

Hale County Hazard Mitigation Plan



2015 Plan Update

Prepared under the direction of the Hazard Mitigation Planning Committee, the Local Emergency Planning Committee and the Hale County Emergency Management Agency
by:



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Hale County Hazard Mitigation Plan

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Introduction

Hale County Hazard Mitigation Plan

The Hale County Hazard Mitigation Plan is a multi-jurisdictional, multi-hazard mitigation plan. This plan fulfills the requirements set forth by the Federal Disaster Mitigation Act of 2000 (DMA 2000). It meets all eligibility requirements set forth by the Federal Emergency Management Agency (FEMA) for grant assistance. To date, assistance is available from the following grant programs: the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), and Pre-Disaster Mitigation Program (PDM). The Biggert-Waters Flood Insurance Reform Act of 2012 eliminated the Repetitive Flood Claims Grant Program (RFC) and Severe Repetitive Loss Program (SRL) and incorporated these elements into the FMA Program. The FMA Program now allows for up to 100% federal cost share for severe repetitive loss properties; 90% federal cost share for repetitive loss properties; and 75% federal cost share for repetitive loss properties.

This plan covers the entire county including all unincorporated areas, the Towns of Akron, Moundville and Newbern and the City of Greensboro. Part of the City of Moundville extends into Tuscaloosa County and that portion of the town will be included in the Tuscaloosa County Hazard Mitigation Plan. Other local governments that elected to participate in and adopt the plan are: the Hale County Board of Education and Hale County Fire Association. Other local governments that elected to participate in and adopt the plan are: the Hale County Board of Education and the Hale County Fire Association.

Authority

Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-228, as amended), Title 44 Code of Federal Regulations, as amended by Section 201 of the Disaster Mitigation Act of 2000 requires that all state and local governments develop a Hazard Mitigation Plan as a condition of receiving federal disaster assistance.

Funding

Funding for this plan update was made available through the Hazard Mitigation Grant Program (HMGP). The Hale County Emergency Management Agency (AEMA) and Lee Helms Associates, L. L. C. entered into an agreement to update the 2009 plan.

Scope

The Hale County Hazard Mitigation Plan includes all incorporated and unincorporated areas in Hale County. All hazards that may affect Hale County and its residents are identified. Hazard mitigation strategies are discussed in terms of goals, objectives and mitigation actions. Responsibility for implementation of strategies is discussed and possible funding sources are identified.

Purpose

“Mitigation is the cornerstone of emergency management. It's the ongoing effort to lessen the impact disasters have on people's lives and property through damage prevention and flood insurance (<http://www.fema.gov/fima/>).” The Hale County Hazard Mitigation Plan is an effort to identify mitigation strategies that address the hazards to which Hale County is the most vulnerable. This plan is only one of many actions Hale County will take to achieve a safer, more hazard resistant environment for its residents.

Section One: Planning Process

Plan update process

The hazard mitigation planning update process began after Hale County EMA was awarded a planning grant from the Alabama Emergency Management Agency (AEMA). The Hale County EMA received 75 percent funding from the Federal Emergency Management Agency (FEMA). The remaining 25 percent was provided locally through in-kind services. The county signed an agreement with Lee Helms Associates, L. L. C. in September 2014 to update the 2009 Hale County Hazard Mitigation Plan.

The Hale County mitigation plan is the representation of the county's commitment to reduce risks from natural and man-made hazards. In doing this, the number, location, extent and probability of natural and manmade disasters occurring within the area was assessed. Previous 2009 plan information was provided to each jurisdiction/local government Hazard Mitigation Planning Committee members participating in the plan update. This information, which included updating of each jurisdiction's data tables, critical facilities and mitigation strategies, were the basis for the plan. Next, actions that would reduce the loss of life or property in the area were considered. In doing this, all jurisdictions, local governments, private-non-profits, first responders (police, fire and medical), and the general public were invited and encouraged to participate.

Continued Public Participation

After the initial plan was completed in 2005 and revision made in 2009, it was made available for ongoing public view and comment at the Hale County Emergency Operations Center, all City and Town Halls, the Hale County Courthouse, and the West Alabama Regional Commission. Each local government was instructed that amendments or additions could be made to that plan at any time. Additional opportunities for comment were provided at annual meetings held by the Hale County EMA. No meeting notes or sign-in sheets were created and saved for these past meetings; however, they will be a requirement and placed in the next plan revision.

In the future, the County EMA will strive to gain more public participation in the maintenance and updates of the county's hazard mitigation plan by encouraging Parent Teacher Organizations, Senior Citizens Clubs, Chamber of Commerce, Kiwanis Club, etc. by mail, telephone, and personal contacts. In addition, the County EMA will encourage the county and municipalities with websites to place the 2015 plan on their site and offer the public a place to comment on the plan. The only jurisdiction having a website at the time of this plan update is Moundville – www.moundvillealabama.com.

Hazard Mitigation Planning Committee

Before beginning the plan update process, LHA staff coordinated with Mr. Russell Weeden, Hale County EMA Director, to review the hazard mitigation planning committee. Existing members were confirmed to continue service. Replacements were made to fill vacancies as needed and new members were added to represent local governments participating in the plan for the first time. Mr. Weeden assumed the responsibility as Chairman of the Hazard Mitigation Planning Committee and also invited the Local Emergency Planning Committee (LEPC) to participate in the planning process. The Hazard Mitigation Committee consisted of the following members:

Hale County

Russell Weeden, HMPG Chairman & EMA/Haz-mat Director
Kenneth Ellis, Hale County Sheriff
Danny Miles, County Engineer
Arthur Crawford, Sr., Probate Judge
Susan Beasley, Hale County 911
Ralph Howard, Hale County EMS Director
Lee Helms, Lee Helms Associates, L. L. C.

Town of Akron

Shelia Kennedy, Mayor, Town of Akron
Donald Anderson, Commissioner

City of Greensboro

Mike Hamilton, Police Department Assistant Chief

City of Moundville

Tony Lester, Mayor, City of Moundville

Daniel Fowler, Water System Manager

Ken Robertson, Police Chief

Town of Newbern

Woody Stokes, Mayor

Hale County Hospital

Tammy Weeden, Hale County Hospital, Director of Patient Care

Shay Whaley, Hale County Hospital, Administrator

Alabama Forestry Commission

Scott Hallman, Forestry Specialist

Hale County Fire Association

Scott Hallman, Forestry Specialist

Hale County Board of Education

Osie Pickens, Superintendent

Others

Bradley Cooper, ADPH Area 7, Emergency Preparedness

Participation Guidelines

The Chairman of the Hazard Mitigation Planning Committee set forth a list of participation guidelines for the Hazard Mitigation Planning Committee:

1. At least one appointed representative from each participating local government should attend all committee meetings. In the event of extenuating circumstances, the local government may send a non-appointed representative. If a committee member cannot attend the meetings, he or she will be contacted in person, by phone, by email, or by mail in order to obtain the jurisdiction's participation in the plan revision. The following HMPC members did not attend the initial or midterm meetings; however, were contacted and participated in person and by telephone and email: Danny Miles, County Engineer (Hale County); Donald Anderson, County Commissioner (Akron); Daniel Fowler, Water System Manager and Ken Robertston, Police Chief (Moundville); Woody Stokes, Mayor (Newbern); Scott Hallman, Forestry Specialist (Alabama Forestry Commission and the Hale County Fire Association); and Osie Pickens, Superintendent (Hale County Board of Education). Committee members are also encouraged to attend neighboring communities' HMPC meetings and participate in their plan updates. Each local government should submit requested information to Hale County EMA or LHA in a timely manner. Local governments should meet timeframes and deadlines established by the committee. In the event of extenuating circumstances, the Hazard Mitigation Planning Committee Chairman may approve late submissions.
2. Committee members should fully cooperate with the Hale County EMA and LHA staff during the update and finalization of the Hale County Hazard Mitigation Plan by providing the best available information necessary to complete the plan.
3. Each participating local government must submit a list of prioritized mitigation actions. The local government must provide mitigation measures and the method used to prioritize the actions. The selected actions must identify the hazard(s) being mitigated.

Committee and Public Meeting Schedule and Participation

Each local government was invited to participate in each of the committee meetings. In the event they were unable to attend the meetings they were required to obtain meeting materials from the Hale County EMA or LHA prior to or immediately following the missed meeting. Meeting materials were completed and returned via mail, fax, email, or by scheduling an individual meeting with the Hale County EMA and/or LHA for the local government to be counted as an active participant in the planning process. Surrounding neighbors were invited by email and encouraged to attend all committee meetings and

provide input. The public was also invited and encouraged to participate in all meetings. Public meeting notices were published on all public bulletin boards throughout the county and two weeks prior to the meeting date and included contact information for assistance. In the event a meeting was rescheduled, a copy of the email to committee members telling of the new date and pertinent meeting information was placed on the door of the meeting location for interested citizens; and if time permitted, was also posted on all public bulletin boards.

Attendees at the meetings were asked to group themselves by jurisdiction in order to review and complete meeting materials that required collaboration, and provide other needed data. Some individuals participated with and contributed to more than one jurisdiction as deemed appropriate. A “Citizen Input on Hazard Mitigation Plan” form (sample found in this section) was available at all meetings for general public citizens to complete. Committee representatives were asked to take these forms back to their agencies and distribute to concerned citizens for their completion. Forms were completed by thirteen citizens during the planning process. These forms were consolidated and can be found beginning on Page 23.

The initial public meeting of the Hale County Hazard Mitigation Planning Committee was held on February 4, 2015 at 10 a.m. in the Hale County Health Department located at 670 Hall Street, Greensboro, AL 36744. No public citizens attended the meeting.

The mid-term public meeting of the Hale County Hazard Mitigation Planning Committee was held on March 11, 2015 at 9 a.m. in the Hale County Health Department located at 670 Hall Street, Greensboro, AL 36744. No public citizens attended the meeting.

The final public meeting of the Hale County Hazard Mitigation Planning Committee will be held during a regular Hale County Commission Meeting to adopt the plan following FEMA’s review and within one calendar year of receipt of FEMA’s “Approval Pending Adoptions”. Cities and Towns will also hold public meetings to adopt the plan. Adoption Resolutions will be added to the final plan.

INITIAL PUBLIC MEETING ANNOUNCEMENT

The Hale County Commission/Emergency Management Agency is scheduling a public meeting on February 4, 2015 at 10 a.m. to update its Hazard Mitigation Plan. The meeting will take place in the Hale County Health Department located at 670 Hall Street, Greensboro, AL 36744. The public, private non-profits, municipalities, school boards, universities/colleges, water/sewer boards, fire departments and elected officials are among those invited and encouraged to attend. Participation is required in order to apply for federal hazard mitigation grants in the future.

HALE COUNTY

Wednesday, February 4, 2015 at 10 a.m. – Hale County Health Dept., 670 Hall Street, Greensboro, AL 36744

INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

| NAME | AGENCY OR DEPARTMENT/ JOB TITLE | PHONE/ FAX | E-MAIL |
|----------------------|---|--|------------------------------|
| Russell Weeden | Agency: Hale Co. EMA Job Title: Director | Phone: 334-624-8160 Fax: 334-624-1911 | rweeden911@halecountynet.net |
| Bradley Egan | Agency: ADPH Area 7 Job Title: Emergency Prep. | Phone: Fax: | |
| Kenneth W. Ellis | Agency: HCSO Job Title: SHERIFF | Phone: 334-624-3081 Fax: 334-624-0218 | Sheeiff@maund.net |
| Arthur Crawford, Sr. | Agency: Probate Job Title: Judge | Phone: 334-624-8740 Fax: 334-624-7361 | Arthur.Crawford.sr@alnet.net |
| Susan Brasley | Agency: Hale Co 911 Job Title: 911 dispatcher | Phone: 334-507-9031 Fax: | sbrasley@att.net |
| Heidi Harris | Agency: Hale Co 911 Job Title: Director | Phone: 661-7108 Fax: 2242 | harris@halecountynet.net |



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INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

| NAME | AGENCY OR DEPARTMENT/ JOB TITLE | PHONE/ FAX | E-MAIL |
|------------------|---|--|-----------------------------|
| Michael Hamilton | Agency: Greensboro PD Job Title: Asst. Chief | Phone: (334) 624-3902 Fax: (334) 624-0500 | mhamilton302@gmail.com |
| Shay Whaley | Agency: Hale County Hospital Job Title: Administrator | Phone: 334-624-3024 Fax: 334-624-3800 | s.whaley@halecohospital.com |
| Tammy Weeden | Agency: Hale Co Hospital Job Title: Director Pt. Care | Phone: 334-624-3024 Fax: 334-624-8022 | tweeden@halecohospital.com |
| Lee Helms | Agency: Lee Helms Associates Job Title: Owner/Consultant | Phone: 205-280-3027 Fax: 205-280-0543 | lee@leehelmsllc.com |
| | Agency: Job Title: | Phone: Fax: | |
| | Agency: Job Title: | Phone: Fax: | |



HALE COUNTY

Wednesday, February 4, 2015 at 10 a.m. – Hale County Health Dept., 670 Hall Street, Greensboro, AL 36744
INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

| NAME | AGENCY OR DEPARTMENT/ JOB TITLE | PHONE/ FAX | E-MAIL |
|------------------|---|--|-------------------------------|
| Tommy Lester | Agency: City of Moundville Job Title: Mayor | Phone: 205-371-2641 Fax: | Tomylester@Mound.net |
| Carol Townsend | Agency: City of Moundville Job Title: City Clerk | Phone: 205-371-2641 Fax: 205-371-9160 | caroletownsend@moundville.net |
| Tommy Muckentoss | Agency: City of Moundville Job Title: Fire Chief | Phone: 205-331-1417 Fax: | tmuck@mound.net |
| Daniel Fowler | Agency: City of Moundville Job Title: Water Superintendent | Phone: 205-371-2641 Fax: | |
| Lee Helms | Agency: LHA Job Title: Contractor | Phone: 205-280-3027 Fax: 205-280-0543 | lee@leehelmsllc.com |
| | Agency: Job Title: | Phone: Fax: | |



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INITIAL MEETING AGENDA

2015 HALE COUNTY HAZARD MITIGATION PLAN UPDATE

Wednesday, February 4, 2015 @ 10 a.m.

Hale County Health Department, 670 Hall Street, Greensboro, AL 36744

1. Introductions

- Sign-in sheets – please print and make sure your email is on the form

2. Project Background

- 2009 plan update was prepared by the West Alabama Planning Commission under the direction of the Hazard Mitigation Planning Committee, the Local Emergency Planning Committee, and the Hale County Emergency Management Agency and adopted by:
 - Hale County – Unincorporated
 - Akron - Town
 - Greensboro - City
 - Moundville - Town
 - Newbern - Town
 - Hale County Fire Association – Special District
 - Hale County School Board – School District
- 2014-2015 plan update will be prepared by Lee Helms Associates, L. L. C. under the direction of the Hazard Mitigation Planning Committee and the Hale County Emergency Management Agency

3. Project Participation

- Identify opportunities for public input into the 2014-2015 plan update
- Identify potential plan meeting participants that are not present today (municipalities, school boards, engineers, hospitals, surrounding county EMAs, fire departments, etc.)
 - PNP's are their own applicant

4. Project Schedule

- 2009 plan update expired November 26, 2014
- Period of Performance for the grant is _____ – _____
- AEMA/Local Review = 30 days; Local response to a request for information (RFI) = 30 days; AEMA review of local response to RFI = 30 days; FEMA Review = 45 days (allow 135 days at the least for plan approval)
- There will be an initial, mid-term, and final meeting. Committee members will be made aware of the meetings via email unless other means is requested. Information may be sent to LHA by fax 205-280-0543 or email to renee@leehelmsllc.com. If you have any questions or need assistance, call LHA at 205-280-3027.

5. Project Tasks for this Meeting

- All general public attendees are to complete the form titled: "Citizen Input on Hazard Mitigation Planning" and leave completed form with LHA representative
- Update 2009 plan information – see handouts
- Discuss in-kind contributions for local match to this planning grant
- Set date and location for next meeting

Wednesday, February 4, 2015 at 10 a.m.

Hale County Health Department, 670 Hall Street, Greensboro, AL 36744

Hale County Hazard Mitigation Planning Committee Meeting 1

The Chairman of the Hazard Mitigation Planning Committee, Mr. Russell Weeden, opened the meeting. Lee Helms Associates, L. L. C. reviewed the 2009 plan with committee members and attendees and explained the update process. Attendees were given worksheets and other materials related to the agenda topics in order to review and provide data for the update. A total of 13 committee members or designees attended the meeting, along with one LHA representative. No members of the general public were in attendance. Those in attendance included:

- Russell Weeden, Hale County EMA Director
- Bradley Cooper, ADPH Area 7-Emergency Preparedness
- Kenneth Ellis, Hale County Sheriff
- Arthur Crawford, Sr., Probate Judge
- Susan Beasley, 911 Dispatcher
- Ralph Howard, 911 Director
- Tony Lester, City of Moundville, Mayor
- Carol Townsend, City of Moundville, City Clerk
- Tommy Muckenfuss, City of Moundville, Fire Chief
- Daniel Fowler, City of Moundville, Water Superintendent
- Michael Hamilton, Greensboro Assistant Police Chief
- Shay Whaley, Hale County Hospital, Administrator
- Tammy Weeden, Hale County Hospital, Director of Patient Care
- Lee Helms, LHA Owner

CITIZEN INPUT ON HAZARD MITIGATION PLANNING

(13 forms submitted)

| | |
|---|--------------------------------|
| Where in the county do you live (Which city or township?) | Greensboro, Melton, Moundville |
| What is your zip code at home? | 36744, 36776, 35474 |
| Do you work with Law Enforcement, Fire Service, Emergency Medical Services, Public Health, or Emergency Management? (Yes or No) | 8 out of 13 |

Which of these emergency events have occurred at your home or in your neighborhood during the past ten years?

| | EVENT | YES | NO |
|---|--|-----|----|
| A | Brush or grass fire? | 1 | 10 |
| B | Building fire? | 1 | 10 |
| C | Severe thunderstorm? | 11 | 1 |
| D | Tornado? | 9 | 4 |
| E | Winter Weather? | 9 | 4 |
| F | Terrorism? | 0 | 11 |
| G | Drought? | 3 | 10 |
| H | Hazardous material spill or release from pipelines, trucks, trains, or aircraft? | 0 | 11 |
| I | Hazardous material spill or release from a facility? | 0 | 11 |
| J | Power failure for more than two or three hours? | 11 | 2 |
| K | Earthquake | 0 | 11 |

Did you have to leave your home because of any of these events?

If so, which ones? List by letter designation: C,D J

Did you lose time from work or school because of any of these events?

If so, which ones? List by letter designation: D, E

Which of the following events are you concerned about in the next 12 months?

| | EVENT | YES | NO |
|---|--|-----|----|
| A | Brush or grass fire? | 2 | 9 |
| B | Building fire? | 2 | 9 |
| C | Severe thunderstorm? | 9 | 4 |
| D | Tornado? | 9 | 4 |
| E | Winter Weather? | 6 | 7 |
| F | Terrorism? | 2 | 9 |
| G | Drought? | 4 | 8 |
| H | Hazardous material spill or release from pipelines, trucks, trains, or aircraft? | 2 | 9 |
| I | Hazardous material spill or release from a facility? | 0 | 10 |
| J | Power failure for more than two or three hours? | 6 | 6 |
| K | Earthquake | 0 | 11 |

Of the concerns listed in question eight, please list the ones that you think are most likely to happen. List in priority by letter designation: A, B, C, D, E, G, I, J

Of the concerns that you think are most likely to happen from question 9, which one do you think would affect most of the population of your County? A, B, C, D, E, F, G, J, H

Of the concerns listed in question eight, please list the ones you think are least likely to happen. List by letter designation: D, I, J, E, F, K, H

Do you own a NOAA weather radio? YES 5 NO 8

If yes, is it on right now? YES 4 NO 4

Are you familiar with the Emergency Alert System YES 13 NO 0

Do you have a device that can sound an alarm to alert you to emergencies? YES 9
NO 3

Can you receive emergency warning information on your pager, cell phone, or wireless messaging devices? YES 10 NO 3 If no, would you like to? YES 10 NO 3

Do you have a family emergency plan for events such as a home fire? YES 7 _____ NO 6

Do you have a safe place for shelter in or around your home? YES 10 NO 2

Are there emergency plans at your place of employment? YES 10 NO 3

If you are willing to, please provide your name, address, and a telephone number so that the County Emergency Management or the community representative may contact you if further input is needed:

| | |
|-----------------|--|
| Name | |
| Mailing Address | |
| Contact Number | |
| E-Mail | |

Questions?

MIDTERM PUBLIC MEETING ANNOUNCEMENT

The Hale County Commission/Emergency Management Agency is scheduling a public meeting on March 11, 2015 at 9 a.m. to update its Hazard Mitigation Plan. The meeting will take place in the Hale County Health Department located at 670 Hall Street, Greensboro, AL 36744. The public, private non-profits, municipalities, school boards, universities/colleges, water/sewer boards, fire departments and elected officials are among those invited and encouraged to attend. Participation is required in order to apply for federal hazard mitigation grants in the future.

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HALE COUNTY

Wednesday, March 11, 2015 at 9 a.m. – Hale County Health Dept., 670 Hall Street, Greensboro, AL 36744

MID-TERM HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

| NAME | AGENCY OR DEPARTMENT/ JOB TITLE | PHONE/ FAX | E-MAIL |
|------------------|--|--|---------------------------------|
| Bradley Cooper | Agency: ADPH Job Title: Emergency Preparedness Team | Phone: (205) 459-6056 Fax: (205) 459-4027 | bradley.cooper@adph.state.al.us |
| Arthur Crawford | Agency: Probate Job Title: Judge | Phone: (334) 624-8740 Fax: (334) 624-9361 | Arthur.Crawford@state.al.us |
| Kenneth W. Ellis | Agency: HCSO Job Title: SHERIFF | Phone: 334 624 3081 Fax: 334 624 0218 | Sheriff@mound.net |
| | Agency: Job Title: | Phone: Fax: | |
| | Agency: Job Title: | Phone: Fax: | |
| | Agency: Job Title: | Phone: Fax: | |



HALE COUNTY

Wednesday, March 11, 2015 at 9 a.m. – Hale County Health Dept., 670 Hall Street, Greensboro, AL 36744

MID-TERM HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

| NAME | AGENCY OR DEPARTMENT/ JOB TITLE | PHONE/ FAX | E-MAIL |
|------------------|---|--|---------------------------|
| Tammy Weeden | Agency: Hale Co Hospital Job Title: Director of Pt. Care | Phone: 334-624-3024 ext 200 Fax: 334-624-8002 | tweedenchd@hsp.com |
| Rebecca Duffin | Agency: Hale Co. Hospital Job Title: Admin Volunteer | Phone: Fax: | |
| Russell Weeden | Agency: Hale Co. EMR Job Title: Director | Phone: 334-624-8160 Fax: | rweeden911@hellsouth.net |
| Michael Hamilton | Agency: Greensboro PD Job Title: Chief | Phone: (334) 352-8002 Fax: (334) 624-0500 | mhamilton_302@gmail.com |
| Tommy Muckenfuss | Agency: Moundville Fire Dept Job Title: Chief | Phone: 205 331 1417 Fax: | tmuck@mound.net |
| Shelbi Terney | Agency: Town of Akron Job Title: Mayor | Phone: 205-372-3148 Fax: 205-372-3198 | townofakron2013@gmail.com |



MID-TERM MEETING AGENDA

2015 HALE COUNTY HAZARD MITIGATION PLAN UPDATE

Wednesday, March 11, 2015 @ 9 a.m.

Hale County Health Department, 670 Hall Street, Greensboro, AL 36744

1. Introductions

- Sign-in sheets – please print and make sure your email is on the form.

2. Project Schedule Reminder

- 2009 plan update expired November 26, 2014
- Period of Performance for the grant is: _____
- AEMA/Local Review = 30 days; Local response to a request for information (RFI) = 30 days; AEMA review of local response to RFI = 30 days; FEMA Review = 45 days (allowing 135 days at the least for plan approval)
- There will be an initial, mid-term, and final meeting. Committee members will be made aware of the meetings via email unless other means is requested. Information may be sent to LHA by fax 205-280-0543 or email renee@leehelmsllc.com. If you have any questions or need assistance, call LHA at 205-280-3027.

3. Project Tasks for this Meeting

- All general public attendees are to complete the form titled: “Citizen Input on Hazard Mitigation Planning” and leave completed form with LHA representative
- Local EMA Director is to provide LHA with a copy of the media release for this meeting
- Submit updates for the 2015 plan to LHA
- If needed, discuss in-kind contributions for local match to this planning grant



Wednesday, March 11, 2015 at 9 a.m.

Hale County Health Department, 670 Hall Street, Greensboro, AL 36744

Hale County Hazard Mitigation Planning Committee Meeting 2

The Chairman of the Hazard Mitigation Committee, Mr. Russell Weeden, opened the meeting. Lee Helms of Lee Helms Associates, L. L. C. reminded the committee members and attendees of the project schedule. Attendees were given worksheets and other materials related to the agenda topics in order to review and provide data for the update. These worksheets were previously emailed to participants with instructions on what information needs updating. A total of 9 committee members or designees attended the meeting, along with one LHA representative. No members of the general public attended. Those in attendance included:

- Russell Weeden, Hale County EMA Director
- Bradley Cooper, ADPH Area 7-Emergency Preparedness
- Kenneth Ellis, Hale County Sheriff's Office, Sheriff
- Arthur Crawford, Sr., Probate Judge
- Michael Hamilton, Greensboro Assistant Police Chief
- Rebecca Duffin, Hale County Hospital, Director
- Tammy Weeden, Hale County Hospital, Director of Patient Care
- Tommy Muckenfuss, Moundville Fire Department, Chief
- Shelia Kennedy, Town of Akron, Mayor
- Lee Helms, LHA Owner

Attendees from the initial meeting returned their updated worksheets to LHA by email or fax. For the information that was missing, LHA contacted each participant by telephone and gathered the information. Attendees of Meeting 2 were provided the same worksheets and will be responded to in the same way.

Interagency and Intergovernmental Coordination

Interagency and intergovernmental coordination also played a vital part in the development of this plan. Each of the agencies listed below were contacted via mail, email, fax, or telephone requesting the best available data that they could contribute to the development of the plan. All information provided was beneficial in completing the risk and vulnerability assessments.

Federal Agencies

- National Weather Service provided storm event data
- United States Geological Survey provided information on general geology, earthquakes, sinkholes, land subsidence, and landslides
- U.S. Army Corp of Engineers and HAZUS-MH 2.1 2012 provided information on dams
- Federal Emergency Management Agency provided information throughout the plan, including the National Flood Insurance Program information
- U.S. Department of Transportation's Hazardous Material Information System provided event data
- U.S. Department of Agriculture – Census of Agriculture provided land value per acre
- HAZUS-MH 2.1 2012 provided estimation information on potential damage, economic loss, and social impacts from natural disasters

State Agencies

- Alabama Emergency Management Agency provided hazard information throughout the plan
- Geological Survey of Alabama provided information on general geology, earthquakes, sinkholes, and landslides
- Alabama Department of Economic and Community Affairs provided the Alabama Drought Management Plan, National Flood Insurance Program information and FEMA flood map update information
- Forestry Commission provided information regarding wildfires

Regional Agencies

- West Alabama Regional Commission provided area planning and development and transportation planning information, as well as maps pertaining to plan information

Local Agencies

- Hale County Emergency Management Agency provided assistance in gathering data

Academia

- University of Alabama - Department of Geology

Surrounding counties in Alabama (Tuscaloosa, Bibb, Perry, Marengo, and Greene) were also invited by email or phone to participate in the development of the plan. None of the surrounding communities attended any of the meetings; however during mutual aid meetings and through our mutual aid agreement, all expressed their willingness to help in the event of a disaster.

Integration with Existing Plans

Careful attention was taken when updating the plan so that it would not contradict or conflict with any existing local subdivision regulations, zoning ordinances, comprehensive plans, or standard building codes. Integration with existing plans of the local EMA and regional planning commission was taken. **Table 1-1** provides a list of the existing plans by jurisdiction.

Wherever appropriate, the West Alabama Regional Commission's (WARC) economic development planning efforts have been integrated into this plan revision. Of possible interest to those viewing this plan, the WARC also provides Hale County with: 1) A Business Preparedness Toolkit and presentation that will help area businesses prepare for the effects of a disaster. The toolkit is tailored to Hale County and provides a sample preparedness and continuity of operations plan, support materials, and a listing of local emergency resources. 2) Data Books containing information from the 2010 Census and the 2006-2010 American Community Survey for the county, tracts, and municipalities. Maps of the counties and tracts are also included.

In order to expand on and improve these existing policies and plans, each participating jurisdiction is committed to increasing hazard mitigation planning and action capability by being involved and incorporating, where appropriate, mitigation planning and actions into local planning initiatives and into public works and emergency management functions. While no specific actions are planned for the immediate future for any participating jurisdiction, the next comprehensive plan update may detail these actions further.

Plan Adoption

All jurisdictions in Hale County, along with the Hale County Board of Education and the Hale County Fire Association have actively participated in the planning process by attending meetings and providing input. Representatives from each local government served on the Hazard Mitigation Planning Committee and attended the meetings. The committee was responsible for updating materials, reviewing sections of the plan, and recommending changes to the plan. Upon completion of the plan each of municipalities (Akron, Greensboro, Moundville, and Newbern) along with the Hale County Commission, Hale County Board of Education, Hale County Volunteer Fire Association, and the Hale Medical Center will pass formal resolutions adopting the Hale County Hazard Mitigation Plan. By adopting this multi-jurisdictional hazard mitigation plan, Hale County and the listed local governments within will be eligible applicants for mitigation grant funds through the Pre-Disaster Mitigation Program, Hazard Mitigation Grant Program, and the Flood Mitigation Assistance Program. Adopting Resolutions can be found in Appendix I.

**Table 1-1: Hale County
Existing Plans by Jurisdiction**

| PLAN/POLICY | Akron | Greensboro | Moundville | Newbern | Hale County |
|--|--------------|-------------------|-------------------|----------------|--------------------|
| Comprehensive Plan | N | N | Y | N | N |
| Strategic Plan | Y | N | Y | N | N |
| Growth Management Plan | N | N | N | N | N |
| Capital Improvement Plan | Y | N | N | N | N |
| Zoning Ordinance | N | Y | Y | Y | N |
| Building Code | Y | Y | Y | N | N |
| Flood Plain Management Plan | N | Y | Y | Y | Y |
| Elevation Certificates | N | N | N | N | Y |
| Drainage Ordinance | N | N | Y | N | N |
| Emergency Operations Plan | Y | Y | Y | Y | Y |
| Critical Facilities Map | N | N | N | Y | N |
| Existing Land Use Map | N | N | N | N | N |
| State Plan | N | N | N | N | Y |
| Hazard Mitigation | Y | Y | Y | Y | Y |
| Strategic National Stockpile Plan | N | N | N | N | Y |
| Other | N | N | N | N | N |
| <i>Source: Participating Jurisdictions, 2015</i> | | | | | |

Section Two: General Characteristics

Hale County is located in West Central Alabama. Tuscaloosa, Bibb, Perry, Marengo, and Greene Counties border Hale County. The county has 643.94 square miles of land area and approximately 12.56 square miles of water area as reported by the 2010 Census. The county contains four municipalities: the Town of Akron, City of Greensboro, City of Moundville, and the Town of Newbern. See **Map 2-1: Hale County General Location**. Hale County is governed by a Probate Judge who serves as the Chairman of the County Commission, and County Commissioners who are elected by citizens in their respective districts. An elected mayor and council serve each municipality. The City of Greensboro serves as the Hale County seat and is the center for local business and trade.

Hale County has one general service airport located in Greensboro. The airport does not provide commercial service. The county is served by one rail line that runs north-south through the Towns of Moundville and Akron. Utilities in Hale County include electricity, gas, water, sewer, and solid waste. Electrical service is provided by Alabama Power and Black Warrior EMC, gas is supplied by Alabama Gas Corporation, SONAT and Texas Eastern Gas. AT&T provides telecommunication services. Water and sewer service is provided by municipal or rural systems. The Town of Akron, City of Greensboro and City of Moundville operate sewer systems. Most unincorporated areas are serviced only by septic tanks. Hale County operates a solid waste collection program and inert landfill.

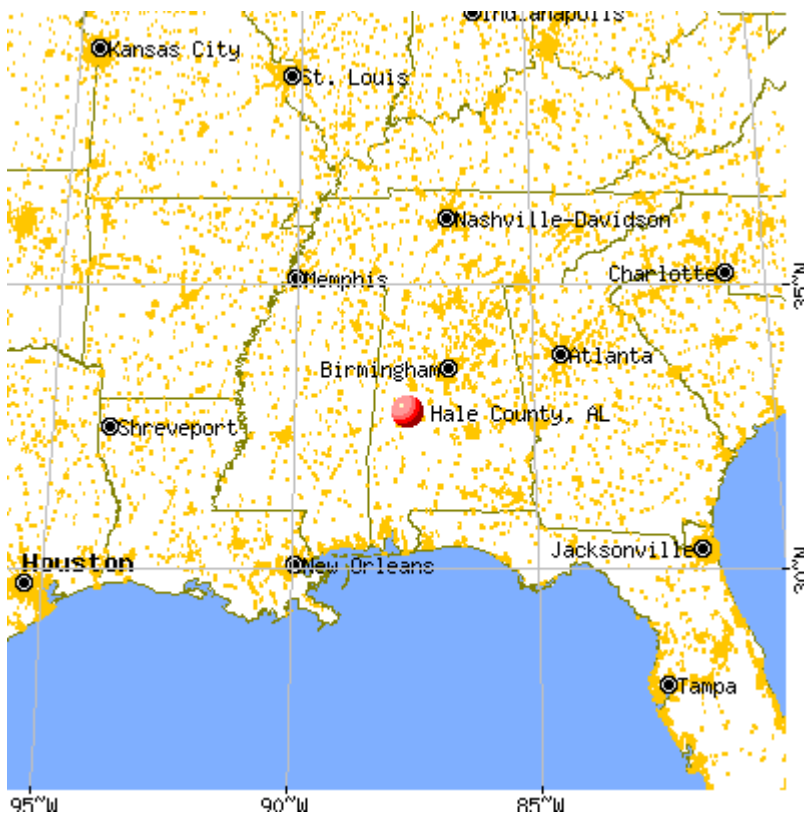
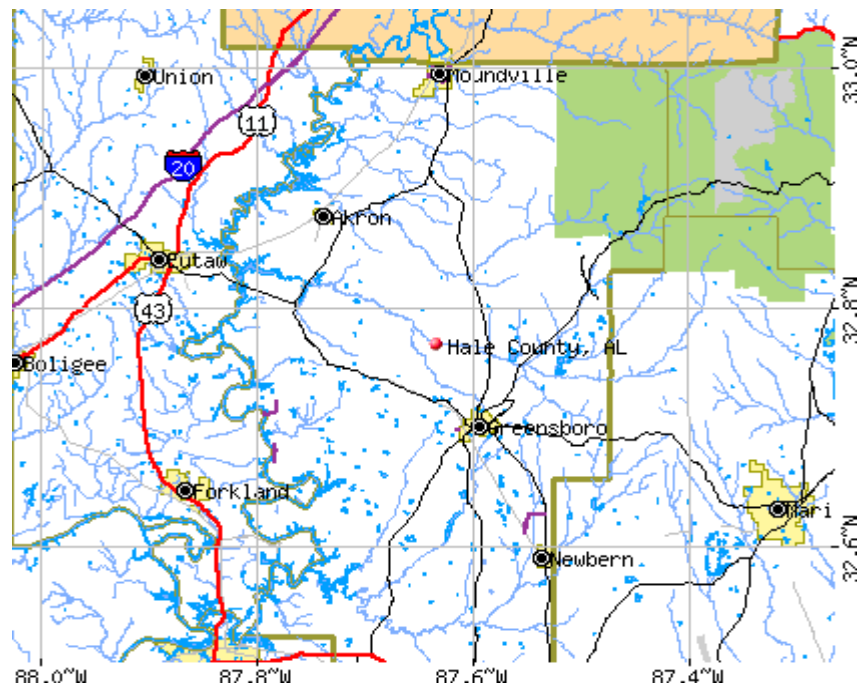
Growth Trends

Hale County's population has declined slightly over the past twenty-four years. **Map 2-1: Hale County General Location** and **Map 2-2: Hale County Population Density** depict the newest 2010 Census Tracts and population concentrations in Hale County. **Table 2-1** below shows the growth trends for the county and its municipalities compared to the State of Alabama.

Table 2-1: Growth Trends 1990-2014**Change 1990-2014**

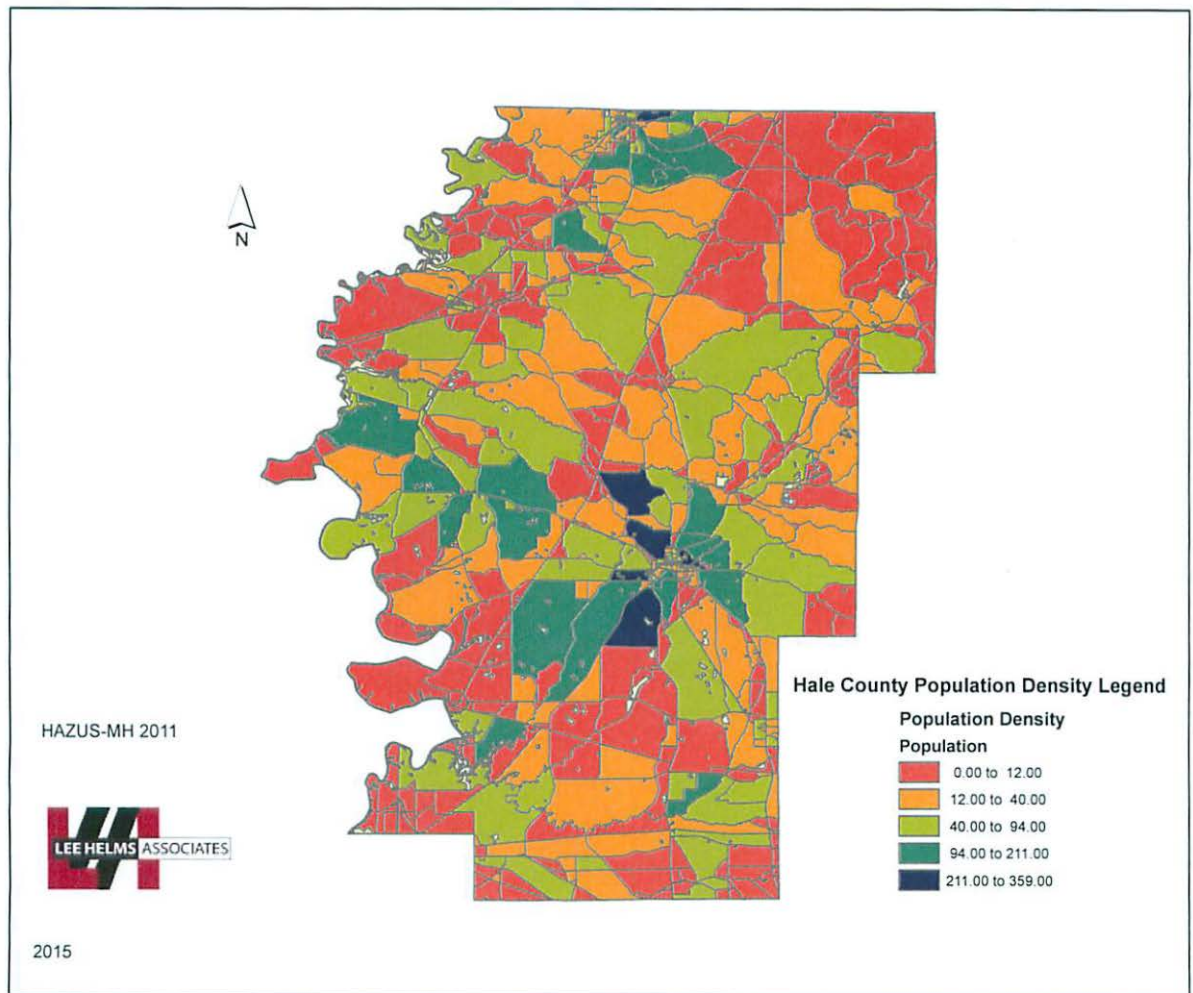
| | 4/1/1990 | 4/1/2000 | 4/1/2010 | 1/1/2014 | Number | Percent |
|---|-----------------|-----------------|-----------------|-----------------|---------------|----------------|
| Akron | 384 | 420 | 356 | 354 | -30 | -8% |
| Greensboro | 2,940 | 2,619 | 2,497 | 2,438 | -502 | -17% |
| Moundville | 2,177 | 2,387 | 2,427 | 2,390 | 213 | 10% |
| Newbern | 227 | 229 | 186 | 181 | -46 | -20% |
| Hale County | 16,025 | 17,185 | 15,760 | 15,406 | -619 | -4% |
| Alabama | 4,041,281 | 4,447,032 | 4,779,736 | 4,841,486 | 800,205 | 20% |
| <i>Source: U.S. Bureau of Census; easidemographics.com; Calculations by LHA; 2015</i> | | | | | | |

MAP 2-1: HALE COUNTY GENERAL LOCATION



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Map 2-2: Hale County Population Density



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General Geology

(Source: U. S. Department of Agriculture Natural Resources Conservation Service – Soil Survey of Hale County, AL; 2015)

Geologic units in Bibb County help determine the risks and vulnerabilities of earthquakes, landslides, sinkholes, and land subsidence events and their occurrences in the county. Geologic units in Hale County, Alabama are shown on **Map 2-3: Geology in Alabama**. The geologic units exposed in Hale County range in age from Upper Cretaceous to Quaternary (Davis, Sanford, and Jefferson, 1975; Copeland, 1968). The Upper Cretaceous geologic units consist of the Tuscaloosa Group, which includes the Coker and Gordo Formations; the Eutaw Formation; and the Selma Group, which includes the Mooreville Chalk and the Demopolis Chalk. The Quaternary units consist of high terrace deposits of the Pleistocene Series and alluvium and low terrace deposits of the Holocene Series. All of the formations are of sedimentary origin and consist mainly of sand, gravel, silt, clay, sandstone, and chalk.

The Coker Formation is the lower formation of the Tuscaloosa Group. The upper part of the Coker Formation is exposed in the far northeastern corner of the county near South Sandy Creek. The formation consists of about 500 to 600 feet of sand, gravel, and clay. Soils that formed in materials weathered from the Coker Formation include Boykin, Smithdale, and Wadley soils.

The Gordo Formation is the upper unit of the Tuscaloosa group and unconformably overlies the Coker Formation. The Gordo Formation is exposed in the northeastern part of the county. The formation ranges from about 300 to 350 feet in thickness. The upper part consists of laminated to massive, red and gray clay and lenticular beds of sand. The lower part consists of poorly sorted sand and chert gravel beds. Soils that formed in materials weathered from the Gordo Formation include Boykin, Luverne, Maubila, Smithdale, and Wadley soils.

The Eutaw Formation underlies the Gordo Formation. The Eutaw Formation crops out in the north-central part of the county in a band that ranges from 10 to 12 miles in width. The formation is about 400 feet thick. It is composed of glauconitic sand interbedded with laminated

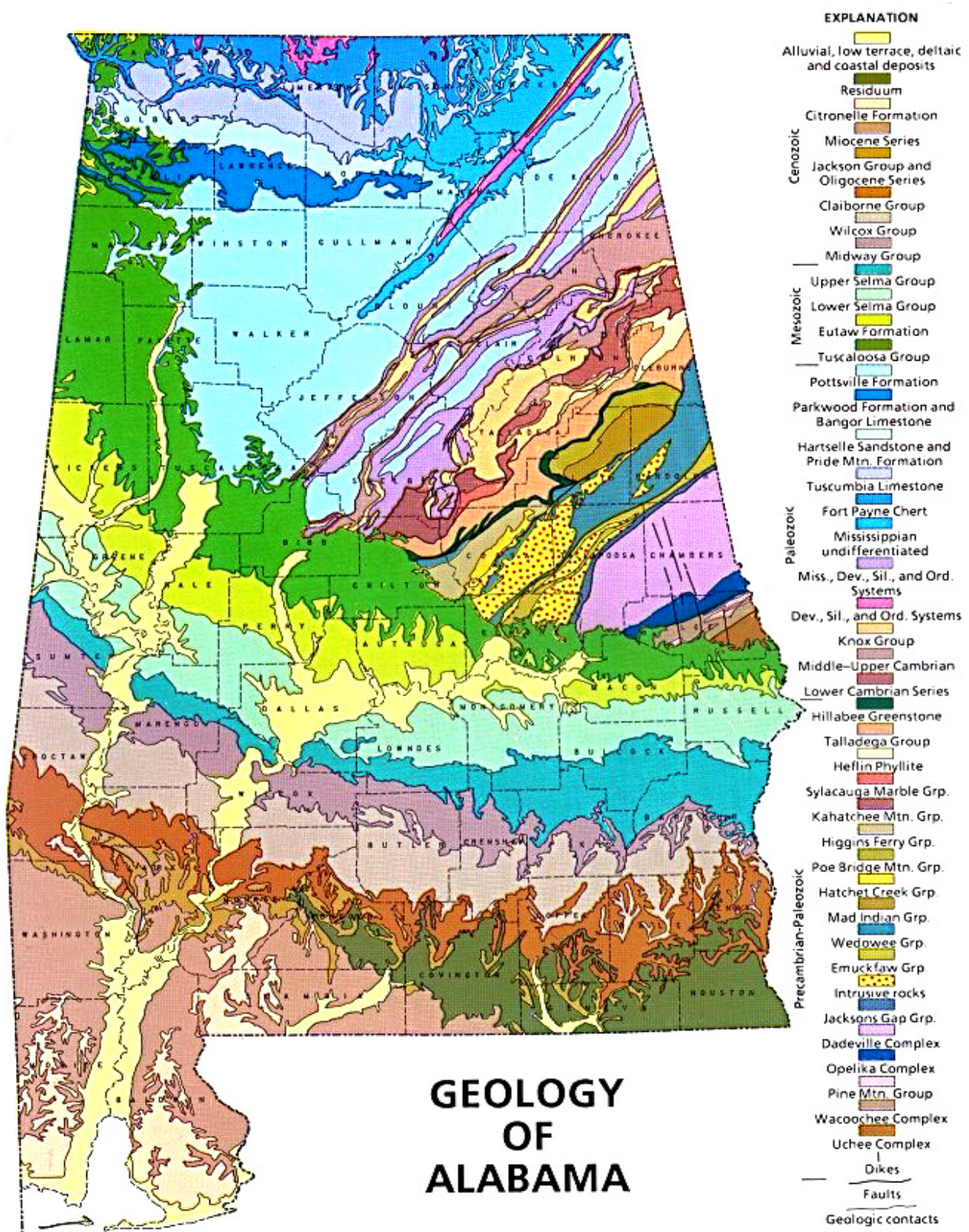
clay and dark gray shale. Soils that formed in materials weathered from the Eutaw Formation include Colwell, Conecuh, Luverne, Smithdale, and Subran soils.

The Mooreville Chalk is in the central and southern parts of the county. The Mooreville chalk rests disconformably on the Eutaw Formation and is about 300 feet thick. It consists of fairly uniform, silty chalk that is generally dark gray to dark bluish gray where fresh but weathers to white or light yellowish gray in outcrops. A thin layer of compact, calcareous, fossiliferous sandstone generally underlies the chalk in Hale County. The soils that formed in materials weathered from the Mooreville Chalk include Eutaw, Faunsdale, Kipling, Okolona, Oktibbeha, Sumter, and Vaiden soils. The Demopolis Chalk overlies the Mooreville Chalk and crops out in the southern part of the county. The formation is less than 200 feet thick in Hale County but ranges to more than 400 feet thick in adjacent Marengo County. The Demopolis Chalk consists mainly of massive to thinly bedded, light gray, fossiliferous chalk. The soils that formed in materials weathered from the Demopolis Chalk include Demopolis, Faunsdale, Oktibbeha, Sumter and Watsonia soils.

Terrace deposits of the Pleistocene Series overlie the older formations that are adjacent to valleys of the Black Warrior River and other major streams. The terrace deposits are typically less than 50 feet thick. They consist of lenticular beds of poorly sorted gravel, sand, silt, and clay. The soils that formed in materials weathered from these deposits include Bama, Colwell, Lucedale, Savannah, and Smithdale soils.

Alluvial deposits of the Holocene Series and low terrace deposits are in stream valleys throughout Hale County. These deposits consist of lenticular beds of yellowish gray and light gray sand, gravel, clay, and silt. They are typically less than 50 feet thick. The Bibb, Iuka, Kinston, Mantachie, Mooreville, Riverview, Sucarnoochee, Una, and Urbo soils are on active flood plains. The Bassfield, Bigbee, Cahaba, Casemore, and Columbus soils are on low terraces.

Map 2-3: Geology of Alabama



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Section Three: Risk Assessment

The risk assessment process is necessary to identify those natural and man-made hazards that pose a threat to Hale County and its municipal jurisdictions. This process used information provided by members of the Hale County Hazard Mitigation Planning Committee to identify these hazards.

The county's Hazard Probability Assessment Summary is shown in **Table 3-1**. A zero denotes no data is available to determine the probability or affected area. Each jurisdiction has an individual hazard probability assessment shown in Section Five of the plan.

Table 3-2 shows the hazards that pose a threat to each jurisdiction. Each jurisdiction was responsible for identifying the hazards that pose a threat to their community. During the 2009 plan update and for subsequent plan updates, tsunami/volcano/typhoon was removed from the plan based on committee consensus that the hazard(s) did not pose a threat to the county or its jurisdictions. Due to the nature of all man-made hazards being possible, however unlikely, each jurisdiction identified them as posing a threat.

Table 3-3 provides the prioritized occurrence threat by jurisdiction based on past events. Occurrence prioritizations were based on the National Oceanic and Atmospheric Administration (NOAA)-National Climatic Data Center (NCDC) reports of occurrences. Hazards are prioritized highest to least threat designating the hazard with the highest threat of occurrence as number one.

Table 3-4 provides the mitigation actions prioritization by jurisdiction. Each jurisdiction was responsible for prioritizing their proposed mitigation actions for the next five years. The jurisdictions took into consideration the impacts of hazards they had experienced over the past five years, as well as the mitigation actions available to help protect their jurisdictions and citizens.

Tables 3-5 is the cornerstone for the hazard profiles that follow in this section. This table contains data from the NOAA NCDC for a defined ten-year study period of January 1, 2003 – December 31, 2013. The table shows events for all hazard types and provides the location, date, type, magnitude, deaths and injuries, dollar amounts for property and crop damages, and total damages.

As FEMA guidelines request that detailed event data be provided, the Hazard Mitigation Committee agreed upon the new ten-year study period as a means of establishing a corrected historical reference that utilized verifiable sources.

Event locations in the table labeled as “countywide” refer to an event that affected the entire county, including all municipalities within. If there is an associated amount of damages, they are assumed to be countywide. Countywide events are also listed in each municipality’s event table in the individual Jurisdiction Assessment located in Section Five. There are events labeled for specific unincorporated areas of the county that were identified as affected. Such events will not be repeated in the individual jurisdiction tables since the location was site specific and did not affect an incorporated jurisdiction.

Some events provided by the NOAA/NCDC are reported as statewide occurrences. Hurricanes, droughts, and winter storms often have this type of far-reaching impact. In cases such as this, the event is shown as a countywide event that affected all municipalities. The county’s extent and probability of a hazard will be listed under each event description.

The extent of the hazard provides the range of magnitude or strength that could be experienced by the county if such an event occurred. The hazard is classified using terms of major, minor, and minimum based on the probability of future damage estimates providing information on the range of magnitude or severity the county can anticipate from potential hazardous events. A major ranking requires continuous action and participation from the entire community and has a 100% or greater chance of an annual occurrence. A minor ranking involves fewer people, effort, and area of community and has a 50% - 99% chance of an annual occurrence. A minimum ranking involves a small number of people and plans for a specific action and has a 49% or less chance of an annual occurrence.

Probability is the likelihood that events of particular severities will occur. The ability of scientists and engineers to calculate probability varies considerably depending on the hazard in question. In many areas, flood studies of various kinds can provide reasonably accurate estimates of how often water will reach particular places and elevations. On the other hand, tornadoes and earthquakes are nearly impossible to predict, except in the most general sense. The probability (frequency) of the various hazards is drawn from a combination of sources, expertise, and the NCDC Storm Event Database for Alabama.

For the 2014-2015 plan update, the probability (%) that an identified hazard will occur on an annual basis was determined using the following formula:

Number of historical or reported events in a time period divided by the number of years the incidents occurred within = Probability of Future Annual Event Occurrences

Example: 13 Extreme Temperature events experienced divided by a 6 year period; $13 \div 6 = >100\%$

A similar formula was used to determine an estimate of the expected damages from each event:

Total amount of damages (in dollars) for each historical or reported event divided by the number of damage causing events within the time period = Estimate of expected future damages

Example: \$172,000 total reported hail damage from 2003-2013 with 21 of those being reported as damage causing; $\$172,000/21=\$8,190$

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**Table 3-1: Hale County
Hazard Probability of Future Occurrence**

| Natural Hazards | Number of Occurrences Between 2003-2013 | Probability of Future Occurrence | Area Affected |
|---|--|---|----------------------|
| Thunderstorm | 35 | >100% | Countywide |
| Lightning | 1 | 10% | Countywide |
| Hail | 36 | >100% | Countywide |
| Tornado | 17 | >100% | Countywide |
| Flood/Flash Flood | 16 | >100% | Countywide |
| Droughts/Extreme Heat | 22 | >100% | Countywide |
| Winter Storm/Frost Freeze/Heavy Snow/ Ice Storm/Winter Weather/Extreme Cold | 7 | 70% | Countywide |
| Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind | 9 | 90% | Countywide |
| Sinkhole/Expansive Soil | 0 | Unknown | Countywide |
| Landslide | 0 | Unknown | Countywide |
| Earthquake | 2 | 20% | Countywide |
| Dam/Levee Failure | 0 | Unknown | Countywide |
| Wildfire 2010-2013 (3-year study period – 1,095 days) | 110 | >100% | Countywide |
| <i>Sources: NOAA NCDC Storm Events Database; Alabama Forestry Commission; Alabama Geological Survey; 2015</i> | | | |
| Methodology: Probability of Future Occurrences was expressed by dividing the total number of occurrences by the ten-year study period, with the exception of wildfire being a 3-year study period. Zero or unknown denotes no data available to determine the probability of future occurrence or areas affected. | | | |

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**Table 3-2: Hale County
Hazard Identification by Jurisdiction**

| Natural Hazards | Akron | Greensboro | Moundville | Newbern | Hale County |
|--|--------------|-------------------|-------------------|----------------|--------------------|
| Thunderstorm | X | X | X | X | X |
| Lightning | X | X | X | X | X |
| Hail | X | X | X | X | X |
| Tornado | X | X | X | X | X |
| Flood/Flash Flood | X | X | X | X | X |
| Drought/Extreme Heat | X | X | X | X | X |
| Winter Storm/Frost Freeze/ Heavy Snow/ Ice Storm/ Winter Weather/Extreme Cold | X | X | X | X | X |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/Strong Wind | X | X | X | X | X |
| Sinkhole/Expansive Soil | X | X | X | X | X |
| Landslide | X | X | X | X | X |
| Earthquake | X | X | X | X | X |
| Wildfire | X | X | X | X | X |
| Dam/Levee Failure | X | X | X | X | X |
| Man-made Hazards | | | | | |
| Hazardous Material Release | X | X | X | X | X |
| Arson/Incendiary Attack | X | X | X | X | X |
| Armed Attack | X | X | X | X | X |
| Conventional Bomb | X | X | X | X | X |
| Chemical Agent | X | X | X | X | X |
| Cyberterrorism | X | X | X | X | X |
| Agriterrorism | X | X | X | X | X |
| Biological Agent | X | X | X | X | X |
| Radiological Agent | X | X | X | X | X |
| Nuclear Bomb | X | X | X | X | X |
| <i>Source: Participating Jurisdictions; 2015</i> | | | | | |
| Key: X = Affects the jurisdiction; N/A = Not a threat to the jurisdiction | | | | | |

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**Table 3-3: Hale County
Prioritized Occurrence Threat by Jurisdiction Based on Past Events**

| Natural Hazards | Akron | Greensboro | Moundville | Newbern | Hale County |
|---|--------------|-------------------|-------------------|----------------|--------------------|
| Thunderstorm | 6 | 3 | 6 | 7 | 3 |
| Lightning | 7 | 9 | 8 | 8 | 10 |
| Hail | 5 | 5 | 6 | 5 | 2 |
| Tornado | 7 | 7 | 8 | 7 | 5 |
| Flood/Flash Flood | 3 | 4 | 3 | 3 | 6 |
| Drought/Extreme Heat | 2 | 2 | 2 | 2 | 4 |
| Winter Storm/Frost Freeze/ Heavy Snow/Ice Storm/ Winter Weather/Extreme Cold | 4 | 6 | 5 | 4 | 8 |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/Strong Wind | 3 | 5 | 4 | 3 | 7 |
| Sinkhole/Expansive Soil | 7 | 10 | 8 | 8 | 11 |
| Landslide | 7 | 10 | 8 | 8 | 11 |
| Earthquake | 6 | 8 | 7 | 6 | 9 |
| Wildfire (3-year study period) | 1 | 1 | 1 | 1 | 1 |
| Dam/Levee Failure | 7 | 10 | 8 | 8 | 11 |
| Man-made Hazards | | | | | |
| Hazardous Material Release | 7 | 1 | 1 | 1 | 3 |
| Arson/Incendiary Attack | 3 | 2 | 3 | 3 | 2 |
| Armed Attack | 4 | 5 | 4 | 4 | 1 |
| Conventional Bomb | 8 | 6 | 6 | 5 | 4 |
| Chemical Agent | 5 | 4 | 2 | 2 | 6 |
| Cyber Terrorism | 2 | 9 | 5 | 8 | 9 |
| Agriterrorism | 1 | 3 | 8 | 9 | 5 |
| Biological Agent | 6 | 7 | 7 | 6 | 7 |
| Radiological Agent | 9 | 8 | 9 | 7 | 8 |
| Nuclear Bomb | 10 | 10 | 10 | 10 | 10 |

Sources: NOAA NCDC Storm Events Database; Alabama Forestry Commission; National Forestry Service; Alabama Geological Survey; 2015

Hazards are prioritized with the highest threat of occurrence assigned number one based on hazardous events that have occurred within each jurisdiction over the past ten years, with the exception of wildfires that were based on events that have occurred over the past three years. Some natural hazards have equal threats to a jurisdiction; therefore, their threat number will be the same. These prioritized threats may or may not be the same as the mitigation actions prioritization.

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**Table 3-4: Hale County
Mitigation Actions Prioritization**

| Natural Hazards | Akron | Greensboro | Moundville | Newbern | Hale County |
|--|--------------|-------------------|-------------------|----------------|--------------------|
| Thunderstorm | 1 | 1 | 1 | 1 | 2 |
| Lightning | 2 | 2 | 2 | 2 | 5 |
| Hail | 8 | 7 | 6 | 4 | 7 |
| Tornado | 3 | 3 | 3 | 3 | 1 |
| Flood/Flash Flood | 4 | 5 | 5 | 7 | 3 |
| Drought/Extreme Heat | 5 | 4 | 7 | 6 | 8 |
| Winter Storm/Frost Freeze/ Heavy Snow/ Ice Storm/ Winter Weather/Extreme Cold | 6 | 6 | 8 | 5 | 5 |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/Strong Wind | 9 | 9 | 9 | 8 | 4 |
| Sinkhole/Expansive Soil | 11 | 11 | 11 | 9 | 11 |
| Landslide | 11 | 11 | 11 | 11 | 11 |
| Earthquake | 10 | 10 | 10 | 11 | 10 |
| Wildfire | 7 | 8 | 4 | 10 | 9 |
| Dam/Levee Failure | 11 | 11 | 11 | 11 | 11 |
| Man-made Hazards | | | | | |
| Hazardous Material Release | 7 | 1 | 1 | 1 | 3 |
| Arson/Incendiary Attack | 3 | 2 | 3 | 3 | 2 |
| Armed Attack | 4 | 5 | 4 | 4 | 1 |
| Conventional Bomb | 8 | 6 | 6 | 5 | 4 |
| Chemical Agent | 5 | 4 | 2 | 2 | 6 |
| Cyberterrorism | 2 | 9 | 5 | 8 | 9 |
| Agriterrorism | 1 | 3 | 8 | 9 | 5 |
| Biological Agent | 6 | 7 | 7 | 6 | 7 |
| Radiological Agent | 9 | 8 | 9 | 7 | 8 |
| Nuclear Bomb | 10 | 10 | 10 | 10 | 10 |

Source: Participating Jurisdictions; 2015

Hazards are prioritized by jurisdictions based on past hazard experiences, vulnerabilities, and available mitigation actions with the hazard having highest priority of mitigation assigned number one. The mitigation actions prioritization may or may not be the same as the prioritized occurrence threats.

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TABLE 3-5: HALE COUNTY HAZARD EVENTS

35 Thunderstorm Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------------|------------|------------|------------|------------|------------|
| MOUNDVILLE | HALE CO. | AL | 02/15/2003 | 20:30 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| WHITSITT | HALE CO. | AL | 04/07/2003 | 05:17 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/07/2004 | 18:35 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| WEDGEWORTH | HALE CO. | AL | 04/10/2004 | 16:29 | CST | Thunderstorm Wind | 75 kts. EG | 0 | 0 | 150.00K | 500.00K |
| AKRON | HALE CO. | AL | 06/16/2004 | 18:40 | CST | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 3.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 03/07/2005 | 17:58 | CST | Thunderstorm Wind | 53 kts. ES | 0 | 0 | 22.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/09/2006 | 17:21 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 5.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 07/31/2006 | 16:00 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 3.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 06/27/2007 | 15:35 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 10.00K | 0.00K |
| CYPRESS | HALE CO. | AL | 04/04/2008 | 12:17 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/04/2008 | 14:24 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 10.00K | 0.00K |
| SAWYERVILLE | HALE CO. | AL | 06/11/2008 | 17:25 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K | 0.00K |
| HAVANA | HALE CO. | AL | 06/29/2008 | 14:16 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K | 0.00K |
| POWERS | HALE CO. | AL | 08/02/2008 | 18:30 | CST-6 | Thunderstorm Wind | 40 kts. EG | 0 | 0 | 1.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 08/02/2008 | 18:30 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 10.00K | 0.00K |
| SLEDGE | HALE CO. | AL | 02/18/2009 | 16:26 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 3.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/26/2009 | 03:25 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 20.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 05/03/2009 | 12:36 | CST-6 | Thunderstorm Wind | 60 kts. EG | 0 | 0 | 100.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 12/09/2009 | 00:25 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 22.00K | 0.00K |
| OAK GROVE | HALE CO. | AL | 04/24/2010 | 10:25 | CST- | Thunderstorm | 50 kts. | 0 | 0 | 1.00K | 0.00K |

| | | | | | | | | | | | |
|--------------------------------------|----------|----|------------|-------|-------|-------------------|------------|---|---|---------|---------|
| | | | | | 6 | Wind | EG | | | | |
| POWERS | HALE CO. | AL | 05/28/2010 | 16:10 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| HAVANA | HALE CO. | AL | 05/28/2010 | 16:15 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 3.00K | 0.00K |
| WEDGEWORTH | HALE CO. | AL | 05/28/2010 | 16:55 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| NEW PROSPECT | HALE CO. | AL | 05/29/2010 | 15:30 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| GREENSBORO MUNI ARPT | HALE CO. | AL | 05/29/2010 | 15:35 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 06/15/2010 | 17:30 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 5.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/11/2011 | 18:04 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 12.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 04/27/2011 | 04:03 | CST-6 | Thunderstorm Wind | 60 kts. EG | 0 | 0 | 8.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/27/2011 | 04:21 | CST-6 | Thunderstorm Wind | 60 kts. EG | 0 | 0 | 4.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 07/04/2011 | 13:11 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 06/11/2012 | 18:48 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 07/10/2012 | 14:52 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00K | 0.00K |
| POWERS | HALE CO. | AL | 09/03/2012 | 14:13 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00K | 0.00K |
| WEDGEWORTH | HALE CO. | AL | 09/03/2012 | 18:20 | CST-6 | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 0.00K | 0.00K |
| WHITSITT | HALE CO. | AL | 06/17/2013 | 13:21 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 412.00K | 500.00K |

1 Lightning Event – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| GREENSBORO | HALE CO. | AL | 08/05/2006 | 14:30 | CST | Lightning | | 0 | 0 | 20.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 20.00K | 0.00K |

36 Hail Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|------------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| MOUNDVILLE | HALE CO. | AL | 04/25/2003 | 12:10 | CST | Hail | 1.50 in. | 0 | 0 | 50.00K | 0.00K |
| AKRON | HALE CO. | AL | 04/25/2003 | 12:40 | CST | Hail | 1.75 in. | 0 | 0 | 45.00K | 0.00K |
| CEDARVILLE | HALE CO. | AL | 04/25/2003 | 13:40 | CST | Hail | 1.75 in. | 0 | 0 | 35.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 04/25/2003 | 14:52 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| AKRON | HALE CO. | AL | 05/02/2003 | 14:44 | CST | Hail | 1.75 in. | 0 | 0 | 40.00K | 0.00K |
| GALLION | HALE CO. | AL | 05/02/2003 | 15:15 | CST | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 05/02/2003 | 15:45 | CST | Hail | 2.75 in. | 0 | 0 | 75.00K | 0.00K |
| CEDARVILLE | HALE CO. | AL | 05/07/2003 | 13:25 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 04/07/2004 | 18:20 | CST | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/07/2004 | 18:35 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| WEDGEWORTH | HALE CO. | AL | 04/10/2004 | 16:29 | CST | Hail | 2.50 in. | 0 | 0 | 30.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 03/13/2005 | 19:05 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 03/30/2005 | 21:13 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| AKRON | HALE CO. | AL | 04/06/2005 | 13:12 | CST | Hail | 1.75 in. | 0 | 0 | 16.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/21/2005 | 17:15 | CST | Hail | 1.00 in. | 0 | 0 | 1.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 04/21/2005 | 17:40 | CST | Hail | 1.75 in. | 0 | 0 | 6.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 04/22/2005 | 12:33 | CST | Hail | 1.75 in. | 0 | 0 | 4.00K | 0.00K |
| CEDARVILLE | HALE CO. | AL | 04/22/2005 | 12:35 | CST | Hail | 1.75 in. | 0 | 0 | 2.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 02/03/2006 | 19:10 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 04/08/2006 | 00:53 | CST | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 02/13/2007 | 16:56 | CST-6 | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 02/13/2007 | 17:00 | CST-6 | Hail | 2.75 in. | 0 | 0 | 0.00K | 0.00K |
| GALLION | HALE CO. | AL | 04/11/2007 | 13:55 | CST-6 | Hail | 1.75 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 02/17/2008 | 11:00 | CST-6 | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| GALLION | HALE CO. | AL | 02/18/2009 | 16:18 | CST-6 | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 02/18/2009 | 16:31 | CST-6 | Hail | 1.75 in. | 0 | 0 | 0.00K | 0.00K |
| HAVANA | HALE CO. | AL | 05/28/2010 | 16:15 | CST-6 | Hail | 0.88 in. | 0 | 0 | 0.00K | 0.00K |
| PRAIRIEVILLE | HALE CO. | AL | 10/24/2010 | 19:03 | CST-6 | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| ROSEMARY | HALE CO. | AL | 03/26/2011 | 12:20 | CST-6 | Hail | 0.88 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/26/2011 | 12:20 | CST-6 | Hail | 0.88 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/26/2011 | 12:24 | CST-6 | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| HAVANA | HALE CO. | AL | 04/05/2012 | 09:58 | CST-6 | Hail | 1.75 in. | 0 | 0 | 0.00K | 0.00K |
| CEDARVILLE | HALE CO. | AL | 03/23/2013 | 18:23 | CST-6 | Hail | 1.75 in. | 0 | 0 | 0.00K | 0.00K |

| | | | | | | | | | | | |
|--------------------------------------|----------|----|------------|-------|-------|------|----------|---|---|---------|-------|
| NEWBERN | HALE CO. | AL | 03/23/2013 | 18:34 | CST-6 | Hail | 1.75 in. | 0 | 0 | 0.00K | 0.00K |
| HAVANA | HALE CO. | AL | 03/23/2013 | 21:22 | CST-6 | Hail | 1.75 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO MUNI ARPT | HALE CO. | AL | 07/17/2013 | 22:20 | CST-6 | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 304.00K | 0.00K |

17 Tornado Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|--------------------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| CEDARVILLE | HALE CO. | AL | 04/25/2003 | 13:30 | CST | Tornado | F0 | 0 | 0 | 3.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 01/07/2005 | 23:12 | CST | Tornado | F0 | 0 | 0 | 27.00K | 0.00K |
| GREENSBORO MUNI ARPT | HALE CO. | AL | 11/30/2006 | 21:35 | CST-6 | Tornado | F1 | 0 | 0 | 20.00K | 0.00K |
| GREENSBORO MUNI ARPT | HALE CO. | AL | 11/30/2006 | 21:40 | CST-6 | Tornado | F0 | 0 | 0 | 10.00K | 0.00K |
| HAVANA | HALE CO. | AL | 11/30/2006 | 21:53 | CST-6 | Tornado | F1 | 0 | 0 | 10.00K | 0.00K |
| WHITSITT | HALE CO. | AL | 02/13/2007 | 17:01 | CST-6 | Tornado | EF0 | 0 | 0 | 50.00K | 0.00K |
| SLEDGE | HALE CO. | AL | 10/22/2007 | 21:44 | CST-6 | Tornado | EF1 | 0 | 2 | 92.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 02/27/2009 | 15:56 | CST-6 | Tornado | EF0 | 0 | 0 | 0.50K | 0.00K |
| WHITSITT | HALE CO. | AL | 04/19/2009 | 16:52 | CST-6 | Tornado | EF0 | 0 | 0 | 15.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 05/03/2009 | 12:32 | CST-6 | Tornado | EF1 | 0 | 0 | 75.00K | 0.00K |
| ARCOLA | HALE CO. | AL | 04/24/2010 | 10:32 | CST-6 | Tornado | EF1 | 0 | 0 | 10.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/24/2010 | 10:50 | CST-6 | Tornado | EF0 | 0 | 0 | 60.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/15/2011 | 14:33 | CST-6 | Tornado | EF2 | 0 | 0 | 374.00K | 0.00K |
| ARCOLA | HALE CO. | AL | 04/15/2011 | 15:50 | CST-6 | Tornado | EF2 | 0 | 0 | 2.980M | 0.00K |
| SAWYERVILLE | HALE CO. | AL | 04/27/2011 | 16:43 | CST-6 | Tornado | EF3 | 6 | 40 | 17.000M | 0.00K |
| HOGGLESVILLE | HALE CO. | AL | 04/27/2011 | 17:50 | CST-6 | Tornado | EF1 | 0 | 0 | 350.00K | 0.00K |
| HOGGLESVILLE | HALE CO. | AL | 09/05/2011 | 11:00 | CST-6 | Tornado | EF0 | 0 | 0 | 12.00K | 0.00K |
| Totals: | | | | | | | | 6 | 42 | 21.088M | 0.00K |

16 Flood/Flash Flood Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|------------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 05/08/2003 | 08:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/18/2003 | 15:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/06/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/12/2005 | 06:45 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/11/2005 | 00:00 | CST | Flood | | 0 | 0 | 3.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/07/2003 | 05:00 | CST | Flash Flood | | 0 | 0 | 12.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/01/2005 | 05:00 | CST | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 07/10/2005 | 17:30 | CST | Flash Flood | | 0 | 0 | 8.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 09/21/2009 | 09:15 | CST-6 | Flash Flood | | 0 | 0 | 25.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 05/29/2010 | 16:30 | CST-6 | Flash Flood | | 0 | 0 | 10.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 03/09/2011 | 05:30 | CST-6 | Flash Flood | | 0 | 0 | 75.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/09/2011 | 05:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 05/03/2012 | 12:15 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HOGGLESVILLE | HALE CO. | AL | 09/03/2012 | 18:25 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| SLEDGE | HALE CO. | AL | 07/11/2013 | 05:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 133.00K | 0.00K |

22 Drought/Extreme Heat Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/18/2006 | 07:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/27/2007 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 10/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 12/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/05/2008 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/02/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/08/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

**7 Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold
Events – 01/01/2003 thru 12/31/2013 (4018 days)**

(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 04/07/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/08/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/09/2011 | 18:00 | CST-6 | Heavy Snow | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/09/2011 | 11:30 | CST-6 | Ice Storm | | 0 | 9 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/19/2008 | 06:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/12/2010 | 11:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/24/2003 | 00:00 | CST | Extreme Cold/wind Chill | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 9 | 0.00K | 0.00K |

**9 Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind Events –
01/01/2003 thru 12/31/2013 (4018 days)**

(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|---------------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/10/2005 | 15:00 | CST | Tropical Storm | | 0 | 0 | 375.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/29/2005 | 17:00 | CST | Tropical Storm | | 0 | 4 | 1.800M | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/23/2008 | 12:00 | CST-6 | Tropical Depression | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/09/2009 | 14:00 | CST-6 | Tropical Depression | | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/16/2004 | 06:00 | CST | High Wind | 77 kts. EG | 0 | 0 | 2.000M | 25.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/11/2005 | 14:00 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/09/2006 | 17:08 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/28/2009 | 00:45 | CST-6 | Strong Wind | 35 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/05/2011 | 15:00 | CST-6 | Strong Wind | 39 kts. EG | 0 | 1 | 10.00K | 0.00K |
| Totals: | | | | | | | | 0 | 5 | 4.197M | 0.00K |

0 Sinkhole Events – 01/01/2003 thru 12/31/2013 (4018 days)

No sinkhole events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

0 Landslide Events – 01/01/2003 thru 12/31/2013 (4018 days)

No landslide events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

2 Earthquake Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: <http://www.city-data.com>)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|---|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| 19.2 miles from the county center | HALE (ZONE) | AL | 11/7/2004 | 11:20 | CST | Earthquake | 4.4 | 0 | 0 | 0.00K | 0.00K |
| 49 miles from the county center | HALE (ZONE) | AL | 08/19/2004 | 23:51 | CST | Earthquake | 3.6 | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | | 0.00K | 0.00K |

No earthquake events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey; Alabama Geological Survey/USGS Database; www.homefacts.com/earthquakes/Alabama.html

110 Wildfire Events – 1/1/2010 thru 12/31/2013

(Source: Alabama Forestry Commission)

| County | Total # of Fires 2010-2013 | Average # of Fires Per Year | Total Acres Burned 2010-2013 | Average Acres Burned Per Year | Average Fire Size in Acres |
|---------------|---------------------------------------|--|---|--|---------------------------------------|
| Hale | 110 | 37 | 570.52 | 190 | 5 |

0 Dam/Levee Failure Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database/Local Input)

No dam/levee failure events occurred or were reported during 01/01/2003 thru 12/31/2013.

Hazard Profiles

I. Thunderstorms

A thunderstorm is a convective cloud that often produces heavy rain, wind gusts, thunder, lightning, and hail. Hale County experiences many thunderstorms each year. The county is most susceptible to thunderstorms during the spring, summer, and late fall. Most of the damage caused by thunderstorms results from straight-line winds, lightning, flash flooding, and hail. Occasionally, thunderstorms will spawn tornados.

Primary Effects from thunderstorms in Hale County would include:

1. High Winds, Straight-line Winds
2. Lightning
3. Flooding
4. Hail
5. Spawning Tornados

Hazardous results from significant thunderstorms in Hale County would include:

1. High winds can cause downed trees and electrical lines resulting in loss of power
2. Severe storms are capable of producing intense lightning that poses many threats to people and infrastructure and can ignite fires.
3. Heavy rains can produce severe storm water run-off in developed areas, and cause bodies of water to breach their banks.
4. Large hail can injure people and livestock and damage crops.
5. Severe thunderstorms can produce tornados that destroy anything in its path, resulting in loss of power, shelter, and potential loss of life.

The National Weather Service reported 35 severe thunderstorms during the ten-year study period of 2003 - 2013. An estimated \$412,000 in property damage and \$500,000 in crop damage resulted from these storms. No injuries or deaths were reported during these thunderstorm events. **Table 3-5** shows the historical occurrences of severe thunderstorms during the study period. Each jurisdiction is at risk for thunderstorm events. Of the storms reported, one affected the entire

county, 15 occurred in an unincorporated county area, and the remaining 19 affected only specific municipalities.

On April 10, 2004, a supercell thunderstorm moved across Greene, Hale, and Perry Counties and produced significant wind damage along with very large hail. The most extensive damage started just northeast of Eutaw, in Greene County, along US 11 and ended just north of the Wedgewood Community, in Hale County, along SR 60. The swath of damage was 1.5 miles wide at the beginning point and 3 miles wide at the ending point. The path length was approximately 6.5 miles long. Inside this extensive damage area, thousands of trees were snapped off or uprooted, numerous power lines were snapped off or blown down, and many structures were damaged by falling trees. The storm continued across eastern Hale and into Perry County past Marion, where numerous trees continued to be knocked down. Very large hail also fell during the storm. The largest hail observed was 2.50 inches in diameter and drifted to over one foot deep in many places. The hail damaged a few homes and several automobiles. Some locations reporting hail and wind damage include Akron and Greensboro. Property damages of \$412,000 and crop damages of \$500,000 occurred. No injuries or deaths were reported.

On May 3, 2009, a cold front sparked strong to severe thunderstorms for several days, with large hail, damaging winds, and several tornadoes. Numerous trees and power lines were blown down across Hale County, including around Greensboro. A total of nine homes were damaged by fallen trees, including five homes in the Faunsdale area. One mobile home had its roof torn off. No deaths, injuries, or crop damages were reported. Property damages of \$100,000 resulted.

Hale County experienced 35 thunderstorm events in a 10 year period resulting in a greater than 100% (3.50) probability that a thunderstorm event will occur on an annual basis. The total amount of damages for the 35 thunderstorm events was \$912,000 with 30 thunderstorm events causing damage resulting in an estimated \$30,400 of expected annual damages from future events. The referenced thunderstorm event(s) are the ones that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a thunderstorm event; the ranking is minor to major.

II. Lightning

Lightning is a natural phenomenon associated with all thunderstorms but can occur in the absence of a storm. Lightning typically occurs as a by-product of a thunderstorm. Lightning is a giant spark of electricity in the atmosphere or between the atmosphere and the ground. In the initial stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground; however, when the differences in charges becomes too great, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that we know as lightning. Lightning can occur between opposite charges within the thunderstorm cloud (Intra Cloud Lightning) or between opposite charges in the cloud and on the ground (Cloud-To-Ground Lightning). Cloud-to-ground lightning is divided two different types of flashes depending on the charge in the cloud where the lightning originates. Thunder is the sound made by a flash of lightning. As lightning passes through the air it heats the air quickly. This causes the air to expand rapidly and creates the sound wave we hear as thunder. Normally, you can hear thunder about 10 miles from a lightning strike. Since lightning can strike outward 10 miles from a thunderstorm, if you hear thunder, you are likely within striking distance from the storm. The months of June through September are the deadliest as far as lightning is concerned. In an average year, three people will be struck and killed by lightning in Alabama and at least six will be injured. (*Source: National Weather Service/Lightning Safety Accessed 11/16/14*). Each jurisdiction is equally at risk for lightning events. Lightning strikes can cause power outages, fires, electrocution, disruptions to communication systems, personal injuries, and deaths. The NOAA NCDC reported one lightning event during the ten-year study period of 2003-2013, resulting in \$20,000 property damages. **Table 3-5** shows the historical occurrences of lightning during the study period. The entire planning area of the county is equally at risk for a lightning event. While the State of Alabama experienced 11-20 deaths as a result of lightning strikes during 2003 – 2013, none of the deaths occurred in Hale County.

The action of rising and descending air in a thunderstorm separates positive and negative charges, with lightning the result of the buildup and discharge of energy between positive and negative charge areas.

Water and ice particles may also affect the distribution of the electrical charge. In only a few millionths of a second, the air near a lightning strike is heated to 50,000°F, a temperature hotter than the surface of the sun. Thunder is the result of the very rapid heating and cooling of air near the lightning that causes a shock wave.

The hazard posed by lightning is significantly underrated. High winds, rainfall, and a darkening cloud cover are the warning signs for possible cloud-to-ground lightning strikes. While many lightning casualties happen at the beginning of an approaching storm, more than half of lightning deaths occur after a thunderstorm has passed. The lightning threat diminishes after the last sound of thunder, but may persist for more than 30 minutes. When thunderstorms are in the area, but not overhead, the lightning threat can exist when skies are clear. Lightning has been known to strike more than 10 miles from the storm in an area with clear sky above.

According to the National Oceanic and Atmospheric Administration (NOAA), an average of 20 million cloud-to-ground flashes has been detected every year in the continental United States. About half of all flashes have more than one ground strike point, so at least 30 million points on the ground is struck on the average each year. In addition, there are roughly 5 to 10 times as many cloud-to-cloud flashes as there are to cloud-to-ground flashes (NOAA, July 7, 2003). During the years 2004-2013, Alabama experienced 11 deaths due to lightning (NOAA, December 18, 2014). The months of June through September are the deadliest as far as lightning is concerned. In an average year, three people will be struck and killed by lightning in Alabama and at least six will be injured. (*Source: NOAA, December 18, 2014*).

Cloud-to-ground lightning can kill or injure people by either direct or indirect means. The lightning current can branch off to strike a person from a tree, fence, pole, or other tall object. It is not known if all people are killed who are directly struck by the flash itself. In addition, electrical current may be conducted through the ground to a person after lightning strikes a nearby tree, antenna, or other tall object. The current also may travel through power lines, telephone lines, or plumbing pipes to a person who is in contact with an electric appliance, telephone, or plumbing fixture. Lightning may use similar processes to damage property or cause fires.

Hale County experienced 1 lightning event in a 10 year period resulting in a 10% (0.10) or unknown probability that a lightning event will occur on an annual basis; however, it is likely a lightning event will occur. The total amount of damages for the 1 lightning event was \$20,000 with 1 lightning event causing damage resulting in an estimated \$20,000 of expected annual damages from future events. The referenced lightning event is the one that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a lightning event; the ranking is minimum to minor.

Primary effects from lightning in Hale County would include:

1. Power Outages
2. Wild Fires
3. Electrocution
4. Disruption of Communication Waves

Hazardous results from significant lightning in Hale County would include:

1. Power outages result in tremendous losses for food distributors and individuals due to loss of refrigeration as well as disruptions to routine business operations.
2. Fires destroy most everything it comes in contact with and also can be detrimental to the health of any living organism due to the massive smoke cloud it produces.
3. Electrocution of electronic device such as water and sewer pumps can cause disruption in service leading to unsanitary conditions and lack of potable water.
4. Disrupted communications from electrical storms can result in inability to communicate with other agencies, making preparation or recovery from a storm nearly impossible.

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III. Hail

Hail is frequently associated with severe thunderstorms. Hail is an outgrowth of severe thunderstorms and develops within a low-pressure front as warm air rises rapidly in to the upper atmosphere and is subsequently cooled, leading to the formation of ice crystals. These are bounced about by high-velocity updraft winds and accumulate into frozen droplets, falling as precipitation after developing enough weight (FEMA, 1997).

The National Weather Service (NWS) defines severe thunderstorms as those with downdraft winds in excess of 58 miles an hour and/or hail at least 3/4 inches in diameter. While only about 10 percent of thunderstorms are classified as severe, all thunderstorms are dangerous because they produce numerous dangerous conditions, including one or more of the following: hail, strong winds, lightning, tornadoes, and flash flooding (National Weather Service – Flagstaff). The size of hailstones varies and is related to the severity and size of the thunderstorm that produced it. The higher the temperatures at the Earth’s surface, the greater the strength of the updrafts, and the greater the amount of time the hailstones are suspended, giving the hailstones more time to increase in size. Hailstones vary widely in size, as shown in **Table 3-6**. Note that penny size (3/4 inches in diameter) or larger hail is considered severe.

Table 3-6: Estimating Hail Size

| Size | Inches in Diameter |
|--------------------------------------|--------------------|
| Pea | ¼ inch |
| Marble/mothball | ½ inch |
| Dime/Penny | ¾ inch |
| Nickel | 7/8 inch |
| Quarter | 1 inch |
| Ping-Pong Ball | 1 ½ inch |
| Golf Ball | 1 ¾ inch |
| Tennis Ball | 2 ½ inch |
| Baseball | 2 ¾ inch |
| Tea Cup | 3 inches |
| Grapefruit | 4 inches |
| Softball | 4 ½ inches |
| <i>Source: NWS, January 10, 2003</i> | |

Hailstorms occur most frequently during the late spring and early summer, when the jet stream moves northward across the Great Plains. During this period, extreme temperature changes occur from the surface up to the jet stream, resulting in the strong updrafts required for hail formation.

The NOAA NCDC reported 36 hail events during the ten-year study period of 2003-2013. An estimated \$304,000 in property damage resulted from these events. No crop damage, injuries, or deaths were reported during these hail events. **Table 3-5** shows the historical occurrences of hail events during the study period. Each jurisdiction is at risk for hail. Of the events reported, 13 occurred in an unincorporated county area and 23 affected only specific municipalities.

The most significant event during the study period occurred in Greensboro on May 2, 2003 when hail up to baseball size (2.75 inches) fell, resulting in \$75,000 in property damage. On this day, a large swath of hail moved through the heart of Hale County. Hail up to the size of baseballs was reported along the path. Several automobiles received windshield damage from the large hail. Several trees and power lines were also blown down during this storm near Greensboro. This was the third large hail producing storm to affect Hale County during the afternoon hours. (*Source: NCDC NOAA*)

Hale County experienced 36 hail events in a 10 year period resulting in a greater than 100% (3.60) probability that a hail event will occur on an annual basis. The total amount of damages for the 36 hail events was \$304,000 with 11 hail events causing damage resulting in an estimated \$27,636 of expected annual damages from future events. The referenced hail event(s) is/are the one(s) that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a thunderstorm event; the ranking is minor to major.

Primary Effects from Hail in Hale County would include:

1. Property Damage
2. Crop Damage
3. Communication equipment damage
4. Livestock loss and injury

Hazardous results from significant Hail in Hale County would include:

1. Any size hail can damage exposed real and personal property. Hail is a major problem for car dealerships, as the unprotected lots of cars receive major damage.
2. Heavy hail is capable of destroying entire crop yields. Farmers of above ground crops are especially concerned with hail as it is extremely detrimental to the crop.
3. Communication equipment, such as receivers, is susceptible to large hail. These instruments can be seriously damaged or destroyed by large hail.
4. Large hail is a danger to livestock of all sorts and is a threat farmers must consider. Hundreds of thousands of dollars are invested in these animals which may be injured or killed in a hailstorm.

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IV. Tornadoes

Tornadoes are rotating columns of air extending downward to the ground with recorded winds in excess of 300 miles per hour. Most tornadoes last less than 30 minutes, but can exist for more than an hour. In Alabama the typical tornado season extends from March through early June, with April and June being peak months for tornado activity. Additionally, Alabama experiences a secondary tornado season from November through December. **Figure 3-1** shows the general paths of tornadoes across the United States.

Figure 3-2 shows the FEMA designated wind zones in the United States. Hale County is located in Zone IV which warrants profiling. Zone IV has witnessed a higher frequency of tornadoes than any other zone. Zone IV has also witnessed some of the deadliest tornadoes in history.

A total of 17 tornadoes occurred in Hale County according to NOAA NCDC during 2003 - 2013. An estimated \$21.088 million in property damage, no crop damage, six deaths and 42 injuries occurred as a result of the reported tornadoes.

The most significant event during the study period occurred in the unincorporated area of Sawyerville on April 27, 2011 with an EF3 tornado, 25.18 miles in length and 1,760 yards wide. A powerful storm system crossed the Southeast United States on Wednesday, April 27, 2011, resulting in a large and deadly tornado outbreak. This epic event broke the record for number of tornadoes in a day for the State of Alabama, becoming the most significant tornado outbreak in the state's history. Central Alabama had two rounds of severe weather that day. During the early morning hours, a Quasi-Linear Convective System quickly moved across the northern half of the National Weather Service, Birmingham county warning area. Straight line winds of 90 mph (78kts) or greater and 11 tornadoes lead to widespread damage and power outages. During the afternoon, long-lived supercell thunderstorms produced long-track, strong and violent tornadoes. Destruction and loss of life across many towns and communities was devastating. A tornado touched down in southwestern Greene County near Tishabee, and moved northeast through central Hale and Hale Counties, before it lifted near Marvel in far northeast Bibb County. The tornado crossed the Black Warrior River and into Hale County west of Sawyerville. The tornado crossed AL Route 14, just north of Sawyerville, intensifying to an EF3 rating with winds of 145 mph. As the tornado continued northeast, it crossed CR 18, CR 21, AL Hwy 69 south of Harper Hill, and CR 29 east of

Ingram. Extensive structural damage was noted in these locations, which resulted in at least 42 injuries and 6 fatalities. Numerous mobile homes and single family homes and one church were damaged or destroyed. Thousands of trees were knocked down. Another event on this day occurred in the unincorporated area of Hogglesville on April 27, 2011 with an EF1 tornado, 4.83 miles in length and 300 yards wide. Property damages of \$350,000 resulted. The tornado touched down east of CR 85, southwest of Hogglesville and tracked northeast along CR 25. As the tornado moved through Watroak, a mobile home and a business were damaged. Significant tree damage was also noted along the path. Damage was consistent with an EF1 rating and winds of 110 mph. Most of the violent tornadoes from this day were captured on video by a number of people, including storm spotters and chasers, as well as numerous television news crews and remotely controlled web-enabled video cameras. This allowed unprecedented coverage and viewing of this historic event in real time from people worldwide. (*Source: NCDC NOAA*)

Each jurisdiction has been affected by tornado activity in the past. The location of Hale County in Wind Zone IV, past occurrences of tornados, and the potential for future occurrences to cause damage, death, and injuries leaves Hale County vulnerable to and at risk for tornados.

Hale County experienced 17 tornado events in a 10 year period resulting in a greater than 100% (1.70) probability that a tornado event will occur on an annual basis. The total amount of damages for the 17 thunderstorm events was \$21,088,000 with 17 tornado events causing damage resulting in an estimated \$1,240,471 of expected annual damages from future events. The referenced tornado event(s) are the ones that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a tornado event; the ranking is major.

Primary effects from Tornados in Hale County would include:

1. Loss of life
2. Property damage
3. Infrastructure destruction and damage
4. Sanitation and water delivery interruption

Hazardous results from significant Tornados in Hale County would include:

1. Collapse of structures can leave people homeless.

2. Roadways may become blocked by debris. Damage may destroy automobiles, creating additional hardships to individuals and families and business operations.
3. High wind speeds associated with a tornado can destroy anything in its path. Power poles topple, communication receivers are destroyed, and water sanitation and treatment plants are offline.
4. Due to destruction, sanitation crews are unable to remove massive amounts of waste, and water delivery is disrupted. This can lead to an increase in disease-carrying insects and lack of potable water.

Figure 3-1: Generalized Tornado Paths

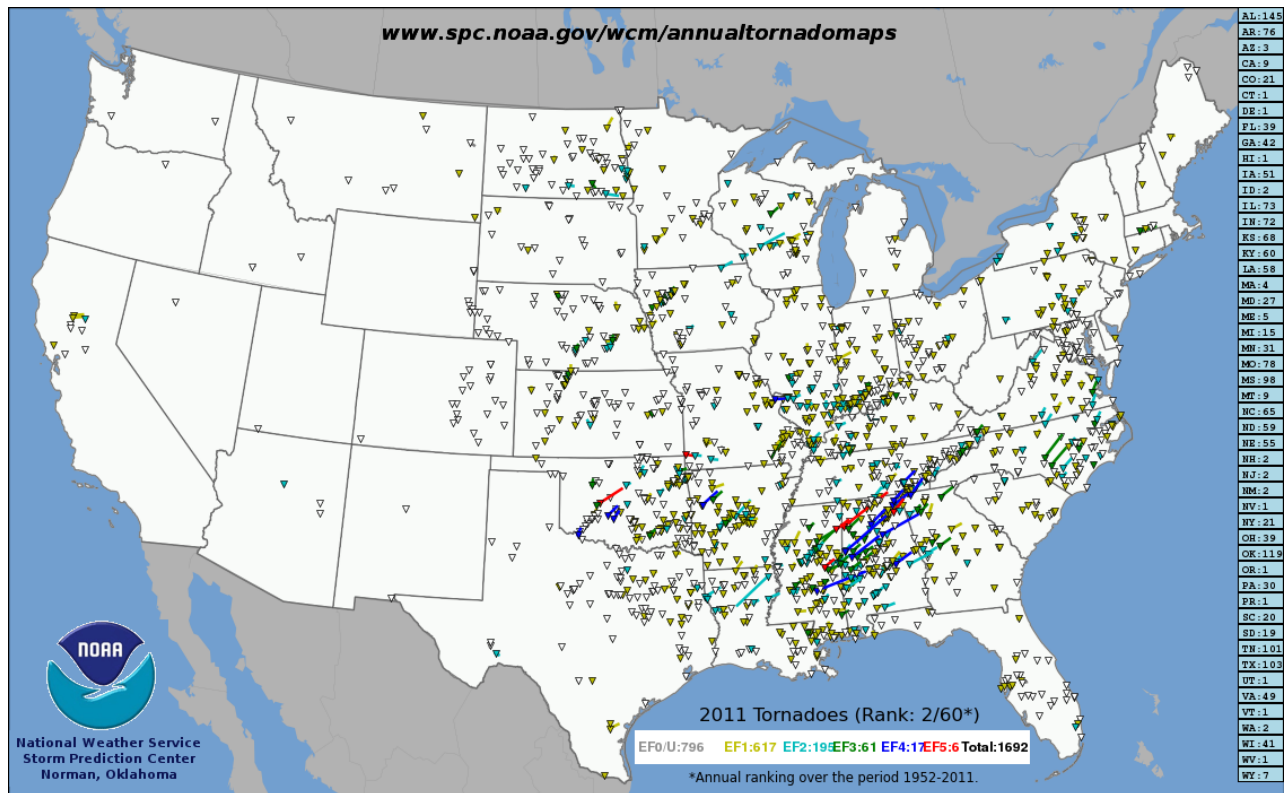


Figure 3-2: Wind Zones in the United States

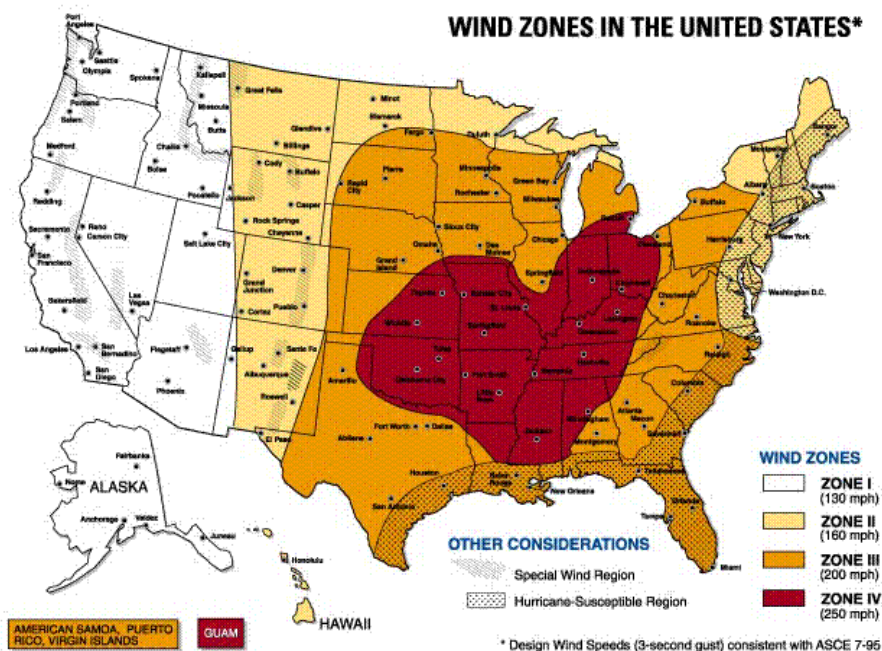


Figure I.2 Wind zones in the United States
Source: www.fema.gov

Tornados are now measured using the new Enhanced Fujita Tornado Scale by examining the damage caused by the tornado after it passes over man-made structures and vegetation. The new scale was put into use in February of 2007. Due to the study period of the plan, which goes from 2003-2013, events shown in **Table 3-5** express the magnitude of tornados using the original Fujita scale and the enhanced Fujita scale. Below is a table comparing the estimated winds in the original F-scale and the operational EF-scale that is currently in use by the National Weather Service, as well as damage descriptions of each category. Like the original Fujita scale, there are six categories from zero to five that represent damage in increasing degrees. The new scale incorporates the use of 28 Damage Indicators and 8 Degrees of Damage to assign a rating.

Table 3-7: Fujita Tornado Scales

Fujita Tornado Scale

| Category | Wind Speed | Description of Damage |
|-----------------|-------------------|--|
| F0 | 40-72 mph | Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards. |
| F1 | 73-112 mph | Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads. |
| F2 | 113-157 mph | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated. |
| F3 | 158-206 mph | Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown. |
| F4 | 207-260 mph | Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated. |
| F5 | 261-318 mph | Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked. |

Enhanced Fujita Tornado Scale

| Category | Wind Speed | Description of Damage |
|-----------------|-------------------|---|
| EF0 | 65-85 mph | Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. |
| EF1 | 86-110 mph | Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken. |
| EF2 | 111-135 mph | Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground. |
| EF3 | 136-165 mph | Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance. |
| EF4 | 166-200 mph | Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated. |
| EF5 | >200 mph | Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena will occur. So far only one EF5 tornado has been recorded since the Enhanced Fujita Scale was introduced on February 1, 2007. |

Source: NOAA, NWS, Storm Prediction Center, 2007.

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V. Floods/Flash Floods

There are three types of flooding that affect Hale County: (1) general flooding, (2) storm water runoff, and (3) flash flooding. General flooding occurs in areas where development has encroached into flood-prone areas. Storm water runoff causes flooding in areas that have inadequate drainage systems. Flash flooding is caused when a large amount of rain falls within a short period of time. **Table 3-5** shows severe flooding events in Hale County recorded by NOAA NCDC. Between 2003 and 2013 there were 10 occurrences of flash flooding and 6 floods in the county. Damages from these events totaled \$133,000 in property damage, no crop damage, no deaths, and no injuries.

Flash floods involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the tearing out of trees, undermining of buildings and bridges, and scouring new channels. The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain. Dam failure and ice jams may also lead to flash flooding.

Dam-break floods may occur due to structural failures (e.g., progressive erosion), overtopping or breach from flooding, or earthquakes. Dam failures are potentially the worst flood events. Dam safety has been an ongoing hazard mitigation issue in the State of Alabama for the past decade, especially for small dams that are privately owned and poorly maintained. No state law currently exists to regulate any private dams or the construction of new private dams, nor do private dams require federal licenses or inspections. There have been several attempts in the State of Alabama to pass legislation that would require inspection of dams on bodies of water over 50 acre-feet or dams higher than 25 feet. Enactment has been hampered by the opposition of agricultural interest groups and insurance companies.

Approximately 1,700 privately owned dams would fit into the category proposed by the law. According to *HAZUS MH 2.1*, Hale County has 231 High Density Polyethylene (HPDE - Earth) Dams and one High Density Polyethylene Concrete Gravity Dam. No historical records are available of dam/levee failures in Hale County. When a dam fails, a large quantity of water is suddenly released downstream, destroying anything in its path. The area impacted by the water

emitted by dam failure would encounter the same risks as those in a flood zone during periods of flooding. The area directly affected by the water released during a dam failure is not county wide.

The probability of future occurrences of dam/levee failure events cannot be characterized on a countywide basis because of the lack of information available. The qualitative probability is rated low because the overall area affected is low and impacts are localized. This rating is intended only for general comparison to other hazards that are being considered.

Local drainage floods may occur outside of recognized drainage channels or delineated flood plains for a variety of reasons, including concentrated local precipitation, a lack of infiltration, inadequate facilities for drainage and storm water conveyance, and/or increased surface runoff. Such events often occur in flat areas, particularly during winter and spring in areas with frozen ground, and also in urbanized areas with large impermeable surfaces. High groundwater flooding is a seasonal occurrence in some areas, but may occur in other areas after prolonged periods of above-average precipitation.

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. Flood studies use historical records to determine the probability of occurrence for different extents of flooding. The probability of occurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year. It is also often referred to as the “100-year flood” since its probability of occurrence suggests it should only occur once every 100 years. This expression is, however, merely a simple and general way to express the statistical likelihood of a flood; actual recurrence periods are variable from place to place. Smaller floods occur more often than larger (deeper and more widespread) floods. Thus, a “10-year” flood has a greater likelihood of occurring than a “100-year” flood. **Table 3-8** shows a range of flood recurrence intervals and their probabilities of occurrence.

| Table 3-8: Flood Probability Terms | |
|---|--|
| Flood Recurrence Intervals | Percent Chance of Annual Occurrence |
| 10-Year | 10.0% |
| 50-Year | 2.0% |
| 100-Year | 1.0% |
| 500-Year | 0.2% |
| <i>(Source: FEMA, August 2001)</i> | |

On July 11, 2005, Hurricane Dennis brought heavy rainfall resulting in a flooding event. Storm total rainfall for the period from Saturday, July 9 through Sunday, July 10 averaged 3 to 6 inches for areas west of Interstate 65. Areas east of Interstate 65 received 1 to 3 inches. Localized higher amounts were observed. This rainfall amount produced some river flooding across central Alabama and was generally minor in nature. Minor flooding occurred on the Lower Tombigbee River at Demopolis, the Lower Black Warrior River at the Selden Lock and Dam, and on the Tallapoosa River at Wadley. Elsewhere, some minor overflow occurred on the Lower Cahaba River, the Lower Tallapoosa River, and on the Alabama River. This overflow was confined to overflow of farm and pastureland. Property damages of \$3,000 resulted.

On March 9, 2011, a flash flooding event occurred as a result of heavy rainfall and causing \$75,000 property damages. Eight homes in the Moundville area were flooded. Three of these homes were on Lock 9 Road and five of these homes were in the Old Lock 5 area.

Hale County experienced 16 flood/flash flood events in a 10 year period resulting in a 100% (1.60) probability that a flood/flash flood event will occur on an annual basis. The total amount of damages for the 16 flood/flash flood events was \$133,000 with 6 flood/flash flood events causing damage resulting in an estimated \$22,167 of expected annual damages from future events. The referenced flood/flash flood event(s) are the ones that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or

severity that could be experienced by Hale County due to a flood/flash flood event; the ranking is minor to major.

Primary Effects from Floods in Hale County would include:

1. Loss of life
2. Property damage
3. Crop damage
4. Dam and levee failure

Hazardous results from significant flood in Hale County would include:

1. Rising water levels can quickly sweep people along in its path.
2. Rapidly moving water destroys anything in its path and also leaves hazardous mold and breed insects.
3. Periods of standing water kill inadaptible plants, and flowing water removes sediment and nutrients from the soil.
4. Breached dams and levees allow water to flood into the surrounding floodplain resulting in destruction of crops and property.

Dam failures may result from one or more the following:

1. Prolonged periods of rainfall and flooding (the cause of most failures)
2. Inadequate spillway capacity which causes excess overtopping flows
3. Internal erosion erosions due to embankment or foundation leakage or piping
4. Improper maintenance
5. Improper design
6. Negligent operation
7. Failure of upstream dams
8. Landslides into reservoirs
9. High winds
10. Earthquakes

Flood Assessment Tools

Programs

Hale County participates in the *National Flood Insurance Program (NFIP)*. The *NFIP* allows property owners to purchase federally sponsored flood insurance. The *NFIP* maps communities in order to establish Flood Risk Zones or Special Flood Hazards Areas. These hazard areas are then mapped on the *Flood Insurance Rate Maps (FIRMS)*. *FIRMS* are used to assess the risks of floods and aid in proper floodplain management. The National Flood Insurance Program (NFIP) requires local participation. **Table 3-9** shows the current NFIP status of each jurisdiction.

Flood Mitigation Assistance Program (FMA) - This program now allows for additional cost share flexibility: up to 100% federal cost share for severe repetitive loss properties; up to 90% federal costs share for repetitive loss properties; and 75% federal cost share for NFIP insured properties.

The Repetitive Flood Claims (RFC) and Severe Repetitive Loss (SRL) Grant Programs were eliminated by the Biggert-Waters Flood Insurance Reform Act of 2012. Elements of these flood grant programs have been incorporated into FMA.

Regulations

The *National Pollutant Discharge Elimination System (NPDES)* requires cities to obtain a NPDES permit for the discharge of wastewater/storm water. This program will address residential and commercial land uses, illicit discharges and improper disposal, industrial facilities, and construction sites.

Additionally, Hale County and each jurisdiction have various plans and regulatory tools in place to aid in hazard mitigation as shown earlier in the plan in **Table 1-1**.

| Table 3-9: Hale County National Flood Insurance Program Status by Jurisdiction | | | | | | |
|--|--|-----------------------------------|------------------------------------|----------------------------------|-------------------------------|---------------|
| CID | Community Name | Initial FHB Identified | Initial FIRM Identified | Current Eff. Map Date | Reg- Emer Date | Tribal |
| 010094# | Hale County | 09/19/80 | 07/01/87 | 01/06/10 (M) | 07/01/87 | No |
| 010095# | Town of Akron (Not participating in the NFIP) | 07/18/75 | 01/06/10 | 01/06/10 | 07/18/76 | No |
| 010336# | City of Greensboro | 12/10/76 | 08/19/85 | 01/06/10 (M) | 08/19/85 | No |
| 010096# | City of Moundville | 06/21/74 | 07/18/85 | 01/16/14 (M) | 07/18/85 | No |
| 010412 | Town of Newbern (Not participating in the NFIP) | - | 01/06/10 | 01/06/10 | 01/06/11 | No |
| KEY: M = No elevation determined – All Zone A, C and X Source: FEMA Community Status Book Report as of February 6, 2014 | | | | | | |

Repetitive Loss Properties

Repetitive loss properties are those for which two or more losses of at least \$1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978 - *FEMA – Local Multi-Hazard Mitigation Planning Guidance, July 1, 2008*.

Hale County has no reported Repetitive Loss properties or Severe Repetitive Loss properties at this time. In last plan revision it stated: Hale County currently has 15 Repetitive Loss properties. The City of Greensboro had one repetitive loss property that has been mitigated. Payments made for damages to these properties totaled \$129,802.61. Each of the properties is residential occupancy. There are no properties designated as Severe Repetitive Loss properties at this time.

Flood Prone Areas

Hale County is prone to flooding along the Black Warrior River and its major tributaries such as Elliott's Creek, Big Brush Creek, and Big Prairie and Little Prairie Creeks. Other minor creeks in the areas of Cypress, Oak Village, and Millwood are also prone to flooding. In last plan revision it stated: The repetitive loss properties listed above are along the Black Warrior River and are primarily located in two areas--Oak Village and Brush Creek. Many seasonal and vacation homes are in these areas as well as full-time residents.

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VI. Droughts/Extreme Heat

Drought occurs when there is a deficiency of precipitation over an extended period of time. Climatic factors, such as high temperature, high winds, and low relative humidity, can contribute to the severity of a drought. No society is immune to the social, economic, and environmental impacts of a drought. There are two primary types of drought: meteorological and hydrological droughts. These events can result in agricultural and socioeconomic droughts.

Meteorological droughts are defined as the degree of dryness as compared to the normal precipitation for the area over the duration of the dry season. This type of drought is specific to a given region since atmospheric conditions and precipitation vary from one region to the next.

Hydrological droughts are associated with the effects of precipitation deficiencies on surface or groundwater supplies. Hydrological droughts do not occur as often as meteorological or agricultural droughts. It takes longer for precipitation deficiencies to show up in soil moisture, stream flow, groundwater levels, and reservoir levels. Hydrological droughts have an immediate impact on crop production, but reservoirs may not be affected for several months. Climate, changes in land use, land degradation, and the construction of dams can have adverse effects on the hydrological system especially in drought conditions.

Agricultural droughts occur when the moisture in the soil no longer meets the needs of the crops.

Socioeconomic droughts occur when physical water shortage begins to affect people and their quality of life.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multidimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of

drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

Extreme summer heat is the combination of very high temperatures and exceptionally humid conditions. If such conditions persist for an extended period of time, it is called a heat wave (FEMA, 1997). Heat stress can be indexed by combining the effects of temperature and humidity, as shown in **Table 3-10**. The index estimates the relationship between dry bulb temperatures (at different humidity) and the skin's resistance to heat and moisture transfer - the higher the temperature or humidity, the higher the apparent temperature.

In addition to affecting people, severe heat places significant stress on plants and animals. The effects of severe heat on agricultural products, such as cotton, may include reduced yields and even loss of crops (Brown and Zeiher, 1997). Similarly, cows may become overheated, leading to reduced milk production and other problems. (Garcia, September 2002).

Drought is a natural event that, unlike floods or tornadoes, does not occur in a violent burst but gradually happens; furthermore, the duration and extent of drought conditions are unknown because rainfall is unpredictable in amount, duration and location. Drought events can potentially affect the entire county.

The Draft Alabama Drought Management Plan (DMP), developed by the Alabama Department of Economic and Community Affairs – Office of Water Resources (ADECA-OWR), defines drought in terms of several indices that describe the relative amounts of surface water flow, groundwater levels, and recent precipitation as compared to localized norms. Because drought is defined in relative terms, it can be stated that all areas of the county are susceptible to drought.

The National Weather Service uses two indexes to categorize drought. The most accurate index of short-term drought is the Crop Moisture Index (CMI). This index is effective in

determining short-term dryness or wetness affecting agriculture. The most accurate index of long-term drought is the Palmer Index (PI). It has become the semi-official index of drought.

During the past ten years, Hale County experienced D2 Severe to D3 Extreme Drought in 2006, D1 Moderate to D4 Exceptional Drought in 2007, D1 Moderate to D4 Exceptional Drought in 2008, and D2 Severe to D3 Extreme Drought in 2011. No deaths, injuries, property or crop damages were reported. Possible impacts resulting from the drought categories experienced by Hale County include: D1 – Crop and pasture damages; streams, reservoirs, or wells low; some water shortages; voluntary water-use restrictions requested. D2 – Crop or pasture losses likely; water shortages common; water restrictions imposed. D3 – Major crop/pasture losses; widespread water shortages or restrictions. D4 – Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells, creating water emergencies.

In 2008, drought conditions continued across most of Central Alabama through the month of January, with monthly rainfall deficits ranging from .5 to 2.5 inches. By the end of the month, roughly three-quarters of Central Alabama remained in Exceptional Drought (D4), with the remainder in Moderate (D1) to Extreme (D3) Drought. Agricultural impacts were relatively low due to being in between growing seasons. However, hydrologic and sociologic impacts continued to be felt. Most stream and river levels across Central Alabama continued to be much below normal, with flow levels generally 25 percent or less of normal. Reservoir levels showed limited improvement due to rainfall that occurred during the month. The threat of water shortages for municipal water systems persisted, and most water restriction plans already in place continued.

Hale County experienced 22 drought/extreme heat events in a 10 year period resulting in a greater than 100% (2.20) probability that a drought/extreme heat event will occur on an annual basis. The total amount of damages for the 22 drought/extreme heat events was unknown with no drought/extreme heat events causing damage resulting in an unknown amount of expected annual damages from future events. No deaths or injuries were reported. The referenced drought/extreme heat event(s) are the ones that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a drought/extreme heat event; the ranking is minimum to minor.

Primary effects from Drought and Excessive Heat in Hale County would include:

1. Crop and other agricultural damage
2. Water supply shortage - water wells, creeks, rivers, and lakes dry up
3. Increase vulnerability to forest fires and sinkholes
4. Heat exhaustion; heat stroke; heat syncope; and heat cramps

Hazardous results from significant Drought and Excessive Heat in Hale County would include:

1. Agricultural damage from drought will result in economic losses of crops and livestock.
2. A water supply shortage will result in the necessity for water to be trucked into the area, damage to the sewer system and lack of hydroelectric power.
3. Forest fires can devastate vast acreages and burn homes and businesses.
4. Heat exhaustion can be debilitating and result in a hospital stay. Heat stroke can cause death.
5. Energy prices will inflate due to loss of hydro-power

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions occur when a “dome” of high atmospheric pressure traps hazy, damp air near the ground. The combination of high temperatures and humid conditions increase the level of discomfort and the potential for danger to humans. A sibling to the heat wave is the drought. Droughts occur when a long period passes without any substantial rainfall. A heat wave combined with a drought is a very dangerous situation.

The human risks associated with extreme heat include heatstroke, heat exhaustion, heat syncope, heat cramps. A description of each of these conditions follows:

- Heatstroke is considered a medical emergency and is often fatal. It exists when rectal temperature rises above 105°F as a result of environmental temperatures. Patients may be delirious, stuporous, or comatose. The death to care ratio in reported cases averages about 15%.

- Heat Exhaustion is much less severe than heatstroke. The body temperature may be normal or slightly elevated. A person suffering from heat exhaustion may complain of dizziness, weakness or fatigue. The primary cause of heat exhaustion is fluid and electrolyte imbalance. The normalization of fluids will typically alleviate the situation.
- Heat Syncope is typically associated with exercise by people who are not acclimated to exercise. The symptom is a sudden loss of consciousness. Consciousness returns promptly when the person lies down. The cause is primarily associated with circulatory instability as a result of heat. The condition typically causes little or no harm to the individual.
- Heat Cramps are typically a problem for individuals who exercise outdoors but are unaccustomed to heat. Similar to heat exhaustion it is thought to be a result of a mild imbalance of fluids and electrolytes.

In 1979 R. G. Steadman, a meteorologist, developed the heat index, which is a relationship between dry bulb temperatures (at different humidity) and the skin's resistance to heat and moisture transfer. Utilizing Steadman's heat index, the following table was developed to show the risk associated with ranges in apparent temperature or heat index.

Table 3-10: Heat Index/Heat Disorders

| Danger Category | Heat Disorder | Apparent Temperature (°F) |
|------------------------|--|----------------------------------|
| IV Extreme Danger | Heatstroke or sunstroke imminent. | >130 |
| III Danger | Sunstroke, heat cramps, or heat exhaustion likely, heat stroke possible with prolonged exposure and physical activity. | 105-130 |
| II Extreme Caution | Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and physical activity. | 90-105 |
| I Caution | Fatigue possible with prolonged exposure and physical activity. | 80-90 |

(Source: National Weather Service, 2015)

Droughts and heat waves have a county-wide impact. The future incidence of drought is highly unpredictable, conditions may be localized or widespread, and not much historical data is available making it difficult to determine the future probability of drought conditions with any accuracy. The qualitative probability rating for drought is high.

Table 3-5 reflects that the NOAA NCDC reported 22 instances of drought for Hale County from 2003-2013. No crop or property damages were reported. There were no reports of extreme heat events during this ten year period.

The National Weather Service reported three instances of drought for Hale County in 2006. Statewide, 31 counties were declared a disaster area. Alabama farmers received one million dollars in federal disaster aid along with other grant assistance. It was during this time that the State implemented its Drought Monitoring System. An initial five wells were selected to track water

levels around the state, with plans to increase the number of monitoring wells to 25. Drought conditions continued to escalate into 2007 and by August the Federal Government declared all 67 Alabama counties Natural Disaster areas. West-central Alabama reported a rainfall deficit that reached nearly 30 inches by 2007. Impacts were felt by farmers of all crops, including timber, livestock producers, and the forestry service. Additionally, electricity providers were affected as river and lake levels dropped and some municipalities were forced to place restrictions on water consumption as supplies became strained. State Agriculture Commissioner Ron Sparks referred to this event as the worst drought in 30-40 years.

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VII. Winter Storms/Frost Freezes/Heavy Snow/Ice Storms/Winter Weather/Extreme Cold

Hale County is vulnerable to extreme winter weather conditions such as extreme cold temperatures, snow, and ice. **Table 3-5** shows the winter storm/extreme cold/frost freeze/heavy snow/ice storm/winter weather events that have affected Hale County from 2003- 2013. In the category of winter storms/frost freezes/heavy snow/ice storms/winter weather/extreme cold events, seven storms were reported for Hale County between 2003 and 2013 – 2 frost freeze events; 1 heavy snow event; 1 ice storm event; 2 winter weather events; and 1 extreme cold event. The entire planning area is equally at risk to all hazards in this category.

The most common impacts of severe winter weather are power failure due to downed power lines and traffic hazards. Winter storm occurrences tend to be very disruptive to transportation and commerce as the county and its citizens are unaccustomed to them. Trees, cars, roads, and other surfaces develop a coating or glaze of ice, making even small accumulations of ice extremely hazardous to motorists and pedestrians. The most prevalent impacts of heavy accumulations of ice are slippery roads and walkways that lead to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs and heavy ice and snow loads; and fallen trees, telephone poles and lines, electrical wires, and communication towers. As a result of severe ice storms, telecommunications and power can be disrupted for days. Also many homes and buildings, especially in rural areas, lack proper insulation or heating, leading to risk of hypothermia. Extremely cold temperatures accompanied by strong winds can result in wind chills that cause bodily injury such as frostbite and death.

On April 8, 2007, an unusually cold spring time air mass settled across Central Alabama bringing record cold temperatures to the entire region. Sub-freezing temperatures (mid to upper 20s) were recorded. No deaths, injuries, property or crop damages were reported.

On February 9, 2011, an average of 2 inches of snow fell across the county with northern areas receiving up to 2.5 inches.

On January 9, 2011, one quarter inch of ice was reported coating most surfaces across the county. Nine people were indirectly injured in a three car accident due to heavy icing on Highway 69 just north of Greensboro.

On February 12, 2010, a period of snow accumulated to between 1 and 2 inches across Hale County, causing hazardous travel conditions.

On January 24, 2003, the coldest temperatures in 7 years occurred across much of North and Central Alabama and lasted for about two days. Early morning temperatures ranged from 2 to 10 degrees. The coldest temperatures were measured in outlying areas. Although no new records were established, these temperatures were very cold for the Deep South. Many area residents reported frozen and broken water pipes as a result of the extended cold. Several lawn sprinkler systems also froze and broke making many areas very icy.

Hale County experienced 7 storms in the category of winter storm/extreme cold/frost freeze/heavy snow/ice storm/winter weather events in a 10 year period resulting in a less than 100% (.70) probability that a winter storm/extreme cold/frost freeze/heavy snow/ice storm/winter weather event will occur on an annual basis. The total amount of damages for the 7 winter storm/extreme cold/frost freeze/heavy snow/ice storm/winter weather events was unknown with no winter storm/extreme cold/frost freeze/heavy snow/ice storm/winter weather events causing damage resulting in an estimated \$0 (unknown) of expected annual damages from future events. The referenced events are the ones that resulted in the most damages, deaths, and injuries during the past ten year period and serve as the extent/range of magnitude or severity that could be experienced by Hale County due to such events; the ranking is minimum to minor.

Primary effects from winter storms in Hale County would include:

1. Injury and damage from downed trees and utility lines due to the snow and ice load
2. Widespread impassable roads and bridges
3. Disruption of services and response capabilities
4. Crop and other agricultural damage

Hazardous results from winter storms in Hale County would include:

1. Loss of power, communications, and fires are common results of severe winter storms. Widespread power outages close down businesses and impact hospitals, nursing homes, and adult and child care facilities serving special needs populations.

2. Loss of transportation ability will affect emergency response, recovery and supply of food and materials.
3. Numerous vehicle accidents in a winter storm can stretch thin the resources of fire rescue and law enforcement.
4. Stranded motorists and the homeless can create a food and housing shortage within the community.
5. The widespread nature of winter storms usually creates a strain on police, fire and medical providers due to the volume of calls for service.

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VIII. Hurricanes/Tropical Storms/Tropical Depressions/High Winds/Strong Winds

Hurricane season in the northern Atlantic Ocean, which affects the United States, begins on June 1 and ends on November 31. These months accompany warmer sea surface temperatures which is a required element to produce the necessary environment for tropical cyclone/hurricane development.

According to data from the National Oceanic and Atmospheric Administration's National Hurricane Center, there are three classification levels of storms based on wind speed. The first, a tropical depression, is "an organized system of clouds and thunderstorms with a defined surface cyclonic closed circulation and maximum sustained winds of 38 mph or less." A tropical storm is the second level and is described as "an organized system of strong thunderstorms with a defined surface circulation and maximum sustained winds of 39-73 mph." A "hurricane," which is the third classification level, is "an intense tropical weather system of strong thunderstorms with a well-defined surface circulation and maximum sustained winds of 74 mph or higher." Individual hurricanes vary in intensity and are categorized using the Saffir-Simpson Hurricane Scale.

NOAA measures wind speeds for thunderstorm/wind and hurricane events in knots (kts) while the Saffir-Simpson scale, shown later in the Hurricane profile, measures wind speed in miles per hour. Both knots and miles per hour is a speed measured by a number of units of distance covered in certain amount of time. Here is how knots compare to MPH:

- 1 knot = 1 nautical mile per hour = 6076.12 feet per hour
- 1 MPH = 1 mile per hour = 5280 feet per hour

To convert knots into miles per hour, multiply the number of knots by 1.151.

Saffir-Simpson Hurricane Wind Scale

Once a tropical storm reaches the level of a hurricane, it is then classified by the storm's intensity. Intensity levels, or categories, are used to assign a number (e.g., Category 1) to a hurricane based on the storm's intensity at the current time. The Saffir-Simpson Hurricane Wind Scale, **Table 3-11**, is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. With the scale

in place, people within the hurricane's tract can better estimate the type of damage they should expect (i.e., wind, storm surge, and/or flooding impacts) due to the intensity of the oncoming hurricane.

Table 3-11: Saffir-Simpson Hurricane Wind Scale

| Category | Sustained Winds | Types of Damage Due to Hurricane Winds |
|--------------|---|--|
| 1 | 74-95 mph 64-82 kt 119-153 km/h | Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days. |
| 2 | 96-110 mph 83-95 kt 154-177 km/h | Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks. |
| 3 (major) | 111-129 mph 96-112 kt 178-208 km/h | Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes. |
| 4 (major) | 130-156 mph 113-136 kt 209-251 km/h | Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months. |
| 5 (major) | 157 mph or higher 137 kt or higher 252 km/h or higher | Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months. |

(Source: National Hurricane Center – NOAA, 2015)

Threats Related to Hurricanes

Hurricanes impact regions in a variety of ways. The intensity of the storm, the speed of the winds, whether the storm moves through a region quickly or whether it stalls over one area all are variables toward the physical damage the storm will cause. High winds and heavy rains are the two

primary elements of hurricanes in Hale County, while tornados and inland flooding are potential secondary elements caused in the wake of the storm. Hale County is not directly affected by storm surges; therefore, no additional analysis will be completed on the topic.

On July 10, 2005, numerous trees and power lines were blown down across Hale County in association with Hurricane Dennis. Several homes and automobiles were damaged by fallen trees. Many roadways were temporarily blocked. Many customers were without power for at least a day. Property damages of \$375,000 occurred.

August 29-30, 2005, the effects of what was once Hurricane Katrina resulted in hundreds of trees and power lines were blown down countywide. At least three quarters of the county was without power for an extended period of time. Numerous structures, homes and vehicles were damaged. Some of the damage was major. Four people across the county were injured during the storm. Two people were injured when a tree fell on their mobile home. One man was injured when a tree fell onto his home. One man was injured when he left his vehicle as trees fell around him and he was subsequently hit by another vehicle. Property damages of \$1,800,000 were reported.

On August 23, 2008, Tropical Storm Fay, and its remnants after landfall, brought high winds, heavy rain, and numerous tornadoes to Central Alabama.

November 9-11, 2009, the effects of what was once Hurricane Ida brought very heavy rain and gusty winds to Hale County. The winds blew down shallow rooted trees where the saturated soil likely played a significant role. Property damages of \$1,000 were reported.

On September 16, 2004, a high wind event occurred as a result of Hurricane Ivan. Thousands of trees and power lines were blown down or snapped off. Several hundred homes or structures received varying degrees of wind damage. At least 200 trees blocked roadways making them temporarily impassable. Power was not fully restored for at least a week in spots. Maximum wind gusts were estimated around 90 miles an hour. Property damages of \$2,000,000 and crop damages of \$25,000 resulted.

Hale County experienced 9 hurricane/tropical storm/tropical depression/high wind/strong wind events in a 10 year period resulting in a less than 100% (.90) probability that a hurricane/tropical storm/tropical depression/high wind/strong wind event will occur on an annual

basis. The total amount of damages for the 9 hurricane/tropical storm/tropical depression/high wind/strong wind events was \$4,197,000 with 8 hurricane/tropical storm/tropical depression/high wind/strong wind events causing damage resulting in an estimated \$524,625 of expected annual damages from future events. Five injuries and no deaths were reported. The referenced hurricane/tropical storm/tropical depression/high wind/strong wind event(s) are the ones that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a hurricane/tropical storm/tropical depression/high wind/strong wind event; the ranking is minor to major.

Primary Effects of Hurricanes:

1. Wind
 - a. Secondary cause of deaths related to hurricanes
 - b. Continue causing destruction as storm travels miles inland
 - c. Able to completely destroy towns and structures that fall within storm path
 - d. Winds near perimeter of eye of storm are strongest and most intense
 - e. Oftentimes produce tornados
2. Heavy Rains
 - a. Rain levels during hurricanes can easily exceed 15 to 20 inches
 - b. Cause flooding beyond coastal regions

Secondary Effects of Hurricanes:

1. Tornados
 - a. Usually found in right-front quadrant of storm or embedded in rain bands
 - b. Some hurricanes capable of producing multiple twisters
 - c. Usually not accompanied by hail or numerous lightning strikes
 - d. Tornado production can occur for days after the hurricane makes landfall
 - e. Can develop at any time of the day or night during landfall of a hurricane

2. Inland Flooding

- a. Statistically responsible for greatest number of fatalities over last 30 years
- b. Stronger storms not necessarily cause of most flooding; weaker storms that move slowly across the landscape can deposit large amounts of rain, causing significant flooding

Hale County is at a low risk for a direct hit by a hurricane due to its position several miles inland from the Alabama coastline. Although Hale County does not feel the effects of storm surges, other effects including heavy rain, flooding, winds, and tornados often have significant impacts on Hale County.

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IX. Sinkholes/ Expansive Soils

Sinkholes

Naturally occurring Sinkholes occur where limestone, carbonate rock, salt beds, or rocks can be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground. The land usually stays intact until the underground spaces become too large to support the ground at the surface. When the ground loses its support it will collapse, forming a sinkhole. Sinkholes can be small or so extreme they consume an automobile or a house. The most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. All jurisdictions have identified sinkholes as a hazard.

According to the Geological Survey of Alabama's sinkhole data as of 2010, Hale County has experienced sinkholes; however, the sinkhole density in Hale County is low. **Figure 3-3** shows sinkholes susceptibility in Hale County. There have been no active sinkholes reported to the GSA or NOAA during the plan's ten-year study period.

Expansive Soils

Expansive soils are soils that swell when they come in contact with water. The presence of clay is generally the cause of such behavior. **Figure 3-4** shows the general soil areas for the state. Hale County has Coastal Plains and Prairies, Major Flood Plains and Alluvial soils. There were no expansive soils reported from NOAA or local sources during the time frame covered by the plan. Though these soils have shrink-swell potential, the committee does not feel a profile is necessary.

Figure 3-3: Hale County Sinkhole Susceptibility
 (Source: Alabama State Hazard Mitigation Plan, April 2013)

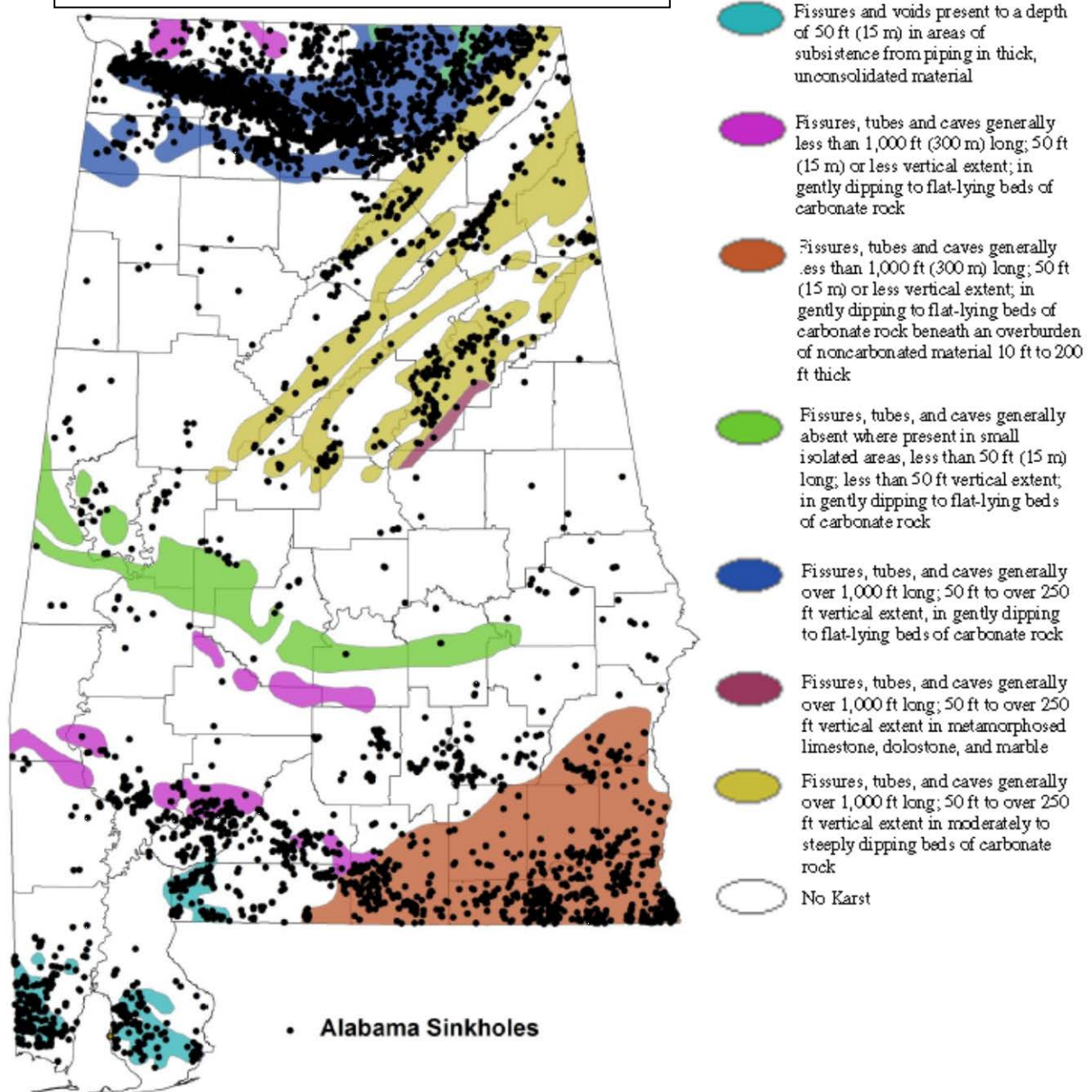
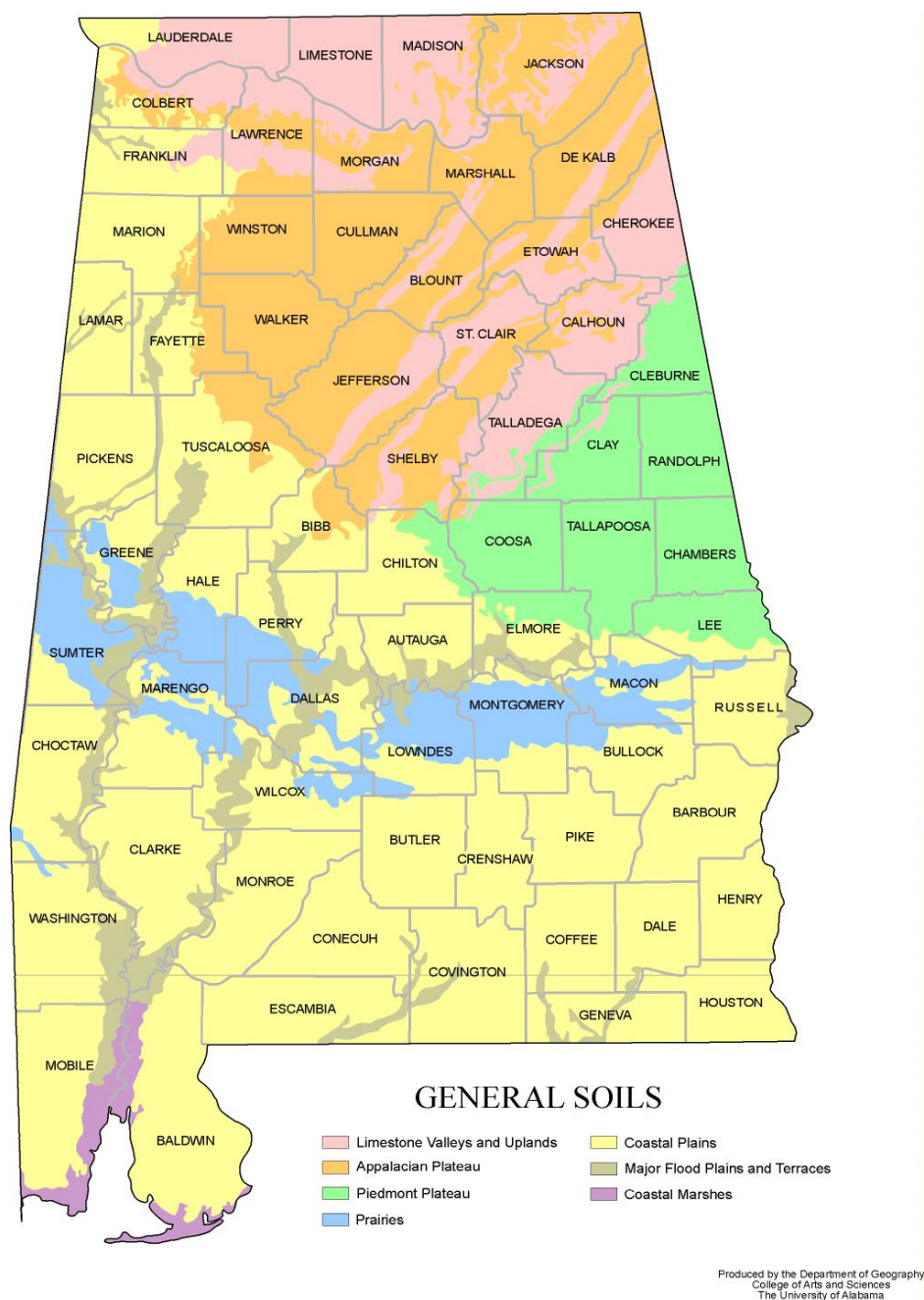


Figure 3-4: General Soils of Alabama



Hale County experienced zero sinkhole events in a 10 year period resulting in an unknown probability that a sinkhole event will occur on an annual basis. The expected annual damages from future events are unknown as there were no events in the past ten years. No deaths or injuries were reported. There is no sinkhole to reference and serve as the extent/range of magnitude or severity that could be experienced by Hale County; the ranking is minimum to minor.

Primary effects from sinkholes in Hale County would include:

1. Property damage
2. Underground infrastructure damage
3. Impassable roads
4. Building collapse

Hazardous results from significant sinkholes in Hale County would include:

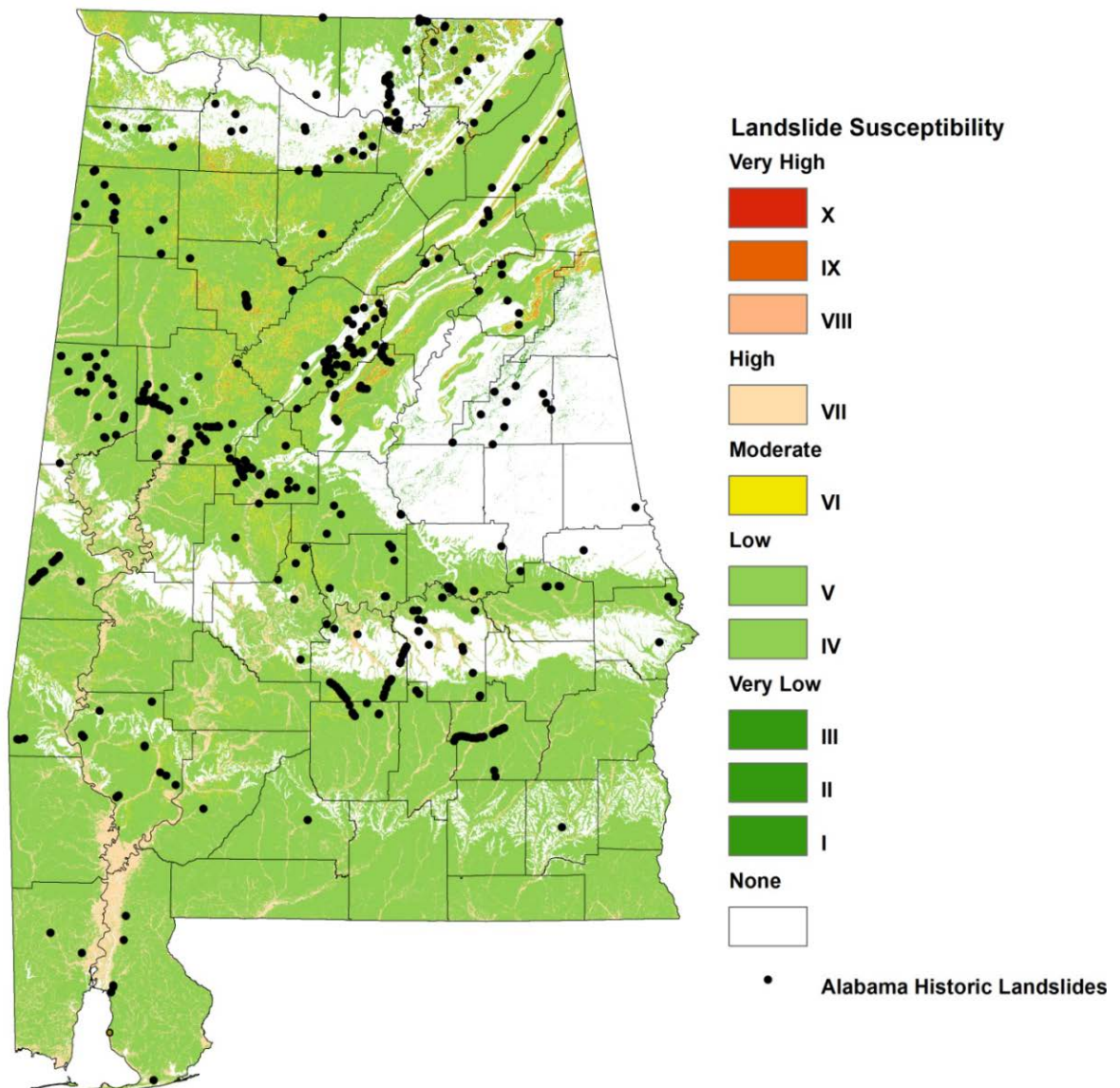
1. Formation of sinkholes can destroy any structure it underlies. Houses, businesses, and government buildings are extremely susceptible to this damage.
2. Underground power, gas, and water lines can be broken causing leakage and breaks that can disrupt service and have negative environmental effects.
3. The ground underneath a road sinks and either leaves the road unsupported or destroys it completely. This is extremely dangerous for unsuspecting motorists and repair crews.
4. Unsupported foundations of buildings allow for collapse of the foundation and possibly the entire structure resulting in mass amounts of injury and damage as well as possible death.

X. Landslides

A landslide is defined by the United States Geologic Survey as the movement of rock, debris, or earth down a slope. Various natural and man-induced triggers can cause a landslide. Naturally induced landslides occur as a result of weakened rock composition, heavy rain, changes in groundwater levels, and seismic activity. Geologic formations in a given area are key factors when determining landslide susceptibility. The three underlying geologic formations present within the region are the Coker, Gordo, and Tuscaloosa groups. These groups are classified as having low to moderate susceptibility to slope failure. In a 1982 study performed by Karen F. Rheams of the United States Geologic Survey, Hale County was indicated to have experienced no landslides. The report separated the landslides into natural and man-induced events. No naturally occurring landslides were recorded in Hale County from this report. Since this data is outside the ten-year study period, it is reported for its historical significance only and to indicate those landslides that were recorded. **Figure 3-5** shows that most of Hale County is at a low risk of incidence. There were no landslides reported from NOAA or the U.S. Geological Survey during the time frame covered by this plan.

Hale County experienced no landslide events in a 10 year period resulting in an unknown probability that a landslide event will occur on an annual basis. Expected annual damages from future events are also unknown. There are no landslide events to reference as ones that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a landslide event; the ranking is minimum to minor.

Figure 3-5: Hale County Landslide Susceptibility
(Source: Alabama State Hazard Mitigation Plan, April 2013)



Primary effects from landslide in Hale County would include:

1. Property damage
2. Impassable roads
3. Sediment erosion
4. Underground infrastructure damage

Hazardous results from landslide in Hale County would include:

1. Landslides move with tremendous force capable of destroying most structures in their path while carrying anything it comes in contact with.
2. Material from landslides can damage and destroy roads as well as block them with debris resulting in disruption to business and other activity.
3. Removed sediment can leave the surrounding area bare and prone to erosion.
4. The flow of a landslide can rip underground pipes and wiring from an area as well as bury them deeper under debris creating a loss of services.

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XI. Earthquakes

An earthquake is a sudden slip on a fault and the resulting ground shaking and radiated seismic energy caused by an abrupt release of accumulated strain in the tectonic plates that comprise the earth's crust. These rigid plates, known as tectonic plates, are some 50 to 60 miles in thickness and move slowly and continuously over the earth's interior. The plates meet along their edges, where they move away, past or under each other at rates varying from less than a fraction of an inch up to five inches per year. While this sounds small, at a rate of two inches per year, a distance of 30 miles would be covered in approximately one million years (FEMA, 1997).

The tectonic plates continually bump, slide, catch, and hold as they move past each other which causes stress to accumulate along faults. When this stress exceeds the elastic limit of the rock, an earthquake occurs, immediately causing sudden ground motion and seismic activity. Secondary hazards may also occur, such as surface faulting, sinkholes, and landslides. While the majority of earthquakes occur near the edges of the tectonic plates, earthquakes may also occur at the interior of plates.

The vibration or shaking of the ground during an earthquake is described by ground motion. The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves. The following are the two kinds of seismic waves:

- ☐ P (primary) waves are longitudinal or compression waves similar in character to sound waves that cause back-and-forth oscillation along the direction of travel (vertical motion), with particle motion in the same direction as wave travel. They move through the earth at approximately 15,000 MPH.
- ☐ S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side-to-side (horizontal motion) due to particle motion at right angles to the direction of wave travel. Unreinforced buildings are more easily damaged by S waves. There are also two kinds of surface waves, Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

Seismic activity is commonly described in terms of magnitude and intensity. Magnitude (M) describes the total energy released and intensity (I) subjectively describes the effects at a particular location. Although an earthquake has only one magnitude, its intensity varies by location.

Magnitude is the measure of the amplitude of the seismic wave and is expressed by the Richter scale. The Richter scale is a logarithmic measurement, where an increase in the scale by one whole number represents a tenfold increase in measured amplitude of the earthquake.

Intensity is a measure of the strength of the shock at a particular location and is expressed by the Modified Mercalli Intensity (MMI) scale.

Another way of expressing an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. If an object is dropped while standing on the surface of the earth (ignoring wind resistance), it will fall towards earth and accelerate faster and faster until reaching terminal velocity. The acceleration due to gravity is often called "g" and is equal to 9.8 meters per second squared (980 cm/sec/sec). This means that every second something falls towards earth, its velocity increases by 9.8 meters per second. Peak ground acceleration (PGA) measures the rate of change of motion relative to the rate of acceleration due to gravity. For example, acceleration of the ground surface of 244 cm/sec/sec equals a PGA of 25.0 percent. It is possible to approximate the relationship between PGA, the Richter scale, and the MMI, as shown in **Table 3-12**. The relationships are, at best, approximate, and also depend upon such specifics as the distance from the epicenter and depth of the epicenter. An earthquake with 10.0 percent PGA would roughly correspond to an MMI intensity of V or VI, described as being felt by everyone, overturning unstable objects, or moving heavy furniture.

Table 3-12: Earthquake PGA, Magnitude and Intensity Comparison

| PGA (%g) | Magnitude (Richter) | Intensity (MMI) | Description (MMI) |
|--|------------------------|--------------------|--|
| <0.17 – 1.4 | 1.0 – 3.0 | I | Not felt except by a very few under especially favorable conditions. |
| 0.17 – 1.4 | 3.0 – 3.9 | II - III | II. Felt only by a few persons at rest, especially on upper floors of buildings. III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated. |
| 1.4 – 9.2 | 4.0 – 4.9 | IV - V | IV. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rock noticeably. V. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop. |
| 9.2 - 34 | 5.0 – 5.9 | VI – VII | VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. VII. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. |
| 34 – 124 | 6.0 – 6.9 | VIII - IX | VIII. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. |
| >124 | 7.0 and higher | VIII or Higher | X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly. XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air. |
| (Source: http://earthquake.usgs.gov , 2015) | | | |

Earthquake-related ground failure, due to liquefaction, is a common potential hazard from strong earthquakes in the central and eastern United States. Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of

the empty spaces between granules to collapse. Pore-water pressure may also increase sufficiently to cause the soil to behave like a fluid (rather than a soil) for a brief period and causing deformations. Liquefaction causes lateral spreads (horizontal movement commonly 10-15 feet, but up to 100 feet), flow failures (massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip). Sand blows were common following major New Madrid earthquakes in the central United States.

The hazards associated with earthquakes include anything that can affect the lives of humans, including surface faulting, ground shaking, landslides, liquefaction, tectonic deformation, tsunamis, and seiches. Earthquake risk is defined as the probability of damage and loss that would result if an earthquake caused by a particular fault were to occur. Losses depend on several factors including the nature of building construction, population density, topography and soil conditions, and distance from the epicenter.

Interestingly, an earthquake's magnitude can be a poor indicator of hazard impact because the duration of ground shaking, and resulting increased damages, is not factored into the magnitude concept. The majority of losses are due to collapsing houses and other structures, the most vulnerable being those of unreinforced masonry and adobe. Structures built with more flexible materials such as steel framing are preferred. Wood frame construction, which constitutes a high percentage of homes in the United States, also tends to flex rather than collapse but is more susceptible to fire. Building codes have historically been utilized to address construction standards to mitigate damages for earthquakes and other hazards. However, older structures, non-compliance, and incomplete knowledge of needed measures remain a problem. In order to reduce losses to lives and property, wider adoption of improved construction methods for both residential and important critical facilities such as hospitals, schools, dams, power, water, and sewer utilities is needed.

Three zones of frequent earthquake activity affecting Alabama are the New Madrid Seismic Zone (NMSZ), the Southern Appalachian Seismic Zone (SASZ) (also called the Eastern Tennessee Seismic Zone), and the South Carolina Seismic Zone (SCSZ). The NMSZ lies within the central Mississippi Valley, extending from northeast Arkansas through southeast Missouri, western Tennessee, and western Kentucky, to southern Illinois. The SASZ extends from near Roanoke in

southwestern Virginia southwestward to central Alabama. Considered a zone of moderate risk, the SASZ includes the Appalachian Mountains. Most of the earthquakes felt in Alabama are centered in the SASZ. The hypocenters of earthquakes in this zone are on deeply buried faults. The SCSZ is centered near Charleston South Carolina and encompasses nearly the whole State. Hale County is at risk for earthquakes.

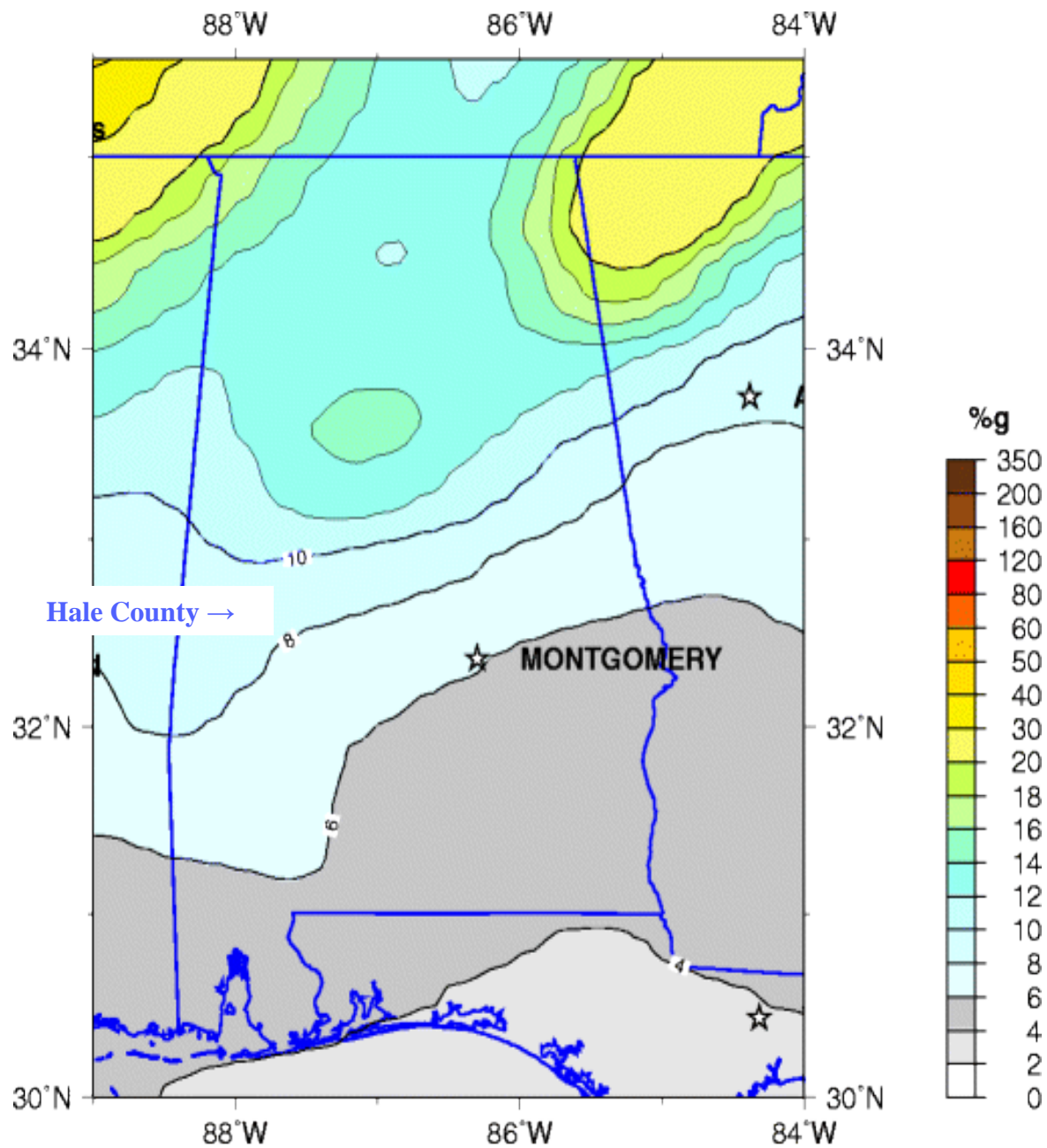
According to city-data.com Hale County's historical earthquake activity is above Alabama's average, but is 69% below the national average. City-data.com reports a 4.4 magnitude earthquake occurred on November 7, 2004, 19.2 miles away from the county's center. City-data.com also reports a 3.6 magnitude earthquake occurred on August 19, 2004, 49 miles from the county's center.

Earthquakes occurring in Hale County are predominantly low magnitude events. **Figure 3-6** shows the Percent Ground Acceleration (PGA) with two percent 50 year exceedance probability. The USGS database shows that there is a 1.91% chance of a major earthquake (= or > 5.0 magnitude) within 31 miles of Hale County, AL within the next 50 years. The largest earthquake within 50 miles of Hale County, AL was a 4.8 Magnitude in 1999. The risk of a significant, damage-causing earthquake in Hale County is low to moderate.

Although many areas of the United States are better known for their susceptibility, earthquakes do occur in Alabama. **Figure 3-7** shows the seismic zones of the Southeastern United States, which includes Alabama, as well as the epicenters of earthquakes recorded in the state from 1886-2007 as provided by the Geological Survey of Alabama and noted in the Alabama EMA Earthquake Book 2002. According to the Alabama Geological Survey/USGS Database and City-data.com, Hale County experienced two earthquake events in the past ten years (January 1, 2003 – December 31, 2013) as noted in **Table 3-5**. On August 19, 2004 at 11:51 p.m., an earthquake 3.1 miles in depth and 3.6 magnitude occurred 49 miles away from the county's center. On November 7, 2004 at 11:20 a.m., an earthquake 3.1 miles in depth and 4.4 magnitude occurred 19.2 miles away from the county's center. No deaths, injuries, property or crop damages were reported from these two earthquake events.

Two zones of frequent earthquake activity that could potentially impact Hale County are the New Madrid Seismic Zone and the Southern Appalachian Seismic Zone. Damage could be

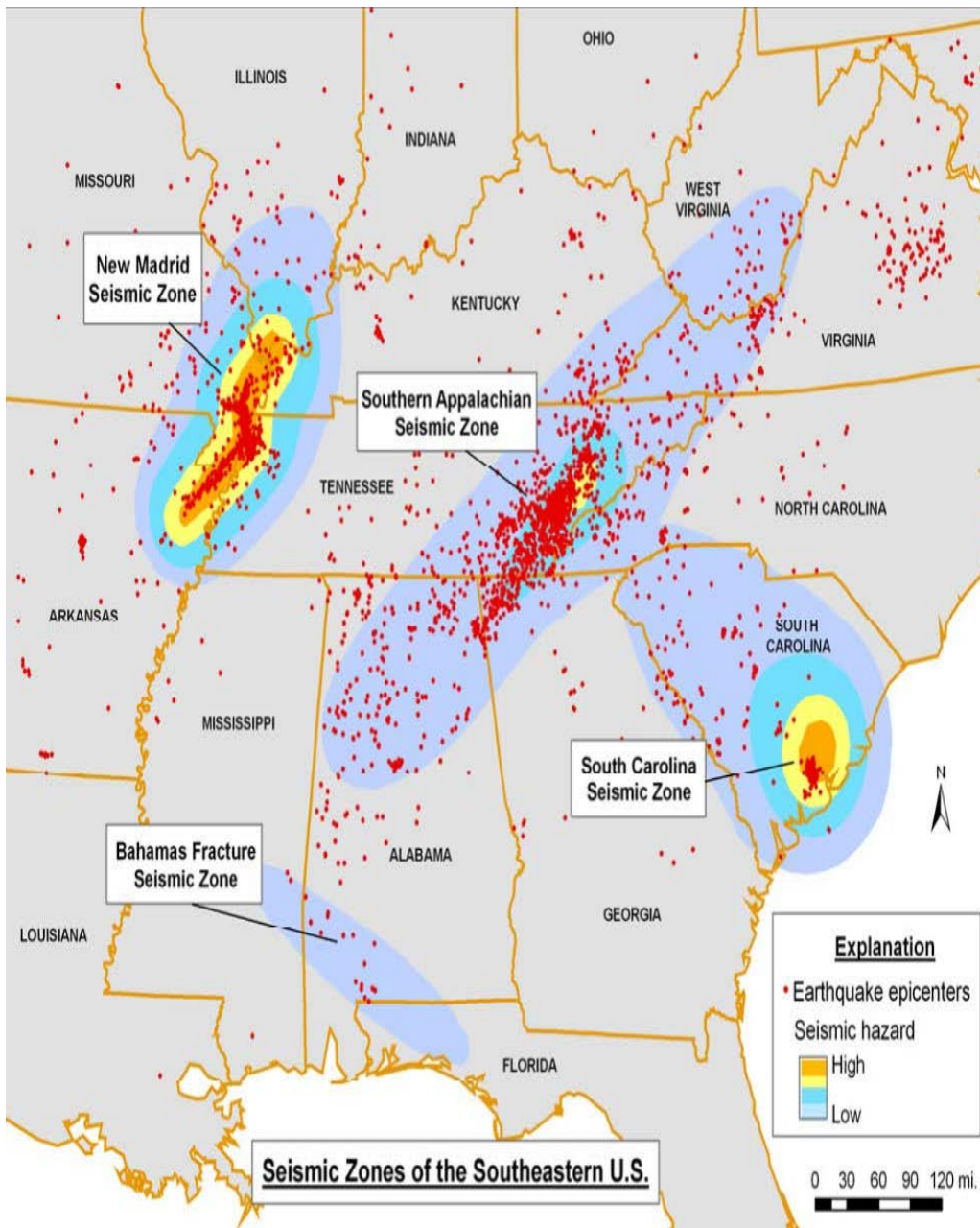
significant in Hale County if a powerful earthquake were to occur because buildings in this part of the country have not been constructed to withstand such a powerful force. In 1916 on October 18, a strong earthquake occurred on an unnamed fault east of Birmingham. It was apparently most strong at Easonville. Near the epicenter, chimneys were knocked down, windows broken, and frame buildings were greatly shaken. It was noted by residents in seven states and covered 100,000 square miles. The 1895 New Madrid earthquake registered a 6.8 on the Richter scale and was moderately felt throughout the southeastern United States. The New Madrid Fault line runs along the Mississippi River. Geologists agree that another major earthquake along the New Madrid Fault line could cause chimneys to fall, glass to break, and walls to crack in Hale County.



Peak Acceleration (%g) with 2% Probability of Exceedance in 50 Years
site: NEHRP B-C boundary
National Seismic Hazard Mapping Project (2008)
Figure 3-6

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Figure 3-7: Seismic Zones of the Southeastern United States



Source: Geological Survey of Alabama, 2014

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In the eastern United States strong earthquakes occur less frequently than other parts of the country; however, this does not mean that the damage in this area would be any less catastrophic should a powerful quake occur. There are two important reasons for this. The first is that the type of rock present in the eastern part of the country transmits seismic waves more effectively. This in turn creates better transmission of earthquake energy and results in higher damage over a wider area. Second, because buildings and other structures in the eastern United States have not been designed to withstand severe earth shaking, they will sustain more damage.

Hale County experienced two earthquake events in a 10 year period resulting in a less than 49% (.20) probability that an earthquake event will occur on an annual basis. The total amount of damages for the two earthquake events was \$0 or unknown with no earthquake events causing damage resulting in an estimated \$0 or unknown expected annual damages from future events. No deaths or injuries were reported. The referenced earthquake event(s) are the ones that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a earthquake event; the ranking is minimum to minor.

Primary effects from earthquake in Hale County would include:

1. Property Damage
2. Underground infrastructure damage
3. Building collapse
4. Trigger for other natural disasters

Hazardous results from earthquake in Hale County would include:

1. Shaking can cause cracking of roads, bridges, or buildings, which may also lead to collapse.
2. Pipes and wiring underground could be severely damaged due to the movement of the earth. This would result in interruption of service and long periods of repair before lines were serviceable again.
3. Buildings in Hale County are not built to meet the rigors of earthquakes; collapsing structures could kill or injure occupants.

4. Earthquakes can create other disasters such as landslides, flooding, and sinkholes.
5. Shifting of underlying soil and breaching of dams are examples of possible results from an earthquake.

XII. Wildfires

Wildfires are responsible for burning thousands of acres of land across the United States each year. They are large, fast moving, disastrous fires that occur in the wilderness or rural areas. These fires are uncontrolled and in dry conditions can spread rapidly through the surrounding vegetation and structures. Hale County is susceptible to wild/forest fires especially during times of drought. According to the Alabama Forestry Commission's Forest Resource Report of 2012, Hale County has a total of 287,018 acres of forestland, which accounts for 70 percent of the total land area in the county – acres are made up of 129,270 acres of softwoods; 28,773 acres of oak-pine; and 128,976 acres of hardwoods.

The frequency and severity of wildfires is dependent on weather and on human activity. If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives, damage forest resources and destroy structures. **Table 3-5** shows the number of fires and acres burned during the period 2010 to 2013, as recorded by the Alabama Forestry Commission. Hale County had a total of 110 fires during this three year period, affecting a total of 570.52 acres.

The National Forest Service (NFS) maintains data nationwide and produces various maps and forecasts daily under the Wildland Fire Assessment System (WFAS). A review of this data showed Hale County has a 5-10 percent probability of a fire occurring because of a lightning strike. The probability of ignition by lightning depends mainly on fuel moisture. Fuel Model Maps help to determine susceptibility of vegetative cover to wildfires. Hale County is covered by Fuel Models A and C. Areas covered by these models consist of light fuel vegetation such as herbaceous plants and round woods that are less than one-quarter of an inch. **Figure 3-8** and **Figure 3-9** from www.wfas.net show Hale County's observed and forecast fire danger class as low.

Hale County experienced 110 wildfire events in a three year period resulting in a greater than 100% (36.66) probability that wildfire event will occur on an annual basis. The total amount of acres burned was 570.52 multiplied by \$1,900 (the average market value for an acre of land in Hale County) equals \$1,083,988 damages for the 110 wildfire events with 110 wildfire events causing damage resulting in an estimated \$9,854 multiplied by 1.09 (projected loss expresses an estimated damage amount per future occurrence by converting the average loss figures from a midpoint of

2008 dollars to 2014 dollars - \$1 in 2008 = \$1.09 in 2014...a cumulative rate of inflation of 9%) equals a total of \$10,741 of expected annual damages from future events. No deaths or injuries were reported. The referenced wildfire event(s) are the ones that resulted in the most damages, deaths, and injuries during the past ten year period and serves as the extent/range of magnitude or severity that could be experienced by Hale County due to a wildfire event; the ranking is minor to major. The extent/range of magnitude or severity that could be experienced by Hale County due to a wildfire event is minimum to minor.

Primary effects from wildfire in Hale County would include:

1. Loss of property
2. Loss of livestock
3. Destruction of wilderness
4. Crop destruction

Hazardous results from significant wildfire in Hale County would include:

1. Widespread fire destroys everything flammable, leaving people homeless and businesses destroyed.
2. Fenced in livestock have no way of escaping the path of a wildfire and most are lost due to smoke inhalation.
3. Most wildfires actually help forests grow because they rid the forest of underbrush, but exceptionally hot fires that have a long duration destroy entire forests.
4. An entire year's crop can be lost by burning through all vegetation.

Figure 3-8

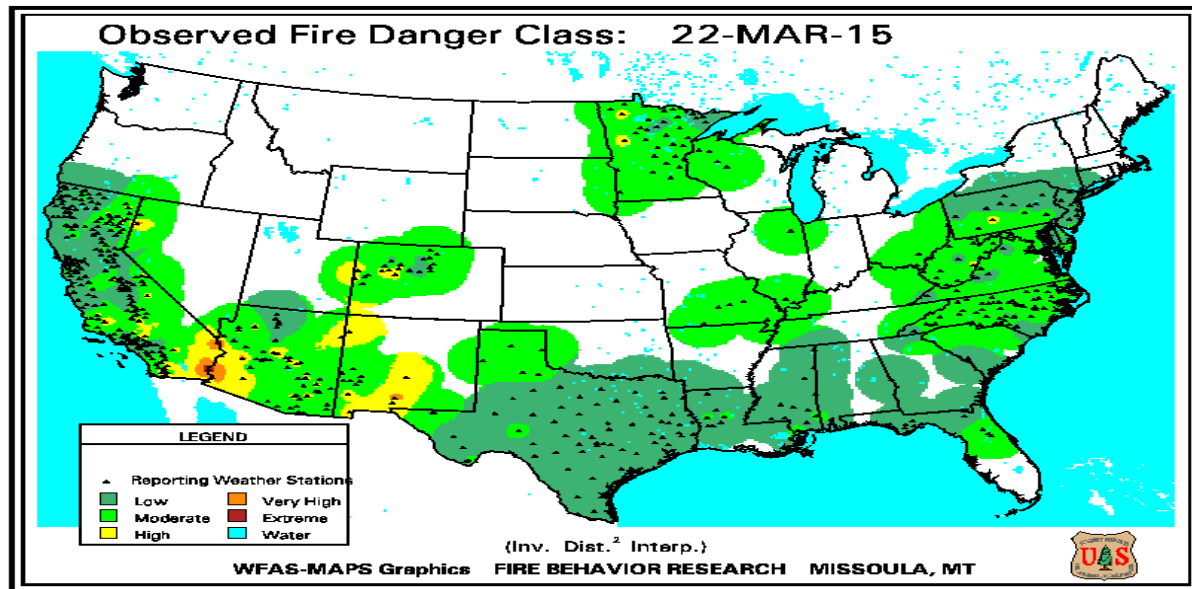
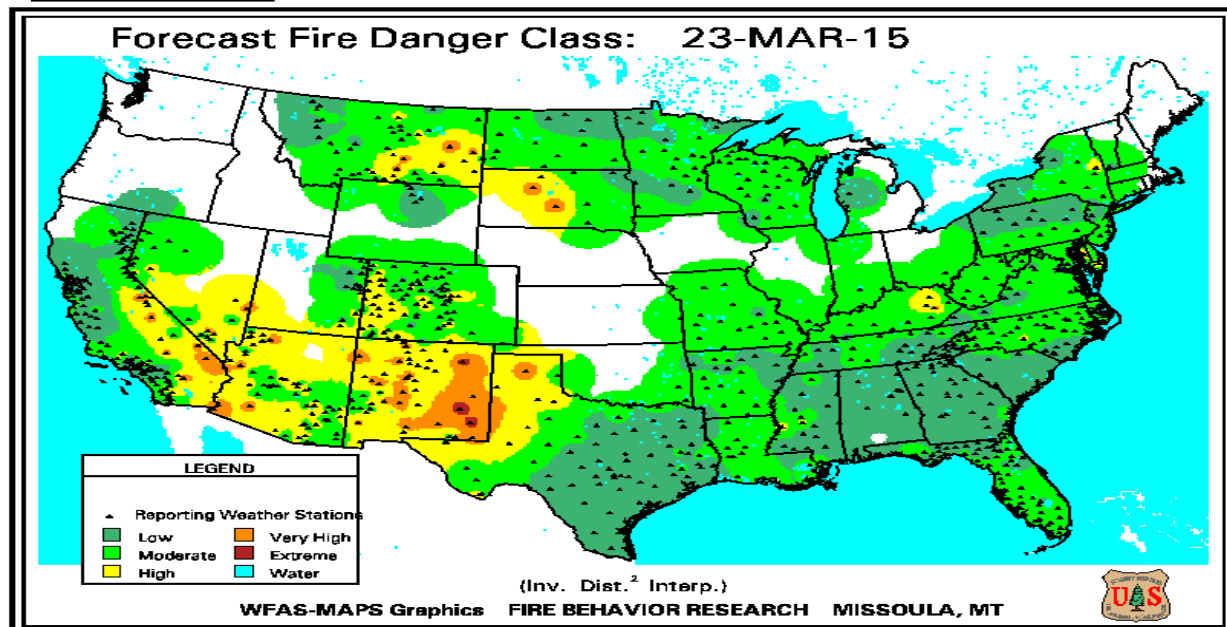


Figure 3-9



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XIII. Dam/Levee Failures

A dam is barriers constructed across a watercourse in order to store, control, or divert water. Dams are usually constructed of earth, rock, concrete, or mine tailings. The water impounded behind a dam is referred to as the reservoir and is measured in acre-feet, with one acre-foot being the volume of water that covers one acre of land to a depth of one foot. Due to topography, even a small dam may have a reservoir containing many acre-feet of water. A dam failure is the collapse, breach, or other failure of a dam that causes downstream flooding. Dam failures may result from natural events, human-caused events, or a combination thereof. Due to the lack of advance warning, failures resulting from natural events, such as hurricanes, earthquakes, or landslides, may be particularly severe. Prolonged rainfall that produces flooding is the most common cause of dam failure (FEMA, 1997).

Dam failures usually occur when the spillway capacity is inadequate and water overtops the dam or when internal erosion through the dam foundation occurs (also known as piping). If internal erosion or overtopping cause a full structural breach, a high-velocity, debris-laden wall of water is released and rushes downstream, damaging or destroying whatever is in its path.

Dam failures may result from one or more the following:

- ☐ Prolonged periods of rainfall and flooding (the cause of most failures)
- ☐ Inadequate spillway capacity which causes excess overtopping flows
- ☐ Internal erosion erosions due to embankment or foundation leakage or piping
- ☐ Improper maintenance
- ☐ Improper design
- ☐ Negligent operation
- ☐ Failure of upstream dams
- ☐ Landslides into reservoirs
- ☐ High winds
- ☐ Earthquakes

Dam failures are potentially the worst flood events. A dam failure is usually the result of neglect, poor design, or structural damage caused by a major event such as an earthquake. Historical records of dam/levee failures for Hale County are not available. When a dam fails, a

large quantity of water is suddenly released downstream, destroying anything in its path. The area impacted by the water emitted by dam failure would encounter the same risks as those in a flood zone during periods of flooding. The area directly affected by the water released during a dam failure is not county wide. The risks associated with dam/levee failures are the same as those risks associated with flooding. There have been no significant dam or levee failures reported in Hale County during 2003 - 2013.

Dam safety has been an ongoing hazard mitigation issue in the State of Alabama, especially for small dams that are privately owned and poorly maintained. No state law currently exists to regulate any private dams or the construction of new private dams, nor do private dams require federal licenses or inspections. There have been several attempts in the State of Alabama to pass legislation that would require inspection of dams on bodies of water over 50 acre-feet or dams higher than 25 feet. Enactment has been hampered by the opposition of agricultural interest groups and insurance companies. Once established, the program will provide an up-to-date inventory of dams in Hale County. A full inventory of dams will help to benefit public safety and emergency response operations in the event of a natural or other disaster. It will also provide for the inspection and permitting certification of certain dams in order to protect the citizens of Alabama by reducing the risk of failure of such dams. According to *HAZUS-MH 2.1 2012* and *NOAA*, Hale County has a total of 228 dams: 227 HPDE – Earth Dams and one HPDG – Concrete Gravity Dam. There is one dam (A. I. Seldon Dam on the Black Warrior River) classified as having high hazard potential, meaning failure or misoperation would probably result in the loss of human life. There are 22 of the HPDG dams are listed in the significant risk category meaning their failure would probably not result in the loss of life but would result in economic loss, environmental damage, and disruption of lifeline facilities. The remaining 205 dams in the county are listed as low risk meaning that their failure or misoperation would not result in the loss of life and only result in low economic or environmental damage. There are 2 dams in Moundville, 5 dams in Newbern, and 74 dams in Greensboro. Remaining dams are located in sparsely populated areas scattered throughout the unincorporated jurisdiction. **Table 3-13** shows risk categories of dams. **Table 3-14** provides an inventory listing of all the dams in Hale County and includes additional data on each.

An estimated 2,228 dams are located in Alabama. As of March 2010 the 2009 dams are listed in the National Inventory of Dams (NID) and maintained by the USACE. The Tennessee Valley Authority (TVA), USACE, Alabama Power Company (APCo), and the Alabama Electric Cooperative, Inc. have jurisdiction over approximately 32 federally regulated hydroelectric, navigation, and flood control project dams in Alabama. Some existing dams have inadequate spillways and embankments. Many dams are poorly maintained. *(Source: Alabama State Hazard Mitigation 2013 Plan Update)*

The probability of future occurrences cannot be characterized on a countywide basis because of the lack of information available. The qualitative probability is rated low because the overall area affected is low and impacts are localized. This rating is intended only for general comparison to other hazards that are being considered.

Primary effects from Dam failure in Hale County would include:

1. Loss of life
2. Destruction of property
3. Unregulated water flow to surrounding areas
4. Increased amount of disease and disease-carrying animals in the area

Hazardous results from dam failure in Hale County would include:

1. Heavy flooding would be a direct result of a dam failure, causing many deaths by injuring and trapping people in structures.
2. Large amounts of water would sweep with it property and severely damage any property that remained in the area.
3. Chemical spills from local factories caused by rushing water would pollute the area and destroy crops and other property.
4. The river would be able to flow naturally once the dam was breached - damaging any structures in the path, as well as interrupting wildlife cycles and hydrologic power supply.
5. There would be increased diseases as a result of the unsanitary conditions.

| Table 3-13: Hale County Dams Risk Categories | |
|---|-----------------------|
| Risk Categories | Number of Dams |
| High - loss of one human life is likely if the dam fails | 1 |
| Significant - possible loss of human life and likely significant property or environmental destruction if the dam fails if the dam fails | 23 |
| Low - no loss of life and low economic or environmental damage | 208 |
| Total | 232 |
| <i>(Source: HAZUS MH 2.1 Accessed 2015)</i> | |

Table 3-14: Hale County Dam Inventory List

| | Dam Name | NID ID | River | NID Height | NID Storage | Year Completed | Drainage Area | Hazard | Longitude | Latitude |
|-----|----------------------------|---------|-------------------------------|------------|-------------|----------------|---------------|--------|------------|-----------|
| 1. | Lewis Lawson Dam | AL00347 | Lake Demopolis Tributary | 0 | 274 | 1970 | 0 | L | -87.733329 | 32.6 |
| 2. | Walthall Lake Dam | AL00358 | Big Prairie Creek Tributary | 0 | 79 | 1970 | 0 | L | -87.538329 | 32.569999 |
| 3. | State Cattle Ranch Dam #4 | AL00356 | Black Warrior River | 0 | 246 | 1972 | 0 | L | -87.71333 | |
| 4. | State Cattle Ranch Dam #3 | AL00355 | Big German Creek Tributary | 0 | 115 | 1973 | 0 | L | -87.69 | 32.63333 |
| 5. | State Cattle Ranch Dam #2 | AL00354 | Big German Creek Tributary | 0 | 102 | 1973 | 0 | L | -87.694999 | 32.636669 |
| 6. | State Cattle Ranch Dam #1 | AL00353 | Big German Creek Tributary | 0 | 90 | 1972 | 0 | L | -87.696669 | 32.626669 |
| 7. | B. W. Coleman Farm Dam # 2 | AL00351 | Big Prairie Creek Tributary | 0 | 95 | 1969 | 0 | S | -87.59833 | 32.59833 |
| 8. | Wiggins Lake Dam | AL00361 | Elliot's Creek Tributary | 0 | 120 | 1970 | 0 | S | -87.64167 | 32.003329 |
| 9. | W. T. Phillips Dam | AL00348 | Hines Creek | 0 | 720 | 1971 | 0 | S | -87.72167 | 32.731669 |
| 10. | Limestone Lakes Dam # 2 | AL00364 | Limestone Creek Tributary | 0 | 141 | 1960 | 0 | L | 87.7333273 | 32.681669 |
| 11. | Morrison Brothers Dam | AL00346 | Hines Creek Tributary | 0 | 172 | 1970 | 0 | S | -87.731669 | 32.706669 |
| 12. | Morrison Brothers Dam | AL00329 | Whitsitt Creek Off-stream | 0 | 220 | 1966 | 0 | S | -87.561669 | 32.635 |
| 13. | C. H. Bryars Jr. Dam # 3 | AL00326 | Black Warrior River Tributary | 0 | 84 | 1969 | 0 | L | -87.718329 | 32.626669 |
| 14. | C. H. Bryars Jr. Dam # 2 | AL00325 | Black Warrior River Tributary | 0 | 92 | 1971 | 0 | L | -87.716669 | 32.636669 |
| 15. | C. H. Bryars Jr. Dam # 1 | AL00324 | Black Warrior River Tributary | 0 | 112 | 1971 | 0 | L | -87.718329 | 32.628329 |
| 16. | B. W. Coleman Dam # 2 | AL00321 | Big German Creek Tributary | 0 | 108 | 1969 | 0 | S | -87.683329 | 32.708329 |
| 17. | B. W. Coleman Dam # 1 | AL00320 | Big German Creek Tributary | 0 | 56 | 1969 | 0 | S | -87.67833 | 32.71167 |
| 18. | Jack Hardenbergh Dam | AL00318 | Big Prairie Creek Tributary | 0 | 108 | 1968 | 0 | S | -87.528329 | 32.603329 |
| 19. | B. W. Coleman Farm #1 | AL00350 | Big Prairie Creek Tributary | 0 | 102 | 1969 | 0 | S | -87.59833 | 32.6 |
| 20. | Carmichael Lake Dam | AL00359 | Picks Creek Off-stream | 0 | 280 | 1950 | 0 | S | -87.608329 | 32.64167 |
| 21. | Willie Woods Dam #3 | AL01565 | Picks Creek Off-stream | 0 | 96 | 1973 | 0 | S | -87.62 | 32.618329 |
| 22. | J. L. Morrison Dam # 2 | AL01571 | Pole Cat Creek | 0 | 190 | 1970 | 0 | S | -87.55167 | 32.704999 |
| 23. | J. L. Morrison Dam # 1 | AL01570 | Big Prairie Creek Tributary | 0 | 336 | 1970 | 0 | S | -87.571669 | 32.649999 |
| 24. | Lewis Lawson Dam # 5 | AL01569 | Big Prairie Creek Tributary | 0 | 134 | 1970 | 0 | S | -87.575 | 32.655 |
| 25. | Lewis Lawson Dam (3.4) | AL01568 | Picks Creek Tributary | 0 | 258 | 1969 | 0 | L | -87.61167 | 32.663329 |

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|-----|---|---------|-------------------------------|----|-------|------|--------|---|------------|-----------|
| 26. | Charlie Moseley Dam # 1 | AL01556 | Baptizing Branch Tributary | 0 | 96 | 1970 | 0 | L | -87.76 | 32.745 |
| 27. | William Dale Dam | AL01566 | Big Prairie Creek Tributary | 0 | 175 | 1970 | 0 | S | -87.59 | 32.58833 |
| 28. | Lenson Montgomery Dam # 2 | AL01543 | Little Brush Creek Tributary | 0 | 120 | 1970 | 0 | S | -87.511669 | 32.76 |
| 29. | Willie Woods Dam # 2 | AL01564 | Picks Creek Offstream | 0 | 95 | 1973 | 0 | S | -87.62 | 32.614999 |
| 30. | Willie Woods Dam # 1 | AL01563 | Picks Creek Offstream | 0 | 77 | 1977 | 0 | S | -87.62 | 32.62127 |
| 31. | Lelia Myers Dam | AL01562 | Black Warrior River Tributary | 0 | 84 | 1969 | 0 | L | -87./09999 | 32.66667 |
| 32. | State Cattle Ranch Dam # 8 | AL01561 | Big German Creek Tributary | 0 | 99 | 1965 | 0 | L | -87.65833 | 32.638329 |
| 33. | State Cattle Ranch Dam # 7 | AL01560 | Limestone Creek Tributary | 0 | 96 | 1973 | 0 | L | -87.725 | 32.651669 |
| 34. | State Cattle Ranch Dam # 6 | AL01559 | Limestone Creek Tributary | 0 | 144 | 1973 | 0 | L | -87.72667 | 32.655 |
| 35. | Charlie Moseley Dam # 2 | AL01557 | Baptizing Branch Tributary | 0 | 51 | 1969 | 0 | L | -87.76 | 32.743329 |
| 36. | Murphy Averette Dam | AL01544 | Little Brush Creek Tributary | 0 | 58 | 1969 | 0 | L | -87.511669 | 32.754999 |
| 37. | Kyser Lakes Dam # 7 | AL01567 | | 0 | 0 | 0 | 0 | S | -87.569999 | 32.626669 |
| 38. | Lenson Montgomery Dam # 1 | AL01534 | Little Brush Creek Tributary | 0 | 76 | 1969 | 0 | S | -87.511669 | 32.76329 |
| 39. | J. B. Thomas Dam | AL01542 | | 0 | 0 | 0 | 0 | S | -87.47667 | 32.788329 |
| 40. | State Cattle Ranch Dam # 5 | AL01558 | Limestone Creek Tributary | 0 | 92 | 1973 | 0 | L | -87.725 | 32.64833 |
| 41. | Macmillian Bloedell Lake Dam (Perry) | AL01551 | | 0 | 0 | 0 | 0 | S | -87.49833 | 32.659999 |
| 42. | Morrison Brothers Dam | AL01580 | Hines Creek Tributary | 0 | 114 | 1976 | 0 | S | -87.741669 | 32.696669 |
| 43. | A. I. Selden Dam | AL01429 | Black Warrior River | 0 | 58650 | 1958 | 5810 | H | -87.841669 | 32.778329 |
| 44. | Taylor Pond Dam # 4 (Greene Co.) | AL02080 | Stephens Creek Tributary | 12 | 97 | 1981 | 0.0234 | L | -87.797329 | 32.5485 |
| 45. | Taylor Pond Dam # 1 (Greene Co.) | AL02078 | Stephens Creek Tributary | 11 | 109 | 1981 | 0.0313 | L | -87.79794 | 32.55044 |
| 46. | Taylor Pond Dam # 2 (Greene Co.) | AL02079 | Stephens Creek Tributary | 12 | 92 | 1981 | 0.0156 | L | -87.79594 | 32.54706 |
| 47. | N. H. Cobb Estate Dam | AL00363 | Limestone Creek Tributary | 17 | 88 | 1965 | 0.125 | L | -87.735 | 32.68833 |
| 48. | N. H. Cobb Estate Dam | AL02158 | Limestone Creek Tributary | 18 | 119 | 1964 | 0.1719 | L | -87.735 | 32.68833 |
| 49. | N. H. Cobb Estate Dam | AL00157 | Limestone Creek Tributary | 17 | 129 | 1965 | 0.2109 | L | -87.735 | 32.68833 |
| 50. | Morrison Brothers Dam | AL02150 | Hines Creek | 20 | 175 | 1974 | 0.1875 | L | -87.581109 | 32.681669 |
| 51. | Morrison Brothers Dam | AL02148 | Hines Creek | 17 | 153 | 1955 | 0.1719 | L | -87.683059 | 32.75 |
| 52. | Morrison Brothers Dam | AL02156 | Polecat Creek | 25 | 157 | 1952 | 0.125 | L | -87.66667 | 32.583329 |

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|-----|------------------------|---------|--------------------------------|----|-----|------|--------|---|------------|-----------|
| 53. | Morrison Brothers Dam | AL02149 | Whitsitt Creek | 18 | 224 | 1973 | 0.1953 | L | -87.583329 | 32.6333 |
| 54. | Morrison Brothers Dam | AL02152 | Whitsitt | 20 | 499 | 1974 | 0.4688 | L | -87.583329 | 32.6333 |
| 55. | Morrison Brothers Dam | AL02151 | Whitsitt | 17 | 224 | 1969 | 0.1875 | L | -87.549999 | 32.549999 |
| 56. | Morrison Brothers Dam | AL02154 | Little Prairie Creek | 18 | 152 | 1974 | 0.2344 | L | -87.583329 | 32.583329 |
| 57. | Morrison Brothers Dam | AL02155 | Little Prairie Creek | 9 | 250 | 1975 | 0.3125 | L | -87.583329 | 32.583329 |
| 58. | Morrison Brothers Dam | AL02153 | Little Prairie Creek | 18 | 211 | 1978 | 0.2344 | L | -87.583329 | 32.583329 |
| 59. | David Plank Dam | AL02090 | Little Prairie Creek | 14 | 163 | 1975 | 0.0016 | L | -87.666667 | 32.6667 |
| 60. | David Plank Dam | AL02096 | Little Prairie Creek | 14 | 163 | 1974 | 0.0016 | L | -87.666667 | 32.6667 |
| 61. | David Plank Dam | AL02090 | Little Prairie Creek | 14 | 204 | 1971 | 0.0016 | L | -87.666667 | 32.6667 |
| 62. | David Plank Dam | AL02094 | Little Prairie Creek | 14 | 245 | 1970 | 0.0016 | L | -87.666667 | 32.6667 |
| 63. | David Plank Dam | AL02091 | Little Prairie Creek | 14 | 152 | 1969 | 0.0016 | L | -87.666667 | 32.6667 |
| 64. | David Plank Dam | AL02095 | Little Prairie Creek | 14 | 245 | 1972 | 0.0016 | L | -87.666667 | 32.6667 |
| 65. | David Plank Dam | AL02092 | Little Prairie Creek | 14 | 160 | 1973 | 0.0016 | L | -87.666667 | 32.6667 |
| 66. | David Plank Dam | AL02093 | Little Prairie Creek | 14 | 131 | 1973 | 0.0016 | L | -87.666667 | 32.6667 |
| 67. | State Cattle Ranch # 1 | AL02170 | German Creek | 18 | 127 | 1960 | 0.125 | L | -87.674999 | 32.603329 |
| 68. | State Cattle Ranch # 2 | AL02175 | German Creek | 17 | 145 | 1976 | 0.1406 | L | -87.683329 | 32.603329 |
| 69. | State Cattle Ranch #3 | AL02176 | German Creek | 17 | 210 | 1978 | 0.1875 | L | -87.696669 | 32.603329 |
| 70. | State Cattle Ranch #4 | AL02177 | German Creek | 17 | 310 | 1980 | 0.25 | L | -87.696669 | 32.603329 |
| 71. | State Cattle Ranch #5 | AL02178 | German Creek | 18 | 162 | 1975 | 0.1563 | L | -87.696669 | 32.603329 |
| 72. | State Cattle Ranch #6 | AL02179 | German Creek | 18 | 179 | 1962 | 0.1563 | L | -87.696669 | 32.603329 |
| 73. | State Cattle Ranch #7 | AL02180 | German Creek | 18 | 196 | 1962 | 0.2031 | L | -87.7 | 32.603329 |
| 74. | State Cattle Ranch #8 | AL02181 | German Creek | 18 | 142 | 1960 | 0.3125 | L | -87.708329 | 32.603329 |
| 75. | State Cattle Ranch #9 | AL02182 | Limestone Creek | 17 | 250 | 1959 | 0.4063 | L | -87.741669 | 32.603329 |
| 76. | State Cattle Ranch #12 | AL02173 | Limestone Creek | 20 | 103 | 1973 | 0.0016 | L | -87.741669 | 32.603329 |
| 77. | Kyser Lakes Dam #1 | AL00327 | Whitsitt Creek | 17 | 99 | 1967 | 0.1094 | L | -87.56833 | 32.604999 |
| 78. | Kyser Lakes Dam #2 | AL00328 | Whitsitt Creek Offstream | 17 | 126 | 1967 | 0.1563 | L | -87.56833 | 32.604999 |
| 79. | Joe Kyser Dam #3 | AL02131 | Whitsitt Creek | 17 | 123 | 1969 | 0.1406 | L | -87.56833 | 32.604999 |
| 80. | Kyser lakes Dam #4 | AL00330 | Whitsitt Creek | 17 | 163 | 1978 | 0.2813 | L | -87.56833 | 32.604999 |
| 81. | Kyser Lakes Dam #5 | AL00331 | Big Prairie Creek Offstream | 12 | 105 | 1966 | 0.0016 | L | -87.528329 | 32.51 |
| 82. | Kyser Lakes Dam #6 | AL00332 | Big Prairie Creek Offstream | 12 | 86 | 1966 | 0.0016 | L | -87.528329 | 32.51 |
| 83. | Joe Kyser Dam #7 | AL02132 | Big Prairie | 14 | 102 | 1966 | 0.0547 | L | -87.528329 | 32.51 |
| 84. | Joe Glover Dam #7 | AL00337 | Sparks Creek Tributary | 12 | 106 | 1969 | 0.2734 | L | -87.48833 | 32.831669 |
| 85. | Joe Glover Dam | AL02116 | Big Brush Creek Tributary | 10 | 370 | 1967 | 0.0016 | L | -87.556669 | 32.753329 |
| 86. | Joe Glover Dam | AL02117 | Big Brush Creek Tributary | 10 | 253 | 1968 | 0.0016 | L | -87.556669 | 32.753329 |
| 87. | Joe Glover Dam | AL02118 | Big Brush Creek Tributary | 10 | 192 | 1969 | 0.0016 | L | -87.556669 | 32.753329 |
| 88. | Joe Glover Dam | AL02119 | Big Brush Creek Tributary | 10 | 190 | 1970 | 0.0016 | L | -87.556669 | 32.753329 |
| 89. | Joe Glover Dam | AL02120 | Big Brush Creek Tributary | 10 | 192 | 1971 | 0.0016 | L | -87.556669 | 32.753329 |
| 90. | Joe Glover Dam | AL02121 | Big Brush Creek Tributary | 10 | 105 | 1972 | 0.0016 | L | -87.556669 | 32.753329 |

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|------|---------------------|---------|---------------------------|----|-----|------|--------|---|------------|-----------|
| 91. | Joe Glover Dam | AL02122 | Warrior River Tributary | 10 | 171 | 1980 | 0.0016 | L | -87.809999 | 32.718329 |
| 92. | Joe Glover Dam | AL02123 | Warrior River Tributary | 10 | 190 | 1980 | 0.0016 | L | -87.809999 | 32.718329 |
| 93. | Joe Glover Dam | AL02124 | Warrior River Tributary | 10 | 213 | 1980 | 0.0016 | L | -87.809999 | 32.718329 |
| 94. | Joe Glover Dam | AL02125 | Warrior River Tributary | 10 | 105 | 1980 | 0.0016 | L | -87.809999 | 32.718329 |
| 95. | Joe Glover Dam | AL02126 | Warrior River Tributary | 10 | 108 | 1980 | 0.0016 | L | -87.809999 | 32.718329 |
| 96. | Joe Glover Dam | AL02127 | Warrior River Tributary | 18 | 171 | 1980 | 0.0781 | L | -87.809999 | 32.718329 |
| 97. | Joe Glover Dam | AL02128 | Warrior River Tributary | 16 | 235 | 1980 | 0.1563 | L | -87.809999 | 32.718329 |
| 98. | Joe Glover Dam | AL02129 | Warrior River Tributary | 18 | 90 | 1980 | 0.0938 | L | -87.809999 | 32.718329 |
| 99. | Joe Glover Dam | AL02130 | Warrior River Tributary | 10 | 108 | 1980 | 0.0016 | L | -87.809999 | 32.718329 |
| 100. | Lenson Montz Dam #1 | AL00338 | Little Brush | 14 | 89 | 1976 | 0.2188 | L | -87.64167 | 32.728329 |
| 101. | Lenson Montz Dam #2 | AL00339 | Little Brush Creek | 15 | 185 | 1976 | 0.0016 | L | -87.64167 | 32.728329 |
| 102. | Lenson Montz Dam #3 | AL00340 | Little Brush | 18 | 159 | 1980 | 0.2813 | L | -87.64167 | 32.728329 |
| 103. | Lenson Montz Dam #4 | AL01555 | Little Brush Tributary | 12 | 140 | 1980 | 0.0016 | L | -87.64167 | 32.728329 |
| 104. | Lenson Montz Dam #5 | AL02140 | Little Brush Tributary | 12 | 178 | 1971 | 0 | L | -87.64167 | 32.728329 |
| 105. | Lenson Montz Dam #6 | AL02141 | Little Brush Tributary | 10 | 142 | 1976 | 0.0016 | L | -87.64167 | 32.728329 |
| 106. | Lenson Montz Dam #7 | AL02142 | Little Brush Tributary | 12 | 105 | 1970 | 0.0016 | L | -87.64167 | 32.728329 |
| 107. | Lenson Montz Dam #8 | AL02143 | Little Brush Tributary | 12 | 224 | 1969 | 0.0625 | L | -87.64167 | 32.728329 |
| 108. | Lenson Montz Dam | AL02139 | Polecat Creek Tributary | 17 | 89 | 1978 | 0.1094 | L | -87.64167 | 32.718329 |
| 109. | Terpin Vise Dam | AL02183 | Big Brush Creek Tributary | 12 | 209 | 1971 | 0.0016 | L | -87.753329 | 32.798329 |
| 110. | Terpin Vise Dam | AL02184 | Big Brush Creek Tributary | 12 | 152 | 1971 | 0.0016 | L | -87.753329 | 32.798329 |
| 111. | Terpin Vise Dam | AL02185 | Big Brush Creek Tributary | 12 | 196 | 1971 | 0.0016 | L | -87.753329 | 32.798329 |
| 112. | Terpin Vise Dam | AL02186 | Big Brush Creek Tributary | 12 | 107 | 1971 | 0.0016 | L | -87.753329 | 32.798329 |
| 113. | Terpin Vise Dam | AL02187 | Big Brush Creek Tributary | 12 | 260 | 1972 | 0.0016 | L | -87.753329 | 32.798329 |
| 114. | Terpin Vise Dam | AL02188 | Big Brush Creek Tributary | 12 | 264 | 1972 | 0.0016 | L | -87.753329 | 32.798329 |
| 115. | Terpin Vise Dam | AL02189 | Big Brush Creek Tributary | 10 | 224 | 1979 | 0.0016 | L | -87.753329 | 32.798329 |
| 116. | Terpin Vise Dam | AL02190 | Big Brush Creek Tributary | 10 | 191 | 1980 | 0.0016 | L | -87.753329 | 32.798329 |
| 117. | Terpin Vise Dam | AL02191 | Limestone Creek Tributary | 16 | 140 | 1979 | 0.1406 | L | -87.52333 | 32.694999 |
| 118. | Terpin Vise Dam | AL02192 | Limestone Creek Tributary | 18 | 282 | 1979 | 0.3281 | L | -87.52333 | 32.694999 |
| 119. | Lewis Lawson Dam #1 | AL00313 | Wrights Creek Offstream | 28 | 310 | 1970 | 0.125 | L | -87.76 | 32.75667 |

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|------|--|---------|--------------------------------|----|-----|------|--------|---|------------|-----------|
| 120. | Lewis Lawson Dam #2 | AL00314 | Wrights Creek Offstream | 28 | 192 | 1970 | 0.1094 | L | -87.75 | 32.754999 |
| 121. | Lewis Lawson Dam #3 | AL02144 | Wrights Creek Tributary | 18 | 258 | 1978 | 0.3125 | L | -87.76 | 32.73833 |
| 122. | Lewis Lawson Dam #4 | AL02145 | Little Prairie Creek Tributary | 18 | 238 | 1973 | 0.2031 | L | -87.608329 | 32.638329 |
| 123. | J. A. Perry Dam | AL02113 | Little Prairie Tributary | 19 | 430 | 1974 | 0.4688 | L | -87.729999 | 32.546669 |
| 124. | Port Royal Land & Timber Co. #1 Dam #1 | AL02161 | Warrior River Tributary | 17 | 112 | 1970 | 0.1563 | L | -87.549999 | 32.591669 |
| 125. | Port Royal Land & Timber Co. #2 Dam #1 | AL02162 | Warrior River Tributary | 18 | 174 | 1972 | 0.2344 | L | -87.549999 | 32.591669 |
| 126. | Port Royal Land & Timber Co. #3 Dam #1 | AL02163 | Warrior River Tributary | 17 | 105 | 1972 | 0.1563 | L | -87.549999 | 32.591669 |
| 127. | Port Royal Land & Timber Co. #4 Dam #1 | AL02164 | Warrior River Tributary | 18 | 261 | 1979 | 0.4297 | L | -87.549999 | 32.591669 |
| 128. | Duglas Farmer Dam #1 | AL02107 | Big Prairie Tributary | 13 | 114 | 1969 | 0.1563 | L | -87.594999 | 32.579999 |
| 129. | Duglas Farmer Dam #2 | AL02108 | Big Prairie Tributary | 9 | 114 | 1969 | 0.1563 | L | -87.6 | 32.579999 |
| 130. | Duglas Farmer Dam #3 | AL02109 | Big Prairie Tributary | 13 | 95 | 1970 | 0.1016 | L | -87.594999 | 32.579999 |
| 131. | Paul James Dam #1 | AL02159 | Big Prairie Tributary | 15 | 122 | 1975 | 0.0859 | L | -87.54 | 32.504999 |
| 132. | Paul James Dam #2 | AL02160 | Big Prairie Tributary | 15 | 91 | 1975 | 0.0469 | L | -87.54 | 32.5 |
| 133. | Dr. Robert Lamb Dam #1 | AL02104 | Big Prairie Tributary | 17 | 258 | 1979 | 0.2813 | L | -87.56833 | 32.556669 |
| 134. | Dr. Robert Lamb Dam #2 | AL02105 | Big Prairie Tributary | 17 | 277 | 1980 | 0.3906 | L | -87.56833 | 32.556669 |
| 135. | John Vickery Dam #1 | AL02136 | Whitsitt Creek Tributary | 12 | 142 | 1980 | 0.0016 | L | -87.53333 | 32.579999 |
| 136. | John Vickery Dam #2 | AL02037 | Whitsitt Creek Tributary | 12 | 157 | 1980 | 0.0016 | L | -87.53333 | 32.579999 |
| 137. | Donnie Wedgeworth Dam #1 | AL02199 | Big Brush Creek Tributary | 19 | 361 | 1978 | 0.625 | L | -87.729999 | 32.809999 |
| 138. | Donnie Wedgeworth Dam #2 | AL02100 | Big Brush Creek Tributary | 12 | 140 | 1979 | 0.0016 | L | -87.729999 | 32.809999 |
| 139. | Donnie Wedgeworth Dam #3 | AL02101 | Big Brush Creek Tributary | 12 | 155 | 1979 | 0.0016 | L | -87.729999 | 32.809999 |
| 140. | Lafayette Woods Dam | AL02138 | Big Brush Creek Tributary | 12 | 132 | 1977 | 0.0016 | L | -87.725 | 32.819999 |
| 141. | Dr. William Willard Dam | AL02106 | Warrior River Tributary | 12 | 240 | 1974 | 0.0625 | L | -87.558329 | 32.003329 |
| 142. | Richard Martin Dam #1 | AL02166 | Big Brush Creek Tributary | 25 | 194 | 1977 | 0.25 | L | -87.716669 | 32.753329 |
| 143. | Ed Langham Dam | AL02110 | Big Brush Creek Tributary | 12 | 140 | 1978 | 0.0016 | L | -87.536669 | 32.62 |
| 144. | Mike Wurm Dam | AL00335 | Little Brush Creek Tributary | 16 | 82 | 1969 | 0.1875 | L | -87.483329 | 32.778329 |
| 145. | Sercy Averette Dam | AL02169 | Little Brush Creek Tributary | 13 | 109 | 1969 | 0.0625 | L | -87.511669 | 32.754999 |
| 146. | Cary Tidmore Dam | AL00333 | Big German Creek Tributary | 20 | 203 | 1968 | 0.4688 | L | -87.63167 | 32.70333 |
| 147. | John Davidson Dam | AL02133 | Black Warrior Tributary | 33 | 106 | 1969 | 0.1094 | L | -87.709999 | 32.66667 |
| 148. | John Jay Dam | AL02134 | Big German Creek Tributary | 20 | 121 | 1969 | 0.1719 | L | -87.626669 | 32.709999 |
| 149. | Walthall Dam | AL02198 | Big Prairie Tributary | 9 | 106 | 1967 | 0.1875 | L | -87.58667 | 32.558329 |

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|------|------------------------------|---------|-----------------------------|------|-----|------|--------|---|------------|-----------|
| 150. | Ronnie Gausey Dam | AL02167 | Big Prairie Tributary | 10 | 261 | 1980 | 0 | L | -87.608329 | 32.534999 |
| 151. | Buddy Phillips Dam | AL02084 | Hines Creek Tributary | 23 | 568 | 1970 | 0.4688 | L | -87.72167 | 32.71167 |
| 152. | Roy Alexander Dam | AL00349 | Big German Creek Tributary | 18 | 126 | 1968 | 0.1875 | L | -87.663329 | 32.628329 |
| 153. | Gross Lake Dam | AL00367 | Picks Creek tributary | 20 | 130 | 1955 | 0.3906 | L | -87.58833 | 32.674999 |
| 154. | Larry Cawart Dam | AL00312 | Big Prairie Tributary | 20 | 310 | 1972 | 0.5078 | L | -87.71167 | 32.53 |
| 155. | William Dale Dam | AL02199 | Big Prairie Tributary | 21 | 123 | 1970 | 0.1719 | L | -87.59 | 32.58833 |
| 156. | Amos Bailey Dam | AL00316 | Big Prairie Creek | 20 | 155 | 1969 | 0.3125 | L | -87.671669 | 32.7 |
| 157. | Richard Massey Dam | AL00317 | Hines Creek Tributary | 25 | 230 | 1968 | 0.4063 | L | -87.68833 | 32.729999 |
| 158. | Jimmy Seale Dam | AL00322 | Big German Creek Off- | 17 | 128 | 1972 | 0.1719 | L | -87.67833 | 32.67833 |
| 159. | Richard Poellnitz Dam | AL00323 | Big German Creek Tributary | 18 | 212 | 1969 | 0.2031 | L | -87.683329 | 32.65833 |
| 160. | John Dembhart Dam | AL02134 | Big German Creek Tributary | 19 | 223 | 1978 | 0.3125 | L | -87.661669 | 32.591669 |
| 161. | Bill Boman Dam | AL02082 | Little Prairie | 20 | 387 | 1981 | 0.1641 | L | -87.683059 | 32.58306 |
| 162. | Ruby Arrington Dam | AL02168 | Sparks Creek | 12 | 222 | 1981 | 0.25 | L | -87.533059 | 32.67 |
| 163. | Martha Gresham Dam | AL02146 | German Creek | 14 | 172 | 1981 | 0.1563 | L | -87.709999 | 32.65833 |
| 164. | C.W. Drury Dam | AL02085 | Little Prairie | 20 | 264 | 1981 | 0.4531 | L | -87.594999 | 32.64833 |
| 165. | W. L. York Dam | AL02197 | German Creek | 22 | 180 | 1981 | 0.1031 | L | -87.709999 | 32.681669 |
| 166. | Joe Glover Dam #1 | AL02114 | Wright Creek | 18 | 287 | 1980 | 0.0016 | L | -87.75 | 32.81667 |
| 167. | Joe Glover Dam | AL02115 | Wright Creek | 18 | 235 | 1980 | 0.3125 | L | -87.75 | 32.81667 |
| 168. | Davis Brothers Dam | AL02098 | Heinz Creek | 17 | 254 | 1980 | 0.4688 | L | -87.78333 | 32.833329 |
| 169. | Curtis Hamilton Dam | AL02088 | Big Brush | 8 | 138 | 1981 | 0.0313 | L | -87.763329 | 32.806669 |
| 170. | H. A. Taylor Dam | AL02111 | Big German Creek Tributary | 17 | 137 | 1977 | 0.25 | L | -87.635 | 32.649999 |
| 171. | Turpin Vise Dam | AL02194 | Hines Creek Tributary | 20 | 219 | 1984 | 0.3969 | L | --87.75 | 32.709999 |
| 172. | Turpin Vise Dam | AL02195 | Hines Creek Tributary | 19 | 200 | 1984 | 0.2578 | L | --87.75 | 32.709999 |
| 173. | Bubba Drury Dam #2 | AL02083 | Picks Creek Tributary | 20 | 286 | 1981 | 0.4531 | L | -87.61 | 32.659999 |
| 174. | W. F. Drury Jr. Dam #3 | AL02196 | Picks Creek Tributary | 10 | 73 | 1984 | 0.0797 | L | -87.61 | 32.659999 |
| 175. | Dr. Lamb Dam #1 | AL02103 | Big Prairie Creek Tributary | 16 | 151 | 1984 | 0.0875 | L | -87.569999 | 32.59 |
| 176. | State Cattle Ranch Dam #13 | AL02174 | German Creek Tributary | 17 | 164 | 1984 | 0.2469 | L | -87.649999 | 32.649999 |
| 177. | Martha Gresham Dam | AL02147 | German Creek Tributary | 18 | 185 | 1979 | 0.1016 | L | -87.7 | 32.69 |
| 178. | Ralph Cole Dam #1 | AL02165 | Big Prairie Creek | 14 | 230 | 1984 | 0.4219 | L | -87.60806 | 32.549999 |
| 179. | Alex Crawford Dam | AL02081 | Big Prairie Creek | 11 | 128 | 1980 | 0 | L | -87.67 | 32.559999 |
| 180. | Williamson Cattle Co. Dam #1 | AL02310 | Cottonwood Creek Tributary | 17.1 | 132 | 1985 | 0.125 | L | -87.604999 | 32.50667 |
| 181. | C. A. Burton Hwy. 69 Dam | AL02311 | Big Brush Creek Tributary | 12.5 | 109 | 1985 | 0.0625 | L | -87.583329 | 32.77 |
| 182. | Henry Martin Levee Dam | AL02312 | Colwell Creek Tributary | 12.2 | 110 | 1985 | 0.0406 | L | -87.62167 | 32.71917 |

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|------|-----------------------------------|---------|-------------------------------|------|-------|------|--------|---|------------|-----------|
| 183. | Williamson Cattle Co. Pond Dam #2 | AL02335 | Cottonwood Creek Tributary | 10 | 136 | 1986 | 0.0406 | L | -87.611109 | 32.49028 |
| 184. | Williamson Cattle Co. Pond Dam #3 | AL02336 | Cottonwood Creek Tributary | 10 | 136 | 1986 | 0.0406 | L | -87.61333 | 32.489999 |
| 185. | Williamson Cattle Co. Pond Dam #4 | AL02337 | Cottonwood Creek Tributary | 11 | 168 | 1986 | 0.0469 | L | -87.614999 | 32.489999 |
| 186. | Williamson Cattle Co. Pond Dam #5 | AL02338 | Cottonwood Creek Tributary | 11 | 168 | 1986 | 0.0469 | L | -87.61722 | 32.49056 |
| 187. | State Cattle Ranch #14 | AL02339 | German Creek Tributary | 11.5 | 201 | 1986 | 0.1031 | L | -87.665279 | 32.64167 |
| 188. | State Cattle Ranch #15 | AL02340 | German Creek Tributary | 14.5 | 181 | 1986 | 0.3031 | L | -87.66667 | 32.63917 |
| 189. | State Cattle Ranch #16 | AL02341 | German Creek Tributary | 11.5 | 97 | 1986 | 00609 | L | -87.66667 | 32.63722 |
| 190. | John Mitchell Dam #1 | AL02342 | German Creek Tributary | 11 | 94 | 1986 | 0.0844 | L | -87682779 | 32.60944 |
| 191. | Bubba Drury Carmichael Dam #1 | AL02344 | Picks Creek Tributary | 10.6 | 120 | 1986 | 0.2188 | L | -87.596939 | 32.653329 |
| 192. | Bubba Drury Carmichael Dam #2 | AL02345 | Picks Creek Tributary | 10.5 | 102 | 1986 | 0.0938 | L | -87.59611 | 32.651669 |
| 193. | Bubba Drury Carmichael Dam #3 | AL02346 | Picks Creek Tributary | 10.5 | 89 | 1986 | 0.2109 | L | -87.59583 | 32.649719 |
| 194. | Roshell Hollingsworth Dam#4 #4434 | AL02347 | Prairie Creek Tributary | 11.5 | 91 | 1986 | 0.125 | L | -87.598889 | 32.59194 |
| 195. | Paul James Pond Dam #1 | AL02348 | Dry Creek Tributary | 10 | 245 | 1986 | 0.0625 | L | -87.550559 | 32.528329 |
| 196. | Paul James Pond Dam #2 | AL02349 | Dry Creek Tributary | 11 | 190 | 1986 | 0.0625 | L | -87.55278 | 32.52806 |
| 197. | Lee Jackson Pond Dam #1 | AL02284 | Big Prairie Creek Tributary | 18 | 135 | 1986 | 0.1016 | L | -87.673329 | 32.586939 |
| 198. | Julian Washburn Dam #1 | AL02321 | Whitsitt Creek Tributary | 8 | 2131 | 1987 | 0.1188 | L | -87.60556 | 32.542499 |
| 199. | George Smelley Dam | AL02322 | Big Prairie Tributary | 18 | 242.7 | 1987 | 0.2188 | L | -87.573329 | 32.640559 |
| 200. | Harry Horn Dam #2 | AL02323 | Big Prairie Tributary | 14 | 207.9 | 1987 | 0.2344 | L | -87.56833 | 32.64694 |
| 201. | John Broussard Dam #6 | AL02324 | Whitsitt Creek Tributary | 8 | 120.1 | 1987 | 0.0453 | L | -87.581669 | 32.550559 |
| 202. | Paul James Dam #7 | AL02325 | Dry Creek Tributary | 8 | 221 | 1987 | 0.0547 | L | -87.5275 | 32.555829 |
| 203. | John Mitchell Dam #2 | AL02326 | German Creek Tributary | 10 | 63.4 | 1987 | 0.0313 | L | -87.606669 | 32.684719 |
| 204. | Drury Garris Dam #1 | AL02327 | Big Prairie Tributary | 17 | 187.2 | 1987 | 0.2297 | L | -87.54889 | 32.622219 |
| 205. | Barnette Dam #1 | AL02387 | Black Warrior River Tributary | 13 | 82 | 1988 | 0.0969 | L | -87.70944 | 32.65694 |
| 206. | Barnette Dam #2 | AL02388 | Limestone Creek Tributary | 16 | 152 | 1988 | 0.3375 | L | -87.72083 | 32.659999 |
| 207. | Barnette Dam #3 | AL02389 | Limestone Creek Tributary | 15 | 79 | 1988 | 0.1344 | L | -87.71917 | 32.66222 |
| 208. | Barnette Dam #4 | AL02390 | Limestone Creek Tributary | 11 | 130 | 1988 | 0.3641 | L | -87.722499 | 32.657499 |
| 209. | Julian Blalock Dam #1 | AL02391 | Picks Creek Tributary | 13.1 | 222 | 1988 | 0.1734 | L | -87.64444 | 32.61389 |

| | | | | | | | | | | |
|------|--------------------------|---------|--------------------------------|------|-------|------|--------|---|------------|-----------|
| 210. | Julian Blalock Dam #2 | AL02392 | Picks Creek Tributary | 11 | 133 | 1988 | 0.0578 | L | -87.651669 | 32.618329 |
| 211. | Clifton Dam #1 | AL02393 | Big Prairie Tributary | 18.8 | 370 | 1988 | 0.4625 | L | -87.763329 | 32.548329 |
| 212. | Clifton Dam #2 | AL02394 | Big Prairie Tributary | 10 | 165 | 1988 | 0.0859 | L | -87.70556 | 32.55167 |
| 213. | Clifton Dam #3 | AL02395 | Big Prairie Creek Tributary | 9.5 | 125 | 1988 | 0.0281 | L | -87.71167 | 32.55167 |
| 214. | Harry Horn Dam #5 | AL02396 | Little Prairie Creek Tributary | 11 | 172 | 1988 | 0.1875 | L | -87.659999 | 32.574169 |
| 215. | Harry Horn Dam #6 | AL02397 | Little Prairie Creek Tributary | 19 | 173 | 1988 | 0.325 | L | -87.680829 | 32.57306 |
| 216. | Bill Kyser Dam #1 | AL02398 | Whitsitt Creek Tributary | 10 | 137 | 1988 | 0.4875 | L | -87.56917 | 32.625 |
| 217. | Bill Kyser Dam #2 | AL02399 | Whitsitt Creek Tributary | 10 | 136 | 1988 | 0.0859 | L | -87.56861 | 32.62111 |
| 218. | Bill Kyser Dam #3 | AL02400 | Whitsitt Creek Tributary | 10 | 72 | 1988 | 0.0281 | L | -87.569439 | 32.63083 |
| 219. | Morrison Brothers Dam #2 | AL02401 | Whitsitt Creek Tributary | 11 | 130 | 1988 | 0.1313 | L | -87.56667 | 32.61417 |
| 220. | Morrison Brothers Dam #1 | AL02402 | Whitsitt Creek Tributary | 12 | 65 | 1988 | 0.0719 | L | -87.569439 | 32.654169 |
| 221. | Kenny Causey Dam #2 | AL02297 | Big Prairie Tributary | 14.3 | 129.8 | 1989 | 0.0938 | L | -87.603329 | 32.55528 |
| 222. | Jamey Clary Dam #1 | AL02298 | Five Mile Creek Tributary | 14.7 | 78.1 | 1989 | 0.3703 | L | -87.706669 | 32.868889 |
| 223. | Bill Kyser Tributary #1 | AL02372 | Big Prairie Tributary | 12.4 | 178.9 | 1989 | 0.2875 | L | -87.574169 | 32.657779 |
| 224. | Henry Simms Dam #2A | AL02373 | Greer Creek | 8 | 58 | 1989 | 0.0156 | L | -87.5925 | 32.532219 |
| 225. | Henry Simms Dam #2A | AL02374 | Greer Creek | 8 | 52.8 | 1989 | 0.0141 | L | -87.590829 | 32.53417 |
| 226. | Bill Kyser Tributary #2 | AL02375 | Big Prairie Tributary | 15 | 390.9 | 1989 | 0.4625 | L | -87.569999 | 32.653329 |
| 227. | Aqua Farm Dam #4 | AL02381 | Big Prairie Tributary | 14 | 142 | 1989 | 0.1359 | L | -87.59778 | 32.614439 |
| 228. | Aqua Farm Dam #5 | AL02382 | Big Prairie Tributary | 14 | 251.7 | 1989 | 0.2703 | L | -87.598609 | 32.616939 |
| 229. | Mary Gihvan Dam | AL02426 | Prairie Creek Tributary | 16.6 | 50.5 | 1990 | 0.0784 | L | -87.757779 | 32.52972 |
| 230. | James Brown Dam | AL02427 | | 16.2 | 59 | 1990 | 0.1097 | L | -87.570279 | 32.737779 |
| 231. | Wyatt Dam #1 | AL02428 | Hardin Creek | 16. | 50.6 | 1990 | 0.0527 | L | -87.679169 | 32.89833 |
| 232. | A. W. Coleman 111 Dam | AL02465 | | 17 | 102 | 1971 | 0.125 | L | -87.69 | 32.683329 |

(Source: HAZUS-MH 2.1, 2011; 2015)

(Source: HAZUS-MH 2.1, 2015)

XIV. Man-made Hazards *(No changes were made to this section for 2014)*

Man-made hazards are any threats that originate from or are induced by human activity, unlike the natural hazards previously profiled which have an origin in the natural environment. Technological disasters and acts of terrorism are the main categories of man-made hazards, according to FEMA, and have been subdivided into ten incident types in order to identify and prioritize these threats as well as track specific occurrences for this plan. FEMA's term, "technological hazards," are those "incidents that can arise from human activities such as manufacture, transportation, storage, and use of hazardous materials." The term "terrorism" refers to "intentional, criminal, [or] malicious acts" (FEMA 387-7).

There is no way to predict what will be attacked or why. It is the very nature of nearly all man-made hazards because the common denominator and determinant factor is the human element. It is also what makes attempts to mitigate these types of acts so difficult.

Due to the lack of information available on incidents, no further extensive profiling is required for the man-made hazards portion in Hale County's mitigation plan.

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Section Four: Vulnerability Assessment

In Section Three, the primary effects and hazardous results were considered for all identified hazards. In this section each hazard was further reviewed to identify the impacts on the county and its jurisdictions. Impact in terms of dollar value for past hazard occurrences are shown for the county in **Table 3-5** and for each jurisdiction in their individual Hazard Event table in Section Five of this plan.

Vulnerability is the extent to which something is damaged by a hazard. Vulnerability is very often measured using “damage functions.” These are based on studies of how buildings perform when they are exposed to hazards. Similar functions are available for infrastructure and other physical assets. Injury and mortality functions (how many people are injured or die during events) are also sometimes used as indicators of vulnerability, but these are generally not as reliable as functions for physical assets because there are many more variables.

Hazard Impacts

Thunderstorms (Source: NCDC NOAA)

Damage from thunderstorms can have a wide range of severity. All jurisdictions are vulnerable to thunderstorm events. Hale County experiences storms every year with varying frequency and intensity. A thunderstorm event in Hale County during 2003-2013 occurred in the Wedgeworth Community. The wind magnitude was 86 miles per hour (75 kts.), resulting in \$150,000 of property damages. On April 10, 2004, a supercell thunderstorm moved across the county and produced significant wind damage along with very large hail. The most extensive damage occurred in the Wedgeworth Community, along State Road 60. Another event occurred in Greensboro on May 3, 2009 and resulted in \$100,000 of property damages. A total of nine homes were damaged by fallen trees, including five homes in the Faunsdale area. One mobile home had its roof torn off.

Lightning (Source: NCDC NOAA)

Lightning can cause substantial property damage and loss of human lives. All jurisdictions are vulnerable to lightning events. On August 5, 2006, several lightning strikes across Hale County

produced fires and subsequent damage, including to the hospital in Greensboro. Property damages of \$20,000 resulted from this lightning event.

Hail (Source: NCDC NOAA)

A hail event that occurred on May 2, 2003 produced hailstones 2.75 inches in diameter (baseball size) in Greensboro and resulting in \$75,000 in property damages. All jurisdictions are vulnerable to hail events.

Tornados (Source: NCDC NOAA)

The impacts of tornados can be far-reaching. Life, property, and personal items are at risk. Tornados do not follow a definite path; all jurisdictions are vulnerable to tornado events. Property damage, injury, and death can result from the weakest tornados. Interruption of electrical services, communications, and other utilities may occur. Transportation corridors may be blocked or even destroyed. Debris removal can take time and can be costly. Residents may suffer from post-traumatic stress disorder, depression, anxiety, and grief for lost loved ones. Longer response times results from having limited emergency personnel.

Areas with higher population densities pose the greatest potential for property damage, injury, and death. Census Tract 404 is the most densely populated area in the county, having 59.52 persons per square mile. Communities with a high concentration of mobile homes are extremely vulnerable to tornados. Mobile homes are not capable of withstanding the strong winds associated with tornados. Hale County has a total of 2,716 mobile homes countywide, 36% of the total housing stock. The greatest concentration of mobile homes in a municipality is in the Town of Akron where 39.02% of the units are mobile homes. (Sources: U.S. Census Bureau, 2010-2012 American Community Survey and Easidemographics.com)

A powerful storm system crossed the Southeast United States on Wednesday, April 27, 2011, resulting in a large and deadly tornado outbreak. This epic event broke the record for number of tornadoes in a day for the state of Alabama, becoming the most significant tornado outbreak in the state's history. This one EF3 tornado event resulted in six deaths, 40 injuries and \$17,350,000 in property damages.

Central Alabama had two rounds of severe weather that day. During the early morning hours, a Quasi-Linear Convective System quickly moved across the northern half of the National Weather Service, Birmingham county warning area. Straight line winds of 90 mph (78kts) or greater and 11 tornadoes lead to widespread damage and power outages. During the afternoon, long-lived supercell thunderstorms produced long-track, strong and violent tornadoes. Destruction and loss of life across many towns and communities was devastating.

Hale County experienced three F0s, two F1s, five EF0s, four EF1s – one on October 22, 2007 resulting in two injuries and \$92,000 in property damages, two EF2s, and one EF3 on April 27, 2011, resulting in six deaths, 40 injuries, and \$17 million in property damages. During the tornado outbreak of April 2011, the EF1 tornado in Hale County was 4.83 miles in length and 300 yards in width and affected the Hogglesville Community. Property damages of \$350,000 resulted. The EF3 tornado was 25.18 miles in length and 1,760 yards in width and affected the Sawyerville Community. Property damages of \$17 million, 6 deaths, and 40 injuries resulted.

Most of the violent tornadoes from this day were captured on video by a number of people, including storm spotters and chasers, as well as numerous television news crews and remotely controlled web-enabled video cameras. This allowed unprecedented coverage and viewing of this historic event in real time from people worldwide.

Floods/Flash Floods (*Source: NCDC NOAA*)

Flooding can occur along the banks of the creeks and streams that flow throughout the county and where development has encroached in the floodplain. Flash flooding can occur anywhere in the county due to inadequate or clogged drainage systems and excessive rainfall. Unpaved dirt roads, common in the rural areas, are particularly vulnerable. Impacts in developed areas such as the Cities of Greensboro and Moundville include street flooding and water backing up into homes and buildings. In addition to damaging homes, flooding can adversely impact crops, water and sewer systems, and dams and levees. Hale County is bordered to the west by the Black Warrior River. Many seasonal homes, for example Oak Village situated north of Akron, are located at various spots along the river and its tributaries such as Brush Creek. Flooding has impacted these homes to a greater degree than other areas of the county. Fifteen identified

Repetitive Loss Properties in Hale County are in these two areas. These locations along the Black Warrior River position them to receive the greatest impact of a riverine flood event. Impacts for both flood types includes property and crop damage, contamination or failure of water and sewer systems, increase in waterborne disease, and possible dam or levee failure. All jurisdictions are vulnerable to flood events.

During 2003-2013, Hale County experienced six flood events. No deaths, injuries, or crop damages resulted from these events; however, \$3,000 of property damages occurred. However during this time, Hale County experienced 10 flash floods resulting in \$130,000 in property damages. One of the most expensive flash flood events occurred in Moundville on March 9, 2011 and resulted in \$75,000 in property damages and 8 homes being flooded. Another flash flood event occurred on September 21, 2009 and resulted in \$25,000 in property damages. Several roads in the City of Moundville were closed and water entered and damaged several homes.

Drought/Extreme Heat (Source: NCDC NOAA)

All jurisdictions are vulnerable to occurrences of drought and extreme heat. Hale County has more catfish ponds for farming than all other Alabama counties combined and droughts significantly impact catfish farms. Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment. The effects are far reaching and impact people, livestock, crops, and hydrologic systems. Droughts create conditions of increased vulnerability to wild fires that can destroy lives and property, and also lead to water supply shortages as reservoirs and ground water levels drop. Heat exhaustion and stroke are common and can disproportionately impact the elderly and low-income residents who cannot afford air conditioning.

The categories of drought are defined as follows (Source <http://droughtmonitor.unl.edu>) Accessed 11/16/14: **Abnormally Dry (D0)** - Going into drought: short-term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered. **Moderate Drought (D1)** - Some

damage to crops, pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested. **Severe Drought (D2)** - Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed. **Extreme Drought (D3)** - Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions. **Exceptional Drought (D4)** - Exceptional and widespread crop/pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies.

During the past ten years, Hale County experienced D2 Severe to D3 Extreme Drought in 2006, D1 Moderate to D4 Exceptional Drought in 2007, D1 Moderate to D4 Exceptional Drought in 2008, and D2 Severe to D3 Extreme Drought in 2011. All Hale County drought events resulted in agricultural, hydrologic, and sociological impacts to be widely felt. No injuries, deaths, property or crop damages were reported to the NCDC NOAA as results of these drought events.

Extreme summer heat is the combination of very high temperatures and exceptionally humid conditions. If such conditions persist for an extended period of time, it is called a heat wave (FEMA). Heat stress can be indexed by combining the effects of temperature and humidity. The index estimates the relationship between dry bulb temperatures (at different humidity) and the skin's resistance to heat and moisture transfer - the higher the temperature or humidity, the higher the apparent temperature. The human risks associated with extreme heat include heatstroke, heat exhaustion, heat syncope, heat cramps. During 2003-2013, no Hale County excessive heat events were reported to the NCDC NOAA.

Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold
(Source: NCDC NOAA)

In the category of winter storms/frost freezes/heavy snow/ice storms/winter weather/extreme cold events, seven storms were reported for Hale County between 2003 and 2013 – 2 frost freeze events; 1 heavy snow event; 1 ice storm event; 2 winter weather events; and 1 extreme cold event. The entire planning area is equally at risk to all hazards in this category. Ice and small amounts of snow can cripple the county, leaving roads impassable, effectively crippling residents from traveling to school, work, or the grocery store, creating a panic of activity

and traffic congestion in advance of a predicted storm. Drivers are not accustomed to driving in these conditions, therefore many accidents occur. Snow and ice can weigh down tree limbs and power lines causing them to break, resulting in power failures and property damages. Local businesses and residents are not equipped with generators to restore power during these severe winter weather events. Also, many homes may not be properly insulated, leading to health concerns and even death. The most significant impacts from an actual event are power outages and consequential loss of heat, numerous transportation related accidents, and stranded motorists. Much like drought, extreme cold has more impact on disadvantaged populations, especially the homeless. Since these storms have no defined track, all residents of Hale County are vulnerable to severe winter storm events.

Hurricane/Tropical Storm/Tropical Depression/Strong Wind/High Wind
(Source: NCDC NOAA)

Tropical Storms/Tropical Depressions such as Ivan, Katrina, Dennis, Fay, and Ida have affected Hale County. The most significant impacts have been related to excessive rainfall, damaging wind, and tornados. Residents suffer loss of power, damage to homes, blocked roadways from associated storm debris, and loss of other crucial utilities. Mobile homes are particularly vulnerable and are impacted more than conventionally built structures. Mobile homes in the county represent 36% of the housing stock. Effects of these storms generally impact the entire county and are not limited to a specific location. The fact that other surrounding counties will have also been affected by the same event only adds to the burden, as utility crews are often overwhelmed by the needs of an entire region or state.

Hurricane Ivan (High Winds)

On September 16, 2004, the remnants of Hurricane Ivan resulted in a High Wind event in Hale County. Property damages of \$2 million and crop damages of \$25,000 occurred.

Hurricane Dennis (Tropical Storm)

On July 10, 2005, the remnants of Hurricane Dennis resulted in a Tropical Storm event in Hale County. Property damages of \$375,000 occurred. Numerous trees and power lines were blown down across Hale County in association with Dennis. Several homes and automobiles were damaged by fallen trees. Many roadways were temporarily blocked. Many customers were without power for at least a day.

Hurricane Katrina (Tropical Storm)

On August 29, 2005, the remnants of Hurricane Katrina resulted in a Tropical Storm event in Hale County. Property damages of \$1.8 million occurred and 4 injuries.

Hurricane Fay (Tropical Storm)

On August 23, 2008, the remnants of Hurricane Fay resulted in a Tropical Storm event in Hale County. No deaths, injuries, property or crop damages occurred. High winds, heavy rain, and numerous tornadoes resulted from this event.

Hurricane Ida (Tropical Depression)

On November 9, 2009, the remnants of Hurricane Ida resulted in a Tropical Depression event in Hale County. Property damages of \$1,000 resulted.

Sinkholes and Expansive Soils (Sources: NCDC NOAA; Geological Survey; Local Input)

Impacts of sinkhole events are damages to property, infrastructure, and/or roadways. Areas of denser development such as the Cities of Greensboro and Moundville could experience more significant impact and loss due to increased number and concentration of structures and associated utility services; however, only the jurisdictions of Greensboro, Newbern and the county identified sinkholes as a hazard. There are limited adverse effects and shrink-swell potential of soils in Hale County. The southern half of Hale County is more susceptible to sinkholes and expansive soils. No sinkholes or expansive soils were reported by the NOAA NCDC Storm Events Database or the U. S. Geological Survey.

Landslides (Source: Local Input)

Like sinkholes, landslides are possible in Hale County, but seldom occur. Naturally occurring landslides have not been reported in the county. No landslides were reported by the NOAA NCDC Storm Events Database or the U. S. Geological Survey.

Earthquakes (Sources: Alabama Geological Survey; USGS Database)

While earthquakes can and do occur in Hale County, their impact has historically been minimal and insignificant. According to the Alabama Geological Survey/USGS Database and City-data.com, Hale County experienced two earthquake events in the past ten years (January 1, 2003 – December 31, 2013). On August 19, 2004 at 11:51 p.m., an earthquake 3.1 miles in depth and 3.6 magnitude occurred 49 miles away from the county's center. On November 7, 2004 at 11:20 a.m., an earthquake 3.1 miles in depth and 4.4 magnitude occurred 19.2 miles away from the county's center. No deaths, injuries, property or crop damages were reported from these two earthquake events. Construction of many buildings on steep slopes susceptible to landslides and in karst terrains susceptible to sinkholes will be a major contributing factor to damage from future earthquakes in the county. Earthquakes can trigger other natural disasters such as landslides and sinkholes. No earthquakes were reported by the NOAA NCDC Storm Events Database.

Wildfires (Source: Alabama Forestry Commission)

Hale County contains a significant amount of forestland, 70% of its land area. Both rural and urban areas in all jurisdictions are impacted by wildfires. The timber industry is very prominent and timber crops could be significantly impacted in this county. During 2010-2013, Hale County experienced 110 wildfire events resulting in 570.52 total acres being burned. Based on this data, the average number of wildfires per year is 37; average acres burned per year is 190; and the average fire size in acres per year is 5. Alabama's forest products industries are vital to the state's economy. Hale County's economy would greatly suffer from wildfires destroying forest lands. Both rural and urban areas in all jurisdictions are impacted by wildfires and result in loss of wilderness, crops, livestock and other property. Loss of human life, both residents and firefighters, is also possible.

Dam and Levee Failures (Sources: HAZUS MH 2.1; NOAA)

According to *HAZUS-MH 2.1 2012* and *NOAA*, Hale County has a total of 228 dams: 227 HPDE – Earth Dams and one HPDG – Concrete Gravity Dam. There is one dam (A. I. Seldon Dam on the Black Warrior River) classified as having high hazard potential, meaning failure or misoperation would probably result in the loss of human life. There are 22 of the HPDG dams are listed in the significant risk category meaning their failure would probably not result in the loss of life but would result in economic loss, environmental damage, and disruption of lifeline facilities. The remaining 205 dams in the county are listed as low risk meaning that their failure or misoperation would not result in the loss of life and only result in low economic or environmental damage. There are 2 dams in Moundville, 5 dams in Newbern, and 74 dams in Greensboro. Remaining dams are located in sparsely populated areas scattered throughout the unincorporated jurisdiction. The impact of a dam failure in the county is low given their location in remote areas with little residential occupancy. Potential impacts would be limited or unregulated water flow, associated damages to property and crops, and a potential increase in water borne disease. The risks associated with dam/levee failures are also the same as those risks associated with flooding. There have been no significant dam or levee failures reported in Hale County during 2003 - 2013.

Man-made hazards (Source: Local Input)

The very nature of man-made hazards makes it difficult to foresee, or effectively mitigate, their occurrence. All of the man-made hazards profiled in the plan are possible, no matter how unlikely they are to actually occur. Events that did occur in Hale County were limited to hazardous material releases. All municipalities and rural areas include roads or rail lines that could be impacted by an event. Potential impacts include loss of life and property, and the disruption of transportation networks and public services.

Socially Vulnerable Populations

Certain populations are generally more affected by hazard events. These populations can be defined in terms of social, racial, and economic characteristics. Data provided in the section was

obtained from the 2010 Census using breakouts for entire municipalities and census tracts. Hale County has 643.94 square miles of land and 24.01 persons per square mile.

Table 4-1 shows the county's population characteristics by jurisdiction and by census tract. The City of Greensboro is the most populated jurisdiction, followed by the City of Moundville and the Towns of Akron and Newbern. The City of Moundville, which is primarily located in Hale County, has only a small portion located in neighboring Tuscaloosa County.

Map 2-1 shows the county's six census tracts. In terms of vulnerability, the larger the population of an area the more people and structures that could possibly be damaged or destroyed. Tract 404 is the most populated tract and contains the Greensboro and Newbern. Tract 400 is the second most populated tract and contains Moundville. Tract 403 is the third most populated tract and contains Greensboro, Akron, and Sawyerville. Tract 402 is the fourth most populated tract and contains Moundville, Greensboro, and Newbern. Tract 401 is the fifth most populated tract and contains Moundville, Akron, and Greensboro. Finally, Tract 405 is the least populated tract and contains Newbern, Faunsdale, Greensboro, and Gallion.

Table 4-1: Hale County Population Characteristics

| Geographic Area | <i>Population</i> | <i>Race-White</i> | <i>Race-Black</i> | <i>Race-Other</i> | <i>Age 19 and Under</i> | <i>Age 20-64 years</i> | <i>Age 65 and Over</i> |
|---|-------------------|-------------------|-------------------|-------------------|-------------------------|------------------------|------------------------|
| Hale County 24.01 persons per sq mi | 15,760 | 6,266 | 9,301 | 193 | 4,378 | 9,012 | 2,370 |
| Akron 514.54 persons per sq mi | 356 | 47 | 308 | 1 | 97 | 216 | 43 |
| Greensboro 1,046.18 persons per sq mi | 2,497 | 798 | 1,660 | 39 | 687 | 1,314 | 496 |
| Moundville (<i>only a small portion of Moundville is located in Tuscaloosa County</i>) 522.59 persons per sq mi | 2,427 | 1,365 | 981 | 81 | 730 | 1,404 | 293 |
| Newbern 159.66 persons per sq mi | 186 | 59 | 125 | 2 | 40 | 114 | 32 |
| Census Tracts | | | | | | | |
| 400 26.22 persons per sq mi | 3,534 | 2,370 | 1,089 | 75 | 960 | 2,050 | 524 |
| 401 16.15 persons per sq mi | 1,582 | 831 | 742 | 9 | 367 | 944 | 271 |
| 402 14.21 persons per sq mi | 1,590 | 889 | 697 | 4 | 420 | 939 | 231 |
| 403 19.75 persons per sq mi | 2,093 | 294 | 1,789 | 10 | 639 | 1,181 | 273 |
| 404 59.52 persons per sq mi | 5,399 | 1,334 | 3,994 | 71 | 1,561 | 3,019 | 819 |
| 405 13.56 persons per sq mi | 1,562 | 548 | 990 | 24 | 431 | 879 | 252 |
| <i>(Source: 2010 Census)</i> | | | | | | | |

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Minority populations are generally considered to be more vulnerable to hazard events. These populations may not have the resources necessary to recover as quickly or completely from disasters. Minorities generally have higher percentages of inadequate medical insurance, inadequate home insurance, and homes that may be deemed as substandard housing. More information and maps can be found at www.warc.info/planning-a-development/documents - data book for Hale County provided by the West Alabama Regional Commission.

Populations over sixty-five years of age and those under eighteen years of age are more vulnerable than other population groups. These groups are at higher risk for injury and medical complications that may occur during or as a result of a disaster. These special needs populations may require more attention during evacuation and may require special shelters.

In addition to the racial and age composition within the county, income levels are important when identifying vulnerable populations. Lower income individuals may not have the resources to prepare for or recover from disasters. **Table 4-2** shows the median household income, per capita income, and poverty level data for the jurisdictions and census tracts in Hale County.

The median household income for the State of Alabama is \$43,160. The median household income for the United States is \$53,046. No census tract in Hale County exceeds the state or national averages; all census tracts are less than the state and national averages. All municipalities have a median household income that is less than the state and national averages. (*Source: 2010 Census; 2008-2012 Census Data at USA.com*)

Per capita income is the average obtained by dividing aggregate income by the total population of an area. The per capita income for the State of Alabama is \$23,587. The per capita income for the United States is \$28,051. All census tracts have per capita incomes that are lower than the state and national averages. (*Source: 2010 Census; 2008-2012 Census Data at USA.com*)

The percent of persons below the poverty level in the State of Alabama is 18.1%. The corresponding rate for the United States is 14.9%. Tracts 403, 404 and 405 exceed the state and national poverty level rates. Tracts 400 and 401 are below the state and national poverty level rates. Tract 402 is below the state poverty level rate, but higher than the national poverty level rate. Akron, Greensboro, and Newbern have poverty level rates higher than both the state and national poverty level rates. Moundville has a poverty level rate lower than the state and higher than the

national poverty level rates. Newbern has the highest poverty rate in the county at 39.55%.

(Source: 2010 Census; 2008-2012 Census Data at USA.com)

According to the 2010 Census, the total population of Hale County is 15,760, which is 8.29% less than it was in 2000. The population growth rate is lower than the state average rate of 7.48% and is about the same as the national average rate of 9.71%. The Hale County population density is 24.01 people per square mile, which is much lower than the state 91.18 and national 81.32 average densities of people per square mile. The most prevalent race in Hale County is white, which represents 39.76% of the total population.

As of 2008-2012 Census Data, the per capita income of Hale County is \$17,210, which is lower than the state average of \$23,587 and national average of \$28,051. Hale County median household income is \$29,409, which has increased by 13.9% since 2000. The median household income growth rate is lower than the state average rate of 26.44% and national average rate of 26.32%.

As of 2008-2012 Census Data, the median price of a house in Hale County is \$80,300, which is lower than the state average of \$122,300 and national average of \$181,400. The Hale County median house value has increased by 21.12% since 2000. The growth rate for the price of a house in Hale County is lower than the state average rate of 43.71% and national average rate of 51.67%. The median year that a house in Hale County was built is 1982, which is newer than the median year for a house built in the state which is 1980 and for a house built in the USA which is 1975.

Table 4-2: Hale County Income Data

| Geographic Area | Median Household Income | Per Capita Income | Population Below Poverty Level | Population Percent Below Poverty Level |
|--|--------------------------------|--------------------------|---------------------------------------|---|
| Hale County | \$29,409 | \$17,210 | 4,277 | 69% |
| Akron | \$24,485 | \$14,625 | 77 | 20.87% |
| Greensboro | \$27,017 | \$14,771 | 826 | 29.96% |
| Moundville | \$42,109 | \$18,769 | 357 | 15.47% |
| Newbern | \$23,333 | \$12,470 | 87 | 39.55% |
| Census Tracts | | | | |
| 400 | \$41,524 | \$21,787 | 348 | 11.41% |
| 401 | \$32,792 | \$18,538 | 217 | 14.41% |
| 402 | \$34,524 | \$18,743 | 272 | 17.53% |
| 403 | \$27,463 | \$19,109 | 921 | 41.04% |
| 404 | \$23,606 | \$13,748 | 1,941 | 36.30% |
| 405 | \$25,184 | \$15,342 | 578 | 33.07% |
| <i>(Source: 2010 Census; 2008-2012 Census Data at USA.com)</i> | | | | |

Vulnerable Structures

Housing is an important consideration of mitigation planning. The concentration and the type of housing are two primary factors. In Hale County there are a total of 7,682 housing units.

Table 4-3 shows the housing characteristics of the county by jurisdiction.

Greensboro has the greatest number of housing units, followed by Moundville, Akron, and Newbern. Greensboro has the highest number of mobile home units within a municipality; while, Akron has the highest percent of mobile homes within a municipality. Tract 404 has the greatest number of housing units, followed by 400, 403, 401, 402 and 405. Tract 404 has the highest number of mobile home units; while, Tract 401 has the highest percent of mobile homes within a census tract. Mobile home units are historically very vulnerable to a variety of hazards and prone to high amounts of damage and complete destruction.

Table 4-3: Hale County Housing Characteristics

| Geographic Area | Total Housing Units | Mobile Home Units | Mobile Home % |
|------------------------------|----------------------------|--------------------------|----------------------|
| Hale County | 7,682 | 2,716 | 36.0% |
| Akron | 264 | 103 | 39.02% |
| Greensboro | 1,276 | 254 | 19.91% |
| Moundville | 893 | 130 | 14.56% |
| Newbern | 100 | 20 | 20.0% |
| Census Tracts | | | |
| 400 | 1,442 | 382 | 26.49% |
| 401 | 988 | 346 | 35.02% |
| 402 | 759 | 263 | 34.65% |
| 403 | 1,192 | 726 | 60.91% |
| 404 | 2,557 | 780 | 30.50% |
| 405 | 744 | 219 | 29.44% |
| <i>(Source: 2010 Census)</i> | | | |

Table 4-4 shows the building stock in Hale County by general occupancy. The data provides the number of buildings by use and is shown by Census Tract. Complementing this information is **Table 4-5** that provides the value totals for these building types and **Table 4-6** that provides the content value for these building types, each table is shown by Census Tract.

| Table 4-4: Hale County Building Stock by General Occupancy | | | | | | | | |
|---|--------------------|-------------------|-------------------|--------------------|------------------|-------------------|------------------|-----------------------|
| Census Tract | Residential | Commercial | Industrial | Agriculture | Religious | Government | Education | Building Count |
| 400 | 1733 | 63 | 27 | 2 | 10 | 2 | 5 | 1842 |
| 401 | 1294 | 15 | 4 | 1 | 3 | 2 | 2 | 1321 |
| 402 | 754 | 19 | 13 | 3 | 5 | 2 | 0 | 796 |
| 403 | 24 | 24 | 5 | 3 | 8 | 1 | 0 | 65 |
| 404 | 2586 | 110 | 19 | 14 | 16 | 16 | 7 | 2768 |
| 405 | 772 | 41 | 14 | 19 | 6 | 4 | 2 | 858 |
| TOTAL | 7163 | 272 | 82 | 42 | 48 | 27 | 16 | 7650 |
| <i>(Source: HAZUS-MH 2.1, 2015)</i> | | | | | | | | |

| Table 4-5: Hale County Building Exposure | | | | | | | | |
|---|--------------------|-------------------|-------------------|--------------------|------------------|-------------------|------------------|--------------------------|
| <i>(Numbers shown in thousands of dollars)</i> | | | | | | | | |
| Census Tract | Residential | Commercial | Industrial | Agriculture | Religious | Government | Education | Building Exposure |
| 400 | 152613 | 15221 | 18788 | 223 | 3978 | 1502 | 8077 | 200402 |
| 401 | 79258 | 2145 | 462 | 107 | 989 | 459 | 1809 | 85229 |
| 402 | 66126 | 4460 | 6360 | 296 | 2208 | 356 | 0 | 79806 |
| 403 | 68373 | 4563 | 623 | 320 | 4461 | 116 | 0 | 78456 |
| 404 | 174876 | 37296 | 4003 | 1758 | 14766 | 5897 | 6496 | 245092 |
| 405 | 47413 | 13961 | 1837 | 1887 | 3845 | 1344 | 1660 | 71947 |
| TOTAL | 588659 | 77646 | 32073 | 4591 | 30247 | 9674 | 18042 | 760932 |
| <i>(Source: HAZUS-MH 2.1, 2015)</i> | | | | | | | | |

| Table 4-6: Hale County Building Contents Exposure <i>(Numbers shown in thousands of dollars)</i> | | | | | | | | |
|--|--------------------|-------------------|-------------------|--------------------|------------------|-------------------|------------------|--------------------------|
| Census Tract | Residential | Commercial | Industrial | Agriculture | Religious | Government | Education | Contents Exposure |
| 400 | 76427 | 15358 | 27434 | 223 | 3978 | 2122 | 10828 | 136370 |
| 401 | 39729 | 2145 | 528 | 107 | 989 | 484 | 1809 | 45791 |
| 402 | 33085 | 4460 | 9216 | 296 | 2208 | 508 | 0 | 49773 |
| 403 | 34227 | 5129 | 623 | 320 | 4461 | 116 | 0 | 44876 |
| 404 | 87618 | 29656 | 5648 | 1758 | 14766 | 6488 | 6645 | 162579 |
| 405 | 23765 | 14188 | 1952 | 1887 | 3845 | 1865 | 1878 | 49380 |
| TOTAL | 294851 | 80936 | 45401 | 4591 | 30247 | 11583 | 21160 | 488769 |
| <i>(Source: HAZUS-MH 2.1, 2015)</i> | | | | | | | | |

Critical Facility Inventory

Critical facilities are crucial to the daily operation of Hale County. Critical facilities help maintain a certain quality of life. Loss of operation could result in severe impacts on the community. Each of the critical facilities listed in **Table 4-7** is vulnerable to each of the hazards identified in the risk assessment. Critical facilities include but are not limited to the following:

- Governmental services
- Police and Fire Departments
- Public Works
- Education
- Industrial
- Medical

Each jurisdiction provided addresses and approximate values for the facilities listed, using replacement values from their insurance policies when available. *HAZUS-MH 2.1* was also utilized for building and content values.

Critical facilities were reviewed to consider vulnerability to special flood hazard areas. The determination utilized the review of existing FIRMs or FHBMs. Critical facilities in Hale County identified as being in a special flood hazard area and particularly vulnerable to floods include:

- City of Greensboro – wastewater treatment facility located on Bates Mill Road valued at \$2,275,000

| TABLE 4-7: Hale County Critical Facilities | | | | |
|--|-----------------------------|----------------|----------------------------|--------------|
| Facility | Location | Area | Use | Value |
| Medical | | | | |
| Hale County Hospital | 508 Green Street | Greensboro | Medical | \$6,035,090 |
| Governmental Services | | | | |
| Hale County EMA | 998 Church Street | Greensboro | Emergency Operations | \$900,000 |
| Steamplant Road VFD | 1335 Co. Rd. 18 | Forkland | Fire Protection | \$250,000 |
| Greensboro VFD | Main Street | Greensboro | Fire Protection | \$250,000 |
| Gallion VFD | 101 Gallion Rd./Co. Rd. | Gallion | Fire Protection | \$250,000 |
| West Perry/East Hale VFD | Perry Co. Hwy. 48 | Rural Area | Fire Protection | \$250,000 |
| Akron VFD | 181 1 st Ave. S. | Akron | Fire Protection | \$250,000 |
| Sawyererville VFD | Highway 14 | Sawyererville | Fire Protection | \$250,000 |
| Friendship VFD | 24739 Hwy 25 | Greensboro | Fire Protection | \$250,000 |
| Lock Five VFD | 305 Meadowlark Ln | Cedarville | Fire Protection | \$250,000 |
| Stewart-Havana VFD | 33953 Highway 69 | Stewart/Havana | Fire Protection | \$250,000 |
| Utility Systems | | | | |
| Akron Lagoon | | Akron | Waste Water | \$59,940,000 |
| Greensboro Lagoon | | Greensboro | Waste Water | \$59,940,000 |
| Moundville Lagoon | | Moundville | Waste Water | \$59,940,000 |
| Hunt Refining Company | CR 21 SW | Moundville | Oil Refinery | \$90,000 |
| Southern Natural Gas | Hale County | Hale County | Compressor Plant | \$981,000 |
| Southern Natural Gas | Highway 69 South | Gallion | Compressor Plant | \$981,000 |
| Water Well 1 | Co. Rd. 1 | Gallion | Water Supply | \$350,000 |
| Water Well 2 | Co. Rd. 1 | Gallion | Water Supply | \$350,000 |
| Water Well 3 | Beckham Bottom Rd. | Beckham Bottom | Water Supply | \$350,000 |
| Water Well 4 | Beckham Bottom Rd. | Beckham Bottom | Water Supply | \$350,000 |
| Tank | Co. Rds. 29 and 85 | Hogglesville | Water Storage | \$500,000 |
| Tank | Co. Rd. 29 & Hwy 69 | Havana | Water Storage | \$500,000 |
| Tank | Co. Rd. 21 | Akron | Water Storage | \$500,000 |
| Tank | Hwy 69 | Cattle Ranch | Water Storage | \$500,000 |
| Tank | Co. Rd. 4 | Beckham | Water Storage | \$500,000 |
| Tank | Co. Rd. 1 | Gallion | Water Storage | \$500,000 |
| Water Well #1 Moundville | Co. Rd. 44 | Moundville | Potable Water | \$350,000 |
| Water Well #2 Moundville | Co. Rd. 44 | Moundville | Potable Water | \$350,000 |
| Water Tank #3 Moundville | 2100 Co. Rd. 52 | Moundville | Water Storage | \$410,555 |
| Water Tank #4 Moundville | Woods Place | Moundville | Water Storage | \$410,555 |
| Water Treatment Moundville | Co. Rd. 44 | Moundville | Potable Water | \$2,200,000 |
| Sewer Lagoon Moundville | Prince St. | Moundville | Sewer Treatment | \$2,500,000 |
| EWB Water Tank #4 | Sandy Ford Rd. | Hale County | Potable Water | \$225,000 |
| ALDOT Dist 5 | Hwy 14 | County | AL Dept. of Transportation | \$2,500,000 |
| Plantation Pipeline | Hwy. 60 | Akron | Pipeline | \$1,000,000 |
| Colonial Pipeline | Hwy. 80 | Gallion | Pipeline | \$1,000,000 |

| | | | | |
|--|-------------------------------|-------------|-----------------------|----------------------|
| Law Enforcement | | | | |
| Hale County Sheriff's Office | 1001 Main St. #18 | Greensboro | Law Enforcement | \$1,260,000 |
| Greensboro Police Dept. | 1101 Main St. | Greensboro | Law Enforcement | \$1,260,000 |
| Moundville Police | 410 Market St. | Moundville | Law Enforcement | \$1,260,000 |
| Education | | | | |
| Greensboro East Elementary School | 620 Carver St. | Greensboro | School | \$5,958,390 |
| Southern Academy | 407 College St. | Greensboro | School | \$2,934,470 |
| Hale County High School | 50 Wildcat Way | Moundville | School | \$5,515,230 |
| Moundville Elementary School | 537 Alabama Ave. | Moundville | School | \$6,350,090 |
| Akron Community School East | 141 College St. | Akron | School | \$2,344,950 |
| Akron Community School West | 131 5 th Ave. S. | Akron | School | \$2,021,190 |
| Greensboro East High School | 620 Carver St. | Greensboro | School | \$4,650,610 |
| Greensboro West High School | 1901 South St. | Greensboro | School | \$3,930,090 |
| Hale County Technology Center | 19875 AL Hwy 69 N | Greensboro | School | \$6,733,560 |
| Greensboro West Elementary School | 1801 South St. | Greensboro | School | \$5,839,180 |
| Sunshine High School | 3125 Co. Rd. 10/Faunsdale Rd. | Newbern | School | \$4,414,800 |
| Headstart | Co. Rd. 17 | Sawyerville | School | \$1,000,000 |
| Mennonite School | Co. Rd. 12 | Gallion | School | \$1,000,000 |
| Miscellaneous | | | | |
| Greensboro Municipal Airport | | Greensboro | Air Transportation | \$10,651,000 |
| WDVZ-LP CH 3 | | Greensboro | TV Broadcast Facility | \$90,000 |
| (Source: Local Jurisdiction; HAZUS-MH 2.1; 2015) | | | TOTAL | \$274,616,750 |

Development Trends

Hale County is mostly rural and is projected to see a decline in growth according to **Table 4-8** that provides the population projections for Hale County.

| Table 4-8: Population Projections | | | | | | | | | | |
|--|------------------------|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------------------|-------------------------------|
| County | Actual 2000 | Actual 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | Number Difference | Percent Difference |
| Hale | 17,185 | 15,760 | 15,214 | 14,719 | 14,242 | 13,761 | 13,245 | 12,744 | -3,016 | -19.1 |
| Note: These projections are driven by population change between Census 2000 and Census 2010. Recent data on births and deaths from the Alabama Department of Public Health are used to derive birth and death rates for the state and each county. | | | | | | | | | | |
| Source: U.S. Census Bureau and Center for Business and Economic Research, The University of Alabama, Fall 2012 – As noted in the Alabama State Hazard Mitigation Plan, April 2013 | | | | | | | | | | |

Local Development and Opportunities

- West Alabama Mental Health Center is to open a 16-bed facility in Moundville. The center will create approximately 15 new jobs.
- Hale County has a 90 acre Industrial Park Site located on County Road 46 in Akron.
- Hale County's top employers are the Hale County BOE (350), Westervelt Lumber (280), Hale County Hospital (125), Hale County Commission (110), and C&S Fabrications, Inc. (65)
- Hale County's top manufacturers are Westervelt Lumber (280), C&S Fabrications, Inc. (65), Plastics, Inc. (60), Heartland Catfish, L. L. C. (40), and Veros, L. L. C. (20)
- Grant accomplishments include: renovation to the Greensboro High School ballfield; various schools have utilized nine educational program grants; HERO Youth Build Program; Moundville Gateway Sign

Regional Development and Opportunities

- The University of West Alabama continues implementation of a \$2.2 million Department of Labor grant to address workforce development needs and has added an automotive training component to the project.

- The Region 3 Workforce Council enters into three-year contract with the West Alabama Chamber of Commerce to manage newly created West Alabama Works and hired a full-time director to oversee operations of workforce programs.
- West Alabama Works hosts first Automotive Hiring Fair. Participation tops 2,000 with 590 job offers made.
- Project READY (Realizing Everybody's Ability to Develop Yourself), sponsored by Congresswoman Terri Sewell, hosts second year of workshops to offer practical guidance on how to succeed in the workforce.
- Grants applied for: Health Development Partnership with Fayette, Hale, Pickens and one other county in the amount of \$200,000 (Appalachian Regional Commission). The West Alabama Regional Commission (WARC) serves as the Local Development District (LDD) for six Appalachian counties in Region 2--Bibb, Fayette, Hale, Lamar, Pickens and Tuscaloosa. WARC was designated the LDD for this area by the Appalachian Regional Commission (ARC) and prepares an annual proposal to ARC for administrative grant funds. These funds afford WARC the opportunity to develop and implement plans for community, economic, and human resource development which empower local leaders and foster and sustain economic development. Appalachian member governments, educational institutions and other nonprofits apply to ARC for supplemental grants to fund projects that support the goals of the ARC. ARC goals are (1) to increase job opportunities and per capita income in Appalachia to reach parity with the nation, (2) to strengthen the capacity of the people of Appalachia to compete in the global economy, (3) to develop and improve Appalachia's infrastructure to make the region economically competitive, and (4) to build the Appalachian Development Highway System to reduce Appalachia's isolation.
- The West Alabama Regional Commission (WARC) serves as the Local Development District (LDD) for three Delta counties in Region 2--Greene, Hale and Pickens. WARC was designated the LDD for this area by the Delta Regional Authority (DRA). WARC receives administrative grant funds to address community, economic, health and workforce related issues in the region and operate as a local-level partner with DRA. These funds allow WARC to identify, develop and implement programs and activities

that are intended to educate local stakeholders about the DRA and its programs. Delta member governments, educational institutions and other nonprofits apply to DRA for supplemental grants to fund projects that support the goals of the DRA. DRA goals are (1) to advance the productivity and economic competitiveness of the Delta workforce, (2) to strengthen the capacity of the people of the Delta to compete in the global economy, (3) to develop and improve the Delta's infrastructure to make the region economically competitive, and (4) to strengthen the Delta's physical and digital connections to the global economy.

- In 1989 WARC's seven-county region was designated an Economic Development District (EDD) by the Economic Development Administration (EDA). The administration approved the region's Comprehensive Economic Development Strategy (CEDS) prepared by the commission in cooperation with a strategy committee comprised of members from each county. The plan presents a detailed look at the resources, opportunities, problems and needs of the region as well as planned economic development projects and programs. The plan is subject to periodic revision to reflect changing conditions and needs throughout Region 2. Since 1984 the commission has received planning grants from the Economic Development Administration to aid member governments. In addition, member governments have been eligible to apply for funds for public works projects such as access roads, rail spurs, port facilities, and water and sewer facilities that result in the creation or retention of jobs. Local governments applying for EDA funds must provide matching funds.

The development trends in the county do not indicate any marked increase in vulnerability to identified hazards. At present, land use patterns are not expected to change, and development is expected to remain consistent within existing patterns.

Methods of Warning

Hale County Emergency Management Agency and the county's jurisdictions have constructed a warning system that provides multiple ways to receive weather watches, warnings, and other emergency messages.

NOAA Weather Radio

NOAA Weather Radio is a nationwide network of radio stations broadcasting weather and other emergency information 24 hours a day. All National Weather Service issued watches, warnings, forecasts and other emergency messages are broadcast on one of seven frequencies.

National Weather Service personnel at offices in Birmingham record weather information that plays in a cyclical pattern repeating every three to six minutes. Broadcasts generally include local area five-day forecasts, current weather conditions, radar reports, weather summaries, climatic data, river and lake stage readings, and other weather information. The broadcasts are continuously updated to provide the listener with the latest information.

NOAA Weather Radio is useful any time for the latest weather information but becomes even more important during severe or hazardous weather. During episodes of severe weather, the normal broadcast cycle is interrupted and focus shifted to the local severe weather threat. Watches, warnings, and statements are given the highest priority and are updated frequently as conditions change.

In an emergency, each transmitter is capable of transmitting a warning alarm tone signal and the new Specific Area Message Encoding (SAME) signal followed by information on the emergency situation. These signals will activate specially designed receivers, either bringing up the volume or producing a visual and/or audible alarm. Not all weather band receivers have this capability, but all radios that receive NOAA Weather Radio transmissions can receive the emergency broadcasts. The warning alarm device is tested each Wednesday between 11 am and noon, weather permitting.

Outdoor Warning Sirens

Hale County EMA has 4 outdoor warning sirens in place. Although these sirens cover most of the populated areas of the Cities of Greensboro and Moundville, there are many places without an outdoor siren – most notably the Towns of Akron and Newbern. An additional 13 sites have been selected for proposed sirens throughout the county. These sirens were installed and are completed. **Table 4-9** lists the outdoor warning sirens in Hale County.

The existing sirens have an effective radiated coverage area of one mile around the siren. The sirens are activated only for Thunderstorm and Tornado Warnings, but will be used to notify

the public of Hazardous Materials Incidents in the near future. There is no ALL CLEAR siren sounding due to the possibility of public confusion. Weather Warnings sound like a long wail, while Hazardous Material Alerts will have a distinct sound when the program goes on line. The siren blasts run three to five minutes. The sirens are activated from the Hale County E-911 Office. Activations may be completed in three separate south to north groupings or simultaneously completed for the entire coverage areas.

The entire countywide Outdoor Siren Warning System is periodically tested. Notification of testing is usually posted in the newspapers to avoid confusion. The general public is advised not to depend on hearing the sirens inside a building. The sirens are designed to be heard outdoors only and are installed near recreational areas and shopping malls where there are large outdoor populations. As a backup to the Outdoor Siren Warning System, police and fire units throughout the county can be instructed to sound their sirens.

Broadcast Media

One of the key elements of the Countywide Warning System is broadcast media. Most of the radio, television, and cable companies that serve Hale County residents are dedicated to informing their audiences of impending emergencies. These broadcasters have partnered with the Hale County Emergency Management Agency to bring their listeners and viewers fast, accurate, and important severe weather and civil emergency information via EAS and traditional newsgathering methods. Most of the television stations serving the Hale County market (ABC 33/40, CBS 42, NBC 13, and Fox 6) feature live Doppler radar and certificated meteorologists. Many of the radio stations maintain continuous severe weather coverage.

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| TABLE 4-9: Hale County Outdoor Warning Sirens | | | | |
|---|--------------|--------------|-----------|-----------|
| Existing Sirens | | | | |
| Number | Jurisdiction | ADDRESS | Longitude | Latitude |
| 1 | Moundville | Howell Field | 33.0044 | -87.6170 |
| 2 | Moundville | Co. Line Rd. | 33.0045 | -87.6160 |
| 3 | Greensboro | Armory St. | 32.6976 | -87.6106 |
| 4 | Greensboro | Davis St. | 32.6985 | -87.5851 |
| <i>*All sirens have a one mile audible radius</i> | | | | |
| Proposed Siren | | | | |
| Number | Jurisdiction | Address | Latitude | Longitude |
| 1 | County | Co. Rd. 52 | 32.9754 | -87.6139 |
| 2 | County | Stewart | 32.9114 | -87.6708 |
| 3 | County | Havana | 32.8927 | -87.6239 |
| 4 | Akron | Armory St. | 32.8778 | -87.7447 |
| 5 | County | Lake Paper | 32.8870 | -87.4378 |
| 6 | County | Bucksnot | 32.8212 | -87.5997 |
| 7 | County | Sawyerville | 32.7506 | -87.7276 |
| 8 | Greensboro | Baptist Hill | 32.7034 | -87.5917 |
| 9 | County | Lock 5 | 32.5830 | -87.7368 |
| 10 | Newbern | Hwy 61 | 32.5926 | -87.5328 |
| 11 | County | Gallion | 32.5026 | -87.7094 |
| 12 | County | Friendship | 32.8116 | -87.4959 |
| 13 | County | Sunshine | 32.5654 | -87.5849 |
| <i>Source: Hale County EMA, 2015</i> | | | | |

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Vulnerability Summary

Table 4-12 provides a summary of Hale County’s vulnerability to specified hazards by jurisdiction. Each jurisdiction was tasked with considering how vulnerable they are to each hazard by considering the percentage of potential damage and the frequency of occurrences. Using information from the Risk Assessment in Section Three as well as the data in the earlier parts of this section as a basis for evaluation, the committee members assigned either N/A: Not Applicable, L: Low Risk, M: Medium Risk, and H: High Risk as defined in the Table Key.

Estimated Loss Projections

Table 4-10 shows the figures used for valuation of deaths and injuries are approximations based on FEMA guidance used in benefit-cost analysis of hazard mitigation measures. Major and minor injuries are combined in the NOAA data, so it was necessary to use a blended number in the valuation.

Table 4-12 shows the estimated loss projections for each hazard. The average number of occurrences per year is shown along with total number of deaths and injuries. The average amount of loss per event was determined by combining crop and property loss damages for each event type and then dividing by the corresponding total number of events reported during the ten-year study period. This amount is shown under the column heading Average Crop and Property Loss. There are instances where the Average Crop and Property Loss (per event) and Projected Loss (per Event) for an identified hazard could not be determined due to the absence of historical event data. This is a data limitation beyond the control of an affected jurisdiction.

| Table 4-10: 2014 Values used for Monetary Conversion of Tornado Injuries and Deaths | |
|--|--------------|
| Damage Category | Value |
| Injury (blended major and minor) | \$23,175 |
| Death | \$3,660,003 |
| <i>(Source: FEMA, 2015)</i> | |

The Projected Loss is shown per event by hazard type. Due to the fluctuations in the value of a dollar over the ten-year study period, the year 2008 was chosen as a midpoint year. The Projected Loss was then calculated by adjusting the 2008 value of \$1 up to \$1.09, a 9 % increase to reflect the value of the dollar in 2014. Average loss amounts were increased by 9% to achieve a 2014 value for an estimated projected loss per event occurrence. *(Source: U. S. Inflation Calculator based on the U. S. Government Consumer Price Index Data, 2014)*

Table 4-11: Hale County Vulnerability Summary

| Natural Hazards | Akron | Greensboro | Moundville | Newbern | Unincorporated County |
|---|--------------|-------------------|-------------------|----------------|------------------------------|
| Thunderstorm | H | H | H | M | H |
| Lightning | H | H | M | M | H |
| Hail | L | L | L | M | H |
| Tornado | H | H | H | H | H |
| Flood/Flash Flood | M | M | M | L | M |
| Drought/Extreme Heat | H | H | L | H | M |
| Winter Storm/Frost Freeze/ Heavy Snow/Ice Storm/ Winter Weather/Extreme Cold | M | M | L | M | M |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/Strong Wind | M | M | H | H | H |
| Sinkhole/Expansive Soil | L | L | L | M | L |
| Landslide | L | L | L | L | L |
| Earthquake | L | L | L | L | L |
| Wildfire | L | L | H | M | H |
| Dam/Levee Failure | L | M | L | H | L |
| Man-made Hazards | | | | | |
| Hazardous Material Release | L | L | H | H | H |
| Arson/Incendiary Attack | L | L | M | M | M |
| Armed Attack | L | L | M | M | M |
| Conventional Bomb | L | L | L | L | L |
| Chemical Agent | L | L | H | M | L |
| Cyber Terrorism | L | L | H | M | L |
| Agriterrorism | L | L | L | H | L |
| Biological Agent | L | L | L | M | L |
| Radiological Agent | L | L | L | L | L |
| Nuclear Bomb | L | L | L | L | L |

(Source: Participating Jurisdictions, 2015)

KEY:

NA – Not Applicable; not a hazard to the jurisdiction

L – Low Risk; little damage potential (damage to less than 5% of the jurisdiction)

M – Medium Risk; moderate damage potential (damage to 5-10% of jurisdiction, infrequent occurrence)

H – High Risk; significant risk/major damage potential (damage to over 10% of jurisdiction, regular occurrence)

**Table 4-12: Hale County
Estimated Loss Projections from Specified Hazards**

| Natural Hazards | Average Occurrences (per year) | Total Deaths | Total Injuries | Average Death and Injury Loss (per event) | Average Crop and Property Loss (per event) | Projected Loss (per event) |
|---|---|---------------------|-----------------------|--|---|---------------------------------------|
| Thunderstorm | 3.5 | 0 | 0 | Unknown | \$11,771 | \$12,831 |
| Lightning | 0.1 | 0 | 0 | Unknown | \$20,000 | \$21,800 |
| Hail | 3.6 | 0 | 0 | Unknown | \$8,444 | \$9,204 |
| Tornado | 1.7 | 6 | 42 | \$1,351,139 | \$1,240,471 | \$2,824,845 |
| Flood/Flash Flood | 1.6 | 0 | 0 | Unknown | \$8,313 | \$9,061 |
| Drought/Extreme Heat | 2.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Winter Storm/Frost Freeze/ Heavy Snow/Ice Storm/Winter Weather/ Extreme Cold | 0.7 | 0 | 9 | \$29,796 | Unknown | \$32,478 |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/ Strong Wind | 0.9 | 0 | 5 | \$12,875 | \$466,333 | \$1,030,641 |
| Sinkhole/Expansive Soil | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Landslide | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Earthquake | 0.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Wildfire (3 year study period) | 37 | 0 | 0 | Unknown | \$9,500 | \$10,355 |
| Dam/Levee Failure | 0 | 0 | 0 | Unknown | Unknown | Unknown |

Sources: NOAA NCDC; U. S. Inflation Calculator/Consumer Price Index; Local Input; USDA Census of Agriculture; Alabama Forestry Commission and National Forestry Service; Alabama Geological Survey; 2015

Methodology: Average occurrences were expressed annually by dividing the total number of occurrences by the ten-year period. Deaths and injuries were taken from the hazard event data. Average losses were calculated by dividing the total amount of all damages by the total number of occurrences during the ten-year period with the exception of wildfire which is a 3-year period. Projected loss expresses an estimated damage amount per future occurrence by converting the average loss figures from a midpoint of 2008 dollars to 2014 dollars (\$1 in 2008 = \$1.09 in 2014...a cumulative rate of inflation of 9%). Zero and Unknown denote there is no data available to determine the average occurrences, average loss or projected loss per event.

Mitigating Potential Losses

The Hazard Mitigation Planning Committee set forth mitigation goals and objectives for the county and its jurisdictions. Each jurisdiction sets forth its own mitigation action plan located in Section Five.

Mitigation Strategy

In the preparation of the mitigation strategy, the Hazard Mitigation Planning Committee reviewed the goals and objectives of the 2009 plan revision. The committee agreed the goals and objectives would remain the same for this plan revision.

Goal 1: Protect Life

Goal 2: Protect Property

Goal 3: Reduce Economic Impacts of Disasters

Goal 4: Protect Environment and Natural Resources

Goal 5: Increase Public Preparedness for Disasters

Mitigation Actions

Mitigation ideas can be found on the FEMA.gov website. FEMA summarizes mitigation actions into four types: Local Planning and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, Education and Awareness.

Jurisdictions sought and selected their own mitigation actions to support the goals and objectives of the mitigation strategy. The identification of mitigation actions has been shaped by the events that occurred over the past five years, vulnerabilities, and available mitigation actions. Each significant event revealed strengths and weaknesses within the hazard mitigation program; therefore, jurisdictions adjusted their mitigation actions to address these weaknesses accordingly. Because of these events, the prioritization of actions has been re-evaluated and ranked as follows:

Actions identify the activity, what hazard(s) are addressed, whether the activity applies to a new or existing asset, and an estimated cost. The action also identifies the planning mechanism, possible funding sources, and a time frame for completion of the activity.

Action Priority and Cost Benefit Review

In the selection and prioritization of mitigation actions, each member was asked to consider the following: funding options, political support, public support, legality, preservation of the environment, and staff capability. The committee then looked at each strategy in terms of costs and benefits. Not only were direct costs and benefits considered, but indirect costs and benefits were also acknowledged. Indirect costs and/or benefits are often intangible attributes such as social effects.

Priority mitigation actions will be implemented only if they are cost beneficial; maximum benefits must outweigh the associated costs of the proposed actions. The committee performed a general evaluation of each mitigation measure which might require FEMA funds. The committee weighed the estimated costs for each mitigation measure against the projected benefits of the action. A more detailed benefit-cost analysis will be required for each priority action to determine economic feasibility during the project planning phase. Projects will also require a more detailed evaluation for eligibility and feasibility including social impact, environmental impact, technical feasibility, and other criteria that measure project effectiveness. This detailed evaluation of projects will be performed in the pre-application phase of a grant request. Further, implementation of actions will be subject to the availability of FEMA grants and other sources of funding from year-to-year.

Mitigation Status

During the plan update mitigation actions were reviewed in order to identify completed, deferred, or deleted actions from the previous plan and incorporate actions added during annual updates. **Table 4-13** shows Hale County's mitigation actions for the 2015 plan update.

In the 2009 plan revision, priorities were expressed by numbering 1 as the highest priority – the higher the number, the lower the priority. For this plan revision, the committee decided to assign a new prioritization labeling as one project may be equally as important as another project. As a result, projects will be labeled high, medium, and low in priority. All actions will be addressed as soon as possible depending on available funding and resources; however, actions labeled high in priority will be addressed first, medium in priority will be addressed secondly,

and low in priority will be addressed last. The most important determination is funding, which greatly affects which projects can be completed.

In order to track the progress of identified actions from the Hale County's 2009 Mitigation Action Plan, current statuses are shown under benchmarking.

| Table 4-13: Hale County Mitigation Actions | |
|---|--|
| Mitigation Action | Install additional outdoor warning sirens |
| Hazard(s) Addressed | Thunderstorm, Tornado, Hurricane, Tropical Storm, Tropical Depression, High Winds, Strong Winds |
| Applies to new/existing asset | New |
| Local Planning Mechanism | Hale County EMA; Hale County |
| Time frame for Completion | 2018 |
| Estimated Cost | \$30,000 each |
| Funding Sources | Local; Grants |
| Priority | Medium |
| Benchmarking | This project was moved to a lower priority because funding was not available during the time frame between the plan updates. The county would still like to pursue this action at a lower priority rate than previously planned. |
| Mitigation Action | Upgrade communication systems |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA; Hale County |
| Time frame for Completion | 2019 |
| Estimated Cost | \$300,000 each |
| Funding Sources | Local; Grants |
| Priority | Medium |
| Benchmarking | The county was unable to achieve the communication system upgrade due to the high costs of equipment and grants were not obtained during this planning period. The county does plan to apply and work on this project before 2019. |
| Mitigation Actions | Construct/install community safe rooms to include generators at fire stations |
| Hazard(s) Addressed | Thunderstorm, Tornado |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA; Hale County |
| Time frame for Completion | 2018 |
| Estimated Cost | \$100,000 each |
| Funding Sources | Local; Grants |
| Priority | High |
| Benchmarking | The county has installed 42 community safe rooms since the last plan update. They plan to obtain additional funding to install more safe rooms within the county. |
| Mitigation Action | Construct storm retrofits to school buildings and fire stations |
| Hazard(s) Addressed | Thunderstorm, Tornado |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$500,000 each |

| | |
|--------------------------------------|--|
| Funding Sources | Local; Grants |
| Priority | Medium |
| Benchmarking | |
| Mitigation Action | Install security measures at Hale County critical facilities |
| Hazard(s) Addressed | Manmade Hazards |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$500,000 |
| Funding Sources | Local; Grants |
| Priority | Low |
| Benchmarking | The county has been unable to complete this project during the planning period due to lack of available funds. The county does wish to keep this on their priority listing of improvement projects for future funds that may become available. |
| Mitigation Action DELETED | Enforce floodplain management requirements, regulate construction or improvements in Special Flood Hazard Areas (SFHA) |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | New |
| Local Planning Mechanism | Hale County |
| Time frame for Completion | 2017 |
| Estimated Cost | (Unknown; cost was not provided in previous plan update.) |
| Funding Sources | Local; Grants |
| Priority | DELETED |
| Benchmarking | The county deleted this action due to the funding availability related to this project. They were unable to achieve work on this project during the planning period due to insufficient funds from grants and county. |
| Mitigation Action DELETED | Add generators to Hale County critical facilities |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA; Hale County |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$25,000 each |
| Funding Sources | Local; Grants |
| Priority | DELETED |
| Benchmarking | The county deleted this project due to funding and the need of generators elsewhere in the county. |
| Mitigation Action DELETED | Upgrade drainage system, enlarge ditches, install pipe, storm drain |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA |

| | |
|--------------------------------------|---|
| Time frame for Completion | 2018 |
| Estimated Cost | \$300,000 |
| Funding Sources | HMGP; Local |
| Priority | DELETED |
| Benchmarking | This project has been deleted due to lack of funding. They would like to replace it with a more feasible project that would likely have more available funding. |
| Mitigation Action NEW | Update EOC |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA; Hale County |
| Time frame for Completion | Six months from funding availability |
| Estimated Cost | \$100,000 |
| Funding Sources | Local; Grants |
| Priority | High |
| Benchmarking | NEW - This is a new project for Hale County to pursue during the upcoming planning period. |

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Section Five:

Jurisdiction

Assessments

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Town of Akron

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**Table 5-1: Town of Akron
Risk and Vulnerability Overview**

| Natural Hazards | Hazard Identification | Mitigation Actions Prioritization | Prioritized Occurrence Threat | Vulnerability |
|---|------------------------------|--|--------------------------------------|----------------------|
| Thunderstorm | X | 1 | 6 | H |
| Lightning | X | 2 | 7 | H |
| Hail | X | 8 | 5 | L |
| Tornado | X | 3 | 7 | H |
| Flood/Flash Flood | X | 4 | 3 | M |
| Drought/Extreme Heat | X | 5 | 2 | H |
| Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/ Winter Weather/ Extreme Cold | X | 6 | 4 | M |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/Strong Wind | X | 9 | 3 | M |
| Sinkhole/Expansive Soil | X | 10 | 7 | L |
| Landslide | X | 10 | 7 | L |
| Earthquake | X | 10 | 6 | L |
| Wildfire | X | 7 | 1 | L |
| Dam/Levee Failure | X | 10 | 7 | L |
| Man-made Hazards | | | | |
| Hazardous Material Release | X | 7 | 7 | L |
| Arson/Incendiary Attack | X | 3 | 3 | L |
| Armed Attack | X | 4 | 4 | L |
| Conventional Bomb | X | 8 | 8 | L |
| Chemical Agent | X | 5 | 5 | L |
| Cyber Terrorism | X | 2 | 2 | L |
| Agriterrorism | X | 1 | 1 | L |
| Biological Agent | X | 6 | 6 | L |
| Radiological Agent | X | 9 | 9 | L |
| Nuclear Bomb | X | 10 | 10 | L |

KEY:

Hazard Identification – Identified by local jurisdictions

Mitigation Actions Prioritization - Hazards are prioritized by jurisdictions based on past hazard experiences, vulnerabilities, and available mitigation actions with the hazard having highest priority of mitigation assigned number one.

Prioritized Occurrence Threat - Hazards are prioritized with the highest threat of occurrence assigned number one based on hazardous events that have occurred within each jurisdiction over the past ten years, with the exception of wildfires that were based on events that have occurred over the past three years. Some natural hazards have equal threats to a jurisdiction; therefore, their threat number will be the same. These prioritized threats may or may not be the same as the mitigation actions prioritization.

Vulnerability – Identified by local jurisdictions. NA – Not Applicable; not a hazard to the jurisdiction; L – Low Risk; little damage potential (damage to less than 5% of the jurisdiction); M – Medium Risk; moderate damage potential (damage to 5-10% of jurisdiction, infrequent occurrence); and H – High Risk; significant risk/major damage potential (damage to over 10% of jurisdiction, regular occurrence)

(Source: NOAA NCDC Storm Events Database; Alabama Forestry Commission; National Forestry Service; Alabama Geological Survey; Participating Jurisdictions; 2015)

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TABLE 5-2: TOWN OF AKRON HAZARD EVENTS

2 Thunderstorm Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|----------------------------|-------------|-----|------------|-------|------|-------------------|------------|-----|-----|--------|-------|
| AKRON | HALE CO. | AL | 06/16/2004 | 18:40 | CST | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 3.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 03/07/2005 | 17:58 | CST | Thunderstorm Wind | 53 kts. ES | 0 | 0 | 22.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 25.00K | 0.00K |

0 Lightning Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|----------------|-------------|-----|------|------|------|------|-----|-----|-----|-------|-------|
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

3 Hail Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------|-------------|-----|------------|-------|------|------|----------|-----|-----|---------|-------|
| AKRON | HALE CO. | AL | 04/25/2003 | 12:40 | CST | Hail | 1.75 in. | 0 | 0 | 45.00K | 0.00K |
| AKRON | HALE CO. | AL | 05/02/2003 | 14:44 | CST | Hail | 1.75 in. | 0 | 0 | 40.00K | 0.00K |
| AKRON | HALE CO. | AL | 04/06/2005 | 13:12 | CST | Hail | 1.75 in. | 0 | 0 | 16.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 101.00K | 0.00K |

0 Tornado Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|----------------|-------------|-----|------|------|------|------|-----|-----|-----|-------|-------|
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

9 Flood/Flash Flood Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 05/08/2003 | 08:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/18/2003 | 15:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/06/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/12/2005 | 06:45 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/11/2005 | 00:00 | CST | Flood | | 0 | 0 | 3.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/07/2003 | 05:00 | CST | Flash Flood | | 0 | 0 | 12.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/01/2005 | 05:00 | CST | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 07/10/2005 | 17:30 | CST | Flash Flood | | 0 | 0 | 8.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 23.00K | 0.00K |

22 Drought/Extreme Heat Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/18/2006 | 07:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/27/2007 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 10/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 12/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/05/2008 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/02/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/08/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

7 Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------------|-------------|-----|------------|-------|-------|-------------------------|-----|-----|-----|-------|-------|
| HALE (ZONE) | HALE (ZONE) | AL | 04/07/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/08/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/09/2011 | 18:00 | CST-6 | Heavy Snow | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/09/2011 | 11:30 | CST-6 | Ice Storm | | 0 | 9 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/19/2008 | 06:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/12/2010 | 11:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/24/2003 | 00:00 | CST | Extreme Cold/wind Chill | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 9 | 0.00K | 0.00K |

9 Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------------|-------------|-----|------------|-------|-------|---------------------|------------|-----|-----|---------|--------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/10/2005 | 15:00 | CST | Tropical Storm | | 0 | 0 | 375.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/29/2005 | 17:00 | CST | Tropical Storm | | 0 | 4 | 1.800M | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/23/2008 | 12:00 | CST-6 | Tropical Depression | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/09/2009 | 14:00 | CST-6 | Tropical Depression | | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/16/2004 | 06:00 | CST | High Wind | 77 kts. EG | 0 | 0 | 2.000M | 25.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/11/2005 | 14:00 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/09/2006 | 17:08 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/28/2009 | 00:45 | CST-6 | Strong Wind | 35 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/05/2011 | 15:00 | CST-6 | Strong Wind | 39 kts. EG | 0 | 1 | 10.00K | 0.00K |
| Totals: | | | | | | | | 0 | 5 | 4.197M | 0.00K |

0 Sinkhole Events – 01/01/2003 thru 12/31/2013 (4018 days)

No sinkhole events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

0 Landslide Events – 01/01/2003 thru 12/31/2013 (4018 days)

No landslide events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

2 Earthquake Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: <http://www.city-data.com>)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Ini</u> | <u>PrD</u> | <u>CrD</u> |
|---|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| 19.2 miles from the county center | HALE (ZONE) | AL | 11/7/2004 | 11:20 | CST | Earthquake | 4.4 | 0 | 0 | 0.00K | 0.00K |
| 49 miles from the county center | HALE (ZONE) | AL | 08/19/2004 | 23:51 | CST | Earthquake | 3.6 | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | | 0.00K | 0.00K |

No earthquake events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey; Alabama Geological Survey/USGS Database; www.homefacts.com/earthquakes/Alabama.html

110 Wildfire Events – 1/1/2010 thru 12/31/2013

(Source: Alabama Forestry Commission)

| County | Total # of Fires 2010-2013 | Average # of Fires Per Year | Total Acres Burned 2010-2013 | Average Acres Burned Per Year | Average Fire Size in Acres |
|---------------|-----------------------------------|------------------------------------|-------------------------------------|--------------------------------------|-----------------------------------|
| Hale | 110 | 37 | 570.52 | 190 | 5 |

0/Unknown Dam/Levee Failure Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database/Local Input)

No or unknown dam/levee failure events occurred or were reported during 01/01/2003 thru 12/31/2013.

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**Table 5-3: Town of Akron
Hazard Probability Assessment**

| Natural Hazards | Number of Historical Occurrences | Probability of Future Annual Occurrence | Extent | Area Affected |
|---|---|--|---------------|----------------------|
| Thunderstorm | 2 | 20% | >10% | Town wide |
| Lightning | 0 | Unknown | >10% | Town wide |
| Hail | 3 | 30% | <5% | Town wide |
| Tornado | 0 | Unknown | >10% | Town wide |
| Flood/Flash Flood | 9 | 90% | 5-10% | Town wide |
| Drought/Extreme Heat | 22 | >100% | >10% | Town wide |
| Winter Storm/Frost Freeze/ Heavy Snow/ Ice Storm/ Winter Weather/ Extreme Cold | 7 | 70% | 5-10% | Town wide |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/ Strong Wind | 9 | 90% | 5-10% | Town wide |
| Sinkhole/Expansive Soil | 0 | Unknown | <5% | Town wide |
| Landslide | 0 | Unknown | <5% | Town wide |
| Earthquake | 2 | 20% | <5% | Town wide |
| Wildfire | 110 | >100% | <5% | Town wide |
| Dam/Levee Failure | 0 | Unknown | Unknown | N/A |
| Man-made Hazards | | | | |
| Hazardous Material Release | 0 | Unknown | <5% | L |
| Arson/Incendiary Attack | 0 | Unknown | <5% | L |
| Armed Attack | 0 | Unknown | <5% | L |
| Conventional Bomb | 0 | Unknown | <5% | L |
| Chemical Agent | 0 | Unknown | <5% | L |
| Cyber Terrorism | 0 | Unknown | <5% | L |
| Agriterrorism | 0 | Unknown | <5% | L |
| Biological Agent | 0 | Unknown | <5% | L |
| Radiological Agent | 0 | Unknown | <5% | L |
| Nuclear Bomb | 0 | Unknown | <5% | L |
| <i>Source: NOAA NCDC; U. S. Inflation Calculator/Consumer Price Index; USGS; Local Input; USDA Census of Agriculture; Alabama Forestry Commission; and National Forestry Service; Participating Jurisdictions; 2015</i> | | | | |

Methodology: Number of historical occurrences is those reported by NOAA NCDC during the 10 year study period, with the exception of wildfire that is a 3 year study period. Probability is expressed by dividing the total number of occurrences by the study period in years. Extent is expressed as the percentage assigned by the jurisdictions' ranking in the vulnerability summary (Table 4-12). Zero or unknown denotes no data available to determine the probability, extent, or affected area.

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| TABLE 5-4: Town of Akron Critical Facilities | | | | |
|---|-----------------------------|-------|------------------|---------------------|
| Facility | Location | Area | Use | Value |
| Governmental Services | | | | |
| Akron VFD | 181 1 st Ave. S. | Akron | Fire Protection | \$200,000 |
| Akron Town Hall | 1 st Ave. South | Akron | Local Government | \$400,000 |
| Utility Systems | | | | |
| Akron Lagoon | | Akron | Waste Water | \$59,940,000 |
| Tank | Co. Rd. 21 | Akron | Water Storage | \$500,000 |
| Plantation Pipeline | Hwy. 60 | Akron | Pipeline | \$1,000,000 |
| Water Tank | Co. Rd. 36 | Akron | Water Supply | \$390,600 |
| Sewer Lagoon/Pumping Station | Lock 8 Rd | Akron | Sewer Treatment | \$825,000 |
| Education | | | | |
| Akron Elementary | C. St. | Akron | Education | Closed in 2014 |
| Akron High School | 4 th Ave. South | Akron | Education | Closing in May 2015 |
| Miscellaneous | | | | |
| Senior Citizen Center | 1 st Ave. North | Akron | Nursing Care | \$150,000 |
| Boys/Girls Club | 1 st Ave. South | Akron | Youth Programs | \$250,000 |
| | | | | |
| TOTAL | | | | \$63,655,600 |
| <i>(Sources: Local Jurisdictions and HAZUS –MH 2.1 accessed 2015)</i> | | | | |

**Table 5-5: Town of Akron
Estimated Loss Projections from Specified Hazards**

| Natural Hazards | Average Occurrences (per year) | Total Deaths | Total Injuries | Average Death and Injury Loss (per event) | Average Crop and Property Loss (per event) | Projected Loss (per event) |
|---|---|---------------------|-----------------------|--|---|---------------------------------------|
| Thunderstorm | 0.2 | 0 | 0 | Unknown | \$12,500 | \$13,625 |
| Lightning | 0.0 | 0 | 0 | Unknown | Unknown | Unknown |
| Hail | 0.3 | 0 | 0 | Unknown | \$33,667 | \$36,697 |
| Tornado | 0.0 | 0 | 0 | Unknown | Unknown | Unknown |
| Flood/Flash Flood | 0.9 | 0 | 0 | Unknown | \$25,556 | \$27,856 |
| Drought/Extreme Heat | 2.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold | 0.7 | 0 | 9 | \$42,566 | Unknown | \$46,397 |
| Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind | 0.9 | 0 | 5 | \$16,554 | \$466,333 | \$526,347 |
| Sinkhole/Expansive Soil | 0.0 | 0 | 0 | Unknown | Unknown | Unknown |
| Landslide | 0.0 | 0 | 0 | Unknown | Unknown | Unknown |
| Earthquake | 0.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Wildfire | 37.0 | 0 | 0 | Unknown | \$9,500 | \$10,355 |
| Dam/Levee Failure | 0.0 | 0 | 0 | Unknown | Unknown | Unknown |

Sources: NOAA NCDC; U.S. Inflation Calculator/Consumer Price Index; Local Input; USDA Census of Agriculture; Alabama Forestry Commission and National Forestry Service; Alabama Geological Survey; 2015

Methodology: Average occurrences were expressed annually by dividing the total number of occurrences by the ten-year period. Deaths and injuries were taken from the hazard event data. Average losses were calculated by dividing the total amount of all damages by the total number of occurrences during the ten-year period with the exception of wildfire. Projected loss expresses an estimated damage amount per future occurrence by converting the average loss figure from a midpoint of 2008 dollars to 2014 dollars (\$1 in 2008 = \$1.09 in 2014...a cumulative rate of inflation of 9%). Zero or Unknown denotes there is no data available to determine the average occurrences, average loss or projected loss per event.

Town of Akron Mitigation Action Plan

The Town of Akron recognizes the importance of Mitigation Planning and will incorporate mitigation planning in planning documents as they are revised or initiated.

Mitigation Status

The current statuses of the mitigation actions are shown under benchmarking. **Table 5-6** shows the Town of Akron's mitigation actions for the 2015 plan update. In the 2009 plan revision, priorities were expressed by numbering 1 as the highest priority – the higher the number, the lower the priority. For this plan revision, the committee decided to assign a new prioritization labeling as one project may be equally as important as another project. As a result, projects will be labeled high, medium, and low in priority.

| Table 5-6: Town of Akron Mitigation Actions | |
|---|---|
| Mitigation Action | Install security measures at critical facilities |
| Hazard(s) Addressed | Man-made |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, Town of Akron |
| Time frame for Completion | 2019 |
| Estimated Cost | \$100,000 |
| Funding Sources | Local, Grants |
| Priority | Medium |
| Benchmarking | The county has not been able to complete this project due to inadequate funds. They still plan to pursue funding and complete this project. |
| Mitigation Action COMBINED | Construct new Town Hall Facility |
| Benchmarking | This mitigation action has been combined with the mitigation action to construct/install multi-use community safe rooms with backup generators. Due to no funding availability, this action was not completed during the past five years. |
| Mitigation Action | Replace cement drainage covers along streets in town |
| Hazard(s) Addressed | Floods and Thunderstorms |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, Town of Akron |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$1,000 each |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmarking | The county has not been able to complete this project due to inadequate funds. They still plan to pursue funding and complete this project. |

| | |
|--------------------------------------|---|
| Mitigation Action | Participate in NFIP |
| Flood | All |
| Applies to new/existing asset | New and Existing |
| Local Planning Mechanism | Town of Akron |
| Time frame for Completion | 2017 |
| Estimated Cost | |
| Funding Sources | Local |
| Priority | Medium |
| Benchmarking | The town did not participate in the NFIP during the last five years; however, plans to do so within the next five years. |
| Mitigation Action | Install additional outdoor warning sirens |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, Town of Akron |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$30,000 each |
| Funding Sources | Local, Grants |
| Priority | Medium |
| Benchmarking | This mitigation action is being deleted for the 2015 plan update. Outdoor warning sirens were installed and they no longer wish to install additional sirens. |
| Mitigation Action | Construct/install multi-use community safe rooms with back-up generators (one will be used for a town hall) |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | New |
| Local Planning Mechanism | Hale County EMA, Town of Akron |
| Time frame for Completion | Two years from funding availability |
| Estimated Cost | \$250,000 - \$400,000 each |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmarking | This mitigation action has been revised and remains in this plan revision. During the past five years, the county has managed to install 42 individual safe rooms. They wish to continue installing new community safe rooms when funds become available. |
| Mitigation Action | Install emergency generators at critical facilities |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, Town of Akron |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$25,000 each |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmarking | There were no generators installed due to the shortage of funds for this project. The county would like to complete this project at a later date if funds become available. |

City of Greensboro

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**Table 5-7: City of Greensboro
Risk and Vulnerability Overview**

| Natural Hazards | Hazard Identification | Mitigation Actions Prioritization | Prioritized Occurrence Threat | Vulnerability |
|---|------------------------------|--|--------------------------------------|----------------------|
| Thunderstorm | X | 1 | 3 | H |
| Lightning | X | 2 | 9 | H |
| Hail | X | 7 | 5 | L |
| Tornado | X | 3 | 7 | H |
| Flood | X | 5 | 4 | M |
| Drought/Extreme Heat | X | 4 | 2 | H |
| Winter Storm/Frost Freeze/ Heavy Snow/Ice Storm/ Winter Weather/Extreme Cold | X | 6 | 6 | M |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/ Strong Wind | X | 9 | 5 | M |
| Sinkhole/Expansive Soil | X | 11 | 10 | L |
| Landslide | X | 11 | 10 | L |
| Earthquake | X | 10 | 8 | L |
| Wildfire | X | 8 | 1 | L |
| Dam/Levee Failure | X | 11 | 10 | M |
| Man-made Hazards | | | | |
| Hazardous Material Release | X | 1 | 1 | L |
| Arson/Incendiary Attack | X | 2 | 2 | L |
| Armed Attack | X | 5 | 5 | L |
| Conventional Bomb | X | 6 | 6 | L |
| Chemical Agent | X | 4 | 4 | L |
| Cyberterrorism | X | 9 | 9 | L |
| Agriterrorism | X | 3 | 3 | L |
| Biological Agent | X | 7 | 7 | L |
| Radiological Agent | X | 8 | 8 | L |
| Nuclear Bomb | X | 10 | 10 | L |
| <p>KEY: Hazard Identification – Identified by local jurisdictions Mitigation Actions Prioritization - Hazards are prioritized by jurisdictions based on past hazard experiences, vulnerabilities, and available mitigation actions with the hazard having highest priority of mitigation assigned number one. Prioritized Occurrence Threat - Hazards are prioritized with the highest threat of occurrence assigned number one based on hazardous events that have occurred within each jurisdiction over the past ten years, with the exception of wildfires that were based on events that have occurred over the past three years. Some natural hazards have equal threats to a jurisdiction; therefore, their threat number will be the same. These prioritized threats may or may not be the same as the mitigation actions prioritization. Vulnerability – Identified by local jurisdictions. NA – Not Applicable; not a hazard to the jurisdiction; L – Low Risk; little damage potential (damage to less than 5% of the jurisdiction); M – Medium Risk; moderate damage potential (damage to 5-10% of jurisdiction, infrequent occurrence); and H – High Risk; significant risk/major damage potential (damage to over 10% of jurisdiction, regular occurrence)</p> | | | | |
| <p><i>(Source: NOAA NCDC Storm Events Database; Alabama Forestry Commission; National Forestry Service; Alabama Geological Survey; Participating Jurisdictions; 2015)</i></p> | | | | |

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TABLE 5-8: CITY OF GREENSBORO HAZARD EVENTS

14 Thunderstorm Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|--------------------------------------|--------------------|------------|-------------|-------------|-------------|-------------------|------------|------------|------------|------------|------------|
| GREENSBORO | HALE CO. | AL | 04/07/2004 | 18:35 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 03/07/2005 | 17:58 | CST | Thunderstorm Wind | 53 kts. ES | 0 | 0 | 22.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/09/2006 | 17:21 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 5.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 07/31/2006 | 16:00 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 3.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 06/27/2007 | 15:35 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 10.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/04/2008 | 14:24 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 10.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/26/2009 | 03:25 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 20.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 05/03/2009 | 12:36 | CST-6 | Thunderstorm Wind | 60 kts. EG | 0 | 0 | 100.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 12/09/2009 | 00:25 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 22.00K | 0.00K |
| GREENSBORO MUNI ARPT | HALE CO. | AL | 05/29/2010 | 15:35 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 06/15/2010 | 17:30 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 5.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/11/2011 | 18:04 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 12.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/27/2011 | 04:21 | CST-6 | Thunderstorm Wind | 60 kts. EG | 0 | 0 | 4.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 07/04/2011 | 13:11 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 217.00K | 0.00K |

1 Lightning Event – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| GREENSBORO | HALE CO. | AL | 08/05/2006 | 14:30 | CST | Lightning | | 0 | 0 | 20.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 20.00K | 0.00K |

9 Hail Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|--------------------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| GREENSBORO | HALE CO. | AL | 05/02/2003 | 15:45 | CST | Hail | 2.75 in. | 0 | 0 | 75.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/07/2004 | 18:35 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/21/2005 | 17:15 | CST | Hail | 1.00 in. | 0 | 0 | 1.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 02/03/2006 | 19:10 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 02/13/2007 | 16:56 | CST-6 | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 02/17/2008 | 11:00 | CST-6 | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/26/2011 | 12:20 | CST-6 | Hail | 0.88 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/26/2011 | 12:24 | CST-6 | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO MUNI ARPT | HALE CO. | AL | 07/17/2013 | 22:20 | CST-6 | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 76.00K | 0.00K |

6 Tornado Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|--------------------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| GREENSBORO | HALE CO. | AL | 01/07/2005 | 23:12 | CST | Tornado | F0 | 0 | 0 | 27.00K | 0.00K |
| GREENSBORO MUNI ARPT | HALE CO. | AL | 11/30/2006 | 21:35 | CST-6 | Tornado | F1 | 0 | 0 | 20.00K | 0.00K |
| GREENSBORO MUNI ARPT | HALE CO. | AL | 11/30/2006 | 21:40 | CST-6 | Tornado | F0 | 0 | 0 | 10.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 02/27/2009 | 15:56 | CST-6 | Tornado | EF0 | 0 | 0 | 0.50K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/24/2010 | 10:50 | CST-6 | Tornado | EF0 | 0 | 0 | 60.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 04/15/2011 | 14:33 | CST-6 | Tornado | EF2 | 0 | 0 | 374.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 491.50K | 0.00K |

12 Flood/Flash Flood Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 05/08/2003 | 08:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/18/2003 | 15:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/06/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/12/2005 | 06:45 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/11/2005 | 00:00 | CST | Flood | | 0 | 0 | 3.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/07/2003 | 05:00 | CST | Flash Flood | | 0 | 0 | 12.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/01/2005 | 05:00 | CST | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 07/10/2005 | 17:30 | CST | Flash Flood | | 0 | 0 | 8.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 05/29/2010 | 16:30 | CST-6 | Flash Flood | | 0 | 0 | 10.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 03/09/2011 | 05:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| GREENSBORO | HALE CO. | AL | 05/03/2012 | 12:15 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 33.00K | 0.00K |

22 Drought/Extreme Heat Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/18/2006 | 07:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/27/2007 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 10/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 12/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/05/2008 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/02/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/08/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

**7 Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold
Events – 01/01/2003 thru 12/31/2013 (4018 days)**
(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------------|-------------|-----|------------|-------|-------|-------------------------|-----|-----|-----|-------|-------|
| HALE (ZONE) | HALE (ZONE) | AL | 04/07/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/08/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/09/2011 | 18:00 | CST-6 | Heavy Snow | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/09/2011 | 11:30 | CST-6 | Ice Storm | | 0 | 9 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/19/2008 | 06:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/12/2010 | 11:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/24/2003 | 00:00 | CST | Extreme Cold/wind Chill | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 9 | 0.00K | 0.00K |

**9 Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind Events –
01/01/2003 thru 12/31/2013 (4018 days)**
(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------------|-------------|-----|------------|-------|-------|---------------------|------------|-----|-----|---------|--------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/10/2005 | 15:00 | CST | Tropical Storm | | 0 | 0 | 375.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/29/2005 | 17:00 | CST | Tropical Storm | | 0 | 4 | 1.800M | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/23/2008 | 12:00 | CST-6 | Tropical Depression | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/09/2009 | 14:00 | CST-6 | Tropical Depression | | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/16/2004 | 06:00 | CST | High Wind | 77 kts. EG | 0 | 0 | 2.000M | 25.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/11/2005 | 14:00 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/09/2006 | 17:08 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/28/2009 | 00:45 | CST-6 | Strong Wind | 35 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/05/2011 | 15:00 | CST-6 | Strong Wind | 39 kts. EG | 0 | 1 | 10.00K | 0.00K |
| Totals: | | | | | | | | 0 | 5 | 4.197M | 0.00K |

0 Sinkhole Events – 01/01/2003 thru 12/31/2013 (4018 days)

No sinkhole events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

0 Landslide Events – 01/01/2003 thru 12/31/2013 (4018 days)

No landslide events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

2 Earthquake Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: <http://www.city-data.com>)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|---|-------------|-----|------------|-------|------|------------|-----|-----|-----|-------|-------|
| 19.2 miles from the county center | HALE (ZONE) | AL | 11/7/2004 | 11:20 | CST | Earthquake | 4.4 | 0 | 0 | 0.00K | 0.00K |
| 49 miles from the county center | HALE (ZONE) | AL | 08/19/2004 | 23:51 | CST | Earthquake | 3.6 | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

No earthquake events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey; Alabama Geological Survey/USGS Database;
www.homefacts.com/earthquakes/Alabama.html

110 Wildfire Events – 1/1/2010 thru 12/31/2013

(Source: Alabama Forestry Commission)

| County | Total # of Fires 2010-2013 | Average # of Fires Per Year | Total Acres Burned 2010-2013 | Average Acres Burned Per Year | Average Fire Size in Acres |
|--------|-------------------------------|--------------------------------|------------------------------------|-------------------------------------|-------------------------------|
| Hale | 110 | 37 | 570.52 | 190 | 5 |

0 Dam/Levee Failure Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database/Local Input)

No dam/levee failure events occurred or were reported during 01/01/2003 thru 12/31/2013.

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**Table 5-9: City of Greensboro
Hazard Probability Assessment**

| Natural Hazards | Number of Historical Occurrences | Probability of Future Occurrence | Extent | Area Affected |
|--|---|---|---------------|----------------------|
| Thunderstorm | 14 | >100% | >10% | Citywide |
| Lightning | 1 | 10% | >10% | Citywide |
| Hail | 9 | 90% | <5% | Citywide |
| Tornado | 6 | 60% | >10% | Citywide |
| Flood/Flash Flood | 12 | >100% | 5-10% | Citywide |
| Drought/Extreme Heat | 22 | >100% | >10% | Citywide |
| Winter Storm/Frost Freeze/ Heavy Snow/Ice Storm/Winter Weather/Extreme Cold | 7 | 70% | 5-10% | Citywide |
| Hurricane/High Wind/ Strong Wind/Tropical Storm/Tropical Depression | 9 | 90% | 5-10% | Citywide |
| Sinkhole/Expansive Soil | 0 | Unknown | <5% | Citywide |
| Landslide | 0 | Unknown | <5% | Citywide |
| Earthquake | 2 | 20% | <5% | Citywide |
| Wildfire (2010-2013 – 3 year study period) | 110 | >100% | <5% | Citywide |
| Dam/Levee Failure | 0 | Unknown | N/A | N/A |
| Man-made Hazards | | | | |
| Hazardous Material Release | 0 | Unknown | <5% | Citywide |
| Arson/Incendiary Attack | 0 | Unknown | <5% | Citywide |
| Armed Attack | 0 | Unknown | <5% | Citywide |
| Conventional Bomb | 0 | Unknown | <5% | Citywide |
| Chemical Agent | 0 | Unknown | <5% | Citywide |
| Cyberterrorism | 0 | Unknown | <5% | Citywide |
| Agriterrorism | 0 | Unknown | <5% | Citywide |
| Biological Agent | 0 | Unknown | <5% | Citywide |
| Radiological Agent | 0 | Unknown | <5% | Citywide |
| Nuclear Bomb | 0 | Unknown | <5% | Citywide |
| <i>Source: NOAA NCDC; U. S. Inflation Calculator/Consumer Price Index; USGS ; Local Input; USDA Census of Agriculture; Alabama Forestry Commission; and National Forestry Service; Participating Jurisdiction; 2015</i> | | | | |
| Methodology: Number of historical occurrences is those reported by NOAA NCDC during the 10 year study period, with the exception of wildfire that is a 3 year study period. Probability is expressed by dividing the total number of occurrences by the study period in years. Extent is expressed as the percentage assigned by the jurisdictions' ranking in the vulnerability summary (Table 4-12). Zero or Unknown denotes no data available to determine the probability, extent, or affected area. | | | | |

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| TABLE 5-10: Greensboro Critical Facilities | | | | |
|---|----------------------|------------|----------------------------|----------------------|
| Facility | Location | Area | Use | Value |
| Medical | | | | |
| Hale County Hospital | 508 Green Street | Greensboro | Medical | \$6,035,090 |
| Hale County Hospital Clinic | 616 Armory St. | Greensboro | Medical | \$2,000,000 |
| Colonial Haven Nursing Home | 616 Armory St. | Greensboro | Nursing Care | \$6,500,000 |
| Hale County Health Department | Hall St. | Greensboro | Public Health | \$2,000,000 |
| Hale County EMS | Hall St. | Greensboro | Emergency Medical Services | \$500,000 |
| Governmental Services | | | | |
| Hale County EMA | 998 Church Street | Greensboro | Emergency Operations | \$900,000 |
| Greensboro City Hall | 1101 Main St. | Greensboro | Local Government | \$1,000,000 |
| Hale County Courthouse | 1001 Main St. | Greensboro | County Government | \$1,118,000 |
| Hale County Jail | Correction Drive | Greensboro | Detention | \$4,000,000 |
| Youth Group Home | Correction Drive | Greensboro | Detention | \$1,500,000 |
| Ryan Youth Center | Correction Drive | Greensboro | Detention | \$4,000,000 |
| Greensboro VFD | Main Street | Greensboro | Fire Protection | \$250,000 |
| Friendship VFD | 24739 Hwy 25 | Greensboro | Fire Protection | \$250,000 |
| Utility Systems | | | | |
| Greensboro Lagoon | | Greensboro | Waste Water | \$59,940,000 |
| Water Well #1 | Walton St. | Greensboro | Potable Water | \$2,000,000 |
| Water Well #2 | South St. | Greensboro | Potable Water | \$1,900,000 |
| Water Well #3 | South St. | Greensboro | Potable Water | \$600,000 |
| Water Well #4 | Cork St. | Greensboro | Potable Water | \$1,900,000 |
| Water Tank #1 | Walton St. | Greensboro | Water Storage | \$1,000,000 |
| Water Tank #2 | Cork St. | Greensboro | Water Storage | \$500,000 |
| Water Tank #3 | Cork St. | Greensboro | Water Storage | \$600,000 |
| Booster Pump | Hwy. 69 North | Greensboro | Potable Water | \$25,000 |
| Wastewater Treatment | Bates Mill Rd. | Greensboro | Sanitary Sewer | \$2,500,000 |
| Pump Station #1 | Centreville St. | Greensboro | Sanitary Sewer | \$100,000 |
| Pump Station #2 | Hwy 69 S./Tressel | Greensboro | Sanitary Sewer | \$100,000 |
| Pump Station #3 | Hwy 69 S. | Greensboro | Sanitary Sewer | \$30,000 |
| Pump Station #4 | Royal Estates | Greensboro | Sanitary Sewer | \$15,000 |
| Pump Station #5 | Davis St. | Greensboro | Sanitary Sewer | \$18,000 |
| Pump Station #6 | Caldwell Subdivision | Greensboro | Sanitary Sewer | \$30,000 |
| Phone Substation | Wheeling St. | Greensboro | Communications | \$3,000,000 |
| Education | | | | |
| Greensboro East Campus Elementary and High School | Carver St. | Greensboro | Education | \$40,000,000 |
| Greensboro West Campus Elementary and High School | Hwy 69 | Greensboro | Education | \$40,000,000 |
| Southern Academy | State St. | Greensboro | Education | \$20,000,000 |
| Hale County AVC Center | Hwy 69 | Greensboro | Education | \$6,000,000 |
| Hale County Board of Education | Powers Street | Greensboro | Education | \$3,000,000 |
| Industrial | | | | |
| American Pride Seafood | Hwy. 69 | Greensboro | Major Employer | \$60,000,000 |
| Miscellaneous | | | | |
| Old National Guard Building | Green St. | Greensboro | Shelter | \$250,000 |
| Outdoor Warning Siren | Armory St. | Greensboro | Weather Warning | \$25,000 |
| Outdoor Warning Siren | Davis St. | Greensboro | Weather Warning | \$25,000 |
| (Sources: Local Jurisdictions/HAZUS-MH 2.1; 2015 | | | TOTAL | \$273,611,090 |

**Table 5-11: City of Greensboro
Estimated Loss Projections from Specified Hazards**

| Natural Hazards | Average Occurrences (per year) | Total Deaths | Total Injuries | Average Death and Injury Loss (per event) | Average Crop and Property Loss (per event) | Projected Loss (per event) |
|---|---|---------------------|-----------------------|--|---|---------------------------------------|
| Thunderstorm | 1.4 | 0 | 0 | \$0 | \$15,500 | \$16,895 |
| Lightning | 0.1 | 0 | 0 | \$0 | \$20,000 | \$21,800 |
| Hail | 0.9 | 0 | 0 | \$0 | \$8,444 | \$8,204 |
| Tornado | 0.6 | 0 | 0 | \$0 | \$81,917 | \$89,290 |
| Flood/Flash Flood | 1.2 | 0 | 0 | \$0 | \$2,750 | \$2,998 |
| Drought/Extreme Heat | 2.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold | 0.7 | 0 | 0 | \$208,575 | Unknown | \$227,647 |
| Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind | 0.9 | 0 | 0 | \$115,875 | \$104,333 | \$240,027 |
| Sinkhole/Expansive Soil | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Landslide | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Earthquake | 0.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Wildfire (3 year study period) | 37 | 0 | 0 | Unknown | \$9,757 | \$10,635 |
| Dam/Levee Failure | 0 | 0 | 0 | Unknown | Unknown | Unknown |

Sources: NOAA NCDC; U. S. Inflation Calculator/Consumer Price Index; Local Input; USDA Census of Agriculture; Alabama Forestry Commission and National Forestry Service; Alabama Geological Survey; 2015

Methodology: Average occurrences were expressed annually by dividing the total number of occurrences by the ten-year period. Deaths and injuries were taken from the hazard event data. Average losses were calculated by dividing the total amount of all damages by the total number of occurrences during the ten-year period with the exception of wildfire. Projected loss expresses an estimated damage amount per future occurrence by converting the average loss figures from a midpoint of 2008 dollars to 2014 dollars (\$1 in 2008 = \$1.09 in 2014...a cumulative rate of inflation of 9%). Zero or Unknown denotes there is no data available to determine the average occurrences, average loss or projected loss per event.

City of Greensboro Mitigation Action Plan

The City of Greensboro recognizes the importance of Mitigation Planning and will incorporate mitigation planning in planning documents as they are revised or initiated.

Mitigation Status

The current statuses of the mitigation actions are shown under benchmarking. **Table 5-12** shows the City of Greensboro's mitigation actions for the 2015 plan update.

Table 5-12: City of Greensboro Mitigation Actions

| | |
|---|--|
| Mitigation Action | Install emergency generators at critical facilities |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, City of Greensboro |
| Time frame for Completion | 2018 |
| Estimated Cost | \$25,000 each |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmark | The city has not been able to complete this project due to inadequate funds. They still plan to pursue funding and complete this project. |
| Mitigation Action DELETED | Construct long-term underground community storm shelters |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | New |
| Local Planning Mechanism | Hale County EMA; City of Greensboro |
| Time frame for Completion | Two years from funding availability |
| Estimated Cost | \$500,000 each |
| Funding Sources | Local; Grants |
| Priority | Low |
| Benchmark | DELETED - This mitigation action has been deleted; the city no longer wishes to construct underground community storm shelters. |
| Mitigation Action | Construct/install community safe rooms to include generators |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | New |
| Local Planning Mechanism | Hale County EMA; City of Greensboro |
| Time frame for Completion | 2019 |
| Estimated Cost | \$100,000 - \$500,000 each |
| Funding Sources | Local; Grants |
| Priority | High |
| Benchmark | The city has not been able to complete this project due to inadequate funds. They still plan to pursue funding and complete this project. |

| | |
|--------------------------------------|---|
| Mitigation Action | Upgrade drainage system to enlarge ditches and install pipe and storm drains |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | New and existing |
| Local Planning Mechanism | Hale County EMA, City of Greensboro, Public Works |
| Time frame for Completion | 2019 |
| Estimated Cost | \$300,000 |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmark | The city has not been able to complete this project due to inadequate funds. They still plan to pursue funding and complete this project. |
| Mitigation Action | Install security measures at critical facilities |
| Hazard(s) Addressed | Man-made hazards |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, City of Greensboro |
| Time frame for Completion | 2018 |
| Estimated Cost | \$300,000 |
| Funding Sources | Local, Grants |
| Priority | Medium |
| Benchmark | The county has not been able to complete this project due to inadequate funds. They still plan to pursue funding and complete this project. |
| Mitigation Action | Enforce floodplain managements requirements, regulate construction or improvements in Special Flood Hazard Areas (SFHAs) |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | New and Existing |
| Local Planning Mechanism | City of Greensboro |
| Time frame for Completion | 2020 |
| Estimated Cost | |
| Funding Sources | Local, Grants |
| Priority | Low |
| Benchmark | Floodplain management requirements have been enforced and the city wishes to continue this action. |
| Mitigation Action | Provide additional outdoor warning sirens throughout each district |
| Hazard(s) Addressed | Thunderstorm, Tornado, Tropical Storm, Tropic Depression, High Winds, Strong Winds |
| Applies to new/existing asset | New |
| Local Planning Mechanism | Hale County EMA, City of Greensboro |
| Time frame for Completion | 2019 |
| Estimated Cost | \$30,000 each |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmark | The city has not been able to complete this project due to inadequate funds. They still plan to pursue funding and complete this project. |

City of Moundville

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**Table 5-13: City of Moundville
Risk and Vulnerability Overview**

| Natural Hazards | Hazard Identification | Mitigation Actions Prioritization | Prioritized Occurrence Threat | Vulnerability |
|---|------------------------------|--|--------------------------------------|----------------------|
| Thunderstorm | X | 1 | 6 | H |
| Lightning | X | 2 | 8 | M |
| Hail | X | 6 | 6 | L |
| Tornado | X | 3 | 8 | H |
| Flood | X | 5 | 3 | M |
| Drought/Extreme Heat | X | 7 | 2 | L |
| Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold | X | 8 | 5 | L |
| Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind | X | 9 | 4 | H |
| Sinkhole/Expansive Soil | X | 11 | 8 | L |
| Landslide | X | 11 | 8 | L |
| Earthquake | X | 10 | 7 | L |
| Wildfire | X | 4 | 1 | H |
| Dam/Levee Failure | X | 11 | 8 | L |
| Man-made Hazards | | | | |
| Hazardous Material Release | X | 1 | 1 | H |
| Arson/Incendiary Attack | X | 3 | 3 | M |
| Armed Attack | X | 4 | 4 | M |
| Conventional Bomb | X | 6 | 6 | L |
| Chemical Agent | X | 2 | 2 | H |
| Cyberterrorism | X | 5 | 5 | H |
| Agriterrorism | X | 8 | 8 | L |
| Biological Agent | X | 7 | 7 | L |
| Radiological Agent | X | 9 | 9 | L |
| Nuclear Bomb | X | 10 | 10 | L |

KEY:

Hazard Identification – Identified by local jurisdictions

Mitigation Actions Prioritization - Hazards are prioritized by jurisdictions based on past hazard experiences, vulnerabilities, and available mitigation actions with the hazard having highest priority of mitigation assigned number one.

Prioritized Occurrence Threat - Hazards are prioritized with the highest threat of occurrence assigned number one based on hazardous events that have occurred within each jurisdiction over the past ten years, with the exception of wildfires that were based on events that have occurred over the past three years. Some natural hazards have equal threats to a jurisdiction; therefore, their threat number will be the same. These prioritized threats may or may not be the same as the mitigation actions prioritization.

Vulnerability – Identified by local jurisdictions. NA – Not Applicable; not a hazard to the jurisdiction; L – Low Risk; little damage potential (damage to less than 5% of the jurisdiction); M – Medium Risk; moderate damage potential (damage to 5-10% of jurisdiction, infrequent occurrence); and H – High Risk; significant risk/major damage potential (damage to over 10% of jurisdiction, regular occurrence)

(Source: NOAA NCDC Storm Events Database; Alabama Forestry Commission; National Forestry Service; Alabama Geological Survey; Participating Jurisdictions; 2015)

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TABLE: 5-14: CITY OF MOUNDVILLE HAZARD EVENTS**6 Thunderstorm Events – 01/01/2003 thru 12/31/2013 (4018 days)***(Source: NOAA NCDC Storm Events Database)*

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|----------------------------|--------------------|------------|-------------|-------------|-------------|-------------------|------------|------------|------------|------------|------------|
| MOUNDVILLE | HALE CO. | AL | 02/15/2003 | 20:30 | CST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 03/07/2005 | 17:58 | CST | Thunderstorm Wind | 53 kts. ES | 0 | 0 | 22.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 08/02/2008 | 18:30 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 10.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 04/27/2011 | 04:03 | CST-6 | Thunderstorm Wind | 60 kts. EG | 0 | 0 | 8.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 06/11/2012 | 18:48 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 07/10/2012 | 14:52 | CST-6 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 42.00K | 0.00K |

0 Lightning Events – 01/01/2003 thru 12/31/2013 (4018 days)*(Source: NOAA NCDC Storm Events Database)*

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

6 Hail Events – 01/01/2003 thru 12/31/2013 (4018 days)*(Source: NOAA NCDC Storm Events Database)*

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| MOUNDVILLE | HALE CO. | AL | 04/25/2003 | 12:10 | CST | Hail | 1.50 in. | 0 | 0 | 50.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 04/07/2004 | 18:20 | CST | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 03/13/2005 | 19:05 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 03/30/2005 | 21:13 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 04/21/2005 | 17:40 | CST | Hail | 1.75 in. | 0 | 0 | 6.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 04/08/2006 | 00:53 | CST | Hail | 1.00 in. | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 56.00K | 0.00K |

0 Tornado Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| Totals: | | | | | | | | | | 0.00K | 0.00K |

11 Flood/Flash Flood Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 05/08/2003 | 08:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/18/2003 | 15:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/06/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/12/2005 | 06:45 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/11/2005 | 00:00 | CST | Flood | | 0 | 0 | 3.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/07/2003 | 05:00 | CST | Flash Flood | | 0 | 0 | 12.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/01/2005 | 05:00 | CST | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 07/10/2005 | 17:30 | CST | Flash Flood | | 0 | 0 | 8.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 09/21/2009 | 09:15 | CST-6 | Flash Flood | | 0 | 0 | 25.00K | 0.00K |
| MOUNDVILLE | HALE CO. | AL | 03/09/2011 | 05:30 | CST-6 | Flash Flood | | 0 | 0 | 75.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 123.00K | 0.00K |

22 Drought/Extreme Heat Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/18/2006 | 07:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/27/2007 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 10/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 12/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/05/2008 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/02/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/08/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

**7 Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold
Events – 01/01/2003 thru 12/31/2013 (4018 days)**
(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------------|-------------|-----|------------|-------|-------|-------------------------|-----|-----|-----|-------|-------|
| HALE (ZONE) | HALE (ZONE) | AL | 04/07/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/08/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/09/2011 | 18:00 | CST-6 | Heavy Snow | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/09/2011 | 11:30 | CST-6 | Ice Storm | | 0 | 9 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/19/2008 | 06:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/12/2010 | 11:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/24/2003 | 00:00 | CST | Extreme Cold/wind Chill | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 9 | 0.00K | 0.00K |

**9 Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind Events –
01/01/2003 thru 12/31/2013 (4018 days)**
(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------------|-------------|-----|------------|-------|-------|---------------------|------------|-----|-----|---------|--------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/10/2005 | 15:00 | CST | Tropical Storm | | 0 | 0 | 375.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/29/2005 | 17:00 | CST | Tropical Storm | | 0 | 4 | 1.800M | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/23/2008 | 12:00 | CST-6 | Tropical Depression | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/09/2009 | 14:00 | CST-6 | Tropical Depression | | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/16/2004 | 06:00 | CST | High Wind | 77 kts. EG | 0 | 0 | 2.000M | 25.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/11/2005 | 14:00 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/09/2006 | 17:08 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/28/2009 | 00:45 | CST-6 | Strong Wind | 35 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/05/2011 | 15:00 | CST-6 | Strong Wind | 39 kts. EG | 0 | 1 | 10.00K | 0.00K |
| Totals: | | | | | | | | 0 | 5 | 4.197M | 0.00K |

0 Sinkhole Events – 01/01/2003 thru 12/31/2013 (4018 days)

No sinkhole events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

0 Landslide Events – 01/01/2003 thru 12/31/2013 (4018 days)

No landslide events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

2 Earthquake Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: <http://www.city-data.com>)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|---|-------------|-----|------------|-------|------|------------|-----|-----|-----|-------|-------|
| 19.2 miles from the county center | HALE (ZONE) | AL | 11/7/2004 | 11:20 | CST | Earthquake | 4.4 | 0 | 0 | 0.00K | 0.00K |
| 49 miles from the county center | HALE (ZONE) | AL | 08/19/2004 | 23:51 | CST | Earthquake | 3.6 | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | | 0.00K | 0.00K |

No earthquake events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey; Alabama Geological Survey/USGS Database;
www.homefacts.com/earthquakes/Alabama.html

110 Wildfire Events – 1/1/2010 thru 12/31/2013

(Source: Alabama Forestry Commission)

| County | Total # of Fires 2010-2013 | Average # of Fires Per Year | Total Acres Burned 2010-2013 | Average Acres Burned Per Year | Average Fire Size in Acres |
|--------|-------------------------------|--------------------------------|------------------------------------|-------------------------------------|-------------------------------|
| Hale | 110 | 37 | 570.52 | 190 | 5 |

0 Dam/Levee Failure Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database/Local Input)

No dam/levee failure events occurred or were reported during 01/01/2003 thru 12/31/2013.

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**Table 5-15: City of Moundville
Hazard Probability Assessment**

| Natural Hazards | Number of Historical Occurrences | Probability of Future Annual Occurrence | Extent | Area Affected |
|--|---|--|---------------|----------------------|
| Thunderstorm | 6 | 60% | >10% | Town wide |
| Lightning | 0 | Unknown | 5-10% | Town wide |
| Hail | 6 | 60% | <5% | Town wide |
| Tornado | 0 | Unknown | >10% | Town wide |
| Flood/Flash Flood | 11 | >100% | 5-10% | Town wide |
| Drought/Extreme Heat | 22 | >100% | <5% | Town wide |
| Winter Storm/Frost Freeze/Heavy Snow/ Ice Storm/Winter Weather/Extreme Cold | 7 | 70% | <5% | Town wide |
| Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind | 9 | 90% | >10% | Town wide |
| Sinkhole/Expansive Soil | 0 | Unknown | <5% | Town wide |
| Landslide | 0 | Unknown | <5% | Town wide |
| Earthquake | 2 | 20% | <5% | Town wide |
| Wildfire (2010-2013 – 3 year study) | 110 | >100% | >10% | Town wide |
| Dam/Levee Failure | 0 | Unknown | <5% | Town wide |
| Man-made Hazards | | | | |
| Hazardous Material Release | 0 | Unknown | >10% | Town wide |
| Arson/Incendiary Attack | 0 | Unknown | 5-10% | Town wide |
| Armed Attack | 0 | Unknown | 5-10% | Town wide |
| Conventional Bomb | 0 | Unknown | <5% | Town wide |
| Chemical Agent | 0 | Unknown | >10% | Town wide |
| Cyberterrorism | 0 | Unknown | >10% | Town wide |
| Agriterrorism | 0 | Unknown | <5% | Town wide |
| Biological Agent | 0 | Unknown | <5% | Town wide |
| Radiological Agent | 0 | Unknown | <5% | Town wide |
| Nuclear Bomb | 0 | Unknown | <5% | Town wide |

Source: NOAA NCDC; U. S. Inflation Calculator/Consumer Price Index; USGS; Local Input; USDA Census of Agriculture; Alabama Forestry Commission; and National Forestry Service; Participating Jurisdiction; 2015

Methodology: Number of historical occurrences is those reported by NOAA NCDC during the 10 year study period, with the exception of wildfire that is a 3 year study period. Probability is expressed by dividing the total number of occurrences by the study period in years. Extent is expressed as the percentage assigned by the jurisdictions' ranking in the vulnerability summary (Table 4-12). Zero or Unknown denotes there is no data available to determine the probability, extent, or affected area.

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| TABLE 5-16: City of Moundville Critical Facilities | | | | |
|---|----------------------|------------|----------------------|----------------------|
| Facility | Location | Area | Use | Value |
| Education | | | | |
| Moundville Elementary | 537 Alabama Ave. | Moundville | Education | \$4,325,450 |
| Moundville High School | 50 Wildcat Way | Moundville | Education | \$8,105,102 |
| Governmental Services | | | | |
| Moundville City Hall | 410 Market St | Moundville | Local Government | \$700,000 |
| Industrial | | | | |
| Colonial Pipeline | Colonial Rd. | Moundville | Fuel, oils transport | \$50,000,000 |
| Plantation Pipeline | 2 nd Ave. | Moundville | Fuel, oils transport | |
| Nustar | 2 nd Ave. | Moundville | Fuel Storage | |
| Westervelt | Gulf States Pkwy. | Moundville | Major Employer | |
| Hunt Oil Storage Facility | Colonial Rd. | Moundville | Fuel Storage | |
| Utility Systems | | | | |
| Moundville Lagoon | | Moundville | Waste Water | \$59,940,000 |
| Hunt Refining Company | CR 21 SW | Moundville | Oil Refinery | \$90,000 |
| Water Well #1 | Co. Rd. 44 | Moundville | Potable Water | \$350,000 |
| Water Well #2 | Co. Rd. 44 | Moundville | Potable Water | \$350,000 |
| Water Tank #3 | 2100 Co. Rd. 52 | Moundville | Water Storage | \$410,555 |
| Water Tank #4 | Woods Place | Moundville | Water Storage | \$410,555 |
| Water Treatment | Co. Rd. 44 | Moundville | Potable Water | \$2,200,000 |
| Sewer Lagoon | Prince St. | Moundville | Sewer Treatment | \$2,500,000 |
| Lift Station -Old Lagoon | School St | Moundville | Wastewater | \$100,000 |
| Lift Station 1 | County Line Rd | Moundville | Wastewater | \$65,000 |
| Lift Station 2 | County Line Rd | Moundville | Wastewater | \$65,000 |
| Lift Station -Carthage Sub | Carthage Dr | Moundville | Wastewater | \$15,000 |
| Lift Station - The Village | Hollyberry | Moundville | Wastewater | \$65,000 |
| Electrical Substation | Hwy. 69 | Moundville | Electric | \$67,852 |
| Electrical Substation | Power Loop | Moundville | Electric | \$67,852 |
| Phone Company | 288 Market St. | Moundville | Communications | \$3,000,000 |
| Cell Phone Tower | Co. Line Rd. | Moundville | Communications | \$400,000 |
| Medical | | | | |
| Emergency Medical Services | Hwy. 69 | Moundville | Emergency Medical | \$500,000 |
| Moundville Health and Rehab | 121 Union St. | Moundville | Nursing Care | \$4,300,000 |
| Northport Health Services | 3 rd Ave. | Moundville | Nursing Care | \$4,300,000 |
| Senior Center | Hwy 69 | Moundville | Nutrition/Services | \$450,000 |
| Miscellaneous | | | | |
| Norfolk Southern Rail | Market St. | Moundville | Switching Station | |
| Outdoor Warning Siren | Howell Field | Moundville | Weather Warning | \$25,000 |
| Outdoor Warning Siren | County Line Rd. | Moundville | Weather Warning | \$25,000 |
| (Sources: Local Jurisdictions, HAZUS –MH 2.1; 2015) | | | TOTAL | \$142,827,366 |

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**Table 5-17: City of Moundville
Estimated Loss Projections from Specified Hazards**

| Natural Hazards | Average Occurrences (per year) | Total Deaths | Total Injuries | Average Death and Injury Loss (per event) | Average Crop and Property Loss (per event) | Projected Loss (per event) |
|---|---|---------------------|-----------------------|--|---|---------------------------------------|
| Thunderstorm | 0.6 | 0 | 0 | Unknown | \$7,000 | \$7,630 |
| Lightning | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Hail | 0.6 | 0 | 0 | Unknown | \$9,333 | \$10,173 |
| Tornado | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Flood/Flood | 1.1 | 0 | 0 | Unknown | \$11,182 | \$12,188 |
| Drought/Extreme Heat | 2.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Winter Weather/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold | 0.7 | 0 | 9 | \$29,796 | Unknown | \$32,478 |
| Hurricane/Tropical Storm/Tropical Depression/ High Wind/ Strong Wind | 0.9 | 0 | 5 | \$12,875 | \$466,333 | \$522,337 |
| Sinkhole/Expansive Soil | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Landslide | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Earthquake | 0.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Wildfire (3 year study period) | 37 | 0 | 0 | Unknown | \$25,176 | \$27,442 |
| Dam/Levee Failure | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| <i>Sources: NOAA NCDC; U. S. Inflation Calculator/Consumer Price Index; Local Input; USDA Census of Agriculture; Alabama Forestry Commission and National Forestry Service; Alabama Geological Survey; 2015</i> | | | | | | |
| Methodology: Average occurrences were expressed annually by dividing the total number of occurrences by the ten-year period. Deaths and injuries were taken from the hazard event data. Average losses were calculated by dividing the total amount of all damages by the total number of occurrences during the ten-year period with the exception of wildfire. Projected loss expresses an estimated damage amount per future occurrence by converting the average loss figures from a midpoint of 2008 dollars to 2014 dollars (\$1 in 2008 = \$1.09 in 2014...a cumulative rate of inflation of 9%). Zero or Unknown denotes there is no data available to determine the average occurrences, average loss or projected loss per event. | | | | | | |

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City of Moundville Mitigation Action Plan

The City of Moundville recognizes the importance of Mitigation Planning and will incorporate mitigation planning in planning documents as they are revised or initiated.

Mitigation Status

The current statuses of the mitigation actions are shown under benchmarking. **Table 5-18** shows the City of Moundville's mitigation actions for the 2015 plan update.

| Table 5-18: City of Moundville Mitigation Actions | |
|--|---|
| Mitigation Action COMPLETED | Upgrade communications equipment |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | New |
| Local Planning Mechanism | Hale County EMA, Town of Moundville |
| Time frame for Completion | 2019 |
| Estimated Cost | \$30,000 |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmarking | This mitigation action was completed using a FEMA firefighter grant |
| Mitigation Action | Construct/install community safe rooms to include generators |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | New |
| Local Planning Mechanism | Hale County EMA; City of Moundville |
| Time frame for Completion | 2015, 2016, 2017, 2018, 2019 |
| Estimated Cost | \$100,000 - \$500,000 each |
| Funding Sources | Local; Grants |
| Priority | High |
| Benchmarking | No action was taken during the past 5 years due to lack of funding. The city has a plan to construct/install one community safe room per year as funding becomes available. Action remains in this plan update. |
| Mitigation Action | Install security measures at critical facilities |
| Hazard(s) Addressed | Man-made |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, City of Moundville |
| Time frame for Completion | 2018 |
| Estimated Cost | \$130,000 |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmarking | No action was taken during the past 5 years due to lack of funding. Action remains in this plan update. |

| | |
|--|---|
| Mitigation Action | Enforce floodplain managements requirements, regulate construction or improvements in Special Flood Hazard Areas (SFHAs). |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | New and existing |
| Local Planning Mechanism | City of Moundville |
| Time frame for Completion | 2019 |
| Estimated Cost | |
| Funding Sources | Local |
| Priority | Low |
| Benchmarking | The Building Inspector continues to enforce floodplain management requirements. Action remains in this plan update. |
| Mitigation Action | Install emergency generators at critical facilities |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA; City of Moundville |
| Time frame for Completion | 2019 |
| Estimated Cost | \$5,000 - \$25,000 each |
| Funding Sources | Local; Grants |
| Priority | High |
| Benchmarking | A generator was installed at the well water system during the past 5 years. The City Hall and water system will be the next locations for generators to be installed. |
| Mitigation Action COMPLETED | Determine base flood elevations of the Black Warrior River, Elliott Creek, and Carthage Branch for use in ordinance |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | City of Moundville |
| Time frame for Completion | 2019 |
| Estimated Cost | |
| Funding Sources | Local |
| Priority | Low |
| Benchmarking | This mitigation action was completed by a CFM Group and City Engineer Group. |
| Mitigation Action | Install backflow prevention valves to keep sewer from entering homes during flood and high water events |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | City of Moundville |
| Time frame for Completion | 2018 |
| Estimated Cost | \$200 each |
| Funding Sources | Local, Grants |
| Priority | Medium |
| Benchmarking | No action was taken during the past 5 years due to lack of funding. Action remains in this plan update. |

| | |
|--------------------------------------|---|
| Mitigation Action | Improve drainage at Elliott Creek |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | City of Moundville |
| Time frame for Completion | 2020 |
| Estimated Cost | \$30,000 |
| Funding Sources | Local, Grants |
| Priority | Medium |
| Benchmarking | No action was taken during the past 5 years due to lack of funding. Action remains in this plan update. |

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Town of Newbern

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**Table 5-19: Town of Newbern
Risk and Vulnerability Overview**

| Natural Hazards | Hazard Identification | Mitigation Actions Prioritization | Prioritized Occurrence Threat | Vulnerability |
|--|------------------------------|--|--------------------------------------|----------------------|
| Thunderstorm | X | 1 | 7 | M |
| Lightning | X | 2 | 8 | M |
| Hail | X | 4 | 5 | M |
| Tornado | X | 3 | 7 | H |
| Flood | X | 7 | 3 | L |
| Drought/Extreme Heat | X | 6 | 2 | H |
| Winter Storm/Frost Freeze/ Heavy Snow/Ice Storm/Winter Weather/Extreme Cold | X | 5 | 4 | M |
| Hurricane/Tropical Storm/ Tropical Depression/High Wind/ Strong Wind | X | 8 | 3 | H |
| Sinkhole/Expansive Soil | X | 9 | 8 | M |
| Landslide | X | 11 | 8 | L |
| Earthquake | X | 11 | 6 | L |
| Wildfire | X | 10 | 1 | H |
| Dam/Levee Failure | X | 11 | 8 | L |
| Man-made Hazards | | | | |
| Hazardous Material Release | X | 1 | 1 | H |
| Arson/Incendiary Attack | X | 3 | 3 | M |
| Armed Attack | X | 4 | 4 | M |
| Conventional Bomb | X | 5 | 5 | L |
| Chemical Agent | X | 2 | 2 | M |
| Cyberterrorism | X | 8 | 8 | M |
| Agriterrorism | X | 9 | 9 | H |
| Biological Agent | X | 6 | 6 | M |
| Radiological Agent | X | 7 | 7 | L |
| Nuclear Bomb | X | 10 | 10 | L |

KEY:

Hazard Identification – Identified by local jurisdictions

Mitigation Actions Prioritization - Hazards are prioritized by jurisdictions based on past hazard experiences, vulnerabilities, and available mitigation actions with the hazard having highest priority of mitigation assigned number one.

Prioritized Occurrence Threat - Hazards are prioritized with the highest threat of occurrence assigned number one based on hazardous events that have occurred within each jurisdiction over the past ten years, with the exception of wildfires that were based on events that have occurred over the past three years. Some natural hazards have equal threats to a jurisdiction; therefore, their threat number will be the same. These prioritized threats may or may not be the same as the mitigation actions prioritization.

Vulnerability – Identified by local jurisdictions. NA – Not Applicable; not a hazard to the jurisdiction; L – Low Risk; little damage potential (damage to less than 5% of the jurisdiction); M – Medium Risk; moderate damage potential (damage to 5-10% of jurisdiction, infrequent occurrence); and H – High Risk; significant risk/major damage potential (damage to over 10% of jurisdiction, regular occurrence)

(Source: NOAA NCDC Storm Events Database; Alabama Forestry Commission; National Forestry Service; Alabama Geological Survey; Participating Jurisdictions; 2015)

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TABLE 5-20: TOWN OF NEWBERN HAZARD EVENTS**1 Thunderstorm Events – 01/01/2003 thru 12/31/2013 (4018 days)***(Source: NOAA NCDC Storm Events Database)*

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|----------------------------|--------------------|------------|-------------|-------------|-------------|-------------------|------------|------------|------------|------------|------------|
| COUNTYWIDE | HALE CO. | AL | 03/07/2005 | 17:58 | CST | Thunderstorm Wind | 53 kts. ES | 0 | 0 | 22.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 22.00K | 0.00K |

0 Lightning Events – 01/01/2003 thru 12/31/2013 (4018 days)*(Source: NOAA NCDC Storm Events Database)*

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

5 Hail Events – 01/01/2003 thru 12/31/2013 (4018 days)*(Source: NOAA NCDC Storm Events Database)*

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| NEWBERN | HALE CO. | AL | 04/25/2003 | 14:52 | CST | Hail | 0.75 in. | 0 | 0 | 0.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 04/22/2005 | 12:33 | CST | Hail | 1.75 in. | 0 | 0 | 4.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 02/13/2007 | 17:00 | CST-6 | Hail | 2.75 in. | 0 | 0 | 0.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 02/18/2009 | 16:31 | CST-6 | Hail | 1.75 in. | 0 | 0 | 0.00K | 0.00K |
| NEWBERN | HALE CO. | AL | 03/23/2013 | 18:34 | CST-6 | Hail | 1.75 in. | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 4.00K | 0.00K |

1 Tornado Event – 01/01/2003 thru 12/31/2013 (4018 days)*(Source: NOAA NCDC Storm Events Database)*

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| NEWBERN | HALE CO. | AL | 05/03/2009 | 12:32 | CST-6 | Tornado | EF1 | 0 | 0 | 75.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 75.00K | 0.00K |

9 Flood/Flash Flood Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 05/08/2003 | 08:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/18/2003 | 15:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/06/2005 | 00:00 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/12/2005 | 06:45 | CST | Flood | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/11/2005 | 00:00 | CST | Flood | | 0 | 0 | 3.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/07/2003 | 05:00 | CST | Flash Flood | | 0 | 0 | 12.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 04/01/2005 | 05:00 | CST | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| COUNTYWIDE | HALE CO. | AL | 07/10/2005 | 17:30 | CST | Flash Flood | | 0 | 0 | 8.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 23.00K | 0.00K |

22 Drought/Extreme Heat Events – 01/01/2003 thru 12/31/2013 (4018 days)
(Source: NOAA NCDC Storm Events Database)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|-----------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/18/2006 | 07:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2006 | 00:00 | CST | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/27/2007 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 07/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 10/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 12/01/2007 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 05/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/01/2008 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/05/2008 | 06:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/02/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/08/2011 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

**7 Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold
Events – 01/01/2003 thru 12/31/2013 (4018 days)**
(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------------|-------------|-----|------------|-------|-------|-------------------------|-----|-----|-----|-------|-------|
| HALE (ZONE) | HALE (ZONE) | AL | 04/07/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 04/08/2007 | 00:00 | CST-6 | Frost/freeze | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/09/2011 | 18:00 | CST-6 | Heavy Snow | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/09/2011 | 11:30 | CST-6 | Ice Storm | | 0 | 9 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/19/2008 | 06:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 02/12/2010 | 11:00 | CST-6 | Winter Weather | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 01/24/2003 | 00:00 | CST | Extreme Cold/wind Chill | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 9 | 0.00K | 0.00K |

**9 Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind Events –
01/01/2003 thru 12/31/2013 (4018 days)**
(Source: NOAA NCDC Storm Events Database)

| Location | County/Zone | St. | Date | Time | T.Z. | Type | Mag | Dth | Inj | PrD | CrD |
|-----------------------------|-------------|-----|------------|-------|-------|---------------------|------------|-----|-----|---------|--------|
| HALE (ZONE) | HALE (ZONE) | AL | 07/10/2005 | 15:00 | CST | Tropical Storm | | 0 | 0 | 375.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/29/2005 | 17:00 | CST | Tropical Storm | | 0 | 4 | 1.800M | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 08/23/2008 | 12:00 | CST-6 | Tropical Depression | | 0 | 0 | 0.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 11/09/2009 | 14:00 | CST-6 | Tropical Depression | | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/16/2004 | 06:00 | CST | High Wind | 77 kts. EG | 0 | 0 | 2.000M | 25.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 06/11/2005 | 14:00 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/09/2006 | 17:08 | CST | Strong Wind | 40 kts. EG | 0 | 0 | 1.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 03/28/2009 | 00:45 | CST-6 | Strong Wind | 35 kts. EG | 0 | 0 | 5.00K | 0.00K |
| HALE (ZONE) | HALE (ZONE) | AL | 09/05/2011 | 15:00 | CST-6 | Strong Wind | 39 kts. EG | 0 | 1 | 10.00K | 0.00K |
| Totals: | | | | | | | | 0 | 5 | 4.197M | 0.00K |

0 Sinkhole Events – 01/01/2003 thru 12/31/2013 (4018 days)

No sinkhole events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

0 Landslide Events – 01/01/2003 thru 12/31/2013 (4018 days)

No landslide events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey

2 Earthquake Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: <http://www.city-data.com>)

| <u>Location</u> | <u>County/Zone</u> | <u>St.</u> | <u>Date</u> | <u>Time</u> | <u>T.Z.</u> | <u>Type</u> | <u>Mag</u> | <u>Dth</u> | <u>Inj</u> | <u>PrD</u> | <u>CrD</u> |
|---|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| 19.2 miles from the county center | HALE (ZONE) | AL | 11/7/2004 | 11:20 | CST | Earthquake | 4.4 | 0 | 0 | 0.00K | 0.00K |
| 49 miles from the county center | HALE (ZONE) | AL | 08/19/2004 | 23:51 | CST | Earthquake | 3.6 | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | | 0.00K | 0.00K |

No earthquake events were reported during 01/01/2003 thru 12/31/2013 by the NOAA NCDC Storm Events Database/U.S. Geological Survey; Alabama Geological Survey/USGS Database; www.homefacts.com/earthquakes/Alabama.html

110 Wildfire Events – 1/1/2010 thru 12/31/2013

(Source: Alabama Forestry Commission)

| County | Total # of Fires 2010-2013 | Average # of Fires Per Year | Total Acres Burned 2010-2013 | Average Acres Burned Per Year | Average Fire Size in Acres |
|---------------|---------------------------------------|--|---|--|---------------------------------------|
| Hale | 110 | 37 | 570.52 | 190 | 5 |

0 Dam/Levee Failure Events – 01/01/2003 thru 12/31/2013 (4018 days)

(Source: NOAA NCDC Storm Events Database/Local Input)

No dam/levee failure events occurred or were reported during 01/01/2003 thru 12/31/2013.

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**Table 5-21: Town of Newbern
Hazard Probability Assessment**

| Natural Hazards | Number of Historical Occurrences | Probability of Future Annual Occurrence | Extent | Area Affected |
|---|---|--|---------------|----------------------|
| Thunderstorm | 1 | 10% | 5-10% | Town wide |
| Lightning | 0 | Unknown | 5-10% | Town wide |
| Hail | 5 | 50% | 5-10% | Town wide |
| Tornado | 1 | 10% | >10% | Town wide |
| Flood/Flash Flood | 9 | 90% | 5% | Town wide |
| Drought/Extreme Heat | 22 | >100% | 5-10% | Town wide |
| Winter Storm/Frost Freeze/Heavy Snow/Ice Storm/Winter Weather/Extreme Cold | 7 | 70% | 5-10% | Town wide |
| Hurricane/Tropical Storm/Tropical Depression/High Wind/Strong Wind | 9 | 90% | >10% | Town wide |
| Sinkhole/Expansive Soil | 0 | Unknown | 5-10% | Town wide |
| Landslide | 0 | Unknown | <5% | Town wide |
| Earthquake | 2 | 20% | <5% | Town wide |
| Wildfire (2010-2013 – 3 year study period) | 110 | >100% | 5-10% | Town wide |
| Dam/Levee Failure | 0 | Unknown | >10% | Town wide |
| Man-made Hazards | | | | |
| Hazardous Material Release | 0 | Unknown | >10% | Town wide |
| Arson/Incendiary Attack | 0 | Unknown | 5-10% | Town wide |
| Armed Attack | 0 | Unknown | 5-10% | Town wide |
| Conventional Bomb | 0 | Unknown | >5% | Town wide |
| Chemical Agent | 0 | Unknown | 5-10% | Town wide |
| Cyberterrorism | 0 | Unknown | 5-10% | Town wide |
| Agriterrorism | 0 | Unknown | >10% | Town wide |
| Biological Agent | 0 | Unknown | 5-10% | Town wide |
| Radiological Agent | 0 | Unknown | >5% | Town wide |
| Nuclear Bomb | 0 | Unknown | >5% | Town wide |

Source: NOAA NCDC; U. S. Inflation Calculator/Consumer Price Index; USGS; Local Input; USDA Census of Agriculture; Alabama Forestry Commission; and National Forestry Service; Participating Jurisdictions; 2015

Methodology: Number of historical occurrences is those reported by NOAA NCDC during the 10 year study period, with the exception of wildfire that is a 3 year study period. Probability is expressed by dividing the total number of occurrences by the study period in years. Extent is expressed as the percentage assigned by the jurisdictions' ranking in the vulnerability summary (Table 4-12). Zero or Unknown denotes there is no data available to determine the probability, extent, or affected area.

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| TABLE 5-22: Town of Newbern Critical Facilities | | | |
|---|--------------------------|------------------|--------------------|
| Facility | Location | Use | Value |
| Governmental Services | | | |
| Newbern Town Hall | Hwy 61 | Local Government | \$250,000 |
| Public Works | | | |
| Telephone Substation | Hwy 61 | Communications | \$3,000,000 |
| Electrical Substation | Hwy 61 and CR 16 | Electric | |
| Outdoor Siren | | Weather Warning | \$15,000 |
| Education | | | |
| Sunshine High School | 3125 Co. Rd. 10, Newbern | Education | \$4,414,800 |
| Miscellaneous | | | |
| | | | |
| <i>Source: Local Jurisdiction; HAZUS-MH 2.1; 2015</i> | | Total | \$7,679,800 |

**Table 5-23: Town of Newbern
Estimated Loss Projections from Specified Hazards**

| Natural Hazards | Average Occurrences (per year) | Total Deaths | Total Injuries | Average Death and Injury Loss (per event) | Average Crop and Property Loss (per event) | Projected Loss (per event) |
|--|---|---------------------|-----------------------|--|---|---------------------------------------|
| Thunderstorm | 0.1 | 0 | 0 | Unknown | \$22,000 | \$23,980 |
| Lightning | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Hail | 0.5 | 0 | 0 | Unknown | \$800 | \$872 |
| Tornado | 0.1 | 0 | 0 | Unknown | \$75,000 | \$81,750 |
| Flood/Flash Flood | 0.9 | 0 | 0 | Unknown | \$2,556 | \$2,786 |
| Drought/Extreme Heat | 2.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Winter Storm/ Frost Freeze/ Heavy Snow/ Ice Storm/Winter Weather/Extreme Cold | 0.7 | 0 | 9 | \$29,796 | Unknown | \$32,478 |
| Hurricane/Tropical Storm/Tropical Depression/High Wind/ Strong Wind | 0.9 | 0 | 5 | \$12,875 | \$466,333 | \$522,337 |
| Sinkhole/Expansive Soil | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Landslide | 0 | 0 | 0 | Unknown | Unknown | Unknown |
| Earthquake | 0.2 | 0 | 0 | Unknown | Unknown | Unknown |
| Wildfire (3 year study period) | 37 | 0 | 0 | Unknown | \$25,176 | \$27,442 |
| Dam/Levee Failure | 0 | 0 | 0 | Unknown | Unknown | Unknown |

Sources: NOAA NCDC; U. S. Inflation Calculator/Consumer Price Index; Local Input; USDA Census of Agriculture; Alabama Forestry Commission and National Forestry Service; Alabama Geological Survey; 2015

Methodology: Average occurrences were expressed annually by dividing the total number of occurrences by the ten-year period. Deaths and injuries were taken from the hazard event data. Average losses were calculated by dividing the total amount of all damages by the total number of occurrences during the ten-year period with the exception of wildfire. Projected loss expresses an estimated damage amount per future occurrence by converting the average loss figures from a midpoint of 2008 dollars to 2014 dollars (\$1 in 2008 = \$1.09 in 2014...a cumulative rate of inflation of 9%). Zero or Unknown denotes there is no data available to determine the average occurrences, average loss or projected loss per event.

Town of Newbern Mitigation Action Plan

The Town of Newbern recognizes the importance of Mitigation Planning and will incorporate Mitigation planning in planning documents as they are revised or initiated.

Mitigation Status

The current statuses of the mitigation actions are shown under benchmarking. **Table 5-24** shows the Town of Newbern's mitigation actions for the 2015 plan update.

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Table 5-24: Town of Newbern Mitigation Actions

| | |
|--------------------------------------|--|
| Mitigation Action | Upgrade and relocate weather warning siren |
| Hazard(s) Addressed | Thunderstorms, Tornados, Tropical Storms, Tropical Depressions, High Winds, Strong Winds |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, Town of Newbern |
| Time frame for Completion | 2018 |
| Estimated Cost | \$20,000 |
| Funding Sources | Local, Grants |
| Priority | Low |
| Benchmark | |

| | |
|--|---|
| Mitigation Actions NEW | Construct/install community safe rooms to include generators |
| Hazard(s) Addressed | Thunderstorm, Tornado |
| Applies to new/existing asset | New and Existing |
| Local Planning Mechanism | Hale County EMA; Town of Newbern |
| Time frame for Completion | 2019 |
| Estimated Cost | \$100,000 each |
| Funding Sources | Local; Grants |
| Priority | Medium |
| Benchmark | NEW - This is a new mitigation action; therefore, there is no benchmark. |
| Mitigation Action | Participate in the NFIP |
| Hazard(s) Addressed | Flood |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA; Town of Newbern |
| Time frame for Completion | 2016 |
| Estimated Cost | |
| Funding Sources | Local; Grants |
| Priority | Medium |
| Benchmark | The Town of Newbern did not become a participating member of the NFIP during the past 5 years as special flood hazard areas were determined in 2010; however this mitigation action remains in this plan update for future participation. |
| Mitigation Action NEW | Install emergency generators at critical facilities |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | New and Existing |
| Local Planning Mechanism | Hale County EMA, Town of Newbern |
| Time frame for Completion | 2018 |
| Estimated Cost | \$2,500 - \$25,000 each |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmark | NEW - This is a new mitigation action; therefore, there is no benchmark. |
| Mitigation Action | Install security measures at critical facilities |
| Hazard(s) Addressed | Man-made |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County EMA, Town of Newbern |
| Time frame for Completion | 2018 |
| Estimated Cost | \$25,000 |
| Funding Sources | Local, Grants |
| Priority | High |
| Benchmark | No action was taken during the past 5 years due to lack of funding. Action remains in this plan update. |

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Hale County Fire Association

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Hale County Fire Association Action Plan

The Hale County Fire Association recognizes the importance of Mitigation Planning and will incorporate mitigation planning in planning documents as they are revised or initiated.

Mitigation Status

Table 5-31 shows the Hale County Fire Association's mitigation actions. Prior to this plan revision, no actions were listed for this organization; therefore, no benchmarking can be made.

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| Table 5-25: Hale County Fire Association Mitigation Actions | |
|--|--|
| Mitigation Action NEW | Construct/Install storm retrofits to fire buildings |
| Hazard(s) Addressed | Thunderstorms, Tornados, Hurricanes |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County Fire Association |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$250,000 each |
| Funding Sources | Grants, local |
| Priority | Low |
| Benchmark | NEW ACTION |
| Mitigation Action NEW | Construct/install community safe rooms to fire buildings to include generators |
| Hazard(s) Addressed | Thunderstorm, Tornado |
| Applies to new/existing asset | New and Existing |
| Local Planning Mechanism | Hale County Fire Association |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$600,000 |
| Funding Sources | Local; Grants |
| Priority | High |
| Benchmark | NEW ACTION |
| Mitigation Action NEW | Construct/install individual storm shelters to fire buildings |
| Hazard(s) Addressed | Thunderstorm, Tornado |
| Applies to new/existing asset | New and Existing |
| Local Planning Mechanism | Hale County Fire Association |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$5,000 each |
| Funding Sources | Local; Grants |
| Priority | Low |
| Benchmark | NEW ACTION |
| Mitigation Action NEW | Provide generators for fire buildings |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County Fire Association |
| Time frame for Completion | 6 months from funding availability |
| Estimated Cost | \$200,000 |
| Funding Sources | Grants, local |
| Priority | Medium |
| Benchmark | NEW ACTION |

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Hale County Board of Education

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Hale County Board of Education Action Plan

The Hale County Board of Education recognizes the importance of Mitigation Planning and will incorporate mitigation planning in planning documents as they are revised or initiated.

Mitigation Status

Table 5-32 shows the Hale County Board of Education's mitigation actions. Prior to this plan revision, no actions were listed for this organization; therefore, no benchmarking can be made.

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| Table 5-26: Hale County BOE Mitigation Actions | |
|---|---|
| Mitigation Action | Construct storm retrofits to educational buildings |
| Hazard(s) Addressed | Thunderstorms, Tornados, Hurricanes |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County BOE |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$400,000 each |
| Funding Sources | Grants, local |
| Priority | Low |
| Benchmark | NEW ACTION |
| Mitigation Action | Construct/install community safe rooms to educational buildings to include generators |
| Hazard(s) Addressed | Thunderstorm, Tornado |
| Applies to new/existing asset | New and Existing |
| Local Planning Mechanism | Hale County BOE |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$100,000 each |
| Funding Sources | Local; Grants |
| Priority | High |
| Benchmark | NEW ACTION |
| Mitigation Action | Construct/install individual storm shelters to educational buildings |
| Hazard(s) Addressed | Thunderstorm, Tornado |
| Applies to new/existing asset | New and Existing |
| Local Planning Mechanism | Hale County BOE |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$5,000 each |
| Funding Sources | Local; Grants |
| Priority | Low |
| Benchmark | NEW ACTION |
| Mitigation Action | Provide generators for educational buildings |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County BOE |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$25,000 ea |
| Funding Sources | Grants, local |
| Priority | High |
| Benchmark | NEW ACTION |

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Hale County Hospital

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Hale County Hospital Action Plan

The Hale County Hospital recognizes the importance of Mitigation Planning and will incorporate mitigation planning in planning documents as they are revised or initiated.

Mitigation Status

Table 5-33 shows the Hale County Hospital’s mitigation actions. Prior to this plan revision, no actions were listed for this organization; therefore, no benchmarking can be made.

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Table 5-27: Hale County Hospital Mitigation Actions

| | |
|--------------------------------------|--|
| Mitigation Action NEW | Construct storm retrofits to medical buildings |
| Hazard(s) Addressed | Thunderstorms, Tornados, Hurricanes |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County Hospital |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$400,000 each |
| Funding Sources | HMGP, ADECA, Local |
| Priority | Low |
| Benchmark | NEW ACTION ITEM |
| Mitigation Action NEW | Install security measures at Pickens County Medical Center |
| Hazard(s) Addressed | Manmade Hazards |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County Hospital |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$500,000 |
| Funding Sources | HMGP, Local |
| Priority | Medium |
| Benchmark | NEW ACTION ITEM |
| Mitigation Action NEW | Provide generators for medical buildings |
| Hazard(s) Addressed | All |
| Applies to new/existing asset | Existing |
| Local Planning Mechanism | Hale County Hospital |
| Time frame for Completion | One year from funding availability |
| Estimated Cost | \$25,000 each |
| Funding Sources | HMGP, ADECA, Local |
| Priority | High |
| Benchmark | NEW ACTION ITEM |

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Section Six: Mitigation Plan Maintenance

The plan may be reviewed at any time at the request of any local government, or at the discretion of the Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee. Local governments may submit a formal letter to the Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee requesting a review of the plan. The public may also request review of the plan by submitting a formal letter to the Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee requesting a review of the plan. In the future, the County EMA will strive to get jurisdictions with websites to post the Hazard Mitigation Plan and provide a way for the public to comment online. Citizen Input on Hazard Mitigation Planning forms will be placed in public places, to include on the courthouse bulletin board, in the local government buildings, and in the library to provide the public a chance to provide feedback during the plan's implementation, monitoring, and evaluation process.

The Hazard Mitigation Planning Committee may re-evaluate the plan after a disaster has occurred to make sure that mitigation of the hazard was addressed properly. At a minimum, the Hazard Mitigation Planning Committee will monitor, evaluate, and amend this plan annually. During publicized meetings of various kinds (mutual aid, LEPC, etc.), public participation, as well as participation from neighboring counties, is encouraged to allow the public an opportunity to participate in the process. In addition, the Hazard Mitigation Planning Committee will continually review a variety of resources and examine conditions, which may affect mitigation activities for natural and technological hazards. The committee will review existing plans, policies, maps, and other documentation such as, but not limited to:

- NFIP flood panels
- Post-disaster redevelopment models
- Critical facilities lists and maps
- Existing land-use maps
- Future land-use maps
- Current zoning maps
- Land development codes
- Governing body codes and resolutions
- Comprehensive plans, including drainage studies
- Emergency Operations Plan

- Standard Operating Guidelines
- Various other plans and/or studies related to hazard mitigation

The EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee will serve as the point of contact for all amendments to the plan and will coordinate all additions or deletions of actions to the plan, as needed. The EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee will be responsible for informing the local governing bodies of any amendments made to the plan. Any local government seeking to add an action to the plan will be responsible for providing support for the action in the form of a resolution if, and only if, the funding source(s) requires so. The entire plan will be updated on a five-year planning cycle. The EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee will begin the update process 18-24 months prior to the plan's expiration date in order to allow adequate time for the planning update process to be completed.

During the past five years, the Hale County EMA kept no records of the annual plan reviews; therefore, regular plan monitoring will be conducted differently in the next five years. Regular plan monitoring will be achieved through the County EMA's efforts to track mitigation activities. The Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee is the responsible person for the review of the plan to include monitoring, evaluating, and updating of the plan, reconvening the committee only if additional information is available or the Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee requires assistance. The annual review of the plan will take place in June of each year. Although the entire plan's progress will be monitored, evaluated, and updated on a continuous basis throughout the five-year timeframe, the annual review will begin by the Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee emailing a survey form to the HMPC members asking them for their input and giving them a two-week deadline on returning the information to the Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee. Following the two-week deadline, the Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee will consolidate the survey forms and act upon the findings as needed and in the methods described below. Documentation will be kept from each review, to include sign-in sheets, agendas, public notices, emails, survey forms, etc. if applicable.

The County EMA will conduct an annual evaluation of the plan, reconvening the committee only if additional information is available or the Hale County EMA

Director/Chairman of the Hale County Hazard Mitigation Planning Committee requires assistance. The Hale County EMA Director/Chairman of the Hale County Hazard Mitigation Planning Committee will document the annual evaluation and note the findings. The evaluation will consider several basic factors including:

1. Changes in the level of risk to the county and its citizens
2. Changes in laws, policies, or regulations at the local or state level
3. Changes in state or local agencies or their procedures that will affect how mitigation programs or funds are administered
4. Significant changes in funding sources or capabilities
5. Changes in the composition of the Hazard Mitigation Committee
6. Progress on mitigation actions (including project closeouts) and new mitigation actions that the county is considering
7. Major changes to the multi-jurisdictional hazard mitigation plan

Additionally, the County EMA will contact local agencies (and other individuals and organizations as appropriate) to determine if updates have been made to certain elements of the local plans as part of the annual review process. The purpose of this effort is to ensure that local information about risk, goals, projects, and mitigation strategies included in the plan remains current.

In the event modifications to the plan are warranted as a result of the annual review or other conditions, the HMPC will oversee and approve all revisions to the plan. Conditions which might warrant revisions to this plan would include, but not be limited to, special opportunities for funding, a response to a natural disaster, and changes in jurisdictions' capabilities to implement the plan. Before any revisions are submitted to the jurisdictions for adoption, a notice may be placed in the local newspaper or posted in public facilities, allowing an opportunity for the public to review the proposed amendments at the EMA, submit written comments, and/or present comments at a public meeting. The HMPC will then submit all revisions for adoption by jurisdictions affected by the changes. A copy of the plan revisions will be submitted to all holders of the original plan in a timely manner.

Incorporation into Existing Planning Mechanisms

The Hale County Hazard Mitigation Plan is a stand-alone plan; however, will be placed alongside the current Hale County Emergency Operations Plan that is administered by the Hale County Emergency Management Agency. The Hale County Hazard Mitigation Plan update has also been incorporated into the regional Comprehensive Economic Development Strategy (CEDS).

Incorporation of the hazard mitigation plan will vary for each jurisdiction based on existing planning methods and processes. Jurisdictions with planning commissions and respective zoning ordinances and building codes will incorporate mitigation plan elements as appropriate into their review of new developments.

Many jurisdictions have no zoning or existing plans of any type other than this mitigation plan (see **Table 1-1**) and do not have the resources or funding to prepare them. In these cases, where applicable, the mitigation plan elements will be incorporated into local development decisions by the appropriate local coordinating body in order to determine funding, prioritization, and review of new development activities. At such time as the jurisdiction does adopt zoning and building codes they will reflect the goals and objectives set forth in this plan. Further, any jurisdiction preparing or updating a comprehensive plan will reflect their hazard mitigation goals and objectives in their plan. These updates will occur as budget and time allow.

The jurisdictions are funded through their local budgets and utilize grants that allow them to expand on and improve existing policies and programs. The EMA distributes educational material and reaches out to the citizens and businesses in the county. **Table 1-1** provides a list of plans, policies, and ordinances available to each jurisdiction. These plans, policies, and ordinances, along with an engineer, planners, GIS staff, a building inspector, emergency managers, and grant writers help to expand on and improve the jurisdictions' capabilities.

APPENDIX I

Adopting Resolutions

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APPROVAL & IMPLEMENTATION

The purpose of hazard mitigation is to implement action that eliminate the risk from hazards, or reduce the severity of the effects of hazards on people and property. Mitigation actions are both short-term and long-term activities that reduce the cause or occurrence of hazards; reduce exposure to hazards; or reduce effects of hazards through various means to include preparedness, response and recovery measures.

This plan update applies to all local agencies, boards, commissions, and departments assigned mitigation responsibilities, and to others as designated by the Hale County Commission or Director of the Hale County Emergency Management Agency.

The Hale County Hazard Mitigation Plan Update was prepared in compliance with Public Law 106-390, *Disaster Mitigation Act of 2000*, as amended. This plan update implements hazard mitigation measures intended to eliminate or reduce the effects of future disasters throughout Hale County, and was developed in a joint and cooperative venture by members of the Hale County Hazard Mitigation Planning.

Hale County will comply with all applicable state and federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 Code of Federal Regulations (CFR) 13.11c. Hale County will amend its plan whenever necessary to reflect changes in local/state and/or federal laws and statutes as required in 44 CFR, 13.11d. At a minimum, the Hale County EMA will review and if necessary, update the plan every five years from the date of approval in accordance with 44 CFR, 201.6 (5) (d) (3) in order to continue program eligibility.

As the Director of the Hale County Emergency Management Agency, I hereby adopt this plan update in accordance to the powers delegated to me and accept this plan update for implementation in order to protect the lives and property of the citizens of Hale County, Alabama.

Date

Russell Weeden, Director

Hale County Emergency Management Agency

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County of Hale

2015 Hale County Hazard Mitigation Plan Update

Resolution of Adoption

WHEREAS, the Hale County Hazard Mitigation Plan has been updated in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the County of Hale participated in the updating of a multi-jurisdictional plan, Hale County Hazard Mitigation Plan; and

WHEREAS, the County of Hale is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

WHEREAS, the County of Hale has reviewed the plan and affirms that the plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the County Commission that the County of Hale adopts the 2015 Hale County Hazard Mitigation Plan Update, and resolves to execute the actions in the plan.

ADOPTED, this _____ day of _____, 2015 at the meeting of the County Commission.

Chairman, Hale County Commission

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Town of Akron

2015 Hale County Hazard Mitigation Plan Update

Resolution of Adoption

WHEREAS, the Hale County Hazard Mitigation Plan has been updated in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the Town of Akron participated in the updating of a multi-jurisdictional plan, Hale County Hazard Mitigation Plan; and

WHEREAS, the Town of Akron is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

WHEREAS, the Town of Akron has reviewed the plan and affirms that the plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the Town Council that the Town of Akron adopts the 2015 Hale County Hazard Mitigation Plan Update, and resolves to execute the actions in the plan.

ADOPTED, this _____ day of _____, 2015 at the meeting of the Town Council.

President, Akron Town Council

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City of Greensboro

2015 Hale County Hazard Mitigation Plan Update

Resolution of Adoption

WHEREAS, the Hale County Hazard Mitigation Plan has been updated in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the City of Greensboro participated in the updating of a multi-jurisdictional plan, Hale County Hazard Mitigation Plan; and

WHEREAS, the City of Greensboro is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

WHEREAS, the City of Greensboro has reviewed the plan and affirms that the plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the City Council that the City of Greensboro adopts the 2015 Hale County Hazard Mitigation Plan Update, and resolves to execute the actions in the plan.

ADOPTED, this _____ day of _____, 2015 at the meeting of the City Council.

President, Greensboro City Council

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City of Moundville

2015 Hale County Hazard Mitigation Plan Update

Resolution of Adoption

WHEREAS, the Hale County Hazard Mitigation Plan has been updated in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the City of Moundville participated in the updating of a multi-jurisdictional plan, Hale County Hazard Mitigation Plan; and

WHEREAS, the City of Moundville is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

WHEREAS, the City of Moundville has reviewed the plan and affirms that the plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the City Council that the City of Moundville adopts the 2015 Hale County Hazard Mitigation Plan Update, and resolves to execute the actions in the plan.

ADOPTED, this _____ day of _____, 2015 at the meeting of the City Council.

President, Moundville City Council

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Town of Newbern

2015 Hale County Hazard Mitigation Plan Update

Resolution of Adoption

WHEREAS, the Hale County Hazard Mitigation Plan has been updated in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the Town of Newbern participated in the updating of a multi-jurisdictional plan, Hale County Hazard Mitigation Plan; and

WHEREAS, the Town of Newbern is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

WHEREAS, the Town of Newbern has reviewed the plan and affirms that the plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the Town Council that the Town of Newbern adopts the 2015 Hale County Hazard Mitigation Plan Update, and resolves to execute the actions in the plan.

ADOPTED, this _____ day of _____, 2015 at the meeting of the Town Council.

President, Newbern Town Council

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Hale County Board of Education

2015 Hale County Hazard Mitigation Plan Update

Resolution of Adoption

WHEREAS, the Hale County Hazard Mitigation Plan has been updated in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the Hale County Board of Education participated in the updating of a multi-jurisdictional plan, Hale County Hazard Mitigation Plan; and

WHEREAS, the Hale County Board of Education is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

WHEREAS, the Hale County Board of Education has reviewed the plan and affirms that the plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the Board that the Hale County Board of Education adopts the 2015 Hale County Hazard Mitigation Plan Update, and resolves to execute the actions in the plan.

ADOPTED, this _____ day of _____, 2015 at the meeting of the Hale County Board of Education.

Superintendent, Hale County Board of Education

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Hale County Fire Association

2015 Hale County Hazard Mitigation Plan Update

Resolution of Adoption

WHEREAS, the Hale County Hazard Mitigation Plan has been updated in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the Hale County Fire Association participated in the updating of a multi-jurisdictional plan, Hale County Hazard Mitigation Plan; and

WHEREAS, the Hale County Fire Association is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

WHEREAS, the Hale County Fire Association has reviewed the plan and affirms that the plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the President that the Hale County Fire Association adopts the 2015 Hale County Hazard Mitigation Plan Update, and resolves to execute the actions in the plan.

ADOPTED, this _____ day of _____, 2015 at the meeting of the Hale County Fire Association.

President, Hale County Fire Association

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Hale County Hospital
2015 Hale County Hazard Mitigation Plan Update
Resolution of Adoption

WHEREAS, the Hale County Hazard Mitigation Plan has been updated in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the Hale County Hospital participated in the updating of a multi-jurisdictional plan, Hale County Hazard Mitigation Plan; and

WHEREAS, the Hale County Hospital is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

WHEREAS, the Hale County Hospital has reviewed the plan and affirms that the plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the Administrator that the Hale County Hospital adopts the 2015 Hale County Hazard Mitigation Plan Update, and resolves to execute the actions in the plan.

ADOPTED, this _____ day of _____, 2015.

Administrator, Hale County Hospital