

Hazard Mitigation Plan

Pulaski County, Arkansas



Approved January 19, 2021

Developed by:

Central Arkansas Planning
and Development District



INCLUDING:

Pulaski County –
Unincorporated

Cammack Village

Jacksonville

Little Rock

Maumelle

North Little Rock

Sherwood

Wrightsville

Pul Co Special SD

Little Rock SD

Jacksonville/North
Pulaski SD

School for the Blind

School for the Deaf

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Sample Adoption Resolution

County, Participating Jurisdictions and School Districts

RESOLUTION

A RESOLUTION ADOPTING THE PULASKI COUNTY HAZARD MITIGATION PLAN FOR THE CITY/COUNTY/SCHOOL DISTRICT PULASKI COUNTY ARKANSAS.

WHEREAS, certain areas of Pulaski County are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, the City/County/School District desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting the requirements of Pulaski County, with the assistance of Central Arkansas Planning and Development District, has initiated development of County-wide multi-jurisdiction Hazard Mitigation Plan the County and all jurisdictions in the County, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY THE City/Quorum/Board of City/County/School District.

That the City/County/School District, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards (date) and

Appoints the Emergency Management Director to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this ____ day of ____, 2020

APPROVED:

Mayor/Judge/Superintendent

ATTEST:

Secretary

A RESOLUTION ADOPTING THE PULASKI COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR THE CITY OF NORTH LITTLE ROCK, ARKANSAS; AND FOR OTHER PURPOSES.

WHEREAS, certain areas of Pulaski County are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties within the area; and

WHEREAS, the City of North Little Rock ("the City") desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Pulaski County, with the assistance of Central Arkansas Planning and Development District, has initiated development of a County-wide, multi-jurisdictional Hazard Mitigation Plan for the County and all jurisdiction in the County, specifically the cities and school districts.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF NORTH LITTLE ROCK, ARKANSAS:

SECTION 1: That the City of North Little Rock adopts those portions of the Hazard Mitigation Plan for Pulaski County, Arkansas ("the Plan") relating to and protecting its jurisdictional area against all hazards (January 19, 2021).

SECTION 2: That the Emergency Management Director is hereby appointed and directed to assure that the Plan be reviewed at least annually and that any needed adjustment to the Plan be developed and presented to the governing board for consideration; and

SECTION 3: That the City agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

SECTION 4: That this Resolution shall be in full force and effect from and after its passage and approval.

PASSED:

2-8-2021

APPROVED:

Terry C. Hartwick
Mayor Terry C. Hartwick

SPONSOR:

Terry C. Hartwick
Mayor Terry C. Hartwick *by AF*

ATTEST:

Diane Whitbey
Diane Whitbey, City Clerk

APPROVED AS TO FORM:

Amy Beckman Fields
Amy Beckman Fields, City Attorney

PREPARED BY THE OFFICE OF THE CITY ATTORNEY/kt

| | | | | |
|--|-----------------------|------|-------|------|
| FILED | <u>9:15</u> | A.M. | _____ | P.M. |
| By | <u>Amy Fields, CA</u> | | | |
| DATE | <u>2-2-21</u> | | | |
| Diane Whitbey, City Clerk and Collector North Little Rock, Arkansas | | | | |
| RECEIVED BY | <u>[Signature]</u> | | | |

**A RESOLUTION ADOPTING THE PULASKI COUNTY MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN FOR JACKSONVILLE NORTH PULASKI SCHOOL
DISTRICT, PULASKI COUNTY, ARKANSAS.**

WHEREAS, certain areas of Pulaski County are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, the School District desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Pulaski County, with the assistance of Central Arkansas Planning and Development District, has initiated development of County-wide, multi-jurisdiction Hazard Mitigation Plan the County and all jurisdictions in the County, specifically the cities and school districts;

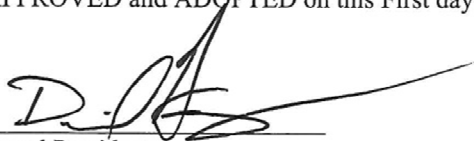
NOW, THEREFORE, BE IT RESOLVED BY THE SCHOOL BOARD

That the **Jacksonville North Pulaski School District** adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards (January 19, 2021) and

Appoints the Emergency Management Director to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this First day of February, 2021


Board President

ATTEST:


Board Secretary

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1 **Section 4. Repealer.** All laws, ordinances, resolutions, or parts of the same, that are inconsistent with
2 the provisions of this resolution, are hereby repealed to the extent of such inconsistency.

3 **ADOPTED: April 6, 2021**

4 **ATTEST:**

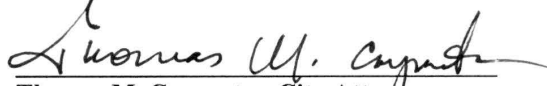
5 
6 _____
7 Susan Langley, City Clerk

APPROVED:



Frank Scott, Jr., Mayor

8 **APPROVED AS TO LEGAL FORM:**

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10 _____
11 Thomas M. Carpenter, City Attorney

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RESOLUTION #

A RESOLUTION ADOPTING THE PULASKI COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR LITTLE ROCK SCHOOL DISTRICT, PULASKI COUNTY ARKANSAS.

WHEREAS, certain areas of Pulaski County are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, the School District desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Pulaski County, with the assistance of Central Arkansas Planning and Development District, has initiated development of County-wide, multi-jurisdiction Hazard Mitigation Plan the County and all jurisdictions in the County, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY THE SCHOOL BOARD

That the **Little Rock School District**, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards (February 25, 2021) and

Appoints the Emergency Management Director to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

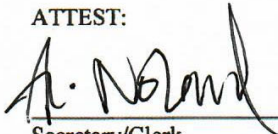
APPROVED and ADOPTED on this 25th day of February, 2021

APPROVED:



Superintendent

ATTEST:



Secretary/Clerk

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MAUMELLE,
COUNTY OF PULASKI, STATE OF ARKANSAS,
A RESOLUTION TO BE ENTITLED:**

RESOLUTION NO. 2021-5

**A RESOLUTION ADOPTING THE PULASKI COUNTY MULTI-JURISDICTIONAL HAZARD
MITIGATION PLAN FOR THE CITY OF MAUMELLE, PULASKI COUNTY ARKANSAS AND
FOR OTHER PURPOSES**

WHEREAS, certain areas of Pulaski County, Arkansas are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to properties within the area; and

WHEREAS, The City of Maumelle and Pulaski County, Arkansas desire to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA- approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Pulaski County, with the assistance of Central Arkansas Planning and Development District, has initiated development of a county wide, multi-jurisdiction Hazard Mitigation Plan for the County and all jurisdictions in the County, specifically the cities and school districts;

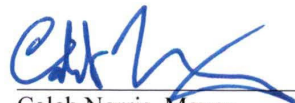
WHEREAS, The City of Maumelle wishes to adopt said Plan.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF
MAUMELLE:**

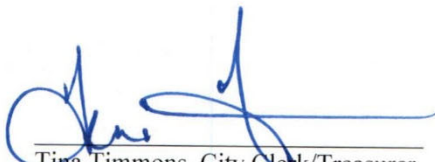
Section 1. That the City of Maumelle hereby adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards, (January 19, 2021); and

Section 2. Appoints the Maumelle Fire Chief as the Emergency Management Director to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.


APPROVED and ADOPTED on this 1st day of March, 2021.


Caleb Norris, Mayor

ATTEST:


Tina Timmons, City Clerk/Treasurer

APPROVED AS TO FORM:


Melissa Krebs, City Attorney

Sponsor: Mayor Norris

| | Mosley | Saunders | Mazzoni | Gardner | Williams | Tierney | Shinn | Holt |
|-----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Yes | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| No | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Resolution No. 21-R-01

FILED 02/25/21 10:58:56
Tampi Hollingsworth
Pulaski County Circuit Clerk
Item: 21-I-07

Pulaski County Quorum Court
State of Arkansas
February 2021

By: Justice Stowers

A RESOLUTION

BE IT RESOLVED BY THE QUORUM COURT OF THE COUNTY OF PULASKI,
STATE OF ARKANSAS, A RESOLUTION TO BE ENTITLED:

**A RESOLUTION OF THE QUORUM COURT OF PULASKI COUNTY ADOPTING THE
PULASKI COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR
PULASKI COUNTY, ARKANSAS.**

WHEREAS, certain areas of Pulaski County are subject to periodic flooding and other natural
and man-caused hazards with the potential to cause damages to people's properties
with the area; and

WHEREAS, the County desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency
Management Agency (FEMA) required that local jurisdictions have in place a
FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain
future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Pulaski County, with the
assistance of Central Arkansas Planning and Development District, has initiated
development of a county-wide, multi-jurisdictional Hazard Plan for the County and
all jurisdictions in the County, specifically the cities and school districts.

**NOW THEREFORE, BE IT RESOLVED BY THE QUORUM COURT OF THE
COUNTY OF PULASKI, STATE OF ARKANSAS, THAT:**

- 1.) Pulaski County, Arkansas adopts those portions of the Plan relating to and
protecting its jurisdictional area against all hazards (January 21, 2021).
- 2.) The Pulaski County Quorum Court appoints the Director of Emergency
Management to assure that the Hazard Mitigation Plan be reviewed at least
annually and that any needed adjustment to the Hazard Mitigation Plan be
developed and presented to the governing board for consideration.

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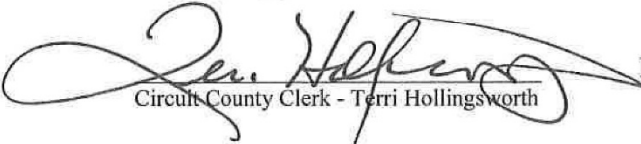
3.) Pulaski County, Arkansas agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED:


County Judge - Barry Hyde

DATE: 2-24-21

ATTEST:


Circuit County Clerk - Terri Hollingsworth

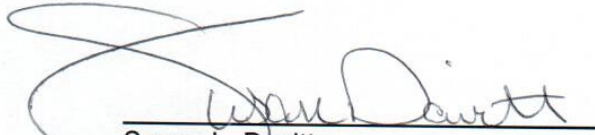
DATE: 2/24/21

STATE OF ARKANSAS)
) SS
COUNTY OF PULASKI)

CERTIFICATE

I the undersigned, City Clerk - Treasurer of the City of Jacksonville, Arkansas, hereby certify that the foregoing RESOLUTION 804 (#03-2021), is a true and correct copy of said Resolution duly adopted by the City Council of the City of Jacksonville, Arkansas, on the 25TH day of February, 2021 and the same now appears of record in my office in RESOLUTION BOOK number XII, page number(s) 000024 through 000025

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seal of the City of Jacksonville, Arkansas, this 9th day of March, 2021.


Susan L. Davitt
CITY CLERK - TREASURER



RESOLUTION NO. 804 (#3-2021)**A RESOLUTION ADOPTING THE PULASKI COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR CITY OF JACKSONVILLE, PULASKI COUNTY ARKANSAS.**

WHEREAS, certain areas of Pulaski County are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, the City desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Pulaski County, with the assistance of Central Arkansas Planning and Development District, has initiated development of County-wide, multi-jurisdiction Hazard Mitigation Plan the County and all jurisdictions in the County, specifically the cities and school districts.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF JACKSONVILLE, ARKANSAS, THAT:

SECTION ONE: The City of Jacksonville, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards (January 19, 2021) and appoints the Emergency Management Director to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration.

SECTION TWO: The City of Jacksonville agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.


APPROVED AND ADOPTED THIS 25th DAY OF February, 2021.

CITY OF JACKSONVILLE, ARKANSAS


BOB JOHNSON, MAYOR

000025

ATTEST:


SUSAN DAVITT, CITY CLERK

APPROVED AS TO FORM:


STEPHANIE FRIEDMAN, CITY ATTORNEY



RESOLUTION NO. 5-2021

A RESOLUTION ADOPTING THE PULASKI COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR CITY OF SHERWOOD, PULASKI COUNTY ARKANSAS; AND FOR OTHER PURPOSES

WHEREAS, certain areas of Pulaski County are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties within the area; and

WHEREAS, the City of Sherwood desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Pulaski County, with the assistance of Central Arkansas Planning and Development District (CAPDD), has initiated development of a County-wide, multi-jurisdiction Hazard Mitigation Plan for the County and all jurisdictions in the County, specifically the cities and school districts;

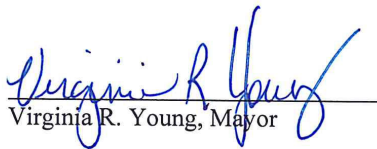
NOW, THEREFORE, BE IT RESOLVED BY THE SHERWOOD CITY COUNCIL THAT:

Section 1. The City of Sherwood, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards (January 19, 2021); and


Section 2. The City of Sherwood appoints the Emergency Manager and City Engineer to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Section 3. The City of Sherwood agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

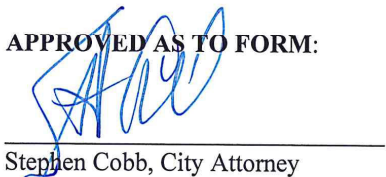
ADOPTED on this 22nd day of **March 2021**.


Virginia R. Young, Mayor

ATTEST:


Angela Nicholson, City Clerk

APPROVED AS TO FORM:


Stephen Cobb, City Attorney



MAYOR
TERRY MIZER
terrymizer@gmail.com

TREASURER
MABELINE HANSBERRY
mhansberry@cityofwrightsville-ar.org

RECORDER
SHEILA GARLING
rtwrightsv@yahoo.com

RESOLUTION # 3021-06

A RESOLUTION ADOPTING THE PULASKI COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR CITY OF WRIGHTSVILLE, PULASKI COUNTY ARKANSAS.

WHEREAS, certain areas of Pulaski County are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, the City desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Pulaski County, with the assistance of Central Arkansas Planning and Development District, has initiated development of County-wide, multi-jurisdiction Hazard Mitigation Plan the County and all jurisdictions in the County, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL

That the City of Wrightsville, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards (January 19, 2021) and

Appoints the Emergency Management Director to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 6th day of April, 2021

APPROVED:

Terry Mizer
Mayor

ATTEST:

Sheila Garling
Secretary/Clerk

SECTION 1: Planning Process

1.1 Plan Introduction

1.1.1 Disaster Mitigation Act of 2000

The purpose of the Pulaski County Hazard Mitigation Plan is to provide guidance for hazard mitigation activities in Pulaski County. The Pulaski County Office of Emergency Management has the responsibility to coordinate all local activities relating to hazard evaluation and mitigation, and to prepare and submit to FEMA a Local Mitigation Plan following the criteria established in 44 CFR 201.4 and Section 322 of the Disaster Mitigation Act of 2000 (Public Law 106-390). The Disaster Mitigation Act of 2000 became law on October 30, 2000, and amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act (“Stafford Act”) (Public Law 93-288, as amended). Regulations for this activity can be found in Title 44 of the Code of Federal Regulations Part 206, Subpart M.

This plan meets requirements for a local mitigation plan under Final Rule 44 CFR 201.4, published in the Federal Register by the Federal Emergency Management Agency (FEMA) on February 28, 2002. Meeting the requirements of the regulations cited above keeps Pulaski County qualified to obtain all disaster assistance including hazard mitigation grants available through the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended.

Pulaski County has three Emergency Management Offices (Pulaski County, City of Little Rock and City of North Little Rock). The three entities takes turns applying for grants for the Mitigation Plan Update. This time the City of Little Rock in Pulaski County initiated the Hazard Mitigation planning process by securing a FEMA Hazard Mitigation Grant Program (HMGP) grant to complete the update. City of Little Rock hired Central Arkansas Planning and Development District, Inc. (CAPDD) to author the plan. The City of Little Rock and CAPDD worked together to engage the county, cities, communities and school districts in the planning process.

The Pulaski County Hazard Mitigation Plan is being developed to assess the ongoing natural hazard mitigation activities in Pulaski County, to evaluate additional mitigation measures that should be undertaken, and to outline a strategy for implementation of mitigation projects. This plan is multi-jurisdictional with a planning area that includes all of unincorporated Pulaski County and the municipalities within the County including the Cities of Cammack Village, Jacksonville, Little Rock, Maumelle, North Little Rock, Sherwood and Wrightsville. This plan also includes the School Districts of Jacksonville-North Pulaski, Little Rock, North Little Rock, Pulaski County Special, Arkansas School for the Blind and Arkansas School for the Deaf.

Formal adoption and implementation of a hazard mitigation plan presents many benefits to Pulaski County and its residents. By identifying problems and possible solutions in advance of a disaster, Pulaski County, participating communities and school districts will be in a better position to obtain pre- and post-disaster funding. Specifically, the Disaster Mitigation Act of 2000 establishes a non-disaster hazard mitigation grant programs like the Pre-Disaster Mitigation (PDM) grant program and the Flood Mitigation Assistance (FMA) grant program, and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). It requires that states and communities have a FEMA approved hazard mitigation plan in place prior to receiving post-disaster HMGP funds. Pulaski County and participating communities will also gain additional credit points under FEMA’s Community Rating System (CRS) program, which provides discounts on National Flood Insurance Program (NFIP) flood insurance premiums for residents of communities that voluntarily participate in this program. Most importantly, Pulaski County will be able to recover faster and more wisely from a disaster. Through planning and acting on local mitigation strategies, the communities will reduce vulnerability to disasters and identify opportunities for mitigation. In addition, the communities may meet comprehensive planning and other planning requirements and achieve community goals. The priorities of the 2020 Pulaski County Hazard Mitigation Plan remain consistent with the 2014 FEMA approved Pulaski County Hazard Mitigation Plan. The priorities of the county have not changed.

1.1.2 Parts of the Plan

The Pulaski County Hazard Mitigation Plan is divided into sections to address FEMA requirements for a local multi-jurisdictional plan. These sections are;

1. Planning Process
2. Planning Area and Resources
3. Hazard Identification and Risk Assessment
4. Mitigation Strategy
5. Acronyms
6. Plan Adoption
7. Appendix

This plan is multi-jurisdictional with a planning area that includes all of unincorporated Pulaski County and the municipalities within the County including the Cities of Cammack Village, Jacksonville, Little Rock, Maumelle, North Little Rock, Sherwood and Wrightsville. This plan also includes the School Districts of Jacksonville-North Pulaski, Little Rock, North Little Rock, Pulaski County Special, Arkansas School for the Blind and Arkansas School for the Deaf.

All jurisdictions and school districts listed above actively participated in the planning process from its inception. Each jurisdiction provided a representative to participate on the “Hazard Mitigation Planning Team” (HMPT) or if a representative was unable to attend, they chose to be represented by the Pulaski County Office of Emergency Management. HMPT members actively participated in meetings, provided data, solicited input from members of their communities, and ensured that all jurisdiction information was reflected in the plan.

1.1.3 Involvement of Local Governments

Pulaski County’s mitigation planning process was initiated on March 7, 2016, when the City of Little Rock was awarded a Hazard Mitigation Grant Program (HMGP) grant by FEMA through the Arkansas Department of Emergency Management, under Matt Burks, Emergency Management Administrator for the City of Little Rock. City of Little Rock negotiated a contract with the Central Arkansas Planning and Development District to facilitate their mitigation planning efforts. Central Arkansas Planning and Development District served as facilitator and City of Little Rock EM Administrator, Matt Burks, led the planning effort.

Once all participating cities and school districts for which the Pulaski County OEM is responsible formally agreed to participate, an initial HMPT composed of representatives from Pulaski County and participating jurisdiction was organized. This initial team was instructed to solicit interested persons from their community to participate on the HMPT. This solicitation led to the addition of several HMPT members. The HMPT members include representatives from County government, local city governments, public works officials, emergency management officials, local floodplain managers, fire districts and school districts. All participating jurisdictions actively participated in the planning process through soliciting input from their communities and participation in meetings. If a participant could not attend a meeting, all minutes and materials were mailed out to the jurisdiction. The Pulaski County Mitigation Hazard Mitigation Planning Team also discussed mitigation actions, projects, and past hazard occurrences with CAPDD during conference calls and one-on-one calls and meetings.

Two planning events were scheduled throughout the planning process. Training events began the planning process. The Central Arkansas Planning and Development District also utilized technical assistance provided by the Arkansas Department of Emergency Management by receiving training at workshops provided by ADEM and FEMA. Technical assistance regarding NFIP was provided by the Arkansas Natural Resources Commission. Technical Assistance regarding the Firewise Program was provided by the Arkansas Forestry Commission. Guidelines for the mitigation plan were discussed as well as training for entering data and how to locate and research the data needed for the mitigation plan. It was stressed to have public involvement and to work together with cities, schools, and County.

Natural Hazard Mitigation Questionnaires were distributed in hard copy by the HMPT members, posted on various websites and available for online completion.

In summary, the planning process consisted of the following items:

- County appointed a Hazard Mitigation Planning Team (HMPT) consisting of mayors and city personnel, school personnel, local floodplain managers, fire department members, emergency workers, planning and development district employees, and LEPC/Citizens Corp Members.
- County engaged the Central Arkansas Planning and Development District (CAPDD), the regional planning organization, to provide staff support in conducting the planning process and preparing the plan.
- Meetings were held with HMPT to understand and agree on planning processes and steps required, including organizing resources, assessing hazards, developing a mitigation plan, and implementing the plan and monitoring progress.
- Central Arkansas Planning and Development District staff attended workshops presented by FEMA and ADEM on the preparation of the mitigation plan.
- Central Arkansas Planning and Development District staff also had numerous subsequent discussions about the planning process with ADEM staff. The CAPDD staff also discussed planning process issues with others in the state that were involved in the preparation of other hazard mitigation plans such as other Planning and Development Districts.
- The Pulaski County OEM reached out directly via email to the OEMs of the surrounding Counties of Faulkner, Lonoke and Saline inviting their participation and providing a draft of the plan for review.

- Public Notices including an invitation to the next HMPT Meeting and a link to an online survey for public, business, academia and other private and non-profit interests was published in the Arkansas Democrat Gazette Newspaper. The notice was also published on websites for some of the participating jurisdictions.

The Planning Committee utilized these technical documents:

- Arkansas Hazard Mitigation Plan was used as a guidance tool for past occurrences and risk assessments.
- Local Floodplain Ordinances for each NFIP Participating jurisdiction to maintain compliance, especially for mitigation actions.
- The Pulaski County Emergency Operations Plan was used to better understand how Pulaski County responds to emergencies and disasters while providing for the safety and welfare of its citizens. Plan provided information about critical facilities in the County.
- 2014 Pulaski County Hazard Mitigation Plan
- FEMA Local Mitigation Planning Handbook (March 2013)
- FEMA G318 Local Mitigation Planning Workshop Student Manual (May 2013)
- FEMA Local Mitigation Plan Review Guide (October 1, 2011)

Timeline:

1. A FEMA Pre-Disaster Mitigation Planning Grant was awarded on February 14, 2019.
2. Contract between City of Little Rock and CAPDD executed on April 9, 2019.
3. Memorandum of Understanding was signed between Pulaski County and the Arkansas Department of Emergency Management on May 8, 2018.
4. First organized planning meeting was held May 22, 2019 at the Little Rock Fire Training Facility in Little Rock, AR. Each person in attendance received a workbook containing a copy of the PowerPoint, a HMPT Survey and Community Surveys to distribute to the community. The PowerPoint including an overview of the planning process was presented, and then the floor was opened for discussion and a questions and answer session. Pulaski County Hazard Mitigation Questionnaires were handed out and participants were asked to forward this information to co-workers and the public.
5. Second Meeting was held October 8, 2019 at the Jacksonville Community Center in Jacksonville, AR - A PowerPoint addressing Task 5- Risk Assessment and Critical Facilities, Task 6 Develop a Mitigation Strategy and Task 7 Keep Plan Updated was covered. Jurisdictions were given critical facility map from the previous plan along with materials to make and changes/updates. Information on risk assessment development, risks and impacts, the location areas, extent of the magnitude and discussion of probably of future events and identifying the community assets. Mitigation Goals, Mitigation Action, and Action Plan were also discussed. Each jurisdiction was given a copy of the previous version of the mitigation action table and provided input regarding the status of those actions. The HMPT also developed their new mitigation actions at this meeting.
6. A final draft of the Plan was provided to the HMPT for review before official FEMA approval or adoption as an opportunity to provide even more input to affect the plan's content.

Meeting Materials are available upon request from Central Arkansas Planning and Development District.

1.1.4 Neighboring Community Involvement

During the Mitigation Planning Process for Pulaski County, neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development were informed of the meetings and invited personally by Little Rock Emergency Management Administrator to attend planning meetings. Lacye Blake and Jennifer Oakley from the Arkansas Dept. of Emergency Management was involved as the State's point of contact. Local Emergency Managers, Police Officer, Firemen and several other first responders were involved during the planning process. The PCOEM contacted surrounding counties to invite them to participate in the planning process by attending meetings and to fill out the Questionnaire.

1.1.5 Public Involvement

During the development of the plan update, the HMPT was provided a three page survey titled “Pulaski County Natural Hazards Questionnaire” to distribute to the community, businesses, non-profits and neighboring communities for input. In addition, a Public Notice was posted in the Arkansas Democrat-Gazette (a daily state-wide newspaper), the Central Arkansas Planning & Development, City of Little Rock and Pulaski County Facebook page and the Central Arkansas Planning and Development District website. Notices were provided to all the attendees and potential participants at the first meeting and were asked to distribute to citizens, businesses, neighboring communities, Community Organizations and Non-Profits. The notice provided a link for people to complete the survey on the web, a link to the original Pulaski County Hazard Mitigation Plan, and invited citizens to attend the October 8, 2019 HMPT meeting. The notice also gave contact information for questions or more information.

A total of 6 responses were returned. The natural hazards that concerned the general public were drought, floods, tornadoes, thunderstorm winds, lightning and hail, and winter storms. The information from these questionnaires was given to the planning members, and mitigation actions were developed from these natural hazards.

After the completion of the planning meetings, the draft plan was provided on the Central Arkansas Planning and Development District (CAPDD) website <http://www.capdd.org/index.php/fema-hazard-mitigation-plans.html> for any additional input from surrounding communities, the public, businesses, state and local agencies, and anyone else wishing to review.

Planning members were made aware of the requirement that the Pulaski County Hazard Mitigation Plan must be submitted to the Arkansas Department of Emergency Management for review prior to the State submitting plans to FEMA.

1.1.6 Plan Developers

Pulaski County Hazard Mitigation Planning Team-

| Jurisdiction | Participation/Involvement |
|---|--|
| Pulaski County, unincorporated areas and state agencies | <p><u>County Judge’s Office:</u> Judge Barry Hyde, Tony Kelley Pul Co Road & Bridge, County Judge, Pulaski County OEM staff: Andy Traffanstedt, Catherine Arnold and Danny Akins <i>County Judge and staff received hazard mitigation workbook, attended planning meetings, completed questionnaires, participated in collection of historical natural disaster information and provided input for the Risk Assessment. Personnel of PCOEM received hazard mitigation workbook, attended planning meetings, completed and distributed hazard questionnaires, participated in collection of historical natural disasters information. Participated in phone calls, emails, and other correspondence with facilitator and school districts, cities, and fire departments. PCOEM also handles floodplain management for all of unincorporated Pulaski County and provides technical assistance regarding floodplain issues to all other areas of the County.</i></p> <p><u>Arkansas Department of Emergency Management:</u> Jennifer Oakley <i>Addressed questions from HMPT about hazard mitigation. Provided Technical Assistance to CAPDD and Pulaski County as needed.</i></p> <p><u>Arkansas Natural Resources Commission:</u> Whit Montague & Veronica Villalobos-Pogue <i>Provided Technical Assistance to CAPDD and Pulaski County as needed, especially related to Floodplain and NFIP.</i></p> |
| City of Jacksonville | <p>Mayor Bob Johnson, Jim Oakley, Melissa Griggs FPM, and Fire Department Representatives Allan Laughy, Danny Atkins, Melissa Griggs <i>City staff attended planning meetings, received hazard mitigation workbooks, completed questionnaires assisted with Risk Assessment, and participated in open discussion of historical storm events.</i></p> |
| City of Little Rock | <p>Assistant Mayor, Bruce Moore, Matt Burks Director of OEM, Nathan Spicer, Dana Carney, Nathan Charles and Police Department Representatives Harry Moore and Jeff Plunkett <i>City of Little Rock was our grantee for the Mitigation Plan. They coordinated with CAPDD with all planning and public participation events. They attended planning meetings, completed community capabilities assessment and natural hazard questionnaire, received hazard mitigation workbook assisted with Risk Assessment, and participated in open discussion of historical storm events.</i></p> |
| City of Maumelle | <p>Mayor Caleb Norris, Jim Narey Director of Planning, Jack Stowe Director of Special Projects and Mike Hogan, Scott Grummer Assistant to the Mayor <i>City staff attended planning meetings, received hazard mitigation workbooks, completed questionnaires assisted with Risk Assessment, and participated in open discussion of historical storm events.</i></p> |
| City of North Little Rock | <p>Mayor Joe Smith, Leonard Montgomery OEM, Cassidy Ezzi, Charley Baxter, Chief Danny Bradley <i>Attended planning meetings, completed community capabilities assessment and natural hazard questionnaires, received hazard mitigation workbook assisted with Risk Assessment, and participated in open discussion of historical storm events.</i></p> |
| City of Sherwood | <p>Mayor Virginia Young, Tracy Sims OEM, Richard Penn Engineer & Brian Galloway <i>Attended planning meetings, completed community capabilities assessment and natural hazard questionnaires, received hazard mitigation workbook assisted with Risk Assessment, and participated in open discussion of historical storm events.</i></p> |

| | |
|--|---|
| City of Wrightsville | Mayor Terry Mizer, Dennis Hansberry <i>Attended planning meetings, completed community capabilities assessment and natural hazard questionnaires, received hazard mitigation workbook assisted with Risk Assessment, and participated in open discussion of historical storm events.</i> |
| Jacksonville – North Pulaski School District | Chris Oldham <i>Attended planning meetings, received hazard mitigation workbook, completed natural hazards questionnaire assisted with Risk Assessment, and participated in open discussion of historical storm events.</i> |
| Little Rock School District | Supt. Ron Self & Kevin Yarberry <i>Attended planning meetings, received hazard mitigation workbook, completed natural hazards questionnaire assisted with Risk Assessment, and participated in open discussion of historical storm events.</i> |
| North Little Rock School District | Supt. Kelly Rodgers <i>Attended planning meetings, received hazard mitigation workbook, completed natural hazards questionnaire assisted with Risk Assessment, and participated in open discussion of historical storm events.</i> |
| Pulaski County Special School District | Supt. Charles McNulty <i>Attended planning meetings, received hazard mitigation workbook, completed natural hazards questionnaire assisted with Risk Assessment, and participated in open discussion of historical storm events.</i> |
| Arkansas School for the Blind | Supt. James Caton <i>Attended planning meetings, received hazard mitigation workbook, completed natural hazards questionnaire assisted with Risk Assessment, and participated in open discussion of historical storm events.</i> |
| Arkansas School for the Deaf | Supt. Dr. Janet Dickinson & Ty Mathis <i>Attended planning meetings, received hazard mitigation workbook, completed natural hazards questionnaire assisted with Risk Assessment, and participated in open discussion of historical storm events.</i> |
| Central Arkansas Planning and Development District | Leigh Ann Pool, CFM, <i>Director of SWM and facilitator for the Pulaski County Hazard Mitigation Planning process.</i> Conya Spencer and Tanya Childers |

Point of Contacts

| | | |
|--|---|--|
| County Judge Barry Hyde Pulaski County Pulaski County Courthouse 201 S. Broadway, Suite 400 Little Rock, AR 72201 501-340-8305 bhyde@pulaskicounty.net | Mayor Bob Johnson City of Jacksonville P. O. Box 126 Jacksonville, AR 72078 501-982-3146 bjohnson@cityofjacksonville.net | Mayor Frank Scott, Jr City of Little Rock City Hall, Room 203 500 W. Markham Little Rock, AR 72201 501-371-4510 mayor@littlerock.gov |
| Mayor Caleb Norris City of Maumelle 550 Edgewood Sr., Suite 590 Maumelle, AR 72112 501-851-2500 calebnorris@maumelle.org | Mayor Joe Smith City of North Little Rock P. O. Box 5757 North Little Rock, AR 72119 501-975-8601 mayor@nlr.ar.gov | Mayor Verginia Young City of Sherwood P. O. Box 6256 Sherwood, AR 72120 501-835-6620 vyoung@cityofsherwood.net |
| Mayor Terry Mizer City of Wrightsville P. O. Box 237 Wrightsville, AR 72183 501-455-2585 terrymizer@gmail.com | Director of OEM Andy Taffansteat Pulaski County OEM 3200 Brown Street Little Rock, AR 72204 atraffanstanst@pulaskicounty.net | Superintendent Chris Oldham Jacksonville – North Pulaski School District 1414W. Main St. Jacksonville, AR 72076 501-920-3371 |
| Superintendent Michael Pore Little Rock School District 801 W. Markham Little Rock, AR 72201 501-447-1000 | Superintendent Kelly Rodgers North Little Rock School Dist. 2700 North Poplar Street North Little Rock, AR 72114 501-771-8000 | Superintendent Charles McNulty Pulaski Co. Special School Dist. 925 East Dixon Road, Little Rock, AR 72206 501-234-2001 |
| Superintendent James Caton Arkansas School for the Blind 2600 W. Markham Street Little Rock, AR 72205 501-296-1810 | Superintendent Janet Dickenson Arkansas School for the Deaf 2400 W. Markham St Little Rock, AR 72205 501-324-9514 | |

1.2 Plan Maintenance Process

1.2.1 Monitoring, Evaluation and Updating the Plan

Although FEMA regulations require a plan update within five years, the City of Little Rock and the Pulaski County LEPC has developed a method to ensure that monitoring, evaluation, and updating of the Pulaski County Hazard Mitigation Plan occurs annually or as needed. The plan will be submitted to FEMA within five-years for review. The Pulaski County Local Emergency Planning Committee (LEPC) will form a Hazard Mitigation Plan Evaluation Sub-Committee of the existing (LEPC). The LEPC consists of members from fire service, health officials, emergency management, law enforcement, community groups, transportation, hospital personnel, school administration and emergency medical personnel, elected officials, and owners and operators of covered facilities. The City of Little Rock Emergency Management Administrator will be the initial Chair of the sub-committee or HMPT Leader. The HMPT Leader will contact the HMPT committee, set up meeting dates, and ensure that each community will maintain a representative on the team.

The Planning Committee will monitor the Plan throughout the 5 year cycle, and make every attempt to ensure the public will be able to directly comment on, and provide feedback about the Plan by posting the agenda and submitting meeting notice to the local media through newspaper articles, County website and postings in public locations. This process will inform the County citizens on any changes or revisions of the Pulaski County Hazard Mitigation Plan. Monitoring the plan as a whole will include projects/actions progress, as well as the relevance and feasibility of completing those not completed, capabilities changes, new risks, or lack of currently identified risks, new hazard data, etc. The Planning Committee will evaluate the method to move forward with proposed actions, re-evaluate and prioritize proposed actions and continue to incorporate the Plan into other planning documents/mechanisms.

The responsible party for overseeing and assuring plan updates is the Pulaski County Office of Emergency Management. At this time, the maintenance procedures for the Mitigation Plan will be conducted at the LEPC meeting, which are held quarterly. Each community's representative will be responsible for monitoring and evaluating the progress of the mitigation strategies in the plan. The team members will monitor the plan by providing a mitigation planning update at each quarterly meeting.

During the last LEPC meeting of each year, the sub-committee will meet to review and evaluate each goal and objective to determine their relevance to changing situations in Pulaski County, as well as changes in State or Federal policy, and to ensure that they are addressing current and expected conditions. The Sub-committee will also review and evaluate the risk assessment portion of the plan to determine if this information should be updated or modified. The parties or agencies responsible for the various implementation actions (identified in Section 4) will report on the status of their projects and will evaluate which implementation processes worked well, any difficulties encountered, how coordination efforts were proceeding, and which strategies should be revised. The sub-committee will also evaluate Plan content to ensure it is still relevant to current Mitigation Plan Standards and relevant regarding method of public participation, evaluations, updates and administration.

The responsible entity will then have three months to update and make changes to the plan before submitting it to the Sub-Committee members and the State Hazard Mitigation Officer. If no changes are necessary, the State Hazard Mitigation Officer will be given a justification for this determination. Comments and recommendations offered by Sub-Committee members and the State Hazard Mitigation Officer will be incorporated into the plan update.

The HMPT will take into account any changes in the plan and incorporate the information accordingly in its next update. The HMPT will incorporate any relevant information into the next plan update.

Since future plans and government regulations might need to be adopted into the Hazard Mitigation Plan, Pulaski County Quorum Court will be informed of any necessary changes to the plan by the Team Leader, to be adopted into the Plan by

County resolution. The Arkansas Department of Emergency Management will be contacted as necessary for professional and technical advice as needed.

Additionally, if any of the participating jurisdictions plan to apply for future FEMA Hazard Mitigation Grants, the public will be invited to comment before the application is submitted, per the HMA grant application guidelines.

1.2.2 Incorporation into Existing Planning Mechanisms

The Pulaski County Hazard Mitigation Plan is an overarching document that is both comprised of, and contributes to various other local plans. In creating this HMP, all the planning documents identified below were consulted and reviewed in turn, when each of these other plans are updated, they will be measured against the contents of the PCHMP.

Below is a list of the local participant's various planning efforts, sole or jointly administered programs, and documents. While each plan can stand alone, their review and functional understanding was pivotal in the development of this plan and further strengthens and improves the participant's resilience to disasters.

- Comprehensive Master Plan
- Land use Plan
- Local Emergency Operations Plan
- Storm Water Management Plan
- Stream Management Plan
- Subdivision Management Plan
- Community Wildfire Protection Plan
- Economic Development Plan

Pulaski County currently has the following plans in place: Comprehensive Master Plan, Land Use Plan, Local Emergency Operations Plan, Storm Water Management Plan, Stream Management Plan, Subdivision Management Plan, Community Wildfire Protection Plan, and Economic Development Plan. The HMG Plan will be reviewed and integrated into the existing plan by approval from the Pulaski County Quorum Court. The HMG Plan can also be used when developing the County annual budget for Mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the Quorum Court.

Cammack Village did not report any existing plans except for the previous Hazard Mitigation Plan. Any future Plans will be approved through the Cammack Village City Council. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the City annual budget for Mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the City Council.

The City of Jacksonville currently has a Comprehensive Master Plan, Local Emergency Operations Plan, Land Use Plan, Continuity of Operations Plan, Storm Water Management Plan, Adopted Zoning Ordinance, Adopted Subdivision Management and Economic Development Plan. The HMG Plan will be reviewed and integrated into the existing plan by approval from the Jacksonville City Council. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the City annual budget for Mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the City Council.

The City of Little Rock currently has Local Emergency Operations Plan, Land Use Plan, Storm water Management Plan, Subdivision Management Plan and Economic Development Plan and Adopted Stream Management. The HMG Plan will be reviewed and integrated into the existing plan by approval from the Jacksonville City Council. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the City annual budget for Mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the City Council.

The City of Maumelle currently has the following plans in place: Comprehensive Master Plan, Land Use Plan, Local Emergency Operations Plan, Storm Water Management Plan, Stream Management Plan, Subdivision Management Plan, Community Wildfire Protection Plan, and Economic Development Plan. The HMG Plan will be reviewed and integrated into the existing plan by approval from the Jacksonville City Council. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the City annual budget for Mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the City Council.

The City of North Little Rock currently has a Comprehensive Master Plan, Land Use Plan, Continuity of Operations Plan, and a Storm Water Management Plan. The HMG Plan will be reviewed and integrated into the existing plan by approval from the Jacksonville City Council. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the City annual budget for Mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the City Council.

The City of Sherwood currently has a Comprehensive Master Plan, Land Use Plan, Local Emergency Operations Plan, Storm Water Management Plan, Stream Management Plan, Subdivision Management Plan, Community Wildfire Protection Plan, and Economic Development Plan. The HMG Plan will be reviewed and integrated into the existing plan by approval from the Jacksonville City Council. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the City annual budget for Mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the City Council.

Jacksonville – North Pulaski School District did not report any existing plans except for the previous Hazard Mitigation Plan. Any future Plans will be approved through School Board. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the school's annual budget for mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the School Board.

Little Rock School District did not report any existing plans except for the previous Hazard Mitigation Plan. Any future Plans will be approved through School Board. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the school's annual budget for mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the School Board.

Pulaski County Special School District did not report any existing plans except for the previous Hazard Mitigation Plan. Any future Plans will be approved through School Board. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the school's annual budget for mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the School Board.

North Little Rock School District did not report any existing plans except for the previous Hazard Mitigation Plan. Any future Plans will be approved through School Board. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the school's annual budget for mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the School Board.

Arkansas School for the Blind did not report any existing plans except for the previous Hazard Mitigation Plan. Any future Plans will be approved through School Board. The HMG Plan can be integrated into those Plans. The HMG Plan can also be used when developing the school's annual budget for mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the School Board.

Arkansas School for the Deaf did not report any existing plans except for the previous Hazard Mitigation Plan. Any future Plans will be approved through School Board. The HMG Plan can be integrated into those Plans. The HMG Plan

can also be used when developing the school's annual budget for mitigation education and awareness, new and existing construction, infrastructure improvements and for prioritizing grant development projects which also would need approval from the School Board.

The Planning Team was asked how the 2014 updated Plan had been utilized over the past five years. Below are the responses:

- Pulaski County Office of Emergency Services: The County increased a line item in their budget for some new tornado sirens that help warn the public for severe weather. They also implemented the National Weather Service "Storm Ready Program" guidelines. The PCHMGP was also utilized when the County conducted their annual Emergency Operation Plan (EOP) update. The County has successfully completed several drainage projects over the past five years.
- Central Arkansas Water who was a member of the Planning Team provided information that they have used the PCHMGP to update their Emergency Action Plan (EOP) as well as their America's Water Infrastructure Act (AWIA) Plan. Central Arkansas Water conducts inspections, maintains and upgrades to the dams on at Reservoir Park and on Lake Maumelle to prevent possible breaches. Emergency back-up power has been added to many of the water/wastewater treatment plants/lift stations that they own.
- The City of Sherwood has acquired several homes in their area with a priority on Repetitive Loss and Severe Repetitive Loss Structures. These projects have had a direct impact on the City's annual budget and planning priorities. The City has also made drainage improvements to mitigate flooding of homes and streets. Storm Sirens have been updated and are in the City Plan to continue to update and add more for citizen's protections. The PCHMGP was used when creating their own "in-house" Hazard Mitigation Plan as well as updating their existing Emergency Response Plan.
- UAMS used the Pulaski County mitigation plan as one of the bases for our Hazard Vulnerability Assessments, to prioritize our lists of HVA's and our management to help reduce loss of life, property and economic damage from exposure to natural and man-made disasters. The PCHMGP was also used to develop employee awareness to hazards and mitigation response. Improved internal services to include warning systems, response and protection of the UAMS system.
- Pulaski County Special School District (PCSSD) has used the past PCHMGP when developing plans to build tornado shelters at their schools. They have successfully completed several and plan to include a new one at the Lawson Elementary school in the next couple of years. The school has also been able to mitigate some flooding issues with drainage projects and will continue to use the Plan to guide them on other possible natural hazard mitigation projects to protect their staff and students. The Plan was utilized when updating their annual Emergency Operations Plan (EOP) and bringing awareness (education) for the need for drills for fire and tornado safety.

Pulaski County and plan participants currently use state laws pertaining to compliance with the National Flood Insurance Program as well as state fire codes, to encourage compliance with its hazard mitigation programs. These existing mechanisms have hazard mitigation strategies integrated into them. Pulaski County, as every other county in the State, has a current Emergency Operations Plan. The Hazard Mitigation Plan will become an annex of the EOP for future submissions.

The Pulaski County Hazard Mitigation Plan will be available for public view on the Pulaski County Office of Emergency Management website and the Central Arkansas Planning and Development District's website <http://www.capdd.org/index.php/fema-hazard-mitigation-plans.html> for any entity or citizen who wishes to view or make a copy of it. Copies will also be made available at public libraries, the Pulaski County Courthouse in Little Rock, the city halls of Cammack Village, Jacksonville, Little Rock, Maumelle, North Little Rock, Sherwood and Wrightsville the offices of Jacksonville- North Pulaski School District, Little Rock School District, Pulaski County Special School District, North Little Rock School District, Arkansas School for the Blind and Arkansas School for the Deaf.

Pulaski County Quorum Court, City Councils and the Board of Directors of the school districts will be adopting the approved Hazard Mitigation Plan by formal adoption or resolution in their existing plans that are relevant to Hazard Mitigation. The same process will also be followed when parts of the Pulaski County Hazard Mitigation Plan are

incorporated into community planning mechanisms.

Any participant without previous plans in place will be encouraged to develop zoning plans and other land ordinance plans to incorporate mitigation strategies. Participants incorporating the Pulaski County Hazard Mitigation Plan pertain to them. After these discussions, each incorporating mechanism will follow their local laws or guidelines necessary for implementation through open forum public meetings. Each incorporating party will monitor the progress of any incorporated mitigation strategies and report the success or failure to the Local Emergency Planning Committee for inclusion in its annual report. After each update of the Pulaski County Hazard Mitigation Plan, each incorporating participant will be informed of the changes so they can reflect these changes in their plans also. Incorporating the plan or parts of the plan into other plans will be done by vote at the regular quorum court/city council/school board meetings and passed by resolution.

All participating jurisdictions will use the risk assessment that was conducted for the mitigation plan for creating strategies when dealing with hazards as well as the budget. The data and maps will be used as supporting documentation to encourage participating jurisdictions to address the hazards that affect their areas and organizations and can be used in grant applications.

Pulaski County will be incorporating the Pulaski County Hazard Mitigation Plan into the Pulaski County Continuity of Operations Plan, and any future county land use ordinances and/or plans by following the laws set forth by the county government. Incorporating the plan (and any plan) into other county plans will be done by vote at the regular quorum court meetings and passed by resolution.

Participating school districts will consider incorporating the Pulaski County Hazard Mitigation Plan into their existing emergency preparedness, response and recovery plans, such as a Continuity of Operations Plan, where applicable by following the rules set forth by each school board. Incorporating the plan into any existing or future plans will be done at regular school board meetings by resolution of the School Board.

The Universities may consider incorporating the Pulaski County Hazard Mitigation Plan into their existing emergency preparedness, response and recovery plans, such as a Continuity of Operations Plan, where applicable by following the rules set forth by the Board of Visitors. Incorporating the plan into any existing or future plans will be done at board meetings by resolution of the Board of Visitors.

1.2.3 Continuous Public Involvement

The City of Little Rock and entities of Pulaski County are dedicated to involving the public directly in the continual reshaping and updating of the Pulaski County Hazard Mitigation Plan. The Hazard Mitigation HMPT members are responsible for the annual monitoring, evaluation, and update of the plan. Although they represent the public to some extent, the public will be able to directly comment on and provide feedback about the plan.

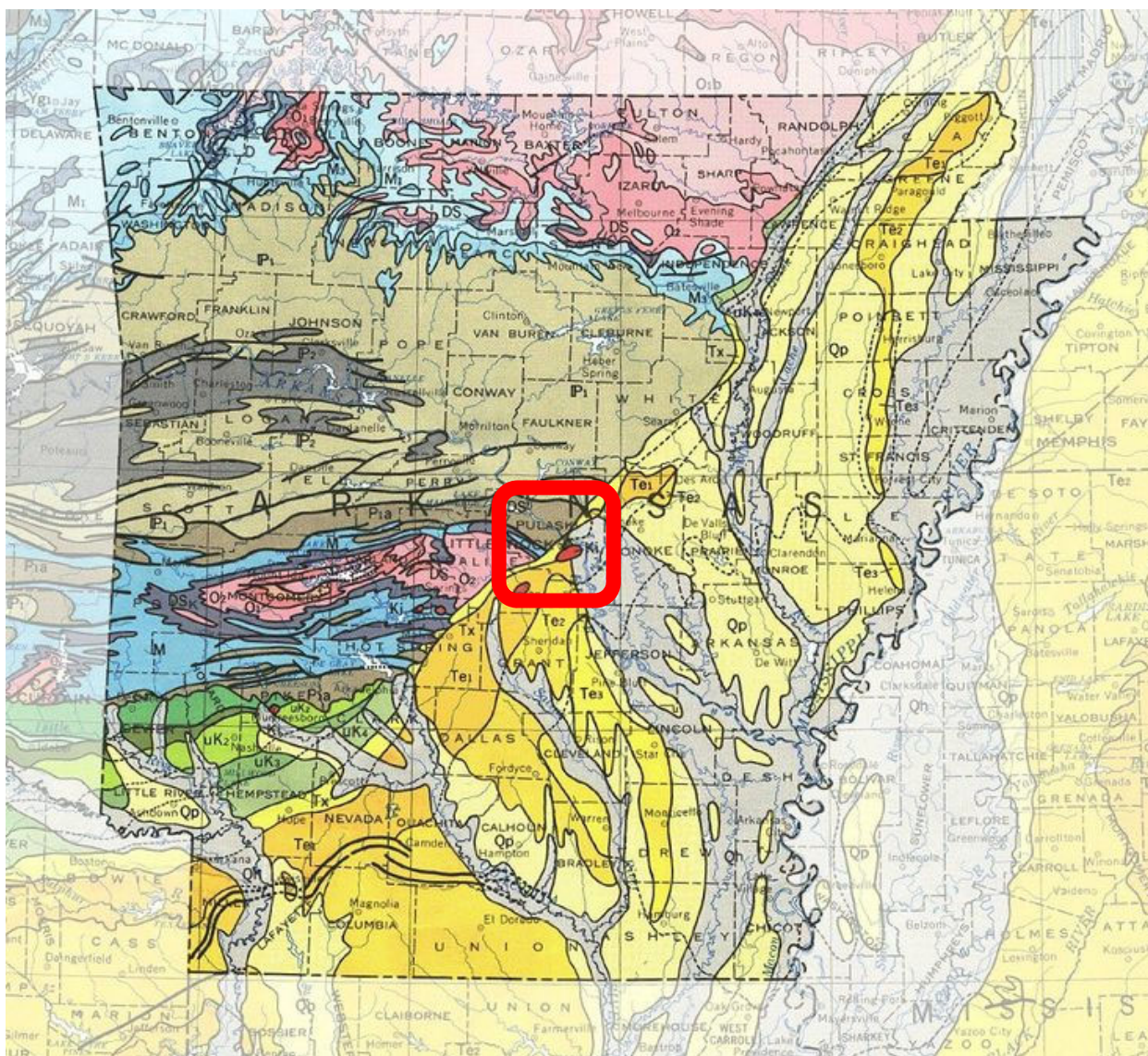
Copies of the FEMA approved Pulaski County Hazard Mitigation Plan will be available at <http://www.capdd.org/index.php/fema-hazard-mitigation-plans.html>. The plan will also be available at the County Courthouse, City Halls of each participating city, public libraries, universities and schools for public review. Contained in the plan are the address, phone number, and e-mail of the Director of the Pulaski County Office of Emergency Management, the primary point of contact for the plan.

A public announcement inviting all interested parties will be made prior to each quarterly LEPC meeting, including the December LEPC meeting during which the Hazard Mitigation Planning Team reviews and evaluates the plan in its entirety. This meeting will provide the public a forum for which the general public can express concerns, opinions, or

ideas about the plan. The City of Little Rock and the Pulaski County LEPC will publicize and host this meeting. Following the meeting, the evaluation committee will review the comments and make changes to the plan, as appropriate.

SECTION 2: Planning Area and Resources

2.1 General Geography



2.1.1 Topography

Pulaski County is a county in US State of Arkansas with a population of 39,911 which makes it the most populous county in Arkansas. Its county seat is Little Rock, which is also Arkansas's capital and largest city. Pulaski County comprises 808 square miles of which 760 square miles is land and 48 square miles is water. The landscape of the county is rugged

terrain western and northern and rolling hills in the southern tip with the Arkansas River Valley delta in the east. Pulaski County is the most populous county in the state.

County is Pulaski included in the Little Rock- North Little Rock – Conway, AR Metropolitan Statistical Area which has 731,612 people in the 2015 census estimates. The Little Rock, North Little Rock Combined Statistical Area had 904,469 people in the 2015 census estimates. Adjacent counties to Pulaski County include: Faulkner County (north), Lonoke County (east), Grant County (south), Jefferson County (south), Saline County (west), and Perry County (northwest).

According to data gathered by the Shuttle Radar Topography Mission, the lowest elevation in Pulaski County is 36 meters (118 feet). This ranks Pulaski County 33rd in terms of lowest elevations when compared to a total of 75 counties in Arkansas. Pulaski County's highest elevation is 116 meters (381 feet) which ranks it 66th in terms of highest elevations compared to the total 75 counties in Arkansas.

Of the five geologic provinces present in Arkansas, three are present in Pulaski County. These include the Ouachita Mountains, Mississippi Embayment, and Gulf Coastal Plain Provinces. Each province exhibits distinctly different geology, soil type and topography that may affect the occurrence and distribution of natural hazards in the Pulaski County and each participating jurisdiction (Pulaski County Planning Area).

2.1.2 Rivers and Watersheds

The Arkansas River is a major tributary of the Mississippi River. It generally flows to the east and southeast as it traverses the U.S. states of Colorado, Kansas, Oklahoma, and Arkansas. The river's source basin lies in the western United States in Colorado, specifically the Arkansas River Valley, where the headwaters derive from the snowpack in the Sawatch and Mosquito mountain ranges. It then flows east into the Midwest via Kansas, and finally into the South through Oklahoma and Arkansas. As the Arkansas River flows through Pulaski County it bisects Little Rock and North Little Rock.

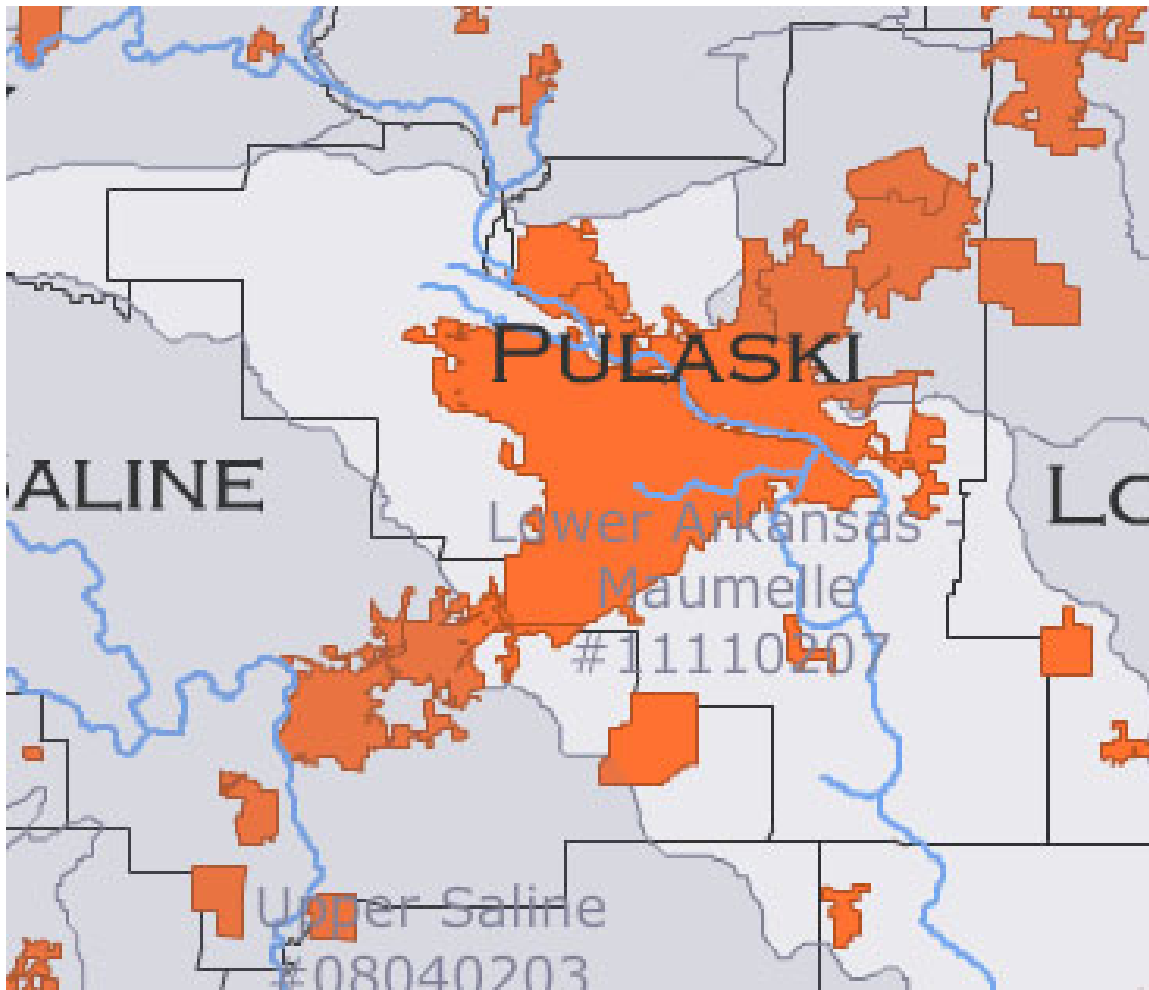
The Little Maumelle River is a stream located just 4.9 miles from Maumelle in Pulaski County. This stream is used primarily for fishing recreation.

Bayou Meto, a slow moving stream that originates in northern Pulaski County at the confluence of several creeks west of Little Rock Air Force Base and travels 150 miles south and east through Lonoke and Jefferson counties before emptying into the Arkansas River a few miles southwest of Gillett, Arkansas. Pulaski County also has Pennigton Bayou which is a tributary off the Arkansas river near the community of Woodson. Shilcotts Bayou and White Oak Bayou also transverse through Pulaski County.

There are 16 lakes and 5 reservoirs in Pulaski County as well.

The majority of Pulaski County is drained into the Lower Arkansas – Maumelle Watershed. The north east sector of Pulaski County drains into the Bayou Meto watershed and the very northern tip of the county that is adjacent to Faulkner County drains into the Lake Conway – Point Remove watershed.

Other watersheds that affect Pulaski County include: Bayout Meto, Fourche La Fave, Lake Conway, Lower Arkansas, Lower White- Bayou Des Arc and upper Saline.



2.2 General Land Use/Analyzing Development Trends

The economic base for Pulaski County is largely government and support services, Metropolitan Pulaski County offers many educational and cultural opportunities such as Arkansas Arts center, the Museum of Science and History, the University of Arkansas at Little Rock and the Little Rock Zoo and Pinnacle Mountain State Park, an 1,800 acre environmental park, is only 15 miles from Little Rock.

According to Census data, population trends are estimated to increase by 2.6% and the employment average staying with the national average.

Land Use for Lower Arkansas – Maumelle Watershed:

- Forest 52.3%
- Cropland: 14.0%
- Grassland: 12.1%
- Suburban: 7.3%
- Water: 6.1%
- Transitional: 5.4%
- Urban 2.4%

| Jurisdiction | Planning and Regulatory Capabilities | | | | | | | | | | | | | | |
|--|--------------------------------------|---------------------------------|---------------|-------------------------------|----------------|----------------------------|---------------------------|--------------------------|--------------------------------|------------------------------------|----------------|----------------------------|-----------------------|-------------------------------|---------------------------|
| | Comprehensive / Master Plan | Local Emergency Operations Plan | Land Use Plan | Continuity of Operations Plan | County Foreman | Stormwater Management Plan | Adopted Stream Management | Adopted Zoning Ordinance | Adopted Subdivision Management | Community Wildfire Protection Plan | Building Codes | Fire Department ISO Rating | Development Ordinance | Site Plan Review Requirements | Economic Development Plan |
| Pulaski County | X | X | X | X | X | X | X | X | X | X | X | * | X | X | X |
| Cammack Village | | | | | | | | | | | | | | | |
| Jacksonville | X | X | X | X | | X | | X | X | | X | | | | X |
| Little Rock | | X | X | | | X | | X | X | | X | | | | |
| Maumelle | X | X | X | X | | X | X | X | X | | X | 2 | X | X | X |
| North Little Rock | X | | X | X | | X | | X | X | | X | | | | |
| Sherwood | X | X | X | X | | X | | X | X | | X | 2 | X | X | |
| Wrightsville | | | | | | | | | | | | 9/10 | | | |
| Jacksonville-North Pulaski School Dist | | | | | | | | | | | | | | | |
| Little Rock School Dist | | | | | | | | | | | | | | | |
| Pulaski County Special School District | | | | | | | | | | | | | | | |
| North Little Rock SD | | | | | | | | | | | | | | | |
| Arkansas School for the Blind | | | | | | | | | | | | | | | |
| Arkansas School for the Deaf | | | | | | | | | | | | | | | |

*Other Fire Departments in the unincorporated Pulaski County:

| Department Name | ISO Rating |
|-----------------|------------|
| Arch Street | 4/4X |
| Camp Robinson | 5/9 |
| Crystal | 3 |
| East Pulaski | 5/7 |
| Gravel Ridge | 2 |

| | |
|-------------------------|------|
| Hensley | 6/9 |
| Hwy. 365 South | 9 |
| Jacksonville | 2 |
| Lake Maumelle | 6/9 |
| Little Rock | 1 |
| Maumelle | 2 |
| McAlmont | 5 |
| Northeast Saline County | 7/9 |
| North Little Rock | 1 |
| North Pulaski | 4 |
| Oak Grove | 4 |
| Quail Creek | 9 |
| Runyan Acres | 3 |
| Scott | 7/10 |
| Sherwood | 2 |
| Southbend | 7/10 |
| Sweet Home | 4/4X |
| West Pulaski | 6/9 |
| Williams Junction | 4/10 |
| Wrightsville | 9/10 |

| Jurisdiction | Administrative and Technical Capabilities | | | | | | | | |
|-------------------------|---|-------------------------------------|-----------------------|-----------------|--------------------------|-----------------------------|---------------|-----------|--------------------------|
| | Planning Commission | Maintenance Programs to Reduce Risk | Mutual Aid Agreements | GIS Analysts or | Warning Systems/Services | Hazard Data and Information | Grant Writers | Emergency | Floodplain Administrator |
| Pulaski County | | X | X | X | X | X | X | X | X |
| Jacksonville | X | | X | | X | | X | X | X |
| Little Rock | X | X | X | X | X | | X | X | X |
| Maumelle | X | X | X | X | X | X | X | X | X |
| North Little Rock | X | | X | X | X | | | X | X |
| Sherwood | X | X | | X | X | X | X | X | X |
| Wrightsville | | | X | | X | | | | X |
| Jacksonville-North SD | | | | | | | | | |
| Little Rock School Dist | | | | | | | | | |
| North Little Rock SD | | | | | | | | | |
| Pulaski Co Special SD | | | | | | | | | |

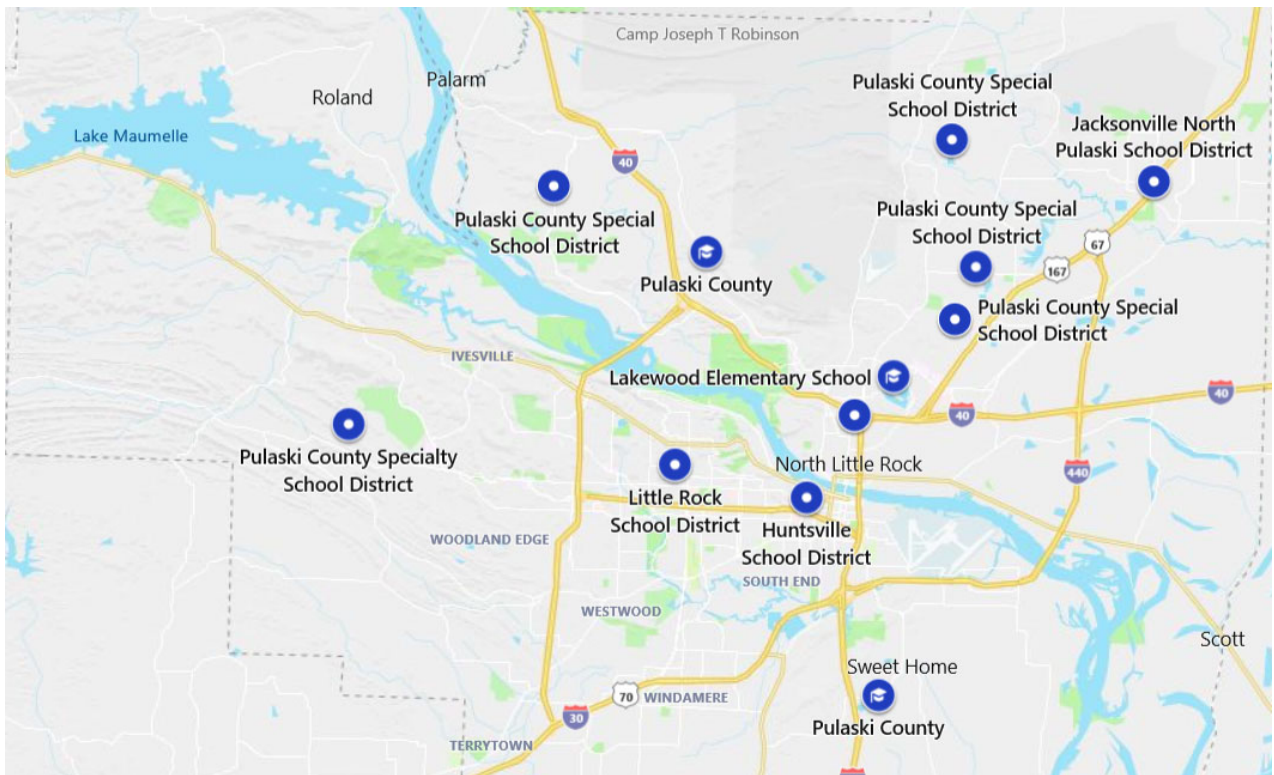
| | | | | | | | | | |
|----------------------------|--|--|--|--|--|--|--|--|--|
| LR School for the Blind | | | | | | | | | |
| LR School for the Deaf | | | | | | | | | |

| Education and Outreach Capabilities | | | | | | | |
|---|----------------|--------------|-------------|----------|-------------------|----------|--------------|
| | Pulaski County | Jacksonville | Little Rock | Maumelle | North Little Rock | Sherwood | Wrightsville |
| Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations | | | | X | | X | X |
| Ongoing public education or information program | | | | X | | X | |
| Natural disaster or safety related school programs | | | | X | | | |
| StormReady certification | | | | | | | |
| Firewise Communities certification | | | | | | | |
| Public-private partnership initiatives addressing disaster-related issues | | | | | | | |
| Website | X | X | X | X | X | X | X |
| Social Media (Facebook, Twitter, etc.) | X | X | X | X | | X | |
| Newspaper/Local Media | X | | X | X | X | X | |
| Mobile Alert System (such as Code RED) | X | X | X | X | | X | |
| Radio | | | X | | | X | |
| Phone | X | X | X | X | | X | |
| Community Mail-Outs | | | | X | | | |
| Public Meetings, Quorum Court, City Council | X | X | X | X | X | X | X |

| | Education and Outreach Capabilities | | | | | |
|---|--|-------------------------|-------------------|--------------------------|-----------------------------|----------------------------|
| | Jacksonville – North SD | North Little Rock SD | Little Rock SD | Pulaski Co Special SD | Ark School for the Blind | Ark School for the Deaf |
| Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations | | | | | | |
| Ongoing public education or information program | | | | | | |
| Natural disaster or safety related school programs | | | | | | |
| StormReady certification | | | | | | |
| Firewise Communities certification | | | | | | |
| Public-private partnership initiatives addressing disaster-related issues | | | | | | |
| Website | X | X | X | X | X | X |
| Social Media (Facebook, Twitter, etc.) | X | X | X | X | X | X |
| Newspaper/Local Media | X | X | | | | |
| Mobile Alert System (such as Code RED) | X | X | | | | |
| Radio | | | | | | |
| Phone | X | X | | | | |
| Community Mail-Outs | | | | | | |
| Public Meetings/ School Board Meetings | X | X | X | X | X | X |

| Local Utilities | | | | | | | |
|-----------------------|-----------------------|---------------------------------|------------------------|--------------------|--------------------------|---|-------------------------|
| UTILITY | <i>Pulaski County</i> | <i>Jacksonville</i> | <i>Little Rock</i> | <i>Maumelle</i> | <i>North Little Rock</i> | <i>Sherwood</i> | <i>Wrightsville</i> |
| Water Distribution | | Jacksonville Waterworks | Central Ark. Water | Central Ark. Water | Central Ark. Water | Central Ark. Water | Central Ark. Water |
| Wastewater Collection | | Jacksonville Wastewater Utility | Central Ark. Water | NLR WW | NLR WW | NLR WW | Wrightsville WW Utility |
| Wastewater Treatment | | Jacksonville Wastewater Utility | Central Ark. Water | NLR WW | NLR WW | Sherwood WW Utility | Wrightsville WW Utility |
| Electricity | | Entergy, First Electric | Entergy First Electric | Entergy | NLR Electric | First Electric Entergy NLR Electric | Entergy |
| Natural Gas | | Reliant Energy | Centerpoint Energy | Centerpoint Energy | Centerpoint Energy | Centerpoint Energy | Centerpoint Energy |

School Districts: There are four public school districts located in Pulaski County School Districts – Jacksonville – North Pulaski, Little Rock, North Little Rock and Pulaski County Special School District.



Pulaski School District School Facilities

| # | Jacksonville – North Pulaski School District | Little Rock School District | North Little Rock School District | Pulaski County Special School District |
|----|---|---|---|--|
| 1. | Administrative Office 1414 W. Main Jacksonville, AR 72076 501-241-2080 | Administrative Office 810 W. Markham Little Rock, AR 72201 501-447-1000 | Administrative Office 2400 Willow NLR, AR 72114 501-771-8000 | Administrative Office 925 E. Dixon Road Little Rock AR 72206 501-234-2000 |
| 2. | Homer Adkins Elem. 500 Cloverdale Road Jacksonville, AR 72076 501-982-3117 | Accelerated LC 7701 Scott Hamilton Little Rock, AR 72209 501-447-1350 | Boone Park Elem 1400 Crutcher St. NLR, AR 72114 501-340-5160 | Baker Elementary 15001 Kanis Road Little Rock, AR 72223 501-228-3250 |
| 3. | Bayou Meto Elem. 26405 Hwy 107 Jacksonville, AR 72076 | Bale Elem. 6501 West 32 nd Street | Center of Excellence 201 W. 22 nd St NLR, AR 72114 | Cato Elem 9906 Jacksonville Cato Rd. |

| | | | | |
|-----|---|---|--|--|
| | 501-988-4131 | Little Rock, AR 72209 | 501-975-3895 | Sherwood, AR 72120 501-833-1160 |
| 4. | Bobby G. Lester Elem. 601 Harris Road Jacksonville, AR 72076 501-982-7456 | Baseline Academy 3623 Baseline Rd Little Rock, AR 72209 501-447-3700 | Crestwood Elem. 1901 Crestwood Rd. NLR, AR 72116 | Chenal Elem 21201 Denny Road Little Rock, AR 72223 501-721-7450 |
| 5. | Murrell Taylor Elem. 1401 Murrell Taylor Dr Jacksonville, AR 72076 501-985-1581 | Booker Arts Magnet Elem. 206 Barber St. Little Rock, AR 72211 501-447-3800 | Glenview Elem. 4901 E. 19 th St. NLR, AR 72117 501-955-3630 | College Station Elem 4710 Frazier Pike Little Rock, AR 72206 501-490-5750 |
| 6. | Pinewood Elem. 1919 Northeastern Ave. Jacksonville, AR 72076 501-982-7571 | Brady Elem. 7915 W. Markham Little Rock, Ar 72205 501-447-3900 | Indian Hills Elem. 6800 Indian Hills Dr. NLR, AR 72116 501-835-5622 | Crystal Hill Elem 5001 Northshore Dr. NLR, AR 72118 501-791-8000 |
| 7. | Warren Dupree Elm 700 Gregory St Jacksonville, AR 72076 501-982-9541 | Carver Elem. 2100 E. 6 th St. Little Rock, AR 72202 501-447-4000 | Lakewood Elem. 1800 Fairway Ave. NLR, AR 72116 501-771-8270 | Daisy Bates Elem. 14300 Dineen Dr. Little Rock, AR 72206 501-897-2171 |
| 8. | Jacksonville Middle School 718 Harris Road Jacksonville, AR 72076 501-982-9436 | Central High 1500 S. Park St Little Rock, AR 72202 501-447-1400 | Meadow Park Elem. 801 E. Bethany Rd. NLR, AR 72117 501-955-3620 | Harris Elem. 4424 Hwy 161 N. NLR, AR 72117 501-955-3550 |
| 9. | Jacksonville High Schl 1301 W. Main Street Jacksonville, AR 72076 501-982-2128 | Chicot Elem 11100 Chicot Rd Mabelvale, AR 72013 | NLR Middle School (6 th 7 th 8 th) 200 Lakeview Rd NLR, AR 72116 501-771-8250 | Joe T. Robinson Elem. 21600 Hwy 10 Little Rock, AR 72223 501-868-2420 |
| 10. | | Cloverdale Middle Sch 6300 Hinkson Road Little Rock, AR 72209 501-447-2500 | Northern Little Rock Academy (9 th) 5500 Lynch Drive NLR, AR 72117 | Landmark Elem 16712 Arch Street Pk Little Rock, AR 72206 501-88-8790 |
| 11. | | David O. Dodd Elem 6423 Stage Coach Rd | NLR High School 201 W. 22 nd NLR, AR 72114 501-771-8100 | Lawson Elem 19901 Lawson Rd Little Rock, AR 72210 |

| | | | | |
|-----------|--|---|--|---|
| | | Little Rock, AR 72204 | | 501-821-7000 |
| 12 | | Don R. Roberts Elem. 16601 La Mache Dr. Little Rock, AR 72223 501-447-8300 | Ridge Road Elem. 4601 Ridge Rd NLR, AR 72116 501-771-8155 | Oak Grove Elem 5703 Oak Grove Rd NLR, AR 72116 |
| 13 | | Dunbar Middle School 1100 Wright Ave. Little Rock, AR 72206 501-447-2600 | 7 th Street Elem. 1200 Bishop Lindsey Ave. NLR, AR 72116 501-771-8155 | Oak Brooke Elem 2200 Thorn Hill Sherwood, AR 72120 501-833-1190 |
| 14 | | Fair Park Early Childhood Ctr. 616 N. Harrison Little Rock, AR 72205 501-447-4400 | | Pine Forest Elem 400 Pine Forest Dr Maumelle, AR 72113 501-851-5380 |
| 15 | | Forest Heights Stem (K-8) 5901 Evergreen Drive Little Rock, AR 72205 | | Sylvan Hills Elem 402 Dee Jay Hudson Dr Sherwood, AR 72120 501-833-1140 |
| 16 | | Forest Park Elem 1600 N. Tyler Little Rock, AR 72207 | | William Jefferson Clinton Elem 142 Hollywood Ave. Sherwood, AR 72120 501-833-1200 |
| 17 | | Fulbright Elem. 300 Pleasant Valley Little Rock, AR 72212 501-447-4700 | | Joe T. Robinson Middle School 21201 Cantrell Little Rock, AR 72223 |
| 18 | | Gyer Springs Early Childhood 5240 Mabelvale Pike Little Rock, AR 72209 501-447-4800 | | Maumelle Middle Sch 1000 Carnahan Dr Maumelle, AR 72113 501- 851-8990 |
| 19 | | Gibbs International Elem. 1115 W. 16 th St | | Mills Middle School 1205 E. Dixon Rd |

| | | | | |
|----|--|--|--|---|
| | | Little Rock, AR 72202 501-447-4900 | | Little Rock, AR 72206 501-490-5370 |
| 20 | | Hamilton Learning Academy 4015 Stannus Little Rock, AR 72204 501-447-3400 | | Sylvan Hills Middle School 1001 Johnson St Sherwood, AR 72120 501-833-1120 |
| 21 | | Henderson Middle School 401- John Barrow Road Little Rock, AR 72205 501-447-2800 | | Joe T. Robinson High 21501 Cantrell Rd Little Rock, AR 72223 501-868-2400 |
| 22 | | J. A. Fair High 13420 David O. Dodd Little Rock, AR 72210 501-447-1700 | | Maumelle High School 100 Victory Ln Maumelle, AR 72113 501-851-8530 |
| 23 | | Jefferson Elem. 2600 N. McKinley Little Rock, AR 72202 | | Sylvan Hills High 484 Bear Paw Road Sherwood, AR 72120 501-833-1100 |
| 24 | | Little Rock SW High 9715 Mabelvale Pike Little Rock, AR 72103 501-447-9103 | | Sylvan Hills North High School 10020 Bamboo Lane NLR, AR 72120 501-833-1170 |
| 25 | | Little Rock West High 5701 Ranch Drive Little Rock, AR 72223 501-447-9103 | | Wilbur D. Mills University Studies 708 E. Dixon Road Little Rock, AR 72206 501-490-4700 |
| 26 | | Hall High 6700 H. Street 501-447-1900 Little Rock, AR 72205 501-447-1900 | | |
| 27 | | Mabelvale Elem. 6700 H. Street Little Rock, AR 72103 | | |

| | | | | |
|-----------|--|---|--|--|
| | | 501-447-5400 | | |
| 28 | | Mabelvale Middle Sch. 1081 Mabelvale West Mabelvale, AR 72103 501-447-3006 | | |
| 29 | | Mann Middle Sch. 1000 E. Roosevelt Little Rock, AR 72206 501-447-3100 | | |
| 30 | | M. L. K. Elem. 905 State Capitol Little Rock, AR 72202 501-447-5100 | | |
| 31 | | McClellan High Sch. 9417 Gyer Springs Little Rock, AR 72209 501-447-2100 | | |
| 32 | | McDermott Elem. 1200 Reservoir Rd. Little Rock, AR 72227 501-447-5500 | | |
| 33 | | Meadowcliff Elem. 25 Sheraton Dr. Little Rock, AR 72227 501-447-5500 | | |
| 34 | | Otter Creek Elem. 16000 Otter Creek Parkway Little Rock, AR 72210 501-447-5800 | | |
| 35 | | Parkview High Sch. 2501 John Barrow Rd Little Rock, AR 72204 501-447-2300 | | |
| 36 | | Pulaski Heights Elem. 319 N. Pine | | |

| | | | | |
|----|--|---|--|--|
| | | Little Rock, AR 72205 501-447-5900 | | |
| 37 | | Rockerfeller Elem. 700 E. 17 th St. Little Rock, AR 72206 501-447-6200 | | |
| 38 | | Romine Elem. 3400 Romine Rd Little Rock, AR 72204 501-447-6300 | | |
| 39 | | Stephens Elem 3700 W. 18th St. Little Rock, AR 72204 501-447-6400 | | |
| 40 | | Terry Elem. 10800 Mara Lynn Dr. Little Rock, AR 72204 501-447-6500 | | |
| 41 | | Wakefield Elem. 75 Westminster Dr. Little Rock, AR 72209 501-447-6600 | | |
| 42 | | Washington Elem. 2700 Main St Little Rock, AR 72206 501-447-6700 | | |
| 43 | | Watson Elem. 7000 Valley Dr. Little Rock, AR 72209 501-447-6800 | | |
| 44 | | Western Hills Elem 4901 Western Hills Ave. Little Rock, AR 72204 501-447-6900 | | |
| 45 | | Williams Elem 7300 Evergreen Little Rock, AR 72207 501-447-7100 | | |

2.2.1.1 Improving Capabilities

Leadership and representatives in all participating jurisdictions are very receptive to mitigation. The Pulaski County, the Local Jurisdictions and Pulaski County OEM make mitigation a first priority. Representatives are actively seeking additional funding to improve the readiness and preparedness of their communities. Ways the communities are improving capabilities are:

- Becoming StormReady Certified and organizing a Community Emergency Response Team (CERT).
- Becoming Firewise Communities
- Regularly attend state-wide full-scale drills for evacuation.
- Expand upon education and outreach by establishing and promoting cooling centers and shelters.
- Expand the Road Department Budget to improve culverts, box tiles, and water crossings.
- Representatives to attend training through ADEM and FEMA to include ICS and NIMS.
- Create a Transportation Plan to include in the Master Plan.
- Regular Fire Department trainings including fire mitigation
- Utilize existing Planning and code enforcement departments to review and strengthen building codes and ordinances with disaster mitigation in mind.

Improving Capabilities by Jurisdiction

Pulaski County could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The county plans to include the Hazard Mitigation plan with their existing Emergency plans

The City of Cammack Village could improve their capabilities by implementing annual goals for management by addressing mitigation activities starting with joining the National Flood Insurance Program, establishing a trained floodplain manager. Inventory and address mitigation activities. Create an emergency response plan and include Hazard Mitigation plan.

City of Jacksonville could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The city plans to include the Hazard Mitigation plan with their existing Emergency plans.

City of Little Rock could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The city plans to include the Hazard Mitigation plan with their existing Emergency plans.

City of Maumelle could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The city plans to include the Hazard Mitigation plan with their existing Emergency plans.

City of North Little Rock could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The county plans to include the Hazard Mitigation plan with their existing Emergency plans.

The City of Sherwood could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to

accomplish these goals. The county plans to include the Hazard Mitigation plan with their existing Emergency plans.

The City Wrightsville could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The city could improve building codes and ordinances with mitigation in mind. The county plans to include the Hazard Mitigation plan with their existing Emergency plans.

Pulaski Co Special School District could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The school plans to include the Hazard Mitigation plan with their existing Emergency plans.

Little Rock Special School District could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The school plans to include the Hazard Mitigation plan with their existing Emergency plans.

Jacksonville/North Pulaski School District could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The school plans to include the Hazard Mitigation plan with their existing Emergency plans.

School for the Blind could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The school plans to include the Hazard Mitigation plan with their existing Emergency plans.

School for the Deaf could improve their capabilities by implementing annual goals for management to address mitigation activities, and provide management and staff with additional training to accomplish these goals. The school plans to include the Hazard Mitigation plan with their existing Emergency plans.

2.2.2 NFIP Participation

| Jurisdiction | NFIP Member | Community Identification Number | Init FHBM | Init FIRM | Current Effective Map Date | Reg-Emergency Date | CRS |
|-------------------|-------------|---------------------------------|-----------|-----------|----------------------------|--------------------|-----|
| Pulaski Co | Yes | 050179B | 10/25/77 | 07/16/81 | 06/07/19 | 07/16/81 | No |
| Cammack Village | No | 050310B | 04/18/75 | 07/06/15 | 06/07/19 | 04/18/76 | No |
| Jacksonville | Yes | 050180B | 02/01/74 | 09/29/78 | 06/07/19 | 09/29/78 | Yes |
| Little Rock | Yes | 050181B | 03/01/74 | 03/04/80 | 06/07/19 | 03/04/80 | Yes |
| Maumelle | Yes | 050577B | | 11/02/94 | 07/06/15 | 02/29/88 | No |
| North Little Rock | Yes | 050182B | 11/02/73 | 07/16/80 | 07/06/15 | 07/16/80 | No |
| Sherwood | Yes | 050235B | 05/17/74 | 10/17/78 | 07/06/15 | 10/17/78 | No |
| Wrightsville | Yes | 050142B | 10/25/77 | 07/16/81 | 07/06/15 | 03/07/17 | No |

| NFIP Members | |
|-----------------------|---|
| Pulaski County | <p>Participation: Pulaski County participates in the NFIP by assisting the residences with filling out documents for the NFIP and educating citizens about the NFIP program. The county plans to continue participating through continuing floodplain education, and staying in compliance with NFIP. The County maintains elevation certificates.</p> <p>Insurance Summary: There are 311 policies in force, \$79,823,600 insurance in force, 313 paid losses with a total loss paid of \$7,523,909.03. There have been 29 Substantial Damage Claims since 1978.</p> <p>Staff Resources: Pulaski County (Pulaski County Office of Emergency Management) has a Certified Floodplain Manager who oversees the floodplain management. The NFIP administrative services include floodplain maps, permit reviews and inspections.</p> <p>If floodplain resources are needed that the county cannot provide, the County's CFM request assistance from the Arkansas Natural Resource Conservation Service and FEMA.</p> <p>Compliance History: Pulaski County is in good standing with the NFIP, and there are no outstanding compliance issues. The last Community Assistance Visit (CAV) or Community Assistance was on 9/23/2009.</p> <p>Pulaski County intends to maintain compliance with the NFIP by continuing to ensure all constructing, locating, substantially altering or changing the use of any structure or land after the effective date of the county's floodplain ordinance.</p> |
| Jacksonville | <p>Participation: Assisting the residences by assisting with the filling out documents for the NFIP and educating citizens about the NFIP program. Permits are issued for those wishing to build in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The city plans to continue participating through continuing floodplain education, and staying in compliance with NFIP. The city maintains elevation certificates and has building code enforcement regulations.</p> <p>Insurance Summary: There are 257 policies in force, \$52,903,600 insurance in force, 94 paid losses with a total loss paid of \$1,157,117.30. There have been 5 Substantial Damage Claims since 1978.</p> <p>Staff Resources: The City of Jacksonville has a Floodplain Manager who oversees the floodplain management. The NFIP administrative services include floodplain maps, permit reviews and inspections. The City floodplain manager is also the building code enforcement officer.</p> |

| | |
|--------------------|--|
| | <p>If floodplain resources are needed that the city cannot provide, the City's CFM request assistance from the Pulaski County Floodplain Manager or the Arkansas Natural Resource Conservation Service and FEMA.</p> <p>Compliance History: The City of Jacksonville is in good standing with the NFIP, and there are no outstanding compliance issues. The last Community Assistance Visit (CAV) or Community Assistance was on 11/11/2019. CRS class is 09 with a 5% discount rate.</p> <p>The City of Jacksonville intends to maintain compliance with the NFIP by continuing to ensure all constructing, locating, substantially altering or changing the use of any structure or land after the effective date of the city's floodplain ordinance.</p> |
| Little Rock | <p>Participation: Assisting the residences by assisting with the filling out documents for the NFIP and educating citizens about the NFIP program. Permits are issued for those wishing to build in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The city plans to continue participating through continuing floodplain education, and staying in compliance with NFIP. The city maintains elevation certificates and has building code enforcement regulations.</p> <p>Insurance Summary: There are 1,112 policies in force, \$270,134,300 insurance in force, 830 paid losses with a total loss paid of \$12,134,300.44 with 74 Substantial Damage Claims since 1978. Staff Resources: The City of Little Rock has a Certified Floodplain Manager who oversees the floodplain management. The NFIP administrative services include floodplain maps, permit reviews and inspections. The City floodplain manager is also the building code enforcement officer.</p> <p>If floodplain resources are needed that the city cannot provide, the City's CFM request assistance from the Pulaski County Floodplain Manager or the Arkansas Natural Resource Conservation Service and FEMA.</p> <p>Compliance History: The City of Little Rock is in good standing with the NFIP, and there are no outstanding compliance issues. The last Community Assistance Visit (CAV) or Community Assistance was on 8/13/14. The City of Little Rock is a CRS classification of 07 with a 15% discount.</p> <p>The City of Little Rock intends to maintain compliance with the NFIP by continuing to ensure all constructing, locating, substantially altering or changing the use of any structure or land after the effective date of the city's floodplain ordinance.</p> |
| Maumelle | <p>Participation: Assisting the residences by assisting with the filling out documents for the NFIP and educating citizens about the NFIP program. Permits are issued for those wishing to build in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The city plans to continue participating through continuing floodplain education, and staying in compliance with NFIP. The city maintains elevation certificates and has building code enforcement regulations.</p> |

| | |
|--------------------------|---|
| | <p>Insurance Summary: There are 83 policies in force, \$26,082,000 insurance in force, 10 paid losses with a total loss paid of \$111,859.39.</p> <p>Staff Resources: The City of Maumelle has a Certified Floodplain Manager who oversees the floodplain management. The NFIP administrative services include floodplain maps, permit reviews and inspections.</p> <p>If floodplain resources are needed that the city cannot provide, the City's CFM request assistance from the Pulaski County Floodplain Manager or the Arkansas Natural Resource Conservation Service and FEMA.</p> <p>Compliance History: The City of Maumelle is in good standing with the NFIP, and there are no outstanding compliance issues. The last Community Assistance Visit (CAV) or Community Assistance was on 03/08/2019.</p> <p>The City of Maumelle intends to maintain compliance with the NFIP by continuing to ensure all constructing, locating, substantially altering or changing the use of any structure or land after the effective date of the city's floodplain ordinance.</p> |
| North Little Rock | <p>Participation: Assisting the residences by assisting with the filling out documents for the NFIP and educating citizens about the NFIP program. Permits are issued for those wishing to build in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The city plans to continue participating through continuing floodplain education, and staying in compliance with NFIP. The city maintains elevation certificates and has building code enforcement regulations.</p> <p>Insurance Summary: There are 493 policies in force, \$102,951,100 insurance in force, 232 paid losses with a total loss paid of \$3,743,200.56. There have been 12 Substantial Damage Claims since 1978.</p> <p>Staff Resources: The City of North Little Rock has a Floodplain Manager who oversees the floodplain management. The NFIP administrative services include floodplain maps, permit reviews and inspections.</p> <p>If floodplain resources are needed that the city cannot provide, the City's CFM request assistance from the Pulaski County Floodplain Manager or the Arkansas Natural Resource Conservation Service and FEMA.</p> <p>Compliance History: The City of North Little Rock is in good standing with the NFIP, and there are no outstanding compliance issues. The last Community Assistance Visit (CAV) or Community Assistance was on 8/8/2014.</p> <p>The City of North Little Rock intends to maintain compliance with the NFIP by continuing to ensure all constructing, locating, substantially altering or changing the use of any structure or land after the effective date of the city's floodplain ordinance.</p> |
| Sherwood | <p>Participation: Assisting the residences by assisting with the filling out documents for the NFIP and educating citizens about the NFIP program. Permits are issued for those wishing to build in the floodplain, and then the</p> |

| | |
|---------------------|---|
| | <p>floodplain manager monitors the construction process to ensure compliance. The city plans to continue participating through continuing floodplain education, and staying in compliance with NFIP. The city maintains elevation certificates and has building code enforcement regulations.</p> <p>Insurance Summary: There are 309 policies in force, \$66,722,900 insurance in force, 197 paid losses with a total loss paid of \$2,454,992.63.</p> <p>Staff Resources: The City of North Sherwood has a Certified Floodplain Manager who oversees the floodplain management. The NFIP administrative services include floodplain maps, permit reviews and inspections. The City floodplain manager is also the City Engineer.</p> <p>If floodplain resources are needed that the city cannot provide, the City's CFM request assistance from the Pulaski County Floodplain Manager or the Arkansas Natural Resource Conservation Service and FEMA.</p> <p>Compliance History: The City of Sherwood is in good standing with the NFIP, and there are no outstanding compliance issues. The last Community Assistance Visit (CAV) or Community Assistance was on 2/23/2017.</p> <p>The City of Sherwood intends to maintain compliance with the NFIP by continuing to ensure all constructing, locating, substantially altering or changing the use of any structure or land after the effective date of the city's floodplain ordinance.</p> |
| Wrightsville | <p>Participation: Assisting the residences by assisting with the filling out documents for the NFIP and educating citizens about the NFIP program. Permits are issued for those wishing to build in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The city plans to continue to participate through continuing floodplain education, and staying in compliance with NFIP. The city maintains elevation certificates and has building code enforcement regulations.</p> <p>Insurance Summary: <i>no information available.</i></p> <p>Staff Resources: The City of Wrightsville has a Floodplain Manager who oversees the floodplain management. The NFIP administrative services include floodplain maps, permit reviews and inspections. If floodplain resources are needed that the city cannot provide, the City's CFM requests assistance from the Pulaski County Floodplain Manager or the Arkansas Natural Resource Conservation Service and FEMA.</p> <p>Compliance History: The City of Wrightsville is in good standing with the NFIP, and there are no outstanding compliance issues.</p> <p>The City of Wrightsville intends to maintain compliance with the NFIP by continuing to ensure all constructing, locating, substantially altering or changing the use of any structure or land after the effective date of the city's floodplain ordinance.</p> |

Cammack Village does not currently participate in the NFIP due to lack of community resources and the small size of the floodplain existing in their communities.

2.2.3 Fire Districts

Fire Districts that cover Pulaski County

Fire Departments, Chief's name, station phone number, and ISO rating.

PULASKI
COUNTY
FIRE
DEPARTMENTS ISO
RATINGS

| FIRE DEPARTMENT | ISO RATING | CHIEF NAME | STATION PHONE |
|-------------------|------------|-------------------|---------------|
| Alexander | 2 | Mark Ridgeway | 847-5265 |
| Arch Street | 4/4X | Harvey Durham | 888-4162 |
| Camp Robinson | 519 | Stan Crisp | 212-5280 |
| Crystal | 3 | Chad Forshee | 821-7099 |
| East Pulaski | 517 | Steven Strawn | 961-9116 |
| Gravel Ridge | 2 | Andy Traffanstedt | 835-3710 |
| Hensley | 619 | David Jones | 397-2728 |
| Hwy. 365 South | 9 | Robert Foley | 897-5811 |
| Jacksonville | 2 | Alan Laughy | 982-1616 |
| Lake Maumelle | 619 | Lance Logan | 868-7100 |
| Little Rock | 1 | Delphone Hubbard | 918-3700 |
| Maumelle | 2 | Gerald Ezell | 851-1337 |
| McAlmont | 5 | Bobby Moss | 563-1251 |
| Northeast Saline | 719 | Rob Bradberry | 847-1500 |
| North Little Rock | 1 | Gerald Tucker | 340-5377 |
| North Pulaski | 4 | Randy Blakey | 988-2494 |
| Oak Grove | 4 | Dennis Poole | 851-1581 |
| Quail Creek | 9 | Cody Church | 340-6911 |
| Runyan Acres | 3 | Ken Partridge | 835-8183 |
| Scott | 7/10 | Ron Myers | 961-2424 |
| Sherwood | 2 | David Teague | 835-0342 |
| Southbend | 7/10 | Kenny Fraley | 982-7729 |
| Sweet Home | 4/4X | Michael Marbley | 490-2509 |
| West Pulaski | 619 | Scott Joblin | 821-9320 |
| Williams Junction | 4110 | Atlas Smith | 333-1939 |
| Wrightsville | 9/10 | Art Willis | 897-2111 |

2.2.4 Transportation

The major highways in Pulaski County are I-30, I-40, Future I-57, I-430, I-440, I-530, I-6-30, US Highway 65, US Highway 67, US Highway 70, US Highway 165, US Highway 167, Highway 5, Highway 10, Highway 100, Highway 161, Highway 300, Highway 338, Highway 365 and Highway 367.



2.3 General Data: Planning Area and Population



Pulaski County is Arkansas's fifth county, formed on December 15, 1818. The county is named for Casimir Pulaski, a Polish volunteer who saved George Washington's life during the American Revolution War.

Information from American Fact Finder (Census)

| <i>Jurisdiction</i> | Population | Housing Units | Area in Square Miles | Population Density Per Square Mile of Land Area |
|----------------------------|-------------------|----------------------|-----------------------------|--|
| <i>Pulaski County</i> | 392,680 | 185,967 | 759.76 | 503.8 |
| <i>Cammack Village</i> | 763 | 365 | 0.29 | 2,569 |
| <i>Jacksonville</i> | 28,364 | 12,049 | 28.10 | 1,009.40 |
| <i>Little Rock</i> | 193,524 | 98,026 | 119.20 | 1,623.5 |
| <i>Maumelle</i> | 17,163 | 7,742 | 12.5 | 1,424.60 |
| <i>North Little Rock</i> | 62,304 | 26,612 | 51.50 | 1,209.9 |
| <i>Sherwood</i> | 29,364 | 13,328 | 20.61 | 1,432.5 |
| <i>Wrightsville</i> | 2,114 | unknown | unknown | 804 |

SECTION 3: Hazard Identification and Risk Assessment

3.1 Hazard Identification and Prioritization

Hazard identification, the process of identifying hazard that threatens a given area, is the first step in the risk assessment process. Pulaski County has identified several natural hazards that, because they pose a threat to the County and its residents, have warranted a complete profile in this hazard mitigation plan. Please note that the update period of this plan is January 1, 2014 through December 31, 2019.

The following hazards were identified from historical information provided by HMPT members, newspapers, review of plans and reports, internet research, the State Mitigation Plan, and FEMA publication “Multi-Hazard-Identification and Risk Assessment”, and information provided by FEMA and ADEM.

| Hazards | Hazard Events during the update period |
|--------------|---|
| Dam Failure | No dam failures for Pulaski County. |
| Drought | 393 events reported between 2015 and 2019 |
| Earthquake | None |
| Extreme Heat | 1 event reported between 2015 and 2019 |
| Flood | 12 flood and 73 flash flood events between 2015 and 2019 |
| Thunderstorm | 137 events including Hail, Lightning and High Winds between 2015 and 2019 |
| Tornado | 8 events between 2015 and 2019 |
| Wildfire | 103 wildfire events between 2015 and 2019 |
| Winter Storm | 3 winter storm events between 2015 and 2019 |

Although the “Land Subsidence” hazard was profiled in the original Pulaski County Hazard Mitigation Plan it is not being profiled in the plan update for the following reasons: 1) lack of previous occurrences (none documented), 2) the Hazard Mitigation Planning Team did agreed that this hazard does not affect any areas of Pulaski County based on history, lack of previous occurrences and lack of public concern about it. Furthermore, Land Subsidence was classified as “unlikely” for probability of future events.

High Winds and Hail- While profiled separately in the 2008 Pulaski County Hazard Mitigation Plan, “high winds” and “hail” will be included as a component of Thunderstorm for this plan update, as is commonly accepted by FEMA.

| Presidential Disaster Declarations in Pulaski County from 2010 to current date | | | |
|--|-----------|--|--|
| Declaration # | Date | Purpose | Amnt. Obligated for Public Assistance (PA) |
| DR-4441 | 6/8/2019 | Severe Storm & Flooding | \$25,187,569.74 |
| DR-4100 | 1/29/2013 | Severe Winter Storm | \$8,548,088.10 |
| DR1975 | 5/2/2011 | Severe Storms, Tornadoes & Associated Flooding | \$49,951,392.96 |

3.2 Vulnerability and Risk Assessment by Hazard

The Pulaski County Hazard Mitigation Plan includes a description or profile, location, and extent of all natural hazards that can affect each jurisdiction.

Description describes the natural hazard that can affect the jurisdictions in the planning area.

Location (Geographic Area Affected) is where geographic areas in the planning area that are affected by the hazard, and when possible maps were used to illustrate the location. But for some hazards, such as tornados, the plan stated that the entire planning area is equally at risk to that hazard.

Extent describes the strength or magnitude of the hazard. This will usually be demonstrated with a scientific chart or scale.

Previous Occurrences lists past hazard events for each jurisdiction.

Probability of Future Events means the likelihood of the hazard occurring in the future and may be defined in terms of general descriptors, historical frequencies, and statistical probabilities. Statistical probabilities often refer to events of a specific size or strength. Hazard likelihood can also be compared using general descriptions or rankings. For the purpose of this plan we will use the general descriptors to describe the likelihood of hazard events based on historical frequency.

The percent probability was determined using the Poisson distribution, an equation that expresses the probability of a given number of events occurring in a fixed interval of time if these events occur with a known average rate and independently of the time since the last event. A description of each identified hazard’s impact on the community as well as an overall summary of the community’s vulnerability for each jurisdiction is included.

Impact and Overall Jurisdictional Vulnerability– is the consequence or effect of the hazard on the community and its assets. Impacts will be described by referencing historical disaster impacts and/or an estimate of potential future losses, such as percent damage of total exposure. It will identify structures, systems, populations or other community assets as defined by the community that are susceptible to

damage and loss from hazard events. It is a list of key issues or problem statements that clearly describes the community's greatest vulnerabilities and that will be addressed in the mitigation strategy.

Repetitive Loss Properties and Severe Repetitive Loss Properties- addresses NFIP insured structures describing the types (residential, commercial, institutional, etc.) and estimates the number of repetitive loss properties located in the identified flood hazard areas.

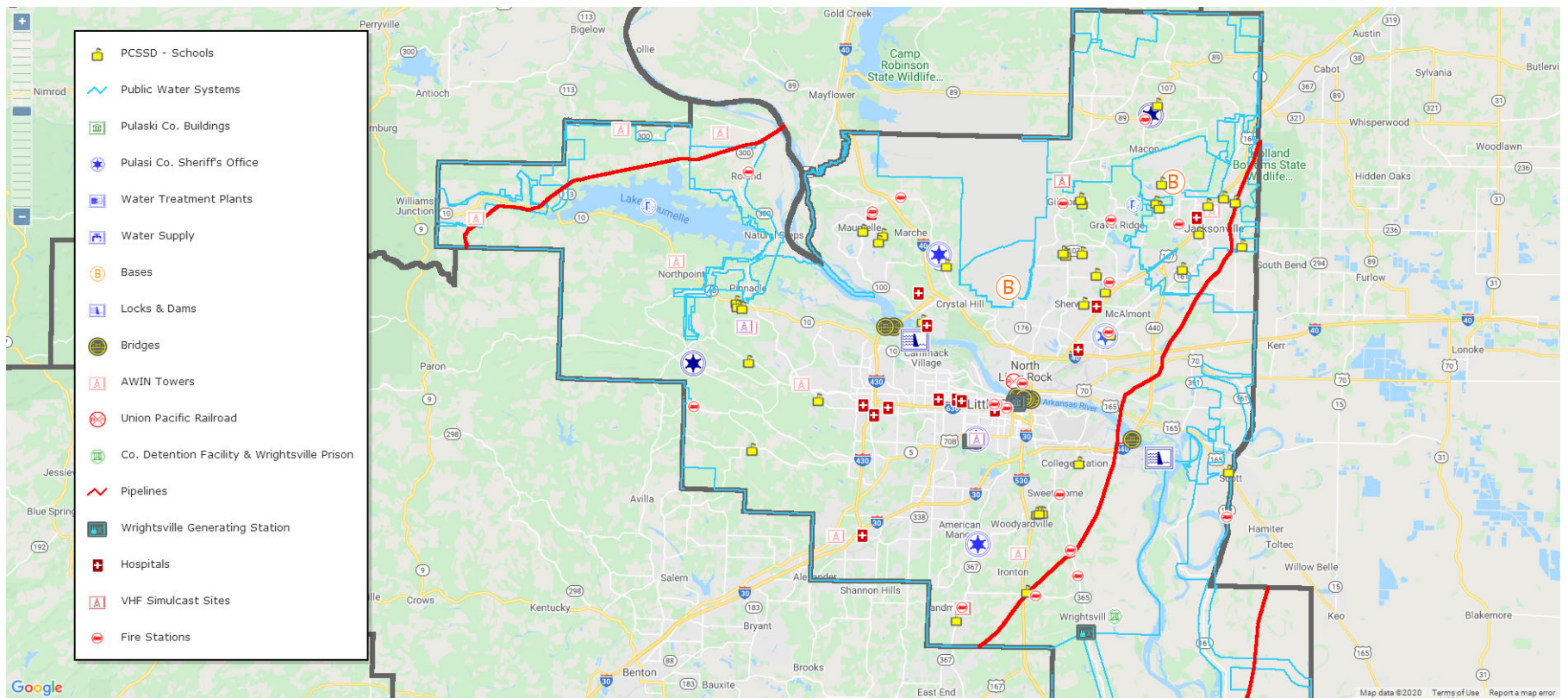
3.2.1 Critical Facilities

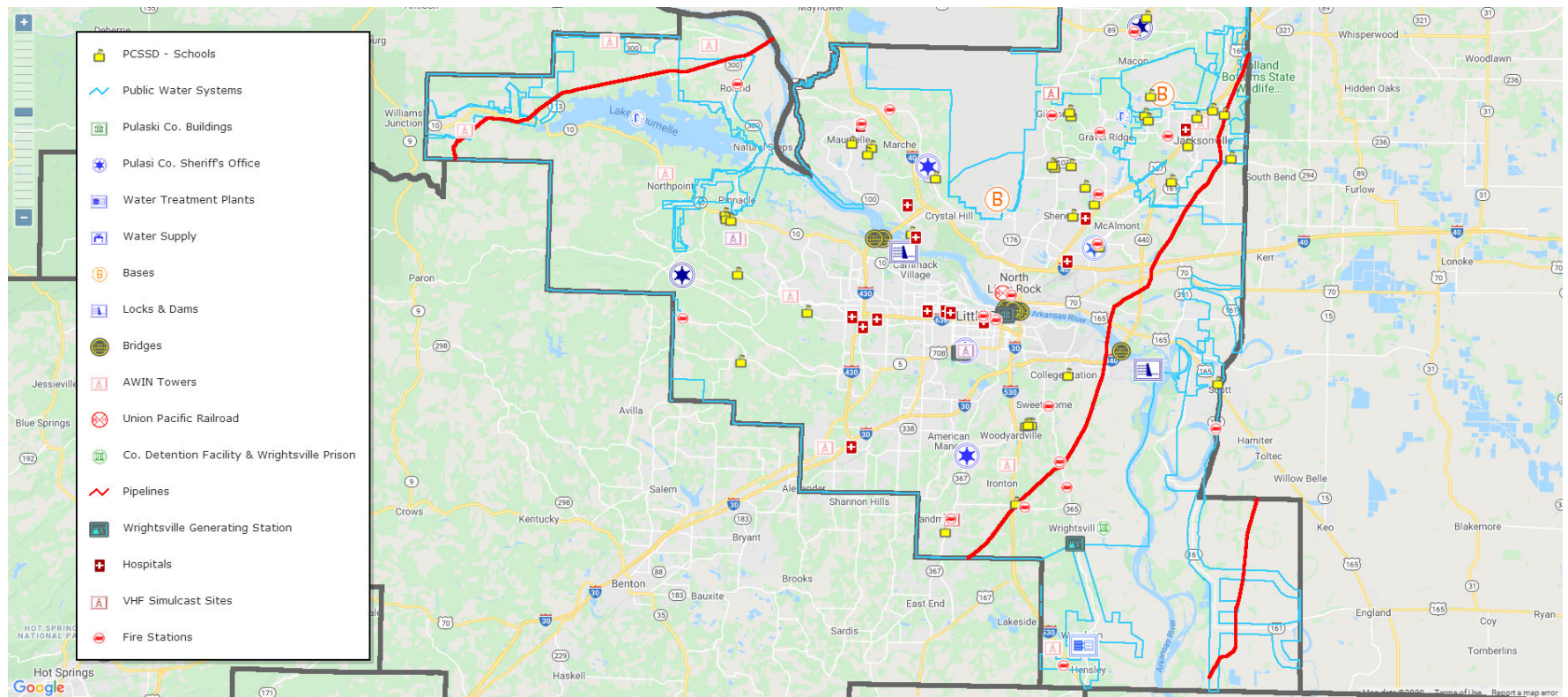
Critical facilities for each jurisdiction are provided below. If a hazard affects the entire planning area's structures and infrastructure, these critical facilities area included, unless otherwise stated in each hazard profile.

Critical Facilities for Pulaski County

1. Lake Maumelle for water supply
2. Little Rock Air Force Base
3. Terry Lock & Dam
4. Murray Lock & Dam
5. Harry L. Oswald Generating Station at Wrightsville on Hwy 365 South that's powered by natural gas
6. Natural gas pipeline off 145th street in Wrightsville
7. Pulaski County Detention Facility
8. Bridges over Arkansas River
 - a. Broadway Bridge
 - b. I-30 Bridge
 - c. I-430 Bridge
 - d. Big Dam Bridge
 - e. Two Rivers Park Bridge
 - f. I-440 Bridge
 - g. Junction Bridge
 - h. Main Street Bridge
9. Camp Robinson
10. Woodson-Hensley Water Company – water treatment plant
11. North Pulaski Water Treatment Plant
12. Union Pacific Railroad
13. Pulaski County Sheriff's Office/Building
14. Pulaski County Substations
 - a. North-East Substation
 - b. North-Central Substation
 - c. North-West Substation
 - d. South-Central Substation

- e. South-West Substation
- 15. Pulaski County Special School District
 - a. Elementary Schools
 - i. Baker
 - ii. Cato
 - iii. Chenal
 - iv. College Station
 - v. Crystal Hill
 - vi. Daisy Bates
 - vii. Harris
 - viii. Joe T. Robinson
 - ix. Landmark
 - x. Lawson
 - xi. Oak Grove
 - xii. Oakbrooke
 - xiii. Pine Forest
 - xiv. Sherwood
 - xv. Sylvan Hills
 - xvi. William Jefferson Clinton
 - b. Middle Schools
 - i. Joe T. Robinson
 - ii. Maumelle
 - iii. Mills
 - iv. Sylvan Hills
 - c. High Schools
 - i. Joe T. Robinson
 - ii. Maumelle
 - iii. Sylvan Hills
 - iv. Sylvan Hills High North
 - v. Wilbur D. Mills University Studies
- 16. Wrightsville Prison
- 17. Pulaski County Courthouse and Administration Building
- 18. Public Works Facility
- 19. AWIN Towers
- 20. VHF simulcast sites





3.2.2 Structure Data

HAZUS Data from the 2018 Arkansas State All-Hazard Mitigation Plan estimates the following Housing growth for Pulaski County as a whole:

| Housing Units 2000 | Housing Units 205 | Percent of Housing Change 200-2015 | Mobile Homes 2015 | Mobile Home Percent of Housing, 2015 |
|--------------------|-------------------|------------------------------------|-------------------|--------------------------------------|
| 161,135 | 183,269 | 13.75% | 22,134 | 6.6% |
| | | | | |

Closely tracking population data, but tending to lag population changes, housing data is a good indicator of changing state demographics and growth. Over the period of 2000 to 2015 the State of Arkansas has been experiencing a yearly housing increase of 15.49% or 181,719 units. The higher a county's housing stock, the greater the change their hazard vulnerability will increase as well.

3.3 Methodology used in Estimating Potential Loss

The methodology used in this plan for the potential loss estimate was developed by using past hazard events data from The National Climatic Data Center (NCDC) Storm Events Database and the NOAA National Centers for Environmental Information. If information was not able to be obtained of a certain type past hazard event, an estimate of potential loss was not completed due to the lack of information.

3.4 Natural Hazards Affecting Pulaski County

This mitigation plan addresses the natural hazards that can affect Pulaski County, cities of Cammack Village, Jacksonville, Little Rock, Maumelle, North Little Rock, Sherwood, Wrightsville, and the School Districts Jacksonville-North Pulaski, Little Rock, North Little Rock, Pulaski County Special, Ark. School for the Blind and Arkansas School for the Deaf. The hazards which have affected Pulaski County in the past or could possibly affect in the near future are dam failure, drought, earthquake, extreme heat, flooding, thunderstorms, tornadoes, wildfire, and winter storms.

3.4.1. Dam Failure

According to the Association of State Dam Safety Officials, the term dam is defined in the rules as "any barrier, including one for flood detention, designed to impound liquid volumes." A dam failure is the collapse, breach, or other failure resulting in downstream flooding. A dam impounds water in the upstream area, referred to as the reservoir. The amount of water impounded is measured in acre-ft. An acre-foot is the volume of water that covers an acre of land to a depth of one foot. As a function of upstream topography, even a very small dam may impound or detain many acre-ft. of water. Two factors influence the potential severity of a full or partial dam failure: the amount of water impounded, and the density, type, and value of development and infrastructure located downstream.

Low Risk Dams that are private, county or state owned dams not presenting a danger to individuals, structures, residential housing, county roads or state highways will not be addressed in this plan.

According to the Arkansas Natural Resource Commission (ANRC) Title 7, Sections 705.3 – 705.4, the criteria for size classifications are based on height of dam and impoundment capacity, and hazard classifications, which are used in this plan to describe the level of risk and severity associated with dam failure.

Section 705.5 provides detail on the hydrologic criteria for dams based on hazard classification. The classifications are shown in the table below:

| Category | Maximum Storage (ac-ft) | Height (Feet) |
|--------------|-------------------------|---------------|
| Small | 50 to 1000 | 25-40 |
| Intermediate | 1000 and <50,000 | 40 and <100 |
| Large | 50,000 | 100 |

Location

According to the Natural Resource Division, Dam Safety Branch of the Arkansas Department of Agriculture, there are a total of 75 regulated dams throughout the entire Pulaski County planning area. Of these dams, 19 are classified as high hazard dams, 30 are classified as significant hazard dams and 26 are classified as low hazard dams.

| NRD PERMIT # | DAM_NAME | ARNUM | LAT_DEG | LON | RIVER_STREAM | AFF_CITY | OWNER | OWNER_TYPE | YEAR_COMPLETION | LENGTH | DAM_HEIGHT | HAZARD |
|--------------|-----------------------------|---------|---------|-----|----------------------|-------------------|--------------------------------------|------------|-----------------|--------|------------|--------|
| NP | BEALL LAKE DAM | AR00080 | 34 | | KELLOGG CREEK-TR | GRAVEL RIDGE | J Johnson and D Beall | P | 1952 | 609 | 14 | H |
| NP | DAVIS LAKE DAM | AR01226 | 34 | | BAYOU METO-TR | JACKSONVILLE | H S Davis | P | 1947 | 540 | 24 | H |
| NP | FOREMAN LAKE DAM | AR00101 | 34 | | GRASSY FLAT CREEK-TR | LITTLE ROCK | William L. Humphries Jr. | P | 1962 | 450 | 23 | H |
| NP | GREEN LAKE DAM | AR00107 | 34 | | MC HENRY CREEK-OS | LITTLE ROCK | James W. Williams(MINOR DEC92) | P | 1972 | 373 | 25 | H |
| NP | LAKEWOOD LAKE NO 6 DAM | AR00094 | 34 | | ARKANSAS RIVER-TR | NORTH LITTLE ROCK | Lakewood Improvement District 4 | L | 1932 | 390 | 22 | H |
| NP | LITTLE INDIAN LAKE NO 1 DAM | AR01232 | 34 | | FIVE MILE CREEK-TR | NORTH LITTLE ROCK | Indian Hills Community Club | P | 1962 | 588 | 27 | H |
| NP | LITTLE INDIAN LAKE NO 2 DAM | AR01233 | 34 | | FIVE MILE CREEK-TR | NORTH LITTLE ROCK | Winrock Enterprises | P | 1962 | 530 | 23 | H |
| NP | SPRICK LAKE DAM | AR00143 | 34 | | FOURCHE CREEK OS | LITTLE ROCK | Park Place Baptist Church | P | 1930 | 490 | 13 | H |
| NP | TODD LAKE DAM | AR00079 | 34 | | KELLOGG CREEK-TR | GRAVEL RIDGE | Jerry Rider | P | 1940 | 470 | 8 | H |
| NP | TWIN LAKES DAM A | AR00106 | 34 | | ROCK CREEK-TR | LITTLE ROCK | Twin Lakes 'A' Homeowner Association | P | 1950 | 320 | 20 | H |

| | | | | | | | | | | | | |
|-----|-----------------------------|---------|----|------------------|--------------------------|-------------------|---|---|------|------|----|---|
| NP | TWIN LAKES DAM B | AR00110 | 34 | | ROCK CREEK | LITTLE ROCK | Twin Lakes Rec. Improvement | P | 1964 | 537 | 15 | H |
| NP | WINGATE LAKE DAM | AR00138 | 34 | | ROCK CREEK-OS | LITTLE ROCK | C V B Developers | P | 1941 | 340 | 16 | H |
| 302 | LAKE MAUMELLE DAM | AR00081 | 34 | 92.4869439999999 | MAUMELLE CREEK | LITTLE ROCK | Central Arkansas Water | L | 1957 | 2550 | 65 | H |
| 307 | JACKSON RESERVOIR DAM | AR00146 | 34 | 92.3702779999999 | PUMPED RESERVOIR | LITTLE ROCK | Central Arkansas Water | L | 1939 | 1750 | 66 | H |
| 343 | LAKEWOOD LAKE NO. 1 DAM | AR00099 | 34 | 92.2399999999999 | ARKANSAS RIVER-TR | NORTH LITTLE ROCK | Lakewood Property Owners Association | L | 1925 | 900 | 29 | H |
| 349 | SPRING VALLEY LAKE NO 1 DAM | AR00114 | 34 | 92.4394439999999 | PAYNE BRANCH | LITTLE ROCK | Spring Valley Manor Suburban Improvement District | P | 1965 | 715 | 27 | H |
| 386 | GINGER HILL LAKE DAM | AR01225 | 34 | 92.5533329999999 | LITTLE MAUMELLE RIVER-TR | LITTLE ROCK | Anna W. Riggs & John A. Riggs IV | P | 1974 | 572 | 30 | H |
| 485 | BROADMOOR LAKE DAM | AR00130 | 34 | -92.343333 | COLEMAN CREEK-TR | LITTLE ROCK | Broadmoor P.O.A. | P | 1952 | 625 | 26 | H |
| 516 | FLORENCE DAM | AR00122 | 34 | 92.4733329999999 | MCHENRY CREEK-TR | MARTINDALE | Lochridge Estates Improvement District No. 703-07 | P | 1950 | 450 | 24 | H |
| NP | ALDERSGATE LAKE DAM | AR00116 | 34 | | BRODIE CREEK-TR | LITTLE ROCK | Aldergate Methodist Church | P | 1950 | 239 | 0 | L |
| NP | ALNETA LAKE DAM | AR00100 | 34 | | LITTLE MAUMELLE RIVER-TR | NONE | Tom Starnes | P | 1948 | 290 | 0 | L |

| | | | | | | | | | | | | |
|----|--|-------------|----|--|-------------------------------|-------------------------|--|---|------|------|----|---|
| NP | BALDWIN LAKE DAM | AR000 89 | 34 | | KINLEY CREEK | NONE | Phillip Baldwin | P | 1960 | 360 | 0 | L |
| NP | BIG ROCK SETTLING POND DAM | AR001 24 | 34 | | FOURCHE CREEK OS | LITTLE ROCK | Big Rock Stone and Material Company | P | 1970 | 7700 | 0 | L |
| NP | BREDLOW RESERVOIR DAM | AR012 24 | 34 | | BEAVERDAM BAYOU-TR | NONE | R S Bredlow | P | 1960 | 5200 | 0 | L |
| NP | BROWN LAKE DAM | AR000 73 | 34 | | BAYOU METO-TR | NONE | Carl Brown | P | 1966 | 565 | 18 | L |
| NP | CAMP ROBINSON LAKE DAM NO 1 | AR000 85 | 34 | | FIVEMILE CREEK | NORTH LITTLE ROCK | DOD USA | F | 1936 | 442 | 0 | L |
| NP | CECIL WHITE LAKE DAM | AR001 21 | 34 | | FOURCHE CREEK-TR | NONE | S C White | P | 1955 | 511 | 0 | L |
| NP | COOK LAKE DAM | AR001 17 | 34 | | BRODIE CREEK-TR | LITTLE ROCK | Cook | P | 1962 | 391 | 18 | L |
| NP | COULTER LAKE DAM | AR001 31 | 34 | | LITTLE FOURCHE CREEK-OS | LITTLE ROCK | Crystal Hill Country Club | P | 1960 | 860 | 22 | L |
| NP | DAILEY LAKE DAM | AR001 29 | 34 | | FOURCHE CREEK-OS | LITTLE ROCK | Dale Dailey | P | 1961 | 443 | 0 | L |
| NP | DOUGAN LAKE DAM | AR000 90 | 34 | | LITTLE MAUMELLE- OS | NONE | Dougan, Mrs | P | 1958 | 350 | 18 | L |
| NP | EANES MINNOW FARM LAKE DAM NO 1 | AR001 12 | 34 | | DRY BAYOU- TR | SCOTT | A B Eanes | P | 1958 | 1700 | 0 | L |
| NP | EANES MINNOW FARM LAKE DAM NO 2 | AR001 11 | 34 | | DRY BAYOU- TR | SCOTT | A B Eanes | P | 1965 | 725 | 0 | L |
| NP | FAULKNER LAKE DAM | AR000 69 | 34 | | BAYOU METO-TR | NONE | Marvin E Faulkner | P | 1956 | 450 | 0 | L |
| NP | GREEN BEAR LAKE DAM | AR012 18 | 34 | | MCHENRY CREEK | LITTLE ROCK | Felix Green | P | 1975 | 972 | 0 | L |

| | | | | | | | | | | | | |
|----|-----------------------------------|-------------|----|--|------------------------------|----------------|---|---|------|------|----|---|
| NP | GRIBBLE LAKE DAM | AR012 28 | 34 | | BAYOU METO-TR | NONE | J Gribble | P | 1962 | 720 | 0 | L |
| NP | GROPPER LAKE DAM | AR001 37 | 34 | | HARRIS BAYOU | NONE | International Paper Company | P | 1938 | 370 | 0 | L |
| NP | HARRIS LAKE DAM | AR000 97 | 34 | | INK BAYOU- TR | NONE | Harris Cattle Company | P | 1963 | 5500 | 15 | L |
| NP | HUDMANS LAKE DAM NO 1 | AR001 44 | 34 | | NEWTON CREEK OS | NONE | Hudman Estate | P | 1930 | 2700 | 0 | L |
| NP | HUDMANS LAKE DAM NO 2 | AR001 45 | 34 | | NEWTON CREEK OS | NONE | Hudman Estate | P | 1930 | 550 | 18 | L |
| NP | JACKSON LAKE DAM | AR000 68 | 34 | | BAYOU METO-TR | NONE | T E Jackson | P | 1950 | 600 | 0 | L |
| NP | KIRK LAKE DAM | AR001 03 | 34 | | ROCK CREEK- TR | LITTLE ROCK | Donald Kirk | P | 1958 | 400 | 0 | L |
| NP | L D ROGERS LAKE DAM | AR000 72 | 34 | | PALARM CREEK-OS | NONE | L D Rogers | P | 1958 | 400 | 0 | L |
| NP | LAKE KUYKENDALL DAM | AR001 35 | 34 | | CLARK BAYOU | WOODSON | Charles Waldren | P | 1963 | 680 | 0 | L |
| NP | LOWER SPRING LAKE DAM | AR012 20 | 34 | | BRODIE CREEK | LITTLE ROCK | Dalme and Malkames | P | 1963 | 310 | 0 | L |
| NP | MCCONNELL LAKE DAM | AR000 93 | 34 | | FIVE MILE CREEK-TR | NONE | John Matthews | P | 1951 | 1100 | 0 | L |
| NP | MILLS VALLEY LAKE DAM | AR012 29 | 34 | | LITTLE CREEK-TR | NONE | North Pulaski Baptist Association | P | 1971 | 612 | 21 | L |
| NP | MONTGOME RY LAKE DAM | AR000 87 | 34 | | NOWLIN CREEK-OS | NONE | J L Montgomery | P | 1960 | 1775 | 0 | L |
| NP | PLEASANT VALLEY CC LAKE DAM | AR012 27 | 34 | | GRASSY FLAT CREEK-OS | LITTLE ROCK | Pleasant Valley Country Club | P | 1967 | 1275 | 17 | L |
| NP | SAM GRAY LAKE DAM | AR001 02 | 34 | | LITTLE MAUMELLE RIV-OS | NONE | B Gray | P | 1952 | 405 | 0 | L |

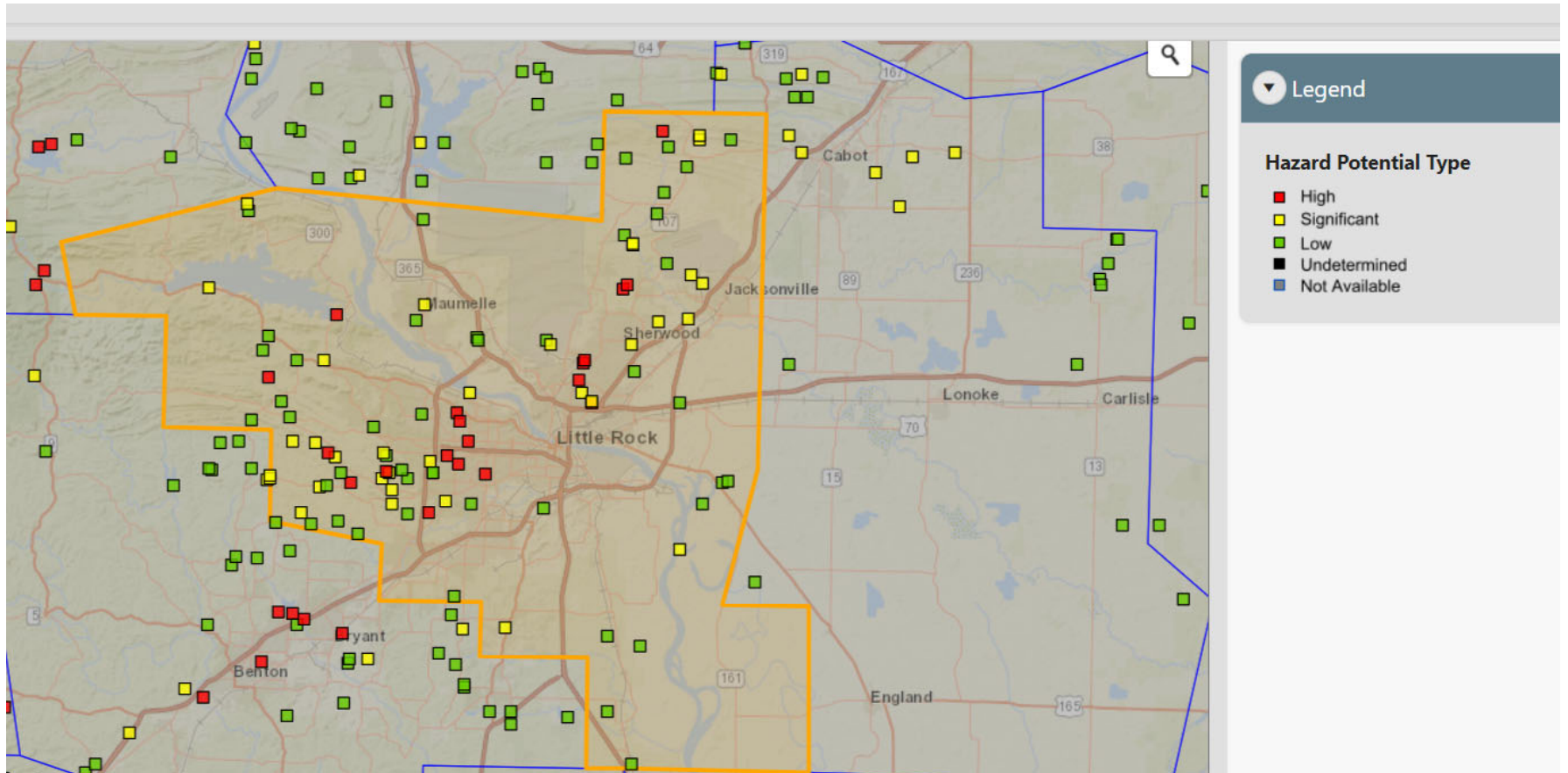
| | | | | | | | | | | | | |
|-----|------------------------|---------|----|------------------|----------------------|--------------|---------------------------------------|---|------|------|----|---|
| NP | SESSIONS LAKE DAM | AR00070 | 34 | | BAYOU METO | NONE | Sessions Mr. | P | 1947 | 508 | 15 | L |
| NP | THOMAS LAKE DAM | AR00076 | 34 | | BAYOU METO-TR | JACKSONVILLE | DOD USAF | F | 1958 | 700 | 0 | L |
| NP | WALDRON LAKE DAM | AR00136 | 34 | | CLEAR CREEK-TR-OS | NONE | Sherman Waldron | P | 1948 | 350 | 0 | L |
| NP | WALTON LAKE DAM | AR00134 | 34 | | FISH CREEK-OS | NONE | Fred Walton | P | 1958 | 380 | 0 | L |
| NP | WESTERN HILLS LAKE DAM | AR00125 | 34 | | FOURCHE CREEK-OS | LITTLE ROCK | City of Little Rock | L | 1955 | 925 | 24 | L |
| NP | WILLOW BEACH LAKE DAM | AR00127 | 34 | | ARKANSAS RIVER-OS | NONE | Floyd Fulkerson | P | 1955 | 1270 | 0 | L |
| NP | WILSON LAKE DAM | AR00113 | 34 | | BRODIE CREEK | LITTLE ROCK | J G Wilson | P | 1949 | 470 | 17 | L |
| 164 | 4-H LAKE DAM | AR01221 | 34 | -92.569444 | FERNDAL CREEK | NONE | Arkansas 4-H Foundation Inc. | P | 1979 | 655 | 18 | L |
| 198 | ST. CHARLES LAKE DAM | AR01416 | 34 | | ROCK CREEK-TR | LITTLE ROCK | ST Charles Community Association Inc. | L | 1979 | 264 | 21 | L |
| 201 | LAKE WILLASTEIN DAM | AR00084 | 34 | | ARKANSAS RIVER-TR | NONE | Maumelle SID 500 | L | 1942 | 990 | 20 | L |
| 203 | SIENNA LAKE DAM | AR00128 | 34 | -92.418333 | MC HENRY CREEK-OS | LITTLE ROCK | Cooper Land Development , Inc. | P | 1966 | 234 | 25 | L |
| 204 | KEENER'S DAM | AR00139 | 34 | 92.1047219999999 | TWO PRAIRIE BAYOU-TR | NONE | G. B. Keener | P | 1961 | 311 | 25 | L |
| 256 | ARMSTRONG DAM | AR01459 | 34 | | FERNDAL CREEK-TR | FERNDAL | Rush F. Harding | P | 1984 | 400 | 18 | L |
| 281 | DAVIDSON LAKE | AR01479 | 34 | | ROSS HOLLOW | NONE | Kent Davidson | P | | 270 | 20 | L |
| 284 | MASS, INC. | AR01508 | 34 | 92.4852779999999 | FOURCHE CREEK-TR | TERRYTOWN | MASS, INC. | P | 1986 | 600 | 25 | L |

| | | | | | | | | | | | | |
|-----|-----------------------------|----------|----|------------|--------------------|-------------------|--|---|------|------|----|---|
| 464 | T.H. MAYER DAM | AR001 20 | 34 | -92.418333 | BRODIE CREEK TRIB | LITTLE ROCK | Richardson Properties, LLC | P | 1967 | 410 | 35 | L |
| NP | CAMP ROBINSON LAKE DAM NO 2 | AR000 86 | 34 | | FIVEMILE CREEK | NORTH LITTLE ROCK | DOD USA | F | 1936 | 810 | 0 | S |
| NP | DAVID D TERRY LOCK AND DAM | AR001 72 | 34 | | ARKANSAS RIVER | PINE BLUFF | CESWL | F | 1968 | 8700 | 28 | S |
| NP | DUPREE LAKE DAM | AR000 82 | 34 | | BAYOU METO-TR | NONE | P W Dupree | P | 1960 | 1300 | 0 | S |
| NP | GLOVER LAKE DAM | AR012 31 | 34 | | FOURCHE CREEK-TR | NONE | Dan Glover | P | 1970 | 200 | 0 | S |
| NP | HATCHER LAKE NO 2 DAM | AR000 75 | 34 | | BAYOU METO-TR | NONE | Julia Hatcher | P | 1945 | 1032 | 16 | S |
| NP | HATCHER LAKE NUMBER 1 DAM | AR000 74 | 34 | | BAYOU METO-TR | NONE | Julia Hatcher | P | 1945 | 520 | 0 | S |
| NP | INDIANHEAD LAKE DAM | AR000 83 | 34 | | KELLOGG CREEK-TR | NONE | Indianhead Property Owners Association | P | 1963 | 430 | 0 | S |
| NP | LAKE CHERRYWOOD DAM | AR000 88 | 34 | | WOODRUFF CREEK-TR | NONE | Dave Witt | P | 1953 | 856 | 0 | S |
| NP | LAKE VALENCIA DAM | AR001 42 | 34 | | WHITE OAK BAYOU-OS | NONE | Maumelle Land Development Company | P | 1973 | 600 | 0 | S |
| NP | LAMAN LAKE DAM | AR000 65 | 34 | | BAYOU TWO PRAIRIE | CABOT | W. F. Laman | P | 1952 | 294 | 20 | S |
| NP | LANDMARK LAKE DAM | AR001 32 | 34 | | TREADWAY BRANCH NE | NONE | Martin Robinson | P | 1957 | 360 | 0 | S |
| NP | MURRAY LOCK AND DAM | AR001 71 | 34 | | ARKANSAS RIVER | LITTLE ROCK | CESWL | F | 1969 | 3740 | 23 | S |

| | | | | | | | | | | | | |
|-----|-----------------------------|---------|----|--------------------|-----------------------|-------------------|-----------------------------------|---|------|-----|----|---|
| NP | PARADISE LAKE DAM | AR00077 | 34 | | BAYOU METO-TR | JACKSONVILLE | City of Jacksonville | L | 1941 | 350 | 10 | S |
| NP | SANDPIPER LAKE DAM | AR01222 | 34 | | BRODIE CREEK-OS | LITTLE ROCK | Fauset and Company Realty | P | 1970 | 288 | 0 | S |
| NP | SPRING LAKE DAM | AR00109 | 34 | | BRODIE CREEK | LITTLE ROCK | Dalme and Malkames | P | 1968 | 397 | 0 | S |
| NP | SPRING VALLEY LAKE NO 2 DAM | AR00118 | 34 | | PAYNE BRANCH | LITTLE ROCK | Spring Valley Realty Company | P | 1938 | 647 | 0 | S |
| NP | STURGIS POND DAM | AR00091 | 34 | | LITTLE MAUMELLE RIVER | NONE | Dave Grundfest | P | 1956 | 520 | 23 | S |
| NP | TALL PINE LAKE DAM | AR00108 | 34 | | MCHENRY CREEK-OS | NONE | H D Boyles | P | 1959 | 165 | 0 | S |
| NP | TALL TIMBER LAKE DAM | AR00141 | 34 | | BRODIE CREEK OS | LITTLE ROCK | Pecan Lake Owners Association | P | 1925 | 240 | 0 | S |
| NP | TRANSVAAL COMPANY LAKE DAM | AR00078 | 34 | | ROCKY BRANCH | JACKSONVILLE | Transvaal Inc. | P | 1946 | 520 | 0 | S |
| 313 | JABO LAKE DAM | AR00105 | 34 | -92.53 | FLETCHER CREEK | NONE | Anne Marsh | P | 1946 | 150 | 32 | S |
| 329 | MAUMELLE NURSERY POND DAM | AR01493 | 34 | -92.610833 | TWIN CREEK | NONE | Arkansas Game and Fish Commission | S | 1989 | 545 | 60 | S |
| 350 | LAKEWOOD LAKE NO. 2 DAM | AR00098 | 34 | -92.23999999999999 | DARK HOLLOW DRAIN.-TR | NORTH LITTLE ROCK | Lakewood Improvement District 4 | L | 1925 | 620 | 64 | S |
| 351 | LAKEWOOD LAKE NO. 3 DAM | AR00095 | 34 | -92.25 | ARKANSAS RIVER-TR | NORTH LITTLE ROCK | Lakewood Improvement District 4 | L | 1925 | 410 | 30 | S |
| 406 | BEGGS LAKE DAM | AR01230 | 34 | -92.52166699999999 | PANTHER CREEK-TR | NONE | Marck L Beggs | P | 1959 | 380 | 30 | S |
| 442 | WILKINS LAKE DAM | AR00066 | 34 | -92.135 | BAYOU TWO PRAIRIE-TR | CABOT | Dennis Wilkins | P | 1952 | 253 | 30 | S |

| | | | | | | | | | | | | |
|--|-------------------|---------|----|-----------------|----------------------|-------------|-----------------------|---|------|-----|-----|---|
| 447 | KOBAN LAKE DAM | AR00126 | 34 | -92.433333 | MC HENRY CREEK-OS | LITTLE ROCK | Koban Family, LLC | P | 1961 | 360 | 29 | S |
| 463 | LAKE NIXON DAM | AR00123 | 34 | -92.433333 | MC HENRY CREEK TRIB | LITTLE ROCK | Second Baptist Church | P | 1946 | 246 | 35 | S |
| 470 | LAKE PATRICIA DAM | AR00119 | 34 | 92.443332999999 | MC HENRY CREEK TRIB | LITTLE ROCK | Jan Woods | P | 1946 | 552 | 27 | S |
| 496 | FERNCREST DAM | AR01536 | 34 | 92.508055999999 | FLETCHER CREEK TRIB. | NONE | Andrea Rockefeller | P | 2000 | 425 | 57 | S |
| NP | BROOKS POND DAM | AR01606 | 35 | | BOYD BRANCH - TR | NONE | | | | | 7.2 | U |
| NP | GLOVER DAM | AR01564 | 34 | | FOURCHE CREEK-TR | | Judy Glover | P | | | | U |
| 241 | SMITH LAKE | AR00000 | 0 | | | | Sam Smith | P | | 0 | 0 | U |
| <p>*NP=Not permitted by NRD (ANRC) and does not meet threshold requiring a permit. Federally owned dams are regulated by the feds.</p> | | | | | | | | | | | | |

Location of Permitted Dams in Pulaski County as provided by National Inventory of Dams (nid.sec.usace.army.mil)



Extent

The following calculations do not reflect the physical conditions of the dams, but rather describe areas downstream of the dams that could be impacted in the event of failure. According to ANRC Title 7, the rate of risk for dam failure is calculated as follows:

| | |
|-------------------------|---|
| Low Hazard Dams | No loss of life and minimal economic loss are expected. (No significant structures, pastures, woodland, or largely undeveloped land); less than \$ 100,000. |
| Significant Hazard Dams | Loss of life is possible, but not expected. Economic loss would be appreciable. (Significant structures, industrial, or commercial development, or cropland); \$100,000 to \$500,000. |
| High Hazard Dams | Loss of life is expected, and economic damage would be excessive. (Extensive public, industrial, commercial, or agricultural development); over \$500,000. |

The HMPT cites a data deficiency related to extent, as there is currently no data available to indicate inundation areas, potential flood depths, volume of water or arrival times for a dam failure in Pulaski County.

Previous Occurrences

There are no documented previous occurrences of dam failure in Pulaski County.

Probability of Future Events

Because there are no known dam failures to have occurred in Pulaski County, it is not possible to predict a future event using the Poisson probability equation. All of the dams were constructed between 1913 and 1970. Regular inspection and maintenance will circumvent future events. Based upon having no historic events, the probability is less than 1% in any given year that a future dam failure will occur.

Impact and Vulnerability

According to the 2018 Arkansas Hazard Mitigation Plan, the state described vulnerability in terms of the jurisdictions most threatened by dam failure, points were assigned to each type of dam and then aggregated for a total point score. Points were assigned as follows for each dam:

- Low Hazard Dams, 1 point
- Significant Hazard Dams, 2 points
- High Hazard Dams, 3 points
- High Hazard Dams without EAP, an additional 2 points

The State's analysis did not intend to demonstrate vulnerability in terms of dam structures that are likely to fail, but rather provided a general overview of the counties that have a high number of dams, with a weighted consideration given to dams whose failure would result in greater damages. The table below identifies dam failure vulnerability in Pulaski County. According to the State Hazard Mitigation Plan, Pulaski County dam vulnerability rating far exceeds other counties in the state, partially because Pulaski County has nearly four to five times more dams, plus the number of high hazard dams is significantly higher than other Arkansas Counties.

| County | # Low Hazard Dams (x1 point) | # of Significant Hazard Dams (x 2 points) | # of High Hazard Dams (x 3 points) | # of Low Hazard Dams w/o EAP (x2 points) | Weighted Vulnerability Score |
|----------------|------------------------------|---|------------------------------------|--|------------------------------|
| Pulaski | 5 | 10 | 7 | 3 | 163 |

The Arkansas State Hazard Mitigation Plan (2018) uses the following formula to estimate losses:

\$500,000 High Hazard Dams

\$250,000 Significant Hazard Dams

\$50,000 Low Hazard Dams

| Expected Damages | High Hazard | Significant Hazard | Low Hazard |
|------------------|--------------|--------------------|------------|
| | \$13,000,000 | 7,500,000 | \$950,000 |

Dam failure risk in the Pulaski County Planning Area varies considerably by jurisdiction. Refer below for a description of each jurisdiction's exposure to dam failure events. To accurately determine the spatial extent of potential flood inundation areas for each high risk dam would require a detailed engineering study; however, for each high risk dam, the HMPT reviewed topographic maps and land use in the downstream area. Due to the lack of "engineering data" and the primary scope of effort of the intent of the HMP Update, the HMPT decided to limit its assessment of dams to high risk dams. As reflected in the comments below relative to dams with a hazard level classified as high, the impacts resulting from dam failure occurring to dams classified as Significant, the impacts would be less. Exactly what the impacts would be are relative to each dam and the area downstream. A case by case assessment would need to be completed, but overall it can be said impacts to residential structures would most likely be the result of dam failure. Most likely there would be some impact to commercial; however, it does not appear that any local jurisdiction's facilities would be adversely affected. As indicated earlier in the text as inundation data becomes available between now and the next update, the HMPT working with the ANRC, will work to update dam vulnerability based on concrete engineering data. *The following information is derived from the previous Pulaski County Mitigation Plan.*

Alexander: The City of Alexander is **Not at Risk** from a dam failure event. No dams are located within or upstream from the City of Alexander.

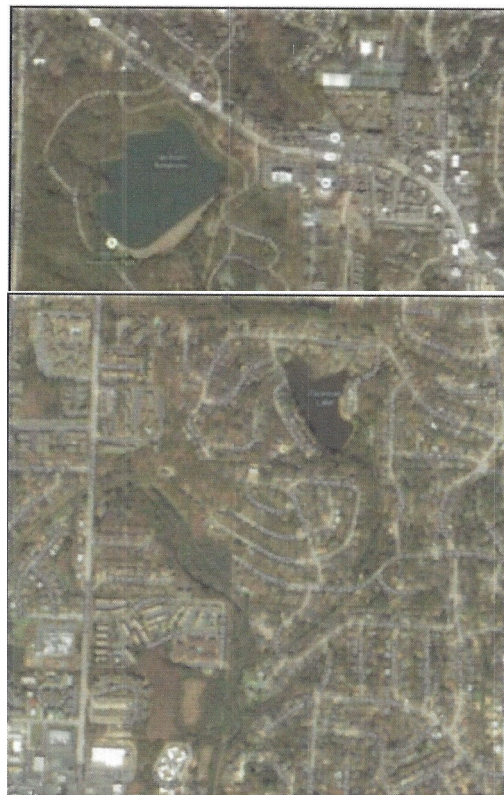
Cammack Village: Cammack Village is at **Not at Risk** from a dam failure event. No dams

are located within or upstream from the City of Cammack Village.

Jacksonville: The City of Jacksonville is **Not at Risk** from a dam failure event. There are three dams shown as being located in the City; however Davis Lake Dam, it is located west of the Jacksonville city boundaries. Therefore, a discussion of Davis Lake Dam is found in the unincorporated Pulaski County section that follows.

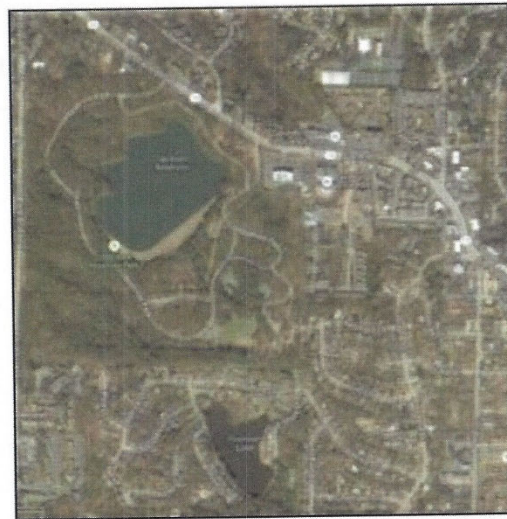
Little Rock: The City of Little Rock is at **Moderate Risk** from a dam failure event. There are 24 dams located within the City of Little Rock. There are 8 high hazard class dams located within the City of Little Rock. Refer to the maps below for a discussion regarding a dam failure including Broadmoor Lake Dam, Foreman Lake Dam, Jackson Reservoir Dam, Sprick Lake Dam, Spring Valley Lake No. 1 Dam, Twin Lakes Dam A, Twin Lakes Dam B, and Wingate Lake Dam. Note that the black arrow on the figures indicates an approximation of direction flow of water. Three of the high hazard class dams hold significant water volume (greater than 100 acre/feet) that could flood substantial acreages of land during a dam failure event, Jackson Reservoir Dam, Twin Lakes Dam A, and Spring Valley Lake No. 1. Broadmoor Lake Dam, Wingate Lake Dam, and the Twin Lake Dam cause concern since each dam is within close proximity of major institutional and/or commercial centers. They include University of Arkansas at Little Rock, Baptist Health Hospital, and Brady Elementary School. If any of the three dams failed, the surrounding neighborhoods would most likely sustain substantial damage not only to property but also to individuals impacted by the flood inundation

Jackson Reservoir Dam and Foreman Lake Dam

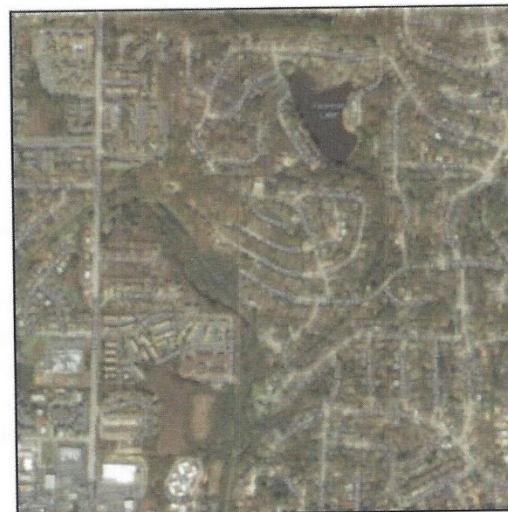


The Broadmoor Lake Dam is 26 acre-feet in height and holds a volume of 80 acre-feet. Dense population development located near high hazard class dams poses a significant risk in the City of Little Rock. The University District, a redevelopment area, is located within a quarter-mile radius of Broadmoor Lake Dam. The University District houses approximately 10,000 people and employs over 7,000 people, as well as educates 12,000 students at the University of Arkansas at Little Rock. In addition there are a number of commercial centers located on South University Avenue. Also, approximately 3,000 feet south of the Broadmoor Dam is a major intersection where State Road 5, S. University Avenue and U.S. 67 converge. A dam failure event in this area could be catastrophic.

Sprick Lake Dam



Jackson Reservoir



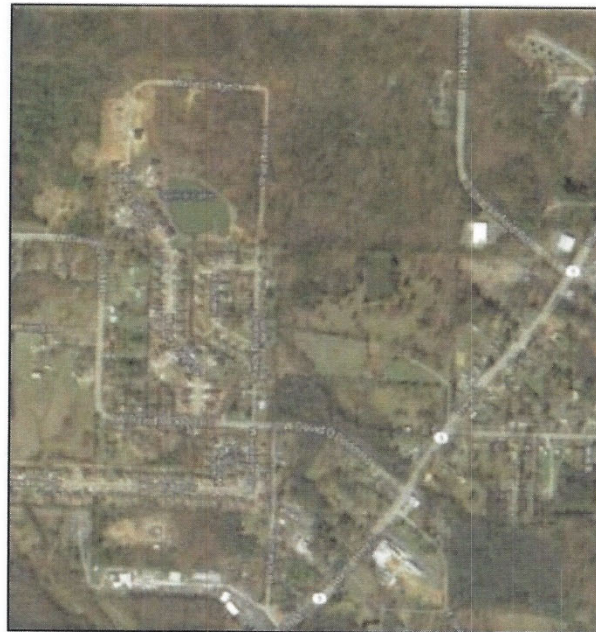
Foreman Lake Dam

Jackson Reservoir: Besides being an important recreational asset to Little Rock, the Jackson Reservoir also serves as an auxiliary potable water source for Central Arkansas Water which is the potable water service provider for Pulaski County and surrounding

counties. The Jackson Reservoir Dam has a height of 66 feet and holds a volume of 353 acre-feet. The reservoir drains south where it finally reaches Rock Creek. The Sheraton Park, a low density residential neighborhood, would be the area that would most likely sustain extensive damage should the Reservoir dam be breached.

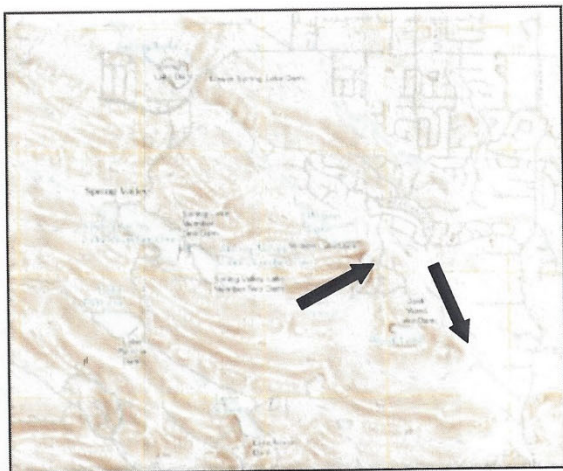
Foreman Lake Dam: The Foreman Lake is a central physical feature within the Lake Foreman Preservation Society neighborhood. The reservoir drains in a southerly direction into the Grassy Flat Creek. The dam is 23 feet in height and holds a volume of 69 acre-feet of water. Should the dam breach the water would flow south through a restricted stream channel flowing ultimately flowing into Rock Creek. The area south of the dam consists of primarily single family residences.

Sprick Lake Dam



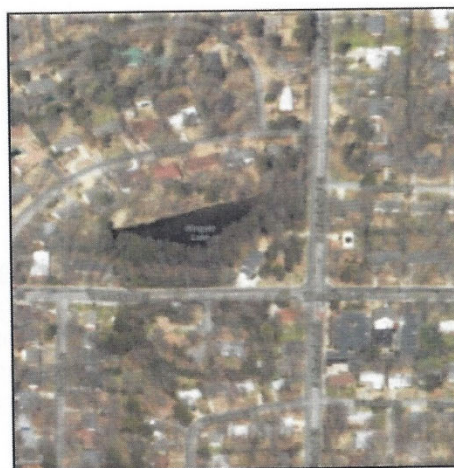
Situated in southwest Little Rock, Sprick Lake Dam is located east of Interstate 430, just north of David O. Dodd Road. The dam is 13 feet in height and contains 52 acre-feet of water. Sprick Lake drains in a southerly direction into the Fourche Creek. Immediately adjacent to the dam is a small 36 lot residential subdivision known as Shady Brook. It was built in 1946. Once the tributary leading from Sprick Lake passes through the Shady Brook Subdivision, it flows through a natural stream corridor until it reaches the Fourche Creek.

Spring Valley Lake Dam #1



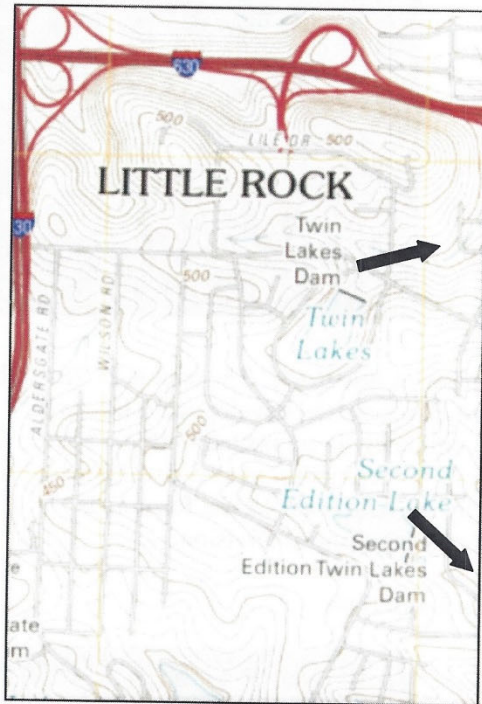
Spring Valley Lake Dam is located 8.5 miles west of downtown Little Rock. The dam is 27 feet in height and contains 156 acre feet of water. The lake is surrounded by residential development; however, discharge from the lake flows into the Payne Reach which ultimately is connected to Bodie Creek. The banks of Payne Reach leading from the dam to Brodie Creek is steep with scattered development. This dam meets the criteria that requires this dam be permitted by the Arkansas Natural Resources Commission which is managed by the Dam Safety and Flood Management Division.

Wingate Lake Dam

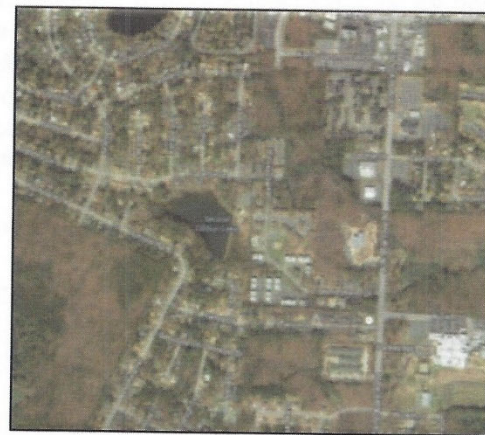


Located at the northwest corner of Markham and Mississippi Avenue, Wingate Lake Dam is 16 feet in height and holds back 57 acre-feet of water. If a breach occurred, water would flow south impacting several nearby neighborhoods, Markham Manor and Fair Hills subdivisions. The downstream flow originating from a breach of the dam would cause significant damage along the stream corridor before it reaches Rock Creek. In addition to residential development, the Brady Elementary School is within ± 300 feet of Lake and could potentially be damaged by a breach to the dam in addition to Markham Road, a major east-west roadway in Little Rock.

Twin Lakes Dam



Twin Lakes Dam



Second Twin Lakes Dam

Twin Lakes Dam is a major facility. It is 20 feet in height and holds 188 acre-feet of water. If a breach occurred water would flow north ultimately reaching Rock Creek. Baptist Health Hospital Medical Center, a major medical facility serving the greater Little Rock area for over 80 years is situated immediately north of the dam in the projected area of inundation. Also within the potential floodway are two residential neighborhoods, Patton Place and Longacre Place. Also potentially impacted could be the Baptist Day Care Center on Barrow Road.

Second Twin Lake Dam is 15 feet in high and holds back 34 acre-feet of water. If breached water would flow in a southeasterly direction and ultimately empty into Rock Creek. Water moving downstream would impact primarily older stable residential neighborhoods such as the Twin Lakes Subdivision which is immediately south of Second Twin Lake. These are urban neighborhoods averaging 4 units per acre.

There are also 5 significant hazard class dams and 11 low hazard class dams within the City of Little Rock.

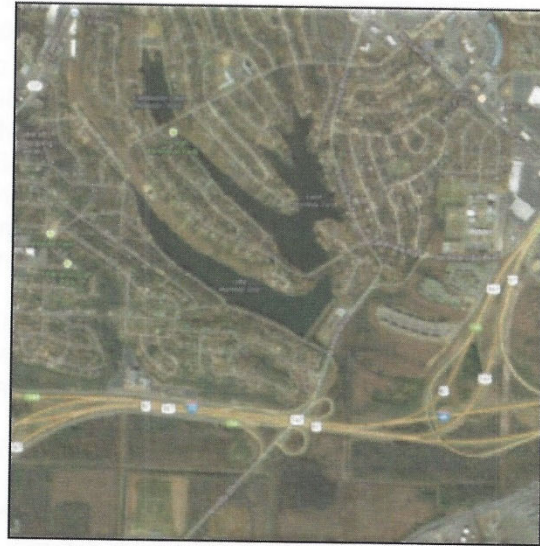
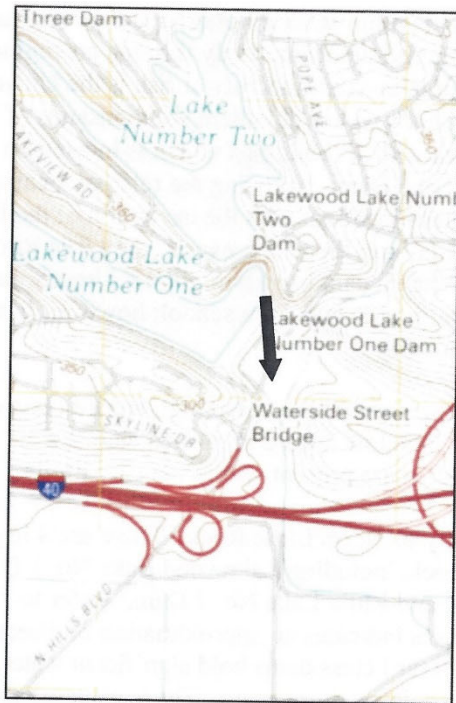
Little Rock School District/UALR: The 24 dams located in the City of Little Rock. The HMPT reviewed the location of schools relative to the location of the 24 dams located in the City of Little Rock. The Brady School located on W. Markham Avenue is located within several hundred feet of Wingate Lake Dam; therefore, may potentially be at risk should a dam failure occur. Only through an engineering study could any definitive answer be determined. The major educational facility at risk is the University of Arkansas at Little Rock (UALR). With a 13,000 student body, every day there are thousands of students as well as staff on campus. UALR sits on 150 acres with 40 buildings which is located on University Boulevard, immediately east of the Broadmoor Lake Dam. Knowing the relative location of school facilities relative to existing dams the HMPT has determined that with the exception of the Brady School and UALR, there is little risk to schools from a dam failure; therefore, overall the Little Rock School District is at **Low Risk** from a dam failure event. While a dam breach might not directly damage a school facility, it certainly might affect the transport of children to and from school; however, in the future the HMPT will evaluate the need to undertake such a study.

Maumelle: The City of Maumelle is at **Low Risk** from a dam failure event. No high hazard class dams are located within or upstream from the City of Maumelle. One low hazard permitted dam (Lake Willastein Dam) and one non-permitted significant hazard dam are present within the City limits.

North Little Rock: There are 6 dams located within the City of North Little Rock. There are 4 high hazard class dams located within the City of North Little Rock, including Lakewood Lake No. 1 Dam, Lakewood Lake No. 6 Dam, Little Indian Lake No. 1 Dam, and Little Lake No. 2 Dam. Refer to **Figures 3.40 to 3.42**. Note that the black arrow on the figures indicates an approximation of direction flow of water. Each is described below. Two of the high hazard class dams hold significant water volume that could flood substantial acreages of land during a dam failure event. The Lakewood Lake No. 1 Dam has a height of 29 feet and holds a volume of 378 acre-feet. The Lakewood Lake No. 6 Dam has a height of 22 feet and holds a volume of 84 acre-feet.

Residential development located near high hazard class dams is a significant risk in the City of North Little Rock. According to the Lakewood Property Owners' Association, there are numerous residential structures that have been developed along the banks of the Lakewood Lake No. 1. In the event this dam would fail this area could sustain significant flood damage.

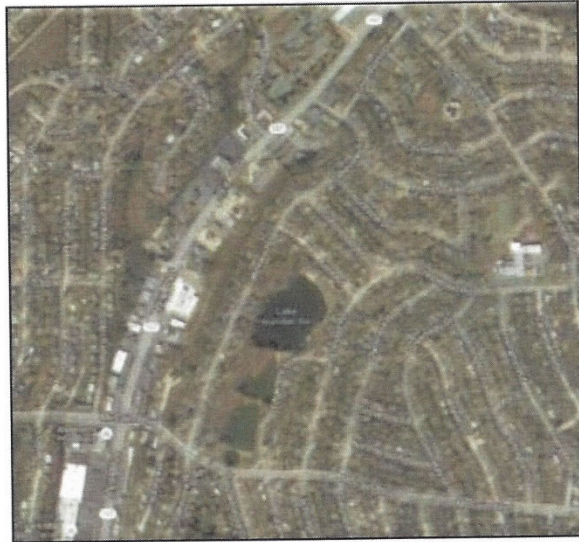
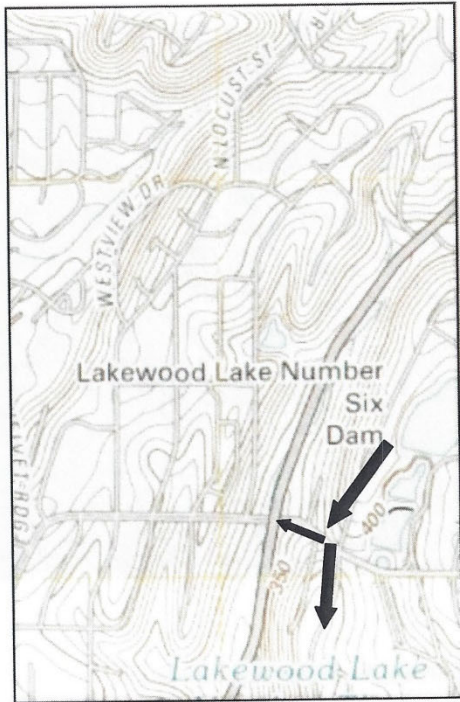
Lakewood Lake Number One Dam



The Lakewood Number One Dam is located in North Little Rock just north of Interstate 40 and west of

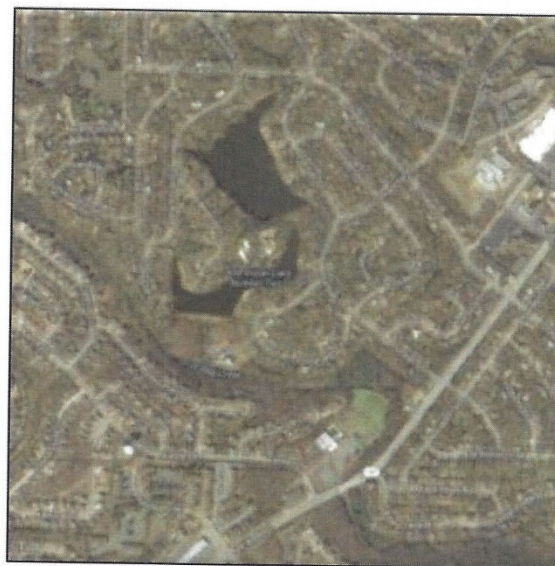
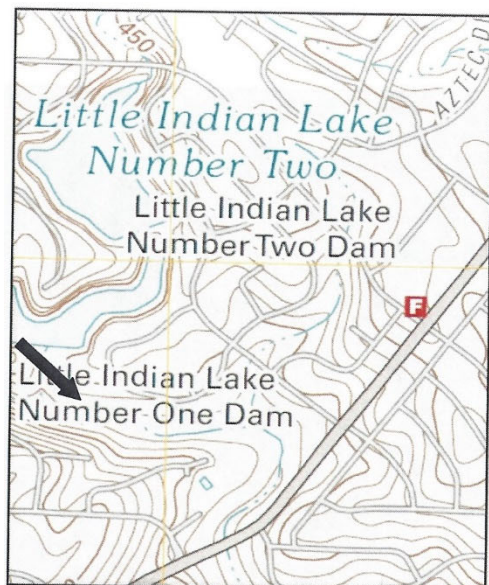
U.S. 67. The dam is 29 feet in height. The lake holds 378 acre-feet which is substantially above the state criteria of 50 acre feet or greater for a high risk dam. Much of the downstream area is either in timber or pasture; however, located within the potential flood area is the Union Pacific's 300 acre rail yard complex that contains the Union Pacific's largest locomotive maintenance center and heavy repair shop. In addition Interstate 40 a major east-west corridor is situated within the potential floodway.

Lakewood Lake Number Six Dam



The Lakewood Lake No. 6 Dam is located on a ridge east of JFK Boulevard and north of McCain Boulevard. The impoundment holds 84 acre feet of water. The dam is 22 feet in height. Immediately south of Lakewood Lake No.6 are a series of smaller lakes which appear to be 20 to 30 feet higher. The area immediately surrounding the lake is residential. However, without a specific engineering study, it is difficult to tell whether a breach in the dam would result in water flowing west and inundating the JFK Boulevard area which is a significant commercial corridor in North Little Rock.

Little Indian Lake Number One and Number Two Dams



Little Indian Lake Number One and Two are located on the north side of North Little Rock, approximately one-half mile northwest of JFK Boulevard. Dam Number One has a height of 27 feet. The reservoir has 41 acre-feet of water. Dam Number two is 23 feet high and 57 acre feet of water. The discharge from the two lakes heads in a southerly direction and feeds into Five Mile Creek. The downstream areas for both Lakes is Based on the topographic map, it appears that if there were a breach in Little Indian Lake Number Two Dam, potentially it could cause a breach in Little Indian Lake Number One (engineering study required to make any definitive conclusion). In the floodway of Little Indian Lake Number One Dam is a recreational complex for the Indian Hills development. JFK Boulevard also sustain damage from a breach since Five Mile Creek passes under the roadway.

There are also 2 significant hazard class dams within the City of North Little Rock. Both significant hazard dams are located near developed areas and could cause some structural damage in the event of a dam failure. The City of North Little Rock is at **Severe Risk** from a dam failure event.

North Little Rock School District: The HMPT reviewed the location of schools relative to the location of the 6 dams located in the City of North Little Rock. No school is within close proximity of any of the dams. While a dam breach might not directly damage a school facility, it certainly might affect the transport of children to and from school. The HMPT will evaluate whether a study is necessary to assess the impact on school operations should a dam breach. Therefore at this time the potential of dam failure to the North Little Rock School District is minimal. At this time, the North Little Rock School District is at **Low Risk** from a dam failure event.

Pulaski County Special School District: There are 62 dams located within Unincorporated

Pulaski County and upstream dams could pose a significant risk to the Pulaski County Special School District; however, that would only be the case if a school was located nearby to a breached dam. Until an investigation is conducted by the HMPT assumes that the Pulaski County School District is at **Low Risk** from a dam failure event.

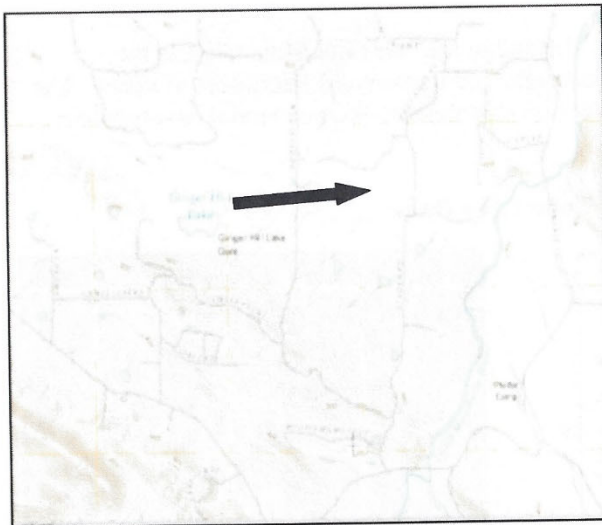
Sherwood: The City of Sherwood is at **Low Risk** from a dam failure event. No high hazard class dams are located within or upstream from the City of Sherwood. Two non-permitted significant hazard dams are present within the City limits.

Wrightsville: The City of Wrightsville is at **Low Risk** from a dam failure event. No high or significant hazard class dams are located within or upstream from the City of Wrightsville. One non-permitted low hazard class dam is located just south of the City, but does not pose any significant threat.

Unincorporated Pulaski County: There are 62 dams located within Unincorporated Pulaski County. There are 4 high hazard class dams located within Unincorporated Pulaski County, including Ginger Hill Lake Dam, Green Lake Dam, Todd Lake Dam, Lake Florence Dam, and Davis Lake Dam. Refer to **Figures 3.43 to 3.47**. Note that the black arrow on the figures indicates an approximation of direction flow of water.

There are also 22 significant hazard class dams and 35 low hazard class dams within Unincorporated Pulaski County. Some of the significant hazard dams are located near developed areas and could cause some structural damage in the event of a dam failure. Unincorporated Pulaski County is at **Severe Risk** from a dam failure event.

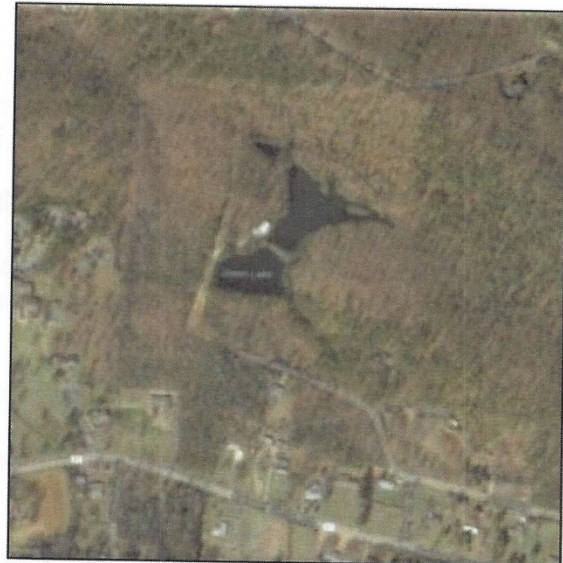
Ginger Hill Lake Dam



The Ginger Hill Lake Dam is approximately 18 miles west of downtown Little Rock. This is a rural, rugged mountainous area. This is one of the permitted high hazard dams permitted

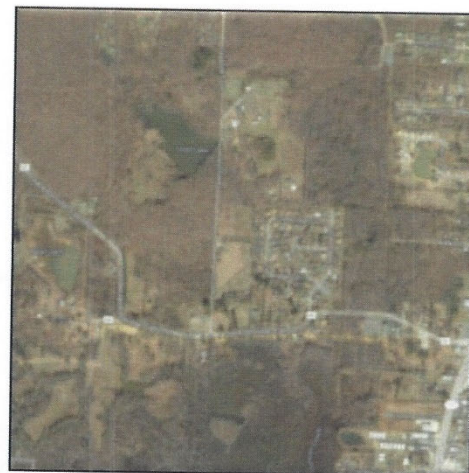
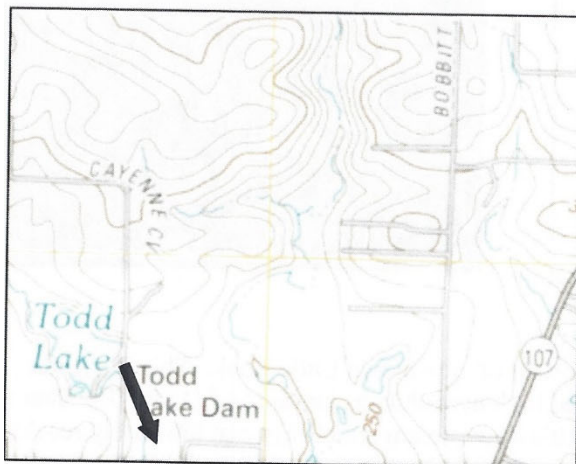
ADNR. The dam is 30 feet high and the lake has 120 acre-feet of water. It's downstream area flows east ultimately reaching the Little Maumelle River. Should a dam breach occur it would impact some scattered structures existing the floodway.

Green Lake Dam



Located approximately 16 miles west of Little Rock situated in the Ouachita Mountains, is the Green Lake Dam. This high hazard dam is 25 feet in height and impounds 75 acre-feet of water. The lake discharges into McHenry Creek. This area is very rural with scattered residential development downstream of the dam.

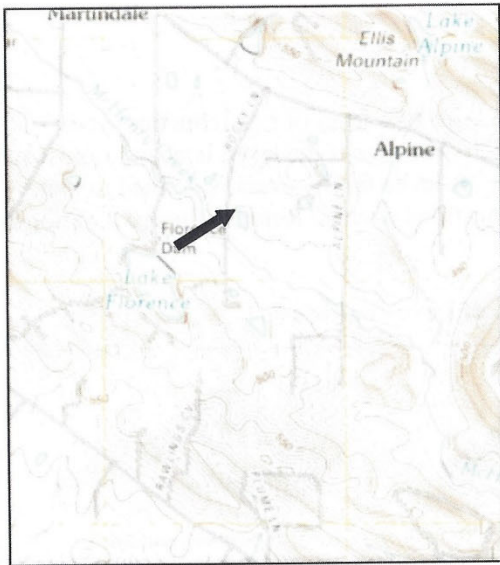
Todd Lake Dam



Todd Lake Dam is located in northern Pulaski County approximately 8 miles west of the

City of Jacksonville. The dam is 8 feet high and holds back 178 acre-feet of water. The downstream area from the dam has minimal development and population; therefore, the potential for damage is relatively minimal. There is only one development, Creek Dale, an older subdivision of 80 units, located southeast of Todd Lake Dam that might possibly be exposed to damage resulting from a breach in the dam. Water from a breach would flow southward into Kellogg Creek.

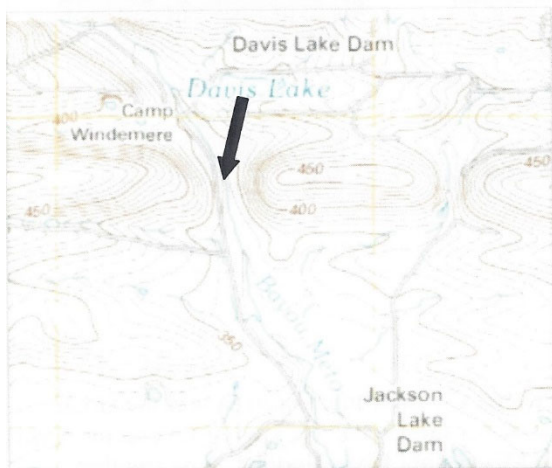
Lake Florence Dam



The Lake Florence Dam is roughly 13 miles west of downtown Little Rock in the Ouachita Mountains. The dam is 24 feet in eight and impounds 135 acre-feet of water. The water would discharge northeast toward McHenry Creek. The downstream area is characterized by large lot (5 Acre) scattered rural residential development

Davis Lake Dam

Figure 3.47 Davis Lake Dam



Davis Lake Dam has a height of 25 feet and holds a volume of 53 acre feet. It is located in an area with minimal population and few structures within proximity of the Lake. Based on the topo and aerial above, if the Davis Lake Dam failed it would cause minimal structural damage and human life loss.

Levees

FEMA defines a levee as a man-made structure that helps contain or control the flow of water during a flood. When discussing levees, there are many terms and definitions that can mean different things to different people. Here are a few terms related to levees and their U.S. Army Corps of Engineers' definition.

Breach: A rupture, break or gap whose cause has not been determined.

Corps authority: There is no single agency with responsibility for levee oversight nationwide. The Corps has specific and limited authorities for approximately 2,000 levees nationwide.

Corps rehabilitation funding eligibility: Federally authorized and some non-federal levees may be eligible for Corps rehabilitation assistance funding if certain criteria are met.

Failure breach: A breach for which a cause of failure is known based on an investigation to determine the cause.

Levee: An earthen embankment, floodwall, or structure along a water course whose purpose is flood risk reduction or water conveyance.

Levee certification: Process under the national Flood Insurance Program used to determine how the Federal Emergency Management Agency (FEMA) will map the floodplain behind a given levee system. Certification documentation is the responsibility of the local project sponsor.

Levee types:

- Federally authorized levee: Typically designed and built by the Corps in cooperation with a local sponsor then turned over to a local sponsor to operate, maintain, repair and replace the levee.
- Non-federally authorized levee: Designed and built by a non-federal agency, which is responsible for the operation, maintenance, repair and replacement of the levee.
- Private or corporate-owned levee: Designed and built by a private citizen, company or other public entity, which is responsible for the operation, maintenance, repair and replacement of the levee. The Corps has no responsibility for private or corporate-owned levees.

Local responsibility: The responsibilities of local levee partners are broad and include levee safety; land use planning and development; building codes and operations, maintenance, repair, rehabilitation and replacement of the levee.

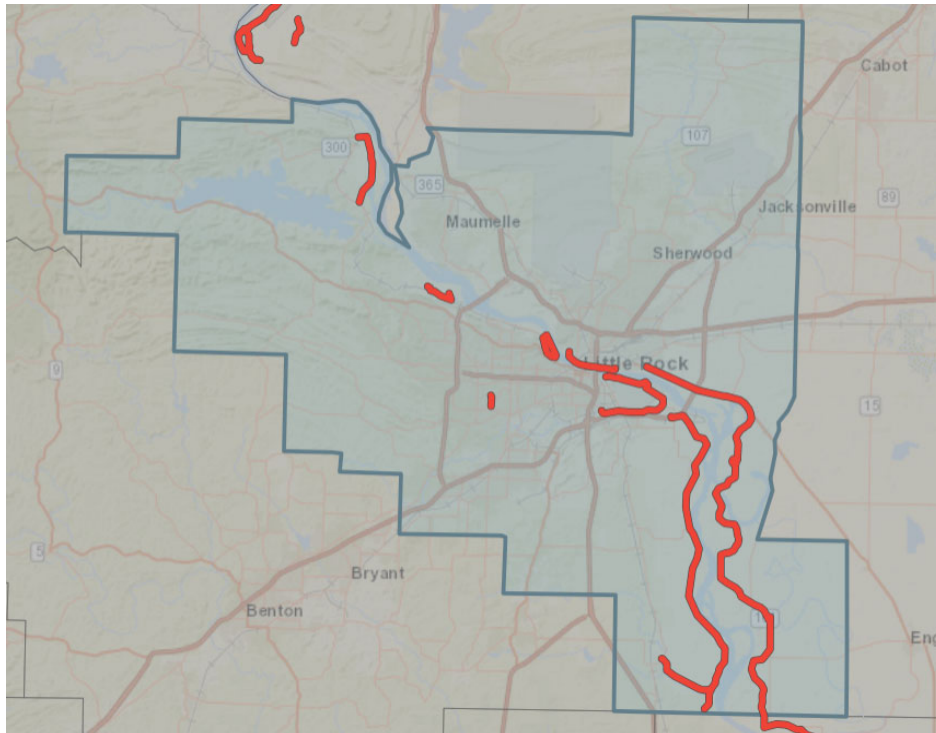
Overtopping: Water levels exceed the crest elevation of a levee and flow into protected areas. Levee may be damaged but not compromised. Flooding occurs from overflow/overwash (waves) and other sources.

Overtopping breach: A breach whose cause is known to be a result of overtopping (system exceeded). The levee has been compromised after overtopping and must be repaired to function prior to the next event.

Pulaski County has 9 levee systems, 69 miles of levees, 106 levee structures and the average levee age is 71 years.

Location

As seen in the location map below, seven of the levees are directly in relation to the Arkansas River. The information provided came from the National Levee Database.

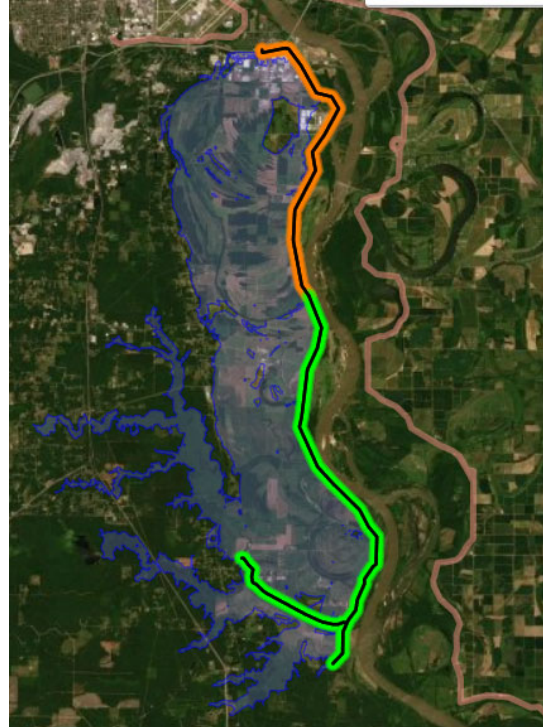


The following pages will include the location of each levee (including segments), with a brief description and Risk Assessment of each.

The Head of Fourche Island to Pennington Bayou Levee (Segments: Woodson Levee District – Orange & Fourche Island Drainage District #2 – Green)

Project Description:

The Head of Fourche Island to Pennington Bayou Local Flood Project is a federally authorized non-federally operated and maintained flood risk management project. The Fourche Island Drainage District No. 2 and the Woodson Levee District are segments of the larger Head of Fourche Island to Pennington Bayou Local Flood Project which primarily serves as flood damage reduction for approximately 21,580 acres consisting of rural lands including homes, businesses and agricultural areas in Pulaski County, Arkansas. Construction of the levee system began on July 23, 1947, and was completed on May 8, 1952. The levee system was originally authorized by the Flood Control Act approved August 18, 1941, and modified by the Flood Control Act approved December 22, 1944 (Public Law No. 534, 78th Congress, 2nd Session). The Head of Fourche Island to Pennington Bayou Local Flood Project is located on the right bank of the Arkansas River in Pulaski County, Arkansas, beginning at a point approximately nine miles south of College Station, Arkansas, and extending downstream to high ground at a point about three miles east of Hensley, Arkansas. The total length of the levee system is about 19 miles. The embankment averages about 15 feet in height and has a crown width of 10 feet with slopes of 1V:3H on both the landside and riverside. The Fourche Island Drainage District No. 2 is the upstream most levee segment, starting at Station 0+00 and ending at Station 471+33. The Fourche Island Drainage District No. 2 system is an 8.9 miles earthen levee, it contains two closure structures, and four drainage structures. The Woodson Levee District starts at Station 471+33 and continues downstream to Station 1010+65. The Woodson Levee District system includes 10.2 miles of earthen levee and four drainage structures along the Arkansas River.



Risk Assessment:

The Fourche Island Drainage District No. 2 has a well-established active board and is accredited by FEMA and the risk associated with the levee considered low. The Woodson Levee District does not have an active board to perform required operations and maintenance work, thus there are many years of neglected maintenance. As a result, the Woodson levee has deficiencies that may hinder its ability to protect against a major flood therefore the risk associated with the levee is considered high. Because the two levee segments are part of a larger levee system, they depend on each other to reduce flood risk to lives and property behind the levee system. Thus, the condition of the Woodson Levee prevents the Head of Fourche Island to Pennington Bayou Local Flood Project from functioning as it was originally intended, therefore the levee system is considered a high risk. It is imperative that a public sponsor be put in place to correct the deficiencies and perform operations and maintenance tasks required to ensure a properly functioning levee system.

The Local Flood Project primarily serves as flood risk management for homes, businesses and agricultural areas in Pulaski County, Arkansas. It also serves as flood risk management to the Arkansas Department of Corrections Wrightsville Prison which house 1300 inmates at the prisons as well a staff of 150 people and the Little Rock Port Authority. These entities within the

leveed area of the project place high importance that an active board is in place to administer the Woodson levee. Recently passed state legislation gives the authority to appoint levee board members to the county judge. Meetings with all stakeholders to discuss the roles of the board, those living behind the levee and the Corps will be very important in reestablishing the Woodson Levee District. Once the Woodson District has been reestablished, the Corps will assist the district to become active in the Rehabilitation Inspection Program (RIP) and inform the district the benefits of being active in the RIP. The Corps will assist the district to develop a System-Wide Improvement Framework (SWIF) so that the district becomes active as soon as possible.

It is important that actions be taken for all structural deficiencies noted below but to further reduce the risk of living behind the levee, it is also important that the sponsor, along with the county/city officials and the community develop an emergency action and evacuation plan. This plan should include but not be limited to, designated river stages to set into action inspections, closure of culvert gates and closure of the road crossings. The plan should also include designated evacuation routes and river stages to execute the evacuation. It should be noted that these designated action river stages may change based upon the rate of rise of the river, so contingencies should be built into the plan.

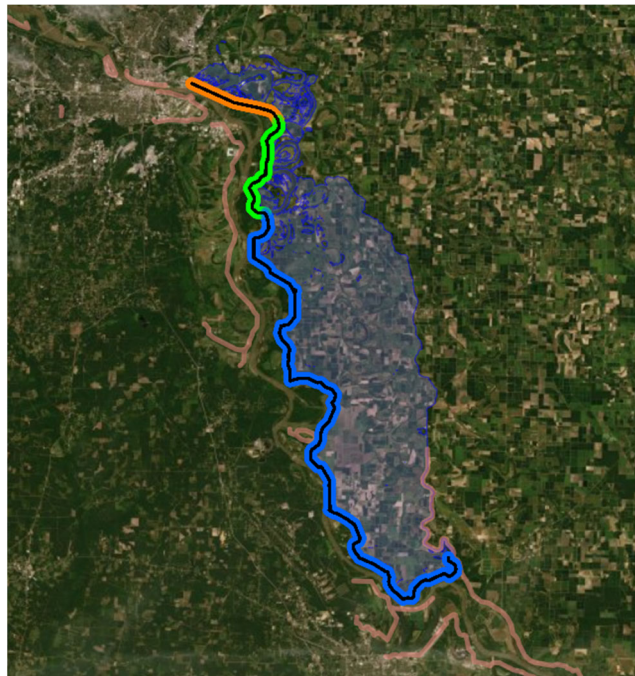
To execute the repairs resources will be needed. The levee board, along with the county/city officials should meet with the local communities to discuss the risks if nothing is done to improve the levee and how these risks can be reduced if repairs and preventive actions are taken. If the risk reduction measures are to be put in place the communities will need to be actively involved and resources will be needed to enact these measures.

North Little Rock to Gillett Levee (Segments: Old River Drainage District – Orange, Plum Bayou Levee District – Green, Baucum Levee District – Blue)

Project Description:

The North Little Rock to Gillett Levee System includes three segments, namely the Baucum Levee District, the Old River Drainage District and the Plum Bayou Levee District. The North Little Rock to Gillett Levee System is located generally on the north or left bank of the Arkansas River, approximately between 110 miles and 165 miles above the mouth of the Arkansas River beginning near the east boundary of North Little Rock at Rose City, Pulaski County, Arkansas, and extending downstream to a point about seven miles northeast of Pine Bluff, Jefferson County, Arkansas. The total length of the completed project is approximately 52.8 miles (Stations 0+00 to 2785+64). The embankment varies in height above the surrounding ground to a maximum of 26 feet, with average heights of 12 to 16 feet. The crown widths are 6 and 8 feet and 20 feet for a portion of the levee that is utilized as a roadway. The slopes are on 1V:3H on the riverside and 1V:4H on the landside. Thirty-nine culverts were constructed into the project. The levee and all drainage structures were completed on 26 July 1939. The North Little Rock to Gillett Levee System primarily serves as flood damage reduction for 568,000 acres of a mostly rural and agricultural area located along the north or left bank of the Arkansas River in Pulaski, Lonoke and Jefferson Counties, Arkansas. The North Little Rock to Gillett Levee consisted of earth levee enlargements, connections and extensions of former levee systems.

The Baucum segment is the most upstream segment of the system. The segment starts in Rose City community of North Little Rock (Station 0+00) and extends downstream approximately 6 miles (Station 314+46.2). Typical levee sections within the Baucum Levee include a top width of 6 feet and side slopes of 1V:2.5H.



Risk Assessment:

In Progress

The LSOG considers the risk associated with the Baucum Levee Segment (LST ID 14) to be high (LSAC 2) for Prior to Overtopping based on moderate life loss, very poor condition of the segment and expected poor performance during flood events and moderate (LSAC 3) for Overtopping due to infrequent likelihood of overtopping and moderate associated consequences. Baucum Levee currently has several unacceptable ratings: Culverts/pipes have not been inspected, several encroachments that could cause stability issues or embankment seepage and piping, settlement issues at numerous locations along the crown, slope stability issues due to existing slope failures, depressions and rutting of over 2 feet were encountered at the crown, bank erosion has occurred at one location and there is no closure plan or stockpile of sandbags. Also, there has been no management organization for the levee since 2009 when all board commissioners resigned.

The LSOG considers the risk associated with the Old River Drainage District (LST ID 26) to be moderate (LSAC 3) for Prior to Overtopping due to the potential for moderate performance with moderate associated consequences and also to be moderate (LSAC 3) for Overtopping due to the infrequent likelihood of overtopping and moderate consequences. Embankment seepage concerns include unwanted vegetation with extensive root systems, the age and condition of culverts, and large, widespread animal burrows on both sides of the embankment. In addition, there is no written Risk Assessment.

Little Rock Flood Protection Levee

Project Description

The Little Rock Pulaski County Drainage District No. 2 system is approximately 8 miles in total length with 7-3/4 miles of earthen levee, 1/4 mile of floodwall, four (4) pump stations and fourteen (14) drainage structures. The system does not include any closure structures. Original construction was completed in Jan. 1950. The system provides flood protection for 2,560 acres of urban land including residential housing, commercial businesses and industrial properties. The City of Little Rock's Adams Field Wastewater Treatment Facility and the Little Rock National Airport (Adams Field) are also located within the protected area.

The general design of the earthen levee consists of 1V:3H slopes with a 10 foot wide crest, except for a section of the levee that consists of false berms where a 30 foot wide berm was constructed on the riverside of the levee and a varying width berm on the landside. The bermed levee was constructed of pervious soils on the landside of the levee and impervious in the riverside portion of the levee. Additionally, a 6' deep by 7' wide inspection trench located 5 feet towards the riverside of the levee was considered in the portion of the levee that was constructed without the false berms. The buttress floodwall was constructed as 1 foot thick and 15 feet tall wall embedded approximately 2 feet. A drain tile consisting of a 5" perforated pipe was installed along the landside portion of the wall foundation. The cut-off wall extended approximately 4'-3" below the bottom of the footing. The wall was also constructed with flashboard stirrups.

Since construction, the levee has been modified to include the installation of a pressure relief well for under seepage control near Gregg Street Pump Station and changes in the alignment to accommodate the expansion of the airport. Documentation of the modifications due to the airports expansion have not been found.

Risk Assessment



The risk associated with the Little Rock Pulaski County Drainage District No. 2 is considered to be low based on anticipated good performance and low associated consequences. The risk is driven by uncertainties regarding seepage and the ability to close many below grade crossings. The levee is expected to perform well under significant loading. There is some performance uncertainty prior to overtopping due to potential embankment seepage associated with the numerous animal burrows and multiple encroachments that penetrate the levee; embankment stability concerns are related to past slope failures which have been repaired however, the high plasticity clay in the levee embankment could lead to similar slides in the future. The Bill and Hillary Clinton National Airport is located within the leveed area but is estimated to experience only minor inundation.

There has been very limited loading on this particular levee and thus there has not been any history of seepage and piping. The soil boring indicate that the foundation and borrow material are predominately sandy clayey silts and sandy silts with sandier material occurring principally on the north and east sides of the project (along the Arkansas River), this material has the potential for seepage and piping. During times of significant loading the sponsor should be aware of this potential and monitor the landside of the levee for any evidence of seepage. The embankment along Fourche Creek consist mostly of high plasticity clay which are subject to cracking during extended dry periods. This desiccation cracking contribute to the slopes slides which could lead to the lowering of the embankment crown and the overtopping of the embankment if the embankment is fully loaded.

The Little Rock-Pulaski Drainage District No. 2 hired an engineering firm to perform detailed geotechnical and hydraulic analysis/investigations for the FEMA certification of the levee. This analysis/investigation lead to the repair of existing slope slides and the replacement of damage culverts. The sponsor received a FEMA notification letter dated June 10, 2015 that the levee has met minimum certification requirements outline in Title 44 of the Code of Federal Regulation, Section 65.10 and that the levee certification documents have been accepted.

Rock Creek Levee

Project Description:

The Rock Creek levee and floodwall system is located in Boyle Park on Rock Creek in the City of Little Rock, Pulaski County, Arkansas and is part of the Rock Creek Levee and floodwall system is part of the larger Fourche Bayou Basin Project which was authorized by Section 401(a) of the Water Resources Development Act of 1986 (Public Law 99-662).

The Rock Creek system is 0.6 miles in total length and contains 0.5 miles of earthen levee, 0.1 miles of floodwall, and no drainage structures or pump stations. The Rock Creek system primarily serves as flood damage reduction for properties adjacent to Rock Creek in the City of Little Rock, Pulaski County, Arkansas.

The Rock Creek Levee system contains one section of floodwall. The floodwall begins approximately 20 feet south of W 24th Street at Station -3+60 and continues south for approximately 360 feet to the beginning of the earthen levee at Sta 0+00. The elevation of the floodwall varies from elevation 300.0 to 297.0 and has a maximum height of approximately 4 feet (COE Memorandum 2008).

The Rock Creek system was certified by FEMA in 2009 as providing protection against the base flood (FEMA 2009). The Flood Insurance Study (FIS) for the City of Little Rock, Arkansas was last revised in October 2001. The FIS shows peak discharges for Rock Creek, which is the principal tributary of Fourche Creek, which is a tributary of the Arkansas River.

Risk Assessment:



The Rock Creek levee and floodwall system is located in Boyle Park on Rock Creek in the City of Little Rock, Pulaski County, Arkansas and is part of the Rock Creek Levee and floodwall system is part of the larger Fourche Bayou Basin Project which was authorized by Section 401(a) of the Water Resources Development Act of 1986 (Public Law 99-662).

The Rock Creek system is 0.6 miles in total length and contains 0.5 miles of earthen levee, 0.1 miles of floodwall, and no drainage structures or pump stations. The Rock Creek system primarily serves as flood damage reduction for properties adjacent to Rock Creek in the City of Little Rock, Pulaski County, Arkansas.

The Rock Creek Levee system contains one section of floodwall. The floodwall begins approximately 20 feet south of W 24th Street at Station -3+60 and continues south for approximately 360 feet to the beginning of the earthen levee at Sta 0+00. The elevation of the floodwall varies from elevation 300.0 to 297.0 and has a maximum height of approximately 4 feet (COE Memorandum 2008).

The Rock Creek system was certified by FEMA in 2009 as providing protection against the base flood (FEMA 2009). The Flood Insurance Study (FIS) for the City of Little Rock, Arkansas was last revised in October 2001. The FIS shows peak discharges for Rock Creek, which is the principal tributary of Fourche Creek, which is a tributary of the Arkansas River.

Roland Drainage District Levee

Project Description:

The Roland Drainage District Local Protection Project was authorized by the Flood Control Act of December 22nd, 1944. The levee system was constructed from July 4th, 1947 through March 31st, 1948. The project is located on the right bank of the Arkansas River in Pulaski County, Arkansas. The total length of the levee is 4.1 miles in length. The top of levee elevations for Roland Drainage District range approximately from 278.1 feet to 283.0 feet. The embankment averages 16 feet in height, has a crown width of 10 feet and 1V:3H slopes on both the landside and riverside.

The system primarily serves to protect the people and property from floods in an agricultural area of approximately 3,870 acres located along the right bank of the Arkansas River in Pulaski County, Arkansas. This agricultural area includes very little residential housing and very little, if any, commercial businesses.



The Record Drawings indicate that the top of levee elevations for Roland Drainage District range approximately from 278.1 feet to 283.0 feet. At the time of construction the levee system was intended to account for floods up to "1.5 feet above the water level of a flood crest reaching 36.2 feet on the Little Rock Gage".

Risk Assessment:

The Roland Drainage District Local Protection Project was authorized by the Flood Control Act of December 22nd, 1944. The levee system was constructed from July 4th, 1947 through March 31st, 1948. The project is located on the right bank of the Arkansas River in Pulaski County, Arkansas. The total length of the levee is 4.1 miles in length. The top of levee elevations for Roland Drainage District range approximately from 278.1 feet to 283.0 feet. The embankment averages 16 feet in height, has a crown width of 10 feet and 1V:3H slopes on both the landside and riverside.

The system primarily serves to protect the people and property from floods in an agricultural area of approximately 3,870 acres located along the right bank of the Arkansas River in Pulaski County, Arkansas. This agricultural area includes very little residential housing and very little, if any, commercial businesses.

The Record Drawings indicate that the top of levee elevations for Roland Drainage District range approximately from 278.1 feet to 283.0 feet. At the time of construction the levee system was intended to account for floods up to “1.5 feet above the water level of a flood crest reaching 36.2 feet on the Little Rock Gage”.

North Little Rock Levee & Floodwall

Project Description:

The risk associated with the Little Rock Pulaski County Drainage District No. 2 is considered to be low based on anticipated good performance and low associated consequences. The risk is driven by uncertainties regarding seepage and the ability to close many below grade crossings. The levee is expected to perform well under significant loading. There is some performance uncertainty prior to overtopping due to potential embankment seepage associated with the numerous animal burrows and multiple encroachments that penetrate the levee; embankment stability concerns are related to past slope failures which have been repaired however, the high plasticity clay in the levee embankment could lead to similar slides in the future. The Bill and Hillary Clinton National Airport is located within the leveed area but is estimated to experience only minor inundation.



There has been very limited loading on this particular levee and thus there has not been any history of seepage and piping. The soil boring indicate that the foundation and borrow material are predominately sandy clayey silts and sandy silts with sandier material occurring principally on the north and east sides of the project (along the Arkansas River), this material has the potential for seepage and piping. During times of significant loading the sponsor should be aware of this potential and monitor the landside of the levee for any evidence of seepage. The embankment along Fourche Creek consist mostly of high plasticity clay which are subject to cracking during extended dry periods. This desiccation cracking contribute to the slopes slides which could lead to the lowering of the embankment crown and the overtopping of the embankment if the embankment is fully loaded.

The Little Rock-Pulaski Drainage District No. 2 hired an engineering firm to perform detailed geotechnical and hydraulic analysis/investigations for the FEMA certification of the levee. This analysis/investigation lead to the repair of existing slope slides and the replacement of damage culverts. The sponsor received a FEMA notification letter dated June 10, 2015 that the levee has met minimum certification requirements outline in Title 44 of the Code of Federal Regulation, Section 65.10 and that the levee certification documents have been accepted.

Risk Assessment:

Although the levee has limited loading history, it is expected to perform well during a significant loading event. There are some concerns with seepage due to the condition of one discharge pipe. However, the risk associated with the North Little Rock Levee and Floodwall is considered to be moderate based on low life safety and moderate property damage. The estimated property damages are \$23 million.

The North Little Rock Levee and Floodwall has performed very well since construction was completed in 1942. But the maximum water that has been placed on the levee has only been three feet, which was in April 1945. The maximum water that can be placed on the levee is approximately 10 feet. The additional 7 feet of water on the levee could lead to the development

of water flow through and or under the earthen levee, especially in areas where there are animal burrows, and the water flow could contribute to uncontrolled flow around the rusted discharge pipe. The additional 7 feet of water could also lead to uncontrolled flow under the floodwall if the sheetpile cutoff wall is damaged because of the tree roots.

The uncontrolled water flow in any of the locations noted could be fast enough to move the sandy material and create a hole under the levee, the floodwall or the culvert. This hole could increase in size allowing more water to flow and the levee could collapse creating a depression in the levee or cause the floodwall to lean resulting in the lowering of the levee or floodwall height. This lowering of the levee height could lead to the overtopping of the levee which could lead to a levee failure, resulting in the flooding of the areas behind the levee.

To further protect themselves, the sponsor and the local government, along with the community, should review the current evacuation plan, ensuring the plan includes but not be limited to, designated river stages to set into action the highwater inspections; closure of culvert gates and the placement of the stoplog structures. The plan should also include designated evacuation routes and river stages to execute the evacuation. It should be noted that these designated action river stages may change based upon the rate of rise of the river, so contingencies should be built into the plan.

Riverdale Private Levee

Project Description:

In Progress

The LSOG considers the risk associated with the Baucum Levee Segment (LST ID 14) to be high (LSAC 2) for Prior to Overtopping based on moderate life loss, very poor condition of the segment and expected poor performance during flood events and moderate (LSAC 3) for Overtopping due to infrequent likelihood of overtopping and moderate associated consequences. Baucum Levee currently has several unacceptable ratings: Culverts/pipes have not been inspected, several encroachments that could cause stability issues or embankment seepage and piping, settlement issues at numerous locations along the crown, slope stability issues due to existing slope failures, depressions and rutting of over 2 feet were encountered at the crown, bank erosion has occurred at one location and there is no closure plan or stockpile of sandbags. Also, there has been no management organization for the levee since 2009 when all board commissioners resigned.



The LSOG considers the risk associated with the Old River Drainage District (LST ID 26) to be moderate (LSAC 3) for Prior to Overtopping due to the potential for moderate performance with moderate associated consequences and also to be moderate (LSAC 3) for Overtopping due to the infrequent likelihood of overtopping and moderate consequences. Embankment seepage concerns include unwanted vegetation with extensive root systems, the age and condition of culverts, and large, widespread animal burrows on both sides of the embankment. In addition, there is no written procedure for the culvert gate closure and the equipment needed for closure is lost. There are no official board members on the levee district, community awareness is low. These concerns are partially offset by the sparse population in the leveed area adjacent to this levee segment.

Risk Assessment:

The risk associated with the Riverdale Private Levee is considered to be moderate. The 2.86 mile ring levee provides protection to a highly developed area that consists of homes and office complexes with an estimated value \$225 million. There are numerous encroachments on and near the levee; multiple residential structures are located on the levee crown and two office buildings were constructed through the levee and now act as floodwalls. There is limited design/construction details for most of

the structures along the levee and because of the limited construction details there is no way to assess the number and type of utility penetrations into the levee embankment.

These unknowns make it very difficult to assess the reliability of the system.

The Riverdale Private Levee Board is a very active levee board. The levee obtained FEMA accreditation in 2012; with this accreditation, the levee board developed an Operation and Maintenance plan and Closure Plan. Over the past 5 years the board has followed the standards set forth in their O&M manual.

The levee district also has a written closure plan for all closures, including the lock, culverts gates and road crossings. During the May 2015 high water event the district carried out the closure procedures for the lock and the culvert gates. At this particular time, there is no written evacuation plan, to effectively reduce the risk of living behind a levee, an evacuation plan is needed. It is important that the sponsor, along with the county/city officials and the community as a whole, develop this evacuation plan. This plan should include but not be limited to designated river stages to set into action inspections, closure of culvert gates, and sand bag closure of the road crossing. It should be noted that the designated action river stages may change based upon the rate of rise of the river, so contingencies should be built into the plan. The evacuation plan should also include designated evacuation routes and river stages to execute the evacuation.

Bayou Meto Levee & Pumping Station

No statistical data available



Pulaski County Farm Private Levee

No statistical data available

Previous Occurrences

There have been no previous “Levee Failures” recorded for the permitted dams located in Pulaski County.

Probability of Future Events

Because there are no known levee failures to have occurred in Pulaski County, it is not possible to predict a future event. However, it is indicated on each of the levee maps the inundation area associated with each levee should a failure occur. There is always a possibility of future occurrences; likely less than 1%.



Impact and Vulnerability

As indicated by the National Levee Data Base, Pulaski County has 380.8 mile of levees affecting 13,326 people and 4,448 structures and the total property value of \$1.482 Billion. One can assume that a levee failure of the High Risk Levees would be detrimental to the communities. The longest levee system in place is the North Little Rock to Gillette Levee District which affects 4 cities and 3 counties. The table below provides detailed information for each levee system.

| ID | System ID | Responsible Entity | Flooding of Record | Length | Levee area Sq mile | Communities Protected | Flood Source | Risk # | People | Structures | Property Value | Probability of Overtop |
|--|------------|--------------------|--------------------|--------|--------------------|--|--------------|--------|--------|------------|----------------|------------------------|
| Head of Fourche Island to Pennington Bayou | 3705000001 | USACE- Little Rock | 6/1/1933 | 21.38 | 46.49 | Little Rock, Saline Co, Pul Co, Grant Co, Jefferson Co, Wrightsville | Ark River | high | 2,828 | 176 | \$266M | 0.001 |
| NLR to Gillette | 3705000003 | USACE- Little Rock | 6/1/1933 | 53.27 | 188.64 | Keo, North Little Rock, Lonoke Co, Jefferson Co, England, Pulaski Co, Sherrill | Ark River | high | 7,842 | 3,799 | \$921M | 0.001 |
| Little Rock Flood Protection Levee | 3705000004 | USACE- Little Rock | 6/1/1933 | 7.51 | 0.47 | Little Rock, Pulaski Co | Ark River | low | 26 | 14 | \$5.6M | 0.002 |
| NLR Levee & Floodwall | 3705000002 | USACE- Little Rock | 6/1/1933 | 2.97 | 0.22 | North Little Rock | Ark River | mod | 368 | 116 | \$44M | 0.001 |
| Riverdale Private Levee | 3705000036 | USACE- Little Rock | 6/1/1933 | 289 | 0.35 | Little Rock | Ark River | mod | 2,046 | 249 | \$223M | 0.02 |
| Rock Creek Levee | 3705000006 | USACE- Little Rock | 5/1/2011 | 0.59 | 0.024 | Little Rock | Rock Creek | low | 115 | 49 | \$11.1M | 0.005 |
| Roland Drainage | 3705000007 | USACE- Little Rock | 6/1/1933 | 4.09 | 4.51 | Pulaski Co | Ark River | low | 101 | 45 | \$12.4M | 0.0005 |

| | | | | | | | | | | | | |
|------------------------------------|------------|--------------------|-----------|-------|-------|----------------------------|-----------------------|-----|---|---|---|---|
| District Levee | | | | | | | | | | | | |
| Bayou Meto Levee & Pumping Station | 3705000018 | USACE- Little Rock | 6/1/1933 | 0.064 | 0.054 | North Little Rock & Pul Co | Ark River | N/A | 0 | 0 | 0 | 0 |
| Pul Co. Farm Private Levee | 3705000058 | USACE- Little Rock | 4/19/1927 | 1.89 | 0.36 | Pulaski Co | Little Maumelle River | N/A | 0 | 0 | 0 | 0 |

3.4.2 Drought

A drought is a period of unusually persistent dry weather that persists long enough to cause serious deficiencies in water supply (surface or underground). Droughts are slow onset hazard, but over time they can severely affect crops, municipal water supplies, recreation resources and wildlife. If drought conditions extend over a number of years, the direct and indirect economic impacts can be significant. High temperatures, high winds, and low humidity can worsen drought conditions and also make areas more susceptible to wildfire. In addition, human actions and demands for water resources can accelerate drought-related impacts.

Location

All areas of Pulaski County and plan participants are equally likely to experience severe drought. There is no defined geographic hazard boundary, and the entire planning area is equally susceptible to this hazard.

Extent

| Drought Severity Classification | | | | | | | |
|---------------------------------|---------------------|---|----------------------|---------------------------------------|--------------------------------------|--|--|
| Category | Description | Possible Impacts | Ranges | | | | |
| | | | Palmer Drought Index | CPC Soil Moisture Model (Percentiles) | USGS Weekly Streamflow (Percentiles) | Standardized Precipitation Index (SPI) | Objective Short and Long-term Drought Indicator Blends (Percentiles) |
| D0 | Abnormally Dry | Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered | -1.0 to -1.9 | 21-30 | 21-30 | -0.5 to -0.7 | 21-30 |
| D1 | Moderate Drought | Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested | -2.0 to -2.9 | 11-20 | 11-20 | -0.8 to -1.2 | 11-20 |
| D2 | Severe Drought | Crop or pasture losses likely; water shortages common; water restrictions imposed | -3.0 to -3.9 | 6-10 | 6-10 | -1.3 to -1.5 | 6-10 |
| D3 | Extreme Drought | Major crop/pasture losses; widespread water shortages or restrictions | -4.0 to -4.9 | 3-5 | 3-5 | -1.6 to -1.9 | 3-5 |
| D4 | Exceptional Drought | Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies | -5.0 or less | 0-2 | 0-2 | -2.0 or less | 0-2 |

Source: U.S. National Drought Mitigation Center.

Previous Occurrences:

According to the U.S. Drought Monitor, since 2015 there were:

- 3- D4 incidents reported
- 29- D3 incidents reported
- 74- D2 incidents reported
- 113- D1 incidents reported
- 174- D0 incidents reported

According to NCDC there has been only 1 drought submitted on record for Pulaski County (from 1/1/15-12/31/2019)

| <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> |
|--------------------------------|--------------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |
| PULASKI (ZONE) | PULASKI (ZONE) | AR | 11/14/2017 | 00:00 | CST-6 | Drought | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 0.00K | 0.00K |

Probability of Future Events

Based on previous occurrences, the planning area is likely to see the probability of a drought event of 48% in any given year. The entire planning area is expected to experience a drought that is rated between a D0 and D3 in any given year.

Impact and Vulnerability

The primary and most devastating effect for planning area is the lack of water. As a dry period progresses and water supplies dwindle, existing water supplies are overtaxed and dry up. If the drought is long term, it may result in permanent changes in settlement, social, and living patterns in these jurisdictions. During a past drought event, the water utility companies serving these jurisdictions instituted mandatory water restrictions. Cascading effects also include major ecological changes such as increased flash flooding and desertification. All populations in these jurisdictions are vulnerable during a drought event; however, children and elderly are the biggest concerns for the communities as they may suffer from dehydration before other populations.

The **economic impacts** of drought on a community can mount up after just one season of drought. Farms may lose money due to crop failures and an inability to feed and water livestock during drought. In turn, agriculture-dependent businesses conduct less business and lose money. Additionally, tourists may be reluctant to visit drought-affected areas, reducing another source of community income. Use of forests for recreational purposes may be discouraged because of fire hazards. Water based recreation may also decrease. Businesses relying on these activities will suffer. Because of a general increase in the potential for bankruptcy among businesses, banks may become reluctant to loan money or extend loan periods. In this way, the economic impacts of drought spread through and beyond affected communities.

Similarly, drought's **environmental impacts** can degrade the habitability of a region. Rivers and lakes drop to low levels and turbidity and salinity increase, affecting fish habitat. Mountain animals have less to drink and migrate to wetter areas or to places of water concentration. The potential for catastrophic wildfires increases.

Drought can cause a series of **social impacts**. Drought affects human health, both physically and emotionally, in both rural and urban areas. People lose their peace of mind if they're not certain they'll have enough water. They may also change their habits in response to animals that come into communities in search of food and water, or to the increased risk of fire caused by dry landscaping around their homes.

The school districts in Pulaski County will also be greatly affected by the dwindling water supply. Limited water supplies may also affect the schools' ability to provide meal services. School schedules could be hindered, or canceled altogether.

3.4.3 Earthquake

An earthquake is what happens when two blocks of the earth suddenly slip past one another. The surface where they slip is called the fault or fault plane. The location below the earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the earth is called the epicenter.

Sometimes an earthquake has foreshocks. These are smaller earthquakes that happen in the same place as the larger earthquake that follows. Scientists can't tell that an earthquake is a foreshock until the larger earthquake happens. The largest, main earthquake is called the mainshock. Mainshocks always have aftershocks that follow. These are smaller earthquakes that occur afterwards in the same place as the mainshock. Depending on the size of the mainshock, aftershocks can continue for weeks, months, and even years after the mainshock.

Location

Data is not available to predict the location of future earthquakes for areas of Pulaski County; therefore it is assumed that all areas of the planning area are equally susceptible to earthquakes. The Arkansas State Mitigation Plan describes the regions with high probability of future earthquakes in the State of Arkansas are along the New Madrid Fault. The portion of Arkansas that is likely to experience damage is located in the northeast portion of the state. Pulaski County is not located in this area.

Extent

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally - total destruction. Although numerous intensity scales have been developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It was developed in 1931 by the American seismologists Harry Wood and Frank Neumann. This scale, composed of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.

The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful measure of severity to the nonscientist than the magnitude because intensity refers to the effects actually experienced at that place.

The lower numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The higher numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above.

The following is an abbreviated description of the levels of Modified Mercalli intensity.

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

Previous Occurrences

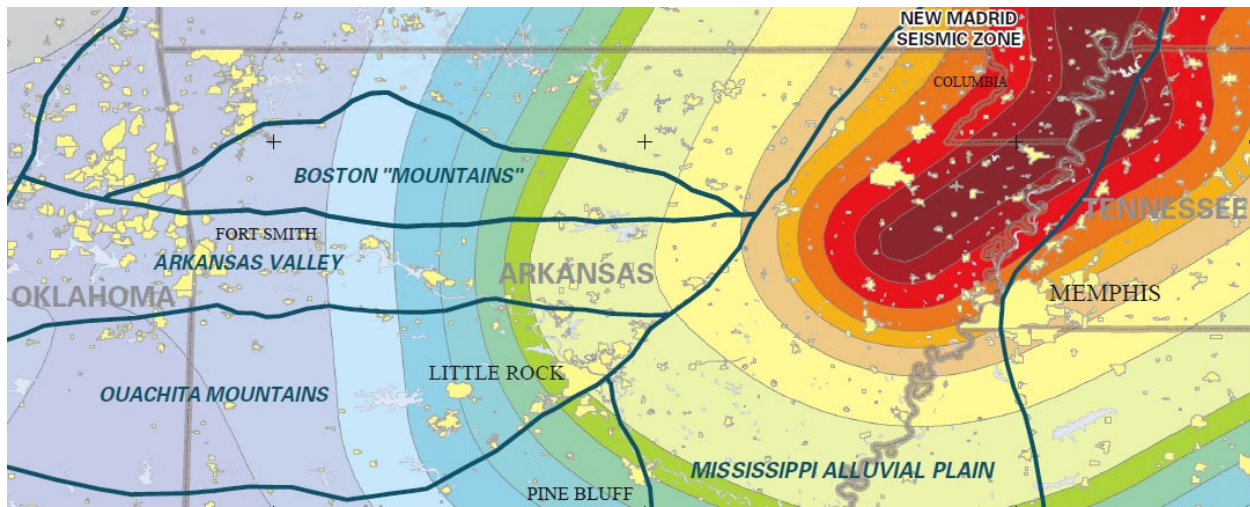
Earthquakes can occur nearly anywhere in Arkansas. Earthquakes that occur outside of the New Madrid Seismic Zone are generally small and have caused little to no damage. One of the most memorable earthquakes outside the NMSZ occurred on New Year's Day in 1969 near **Ferndale (Pulaski County)** and was felt over northern and central Arkansas. Residents of **Little Rock (Pulaski County)** reported cracked plaster and shifted furniture. This earthquake also caused trees, utility lines, and tall buildings to sway. Many people reported having difficulty standing. The earthquake was estimated to be 4.2 to 4.5 in magnitude.

There has been one recorded earthquake in the planning area according to the Arkansas Geological Survey since 2015. However, according to a "Final Technical Report" conducted by the University of Memphis in 2010 as an "Investigation of the Magnitude and Timing of Paleo-Earthquakes in Southeast Arkansas," there is evidence of 3 prehistoric earthquakes occurring in Pulaski County in the last 7,000 years.

Probability of Future Events

Based on lack of previous occurrences in recent history, the probability of an earthquake event in any given year is 1%. Therefore, a future event is extremely unlikely to occur before the next migration plan update. However, it is possible that all plan participants in Pulaski County could experience up to a 6.1 magnitude earthquake at some point in the future, which could be thousands of years in the future.

Pulaski County lies with the Moderate to Weak Zone of the New Madrid Seismic Map.



Impact and Vulnerability

Most earthquake-related property damage and deaths are caused by the failure and collapse of structures due to ground shaking. Impacts to the Pulaski County planning area during a New Madrid event would lend more toward recovery, i.e. acceptance of displaced residents from other counties and the providing of resources to the overall state recovery effort.

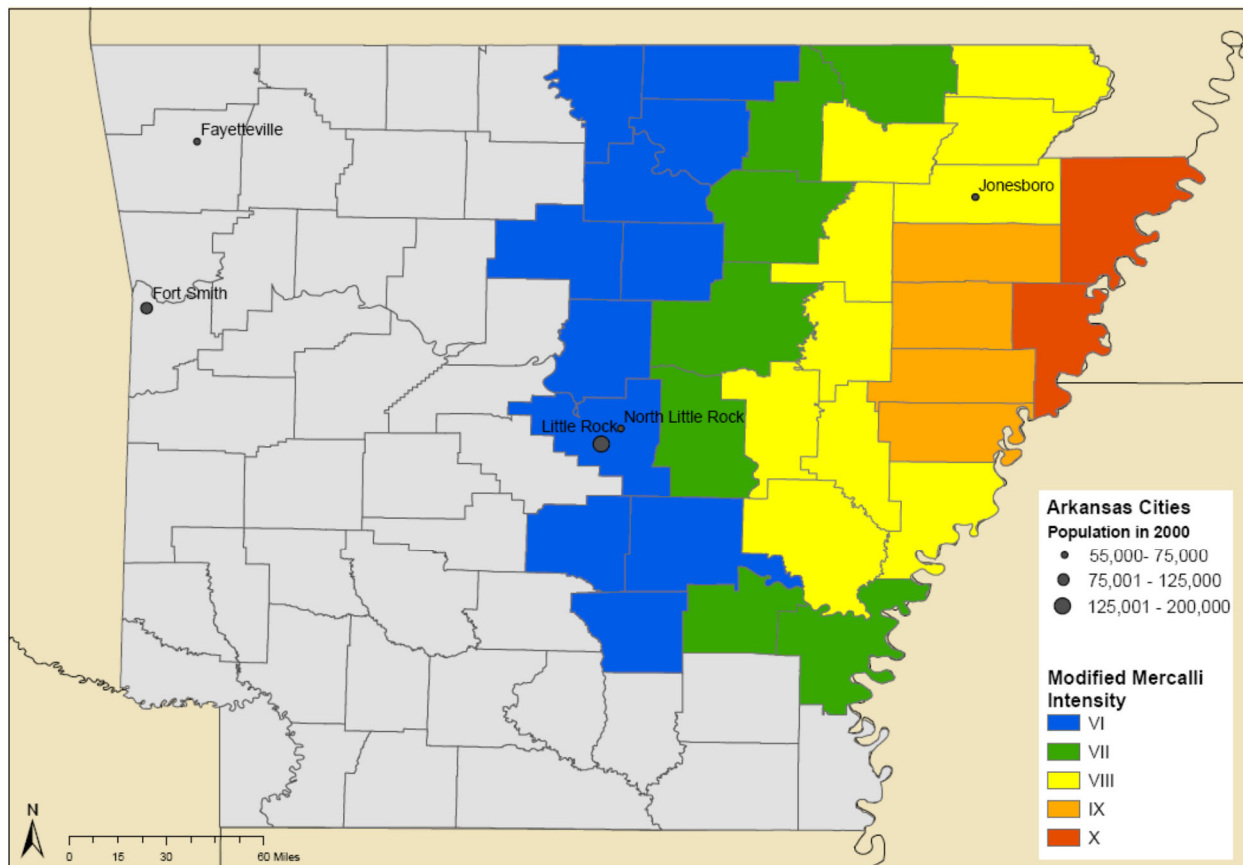
The magnitude of a future probable event for the planning area would not impact any areas differently, i.e. urban vs. rural so building density would not be a factor. There are vulnerable commercial structures located in the planning area that are constructed with unreinforced masonry. During a Magnitude 6.1 on the Richter Scale, the planning area could experience destruction up to about 99 miles across populated areas. According to the Modified Mercalli Scale, an event of this magnitude (IX equivalent) could cause buildings to shift off foundations, foundation cracks, and break underground pipes.

All areas of the planning area contain housing that is constructed with unreinforced masonry. The walls will be cracked or collapsed. The windows would be broken and unanchored furniture will be turned over or displaced. There are also areas with mobile homes that are mounted on piers. The homes could be knocked off their foundation and drop 24 to 36 inches before striking the ground. Any residents in mobile homes are vulnerable and would be knocked from their current position to the floor and injured or killed. The contents of the home would be scattered and damaged, and structures connected to the home can be torn away from the main structure.

Elderly and small children (including students at the Crossett and Hamburg Schools) are most vulnerable to this hazard as they may be unable to reach safety (outdoors) as quickly as others. Additionally, an earthquake could create stress or take an emotional toll on this population for fear of future events.

Infrastructure such as roads, bridges, power lines, etc. can also be vulnerable to a future earthquake event. Services such as cell service and landlines may become unavailable as well due to damage or capacity limits. Roads and bridges can collapse, power lines fall causing major power outages. Both issues can cause delays for emergency responders.

Earthquake Intensity in Arkansas FEMA Catastrophic Planning Scenario - NMSZ - 7.7 M



3.4.4 Extreme Heat

Extreme heat is characterized by a combination of very high temperatures and exceptionally humid conditions. Temperatures that hover 10 degrees or more above the average high temperature for the region and lasts for several weeks are defined as extreme heat. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. When persisting over a period of time, it is called a heat wave. Many areas of the United States are susceptible to heat waves and Arkansas is certainly one of these.

The major threat of extreme heat or heat waves is heatstroke, a medical emergency that can be fatal. Most at risk are outdoor laborers, the elderly, children, and people in poor physical health. The combined effects of high temperature and high humidity are more intense in urban centers than in rural areas.

An estimation of the heat index is a relationship between dry bulb temperatures at different humidity's and the skin's resistance to heat and moisture transfer. Because skin resistance is directly related to skin temperature, a relation between ambient temperature and relative humidity versus skin or apparent temperature can be determined. If the relative humidity is higher or lower than the base value, then the apparent temperature is higher or lower than the ambient temperature.

Approximately 200 deaths a year are attributable to extreme heat in the U.S. There were no records available to the HMPT documenting any deaths in the county which was attributable to extreme heat, although it is doubtful there have not been some over the years, though perhaps not recorded as such or attributed directly to the weather.

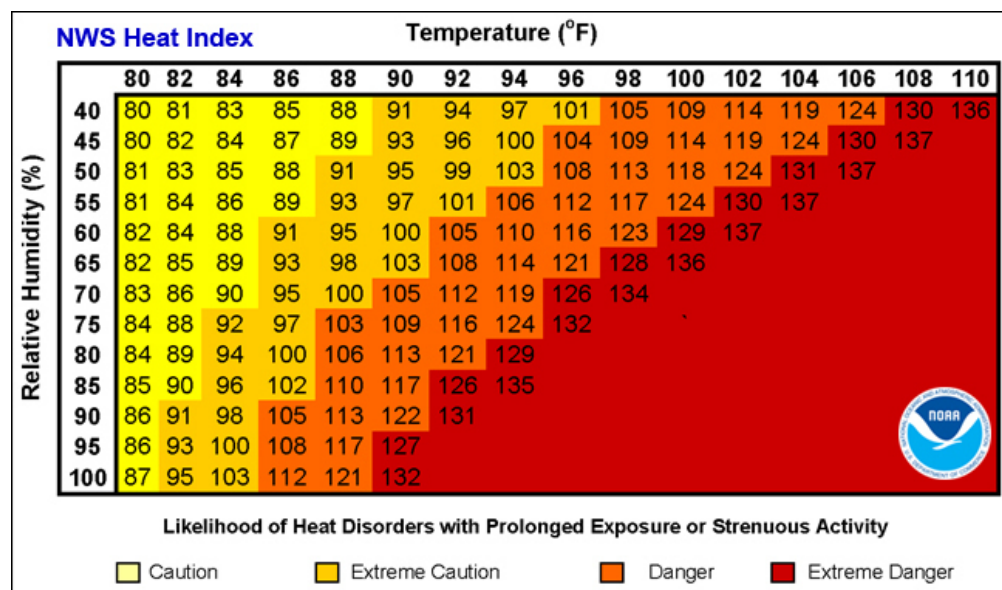
Location

There is no defined geographic hazard boundary for extreme heat. Extreme heat generally affects people rather than property. All plan participants are equally likely to experience an extreme heat event.

Extent

All plan participants are affected seasonally by summer heat, with summer temperatures averaging 89 degrees (all temperatures given in Fahrenheit). Between 2000 and 2016, areas in Pulaski County have recorded high temperatures between 100 and 108 degrees. The highest recorded temperature of 108 occurred on August 28, 2000. Temperature readings of 107 were recorded on August 31, 2000 and August 4, 2011. The past occurrences help predict that the participating jurisdictions mentioned above are likely to expect extreme heat up to 108 degrees Fahrenheit.

The magnitude or intensity of an extreme heat event is measured according to temperature in relation to the percentage of humidity. According to the National Oceanic Atmosphere Administration (NOAA) this relationship is referred to as the “Heat Index” which is shown below. The Heat Index measures how hot it feels outside when humidity is combined with high temperatures.



Heat Index/Heat Disorders

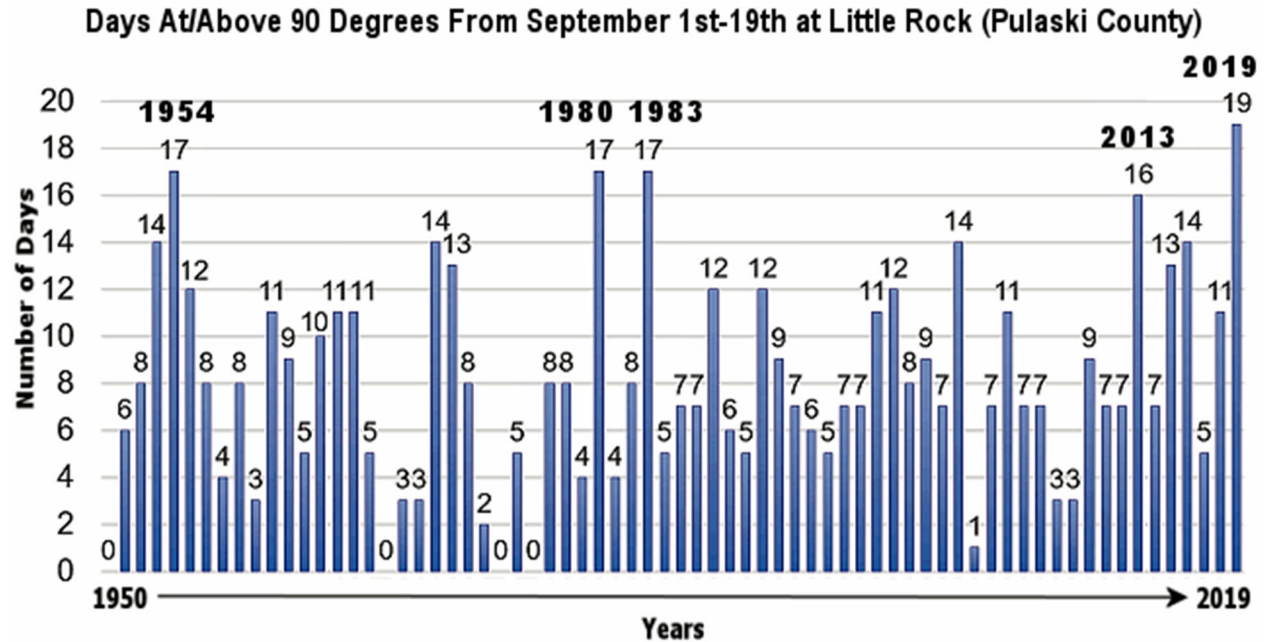
| Heat Index | Possible heat disorders for people in higher risk groups |
|---------------|--|
| 130 or higher | Heatstroke/sunstroke highly likely with continued exposure. |
| 105-130 | Sunstroke, heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity. |
| 90-105 | Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity. |
| 80-90 | Fatigue possible with prolonged exposure and/or physical activity. |

IMPORTANT: Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to 15°F. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

| Heat Disorder | Symptoms | First Aid |
|-------------------------|--|---|
| Sunburn | Redness and pain. In severe cases swelling of skin, blisters, fever, and headaches. | Ointments for mild cases if blisters appear and do not break. If breaking occurs, apply dry sterile dressings. Serious, extensive cases should be seen by a physician. |
| Heat Cramps | Painful spasms usually in muscles of the legs and abdomen possible. Heavy sweating. | Firm pressure on the cramping muscles, or gentle massaging to relieve the spasm. Give sips of water. If nausea occurs, discontinue use. |
| Heat Exhaustion | Heavy sweating, weakness, skin cold, pale and clammy. Pulse thready. Normal temperature possible. Fainting and vomiting. | Get victim out of sun. Lay down and loosen clothing. Apply cool, wet cloths. Fan or move victim to air conditioned room. Sips of water. If nausea occurs, discontinue use. If vomiting continues, seek immediate medical attention. |
| Heat Stroke (sunstroke) | High body temperature (106 F or higher). Hot dry skin. Rapid and strong pulse. Possible unconsciousness. | <i>Heat stroke is a severe medical emergency. Summon emergency medical assistance or get the victim to a hospital immediately. Delay can be fatal.</i> Move the victim to a cooler environment. Reduce body temperature with cold bath or sponging. Use extreme caution. Remove clothing, use fans and air conditioners. If temperature rise again, repeat process. Do not give fluids. |

Previous Occurrences

There has been one instance of “excessive heat” recorded by the NCDC on July 18, 2019. One death was reported associated with the extreme heat. However, areas of the County have recorded record breaking temperatures in 2019 with 62 days above 90° from 2015-2019.



Probability of Future Events

Based on previous occurrences, the planning area is likely to see 12.40 extreme heat events per year, so the probability of an event is 29.44% in any given year. The entire planning area is expected to experience temperatures between 100°F and 110°F any given year.

Impact and Vulnerability

All participating jurisdictions have a total vulnerable population. It has been determined that the most vulnerable are of children under 5 years and elderly over 62 years. Prolonged exposure to temperatures above 100 degrees Fahrenheit can cause significant health-related ailments that include heat stroke and even death.

Infrastructure can be affected by extreme heat as power grids become over taxed causing power outages which will contribute to the heat effects.

For the Pulaski County School Districts, the students, faculty, and staff are at risk of heat injuries during recess, and transition from building to building.

The unincorporated areas of Pulaski County and rural communities are concerned about the agriculture crops, livestock, water supply, and timber populations during extreme heat events. As temperatures rise, people and animals need more water to maintain their health. Many important economic activities like raising livestock and growing food crops require plenty of water. Agriculture, forestry, fishing and hunting, and mining continue to make up a significant portion of Pulaski County's industry. This trend remains a vulnerability of the farmers and the economy that relies on the product sales during extreme heat events.

During extreme heat, warmer temperatures make crops grow more quickly, also while warmer temperatures can reduce yields. For some crops, such as grains, faster growth reduces the amount of time that seeds have to grow and mature. Also, more extreme temperatures prevent crops from growing.

Heat waves directly threaten livestock. Heat stress can increase vulnerability to disease, reduce fertility, and reduce milk production. Pasture and feed supplies will deplete. Extreme heat will reduce the amount of quality forage available to grazing livestock. Animals that rely on grain will have a lack of feed. All the while, the prevalence of parasites and diseases will rise.

For timber plantations and forestry, the climate will influence the structure and function of forest ecosystems and plays an essential role in forest health. Increased temperature may worsen many of the threats to forests through the increase of pest outbreaks, fires, and drought.

Structures and infrastructure are vulnerable to this hazard. Roads can buckle as they become extremely hot as the chip seal and asphalt begin to soften by the heat.

3.4.5 Flooding

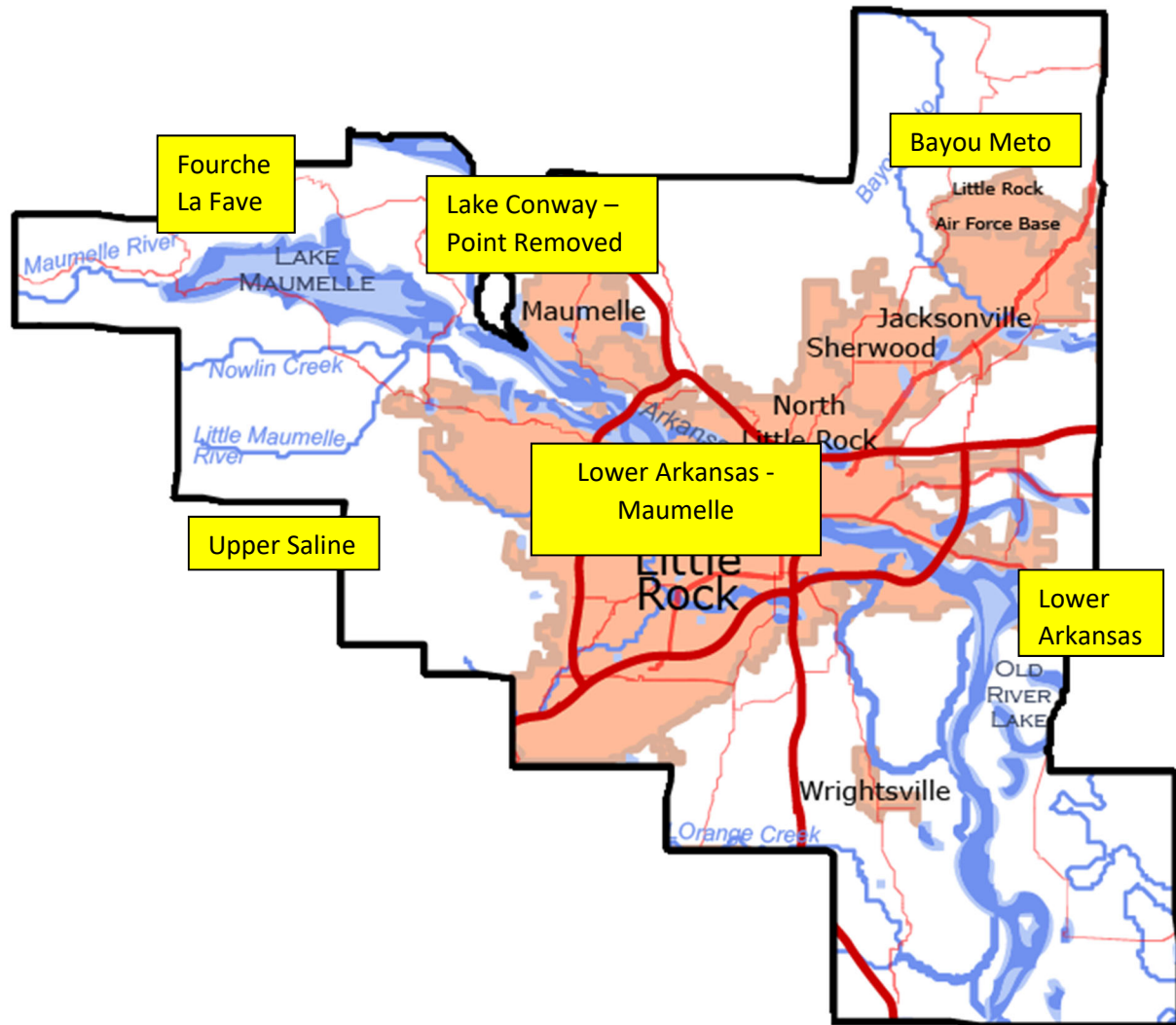
A flood is the partial or complete inundation of normally dry land. The various types of flooding include riverine flooding, and shallow flooding in Pulaski County. Common impacts of flooding include damage to personal property, buildings, and infrastructure; bridge and road closures; service disruptions; and injuries or even fatalities.

Location

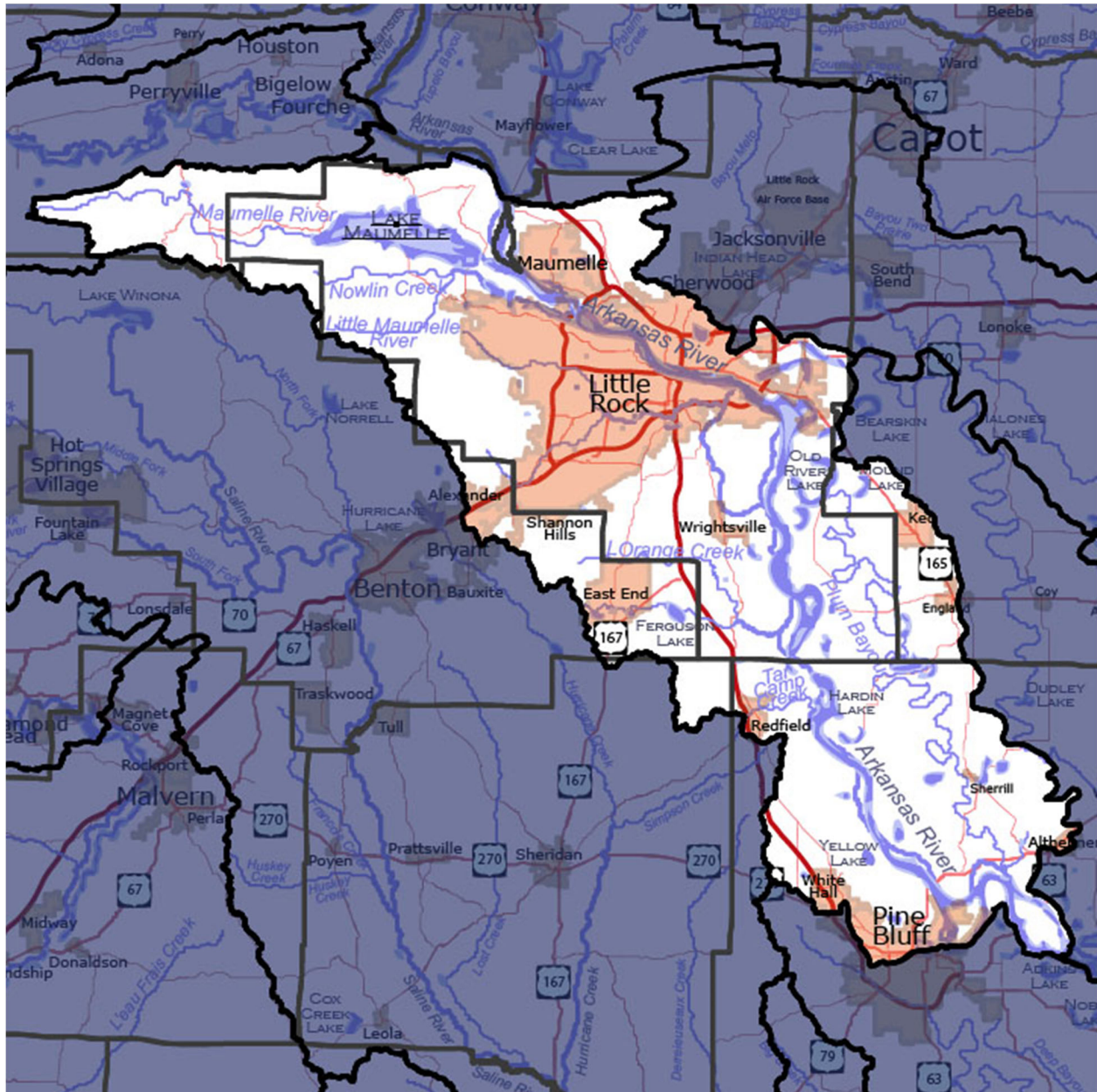
The Lower Arkansas Maumelle Watershed covers the majority of Pulaski County and includes the Cities of Little Rock, North Little Rock, Maumelle, Wrightsville and Cammack Village. Bayou Meto Watershed is located in the Northeastern tip of the County and includes Jacksonville and Sherwood. Fourche La Fave Watershed is located in the very Northwest tip of the county. Lake Conway – Point Remove is in the northern most part of the county near Maumelle. Lower Arkansas is located on the eastern boundary of Pulaski County and Upper Saline Watershed is southwest corner of Pulaski County near Saline County.

Pulaski County Watersheds

Arkansas Natural Resources Commission under Cooperating Technical Partner (CTP) with FEMA completed the Flood Risk Report for the Lower Arkansas – Maumelle Watershed on October 10, 2018. and the following non-regulatory risk assessment products of “Flood Risk Map”, “Flood Risk Report,” and “Flood Risk Database” were made available. A very in depth report project area included: Town of Alexander, City of Bryant, City of Cammack Village, City of England, Town of Keo, City of Little Rock, City of Maumelle, City of North Little Rock, City of Pine Bluff, Town of Redfield, City of Shannon Hills, Town of Sherrill, City of White Hall, city of Wrightsville, Faulkner County Unincorporated Areas, Grant County Unincorporated Areas, Jefferson County Unincorporated Areas, Lonoke County Unincorporated Areas, Perry County Unincorporated Areas, Pulaski County unincorporated Areas, and Saline County Unincorporated Areas.



Lower Arkansas – Maumelle Watershed



Arkansas Natural Resources Commission under Cooperating Technical Partner (CTP) with FEMA completed the full Risk MAP process for the Lake Conway – Point Remove Watershed, (09/01/2015) and the following non-regulatory risk assessment products of “Flood Risk Map”, “Flood Risk Report,” and “Flood Risk Database” were made available.

Arkansas Natural Resources Commission under Cooperating Technical Partner (CTP) with FEMA completed the full Risk MAP process for the Bayou Meto Watershed, (12/17/2015) and the following non-regulatory risk assessment products of “Flood Risk Map”, “Flood Risk Report,” and “Flood Risk Database” were made available. Arkansas Natural Resources Commission under Cooperating Technical

Partner (CTP) with FEMA completed the full Risk MAP process for the Upper Saline Watershed, (12/23/2015) and the following non-regulatory risk assessment products of “Flood Risk Map”, “Flood Risk Report,” and “Flood Risk Database” were made available.

No Risk MAP data is available for the Lower Arkansas Watershed at this time. It is not known if ANRC and FEMA have plans to produce Risk MAP products for these Watersheds, but this status will be revisited for future Mitigation Plan Updates to ensure the inclusion of the best available data.

Extent

NOAA data from January 2015- December 2019 indicates Pulaski County as a whole experienced 28 days of heavy rain, 1857 days (75 events) of flooding. The average precipitation for those events is 0.751724 inches. Oftentimes flooding can be a result of the condition of the land’s ability to absorb precipitation, which can be affected by how much and in what time period previous rains have occurred. In events where an extreme amount of rain fall occurs over a short amount of time, the land is less able to absorb in influx of the rainfall which contributes to runoff. Runoff is also increased by the land use and development changes causing an increase in non-permeable surfaces such as asphalt and concrete.

Flood elevation data is not available for any of the planning area to determine how high the water can get. However, comparing past occurrences to rainfall received can provide an indication of what amount of rain each community can handle before experiencing flooding.

Flood severity categories used by the NWS include minor flooding, moderate flooding, and major flooding. Each category has a definition based on property damage and public threat. Any of the planning area could see any of the below categories of flooding.

- **Minor Flooding-** minimal or no property damage, but possibly some public threat or inconvenience
- **Moderate Flooding-** some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to high elevations are necessary
- **Major Flooding-** extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.

According to the Arkansas State All-Hazards Mitigation Plan (2013), should a 1% annual (100-year) flood event occur in Pulaski County, the following losses would occur:

| | |
|-----------------------------|---------------|
| Residential Building Losses | \$121,456,000 |
| Residential Contents Losses | \$ 78,503,000 |
| Commercial Building Losses | \$141,779,000 |
| Commercial Content Losses | \$357,379,000 |
| Other Building Losses | \$ 20,143,000 |
| Other Contents Losses | \$ 59,923,000 |
| Total Contents Losses | \$495,805,000 |
| Total Building Losses | \$283,378,000 |
| Business Disruption Losses | \$ 62,809,000 |
| Total Losses | \$841,992,008 |

This same source also estimates crop exposure value at \$18,618,000, and an annual estimated crop damages at \$101,352.

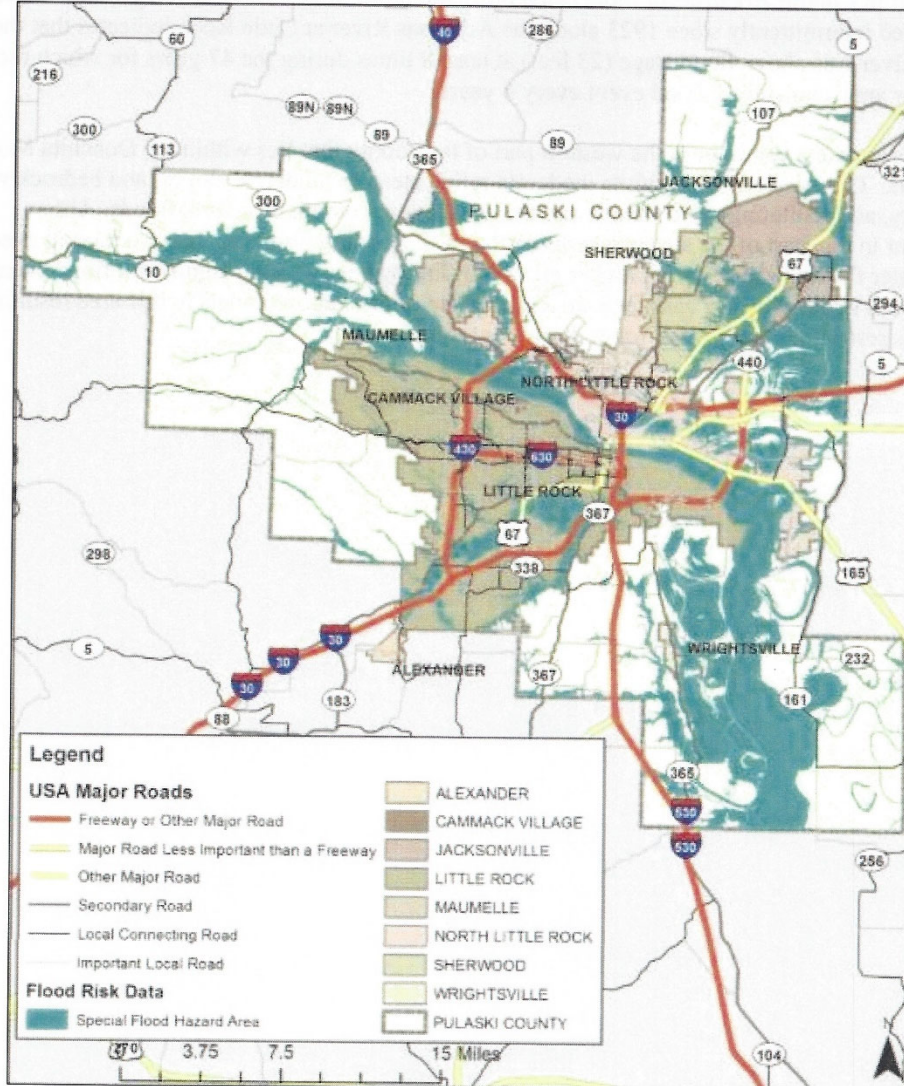
The following charts and maps are an excerpt from the 2014 Pulaski County Hazard Mitigation that provides additional information of estimated flood depths for flooding.

Floodplains and areas in the 500 year flood zone are the geographical areas affected by flood events in the Pulaski County Planning Area. The HMPT has reviewed Pulaski County's Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS), as well as worked with the County Floodplain Administrator and State of Arkansas Natural Resource Commission to conduct a risk assessment of flooding events throughout the County. Based on a conversation with a local engineering firm extremely knowledgeable of flooding in Pulaski County, the depths of flood waters in areas within the 100 year flood zone range from 2 to 4 feet while flood depths in the 500 year flood zone range from 1 to 3 feet. Refer to map below for areas vulnerable to flooding.

Riverine floods are most common in the Mississippi Alluvial Plain in the eastern part of the County and along the Arkansas River. These areas exhibit low relief and typically have flat, broad floodplains. The area surrounding the Arkansas River is subject to flood damage because of the large amounts of rain fall it receives; the wide, flat floodplain in the southeastern part of the County; large amounts of wetland area and oxbow lakes in the southeastern portion of the county; and the large numbers of structures located in the floodplain. Riverine flooding is usually caused by extensive rainfall over a period of several days or longer either in Central Arkansas or more often upstream to the west. Forty-seven years of stream gage data collected intermittently since 1923 along the Arkansas River at Little Rock indicates that the Arkansas River was above flood stage (23 feet) at least 8 times during the 47 years for which records are available, or approximately 1 flood event every 6 years.

Flash floods are most common in the western part of the county that lies within the Ouachita Mountains. This area exhibits high to moderate relief, steep to moderate slopes, and bedrock with low permeability, all facilitating rapid runoff, and the consequent potential for flash floods. Urban development in this part of the state exacerbates the flash flooding problem. Intense rainfall events may result in water flowing rapidly from higher elevations into valleys causing significant flood events. There have also been issues with the maintenance and clearing of drainage channels in this area resulting in obstructions restricting the flow of water during a storm.

Vulnerable Flooding Areas in the Pulaski County Planning Area



The most vulnerable structures in the Pulaski County Planning Area are repetitive loss and severe repetitive loss structures. Repetitive Loss and Severe Repetitive Loss properties are identified by FEMA's National Flood Insurance Program (NFIP). Repetitive Loss properties are those for which two or more losses of at least \$1,000 each have been paid under the NFIP within any 10-year period since 1978. Severe Repetitive Loss structures are NFIP-enrolled residential or commercial properties that have at least: 1) Four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or 2) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion in such claims exceeding the market value of the building.

The extent of flood risk in the Pulaski County Planning Area varies considerably by jurisdiction. Refer below for a description and map of each jurisdiction's exposure to flood events.

Alexander: The northern corner of Alexander (approximately northwest of Earl D. Miller Lane and W 2nd Street) lies within the regulatory floodplain of Crooked Creek. Four structures lie within the 100-year floodplain and 4 structures lie within the 500-year floodplain. Refer to the map of flood zones within the City of Alexander. The City of Alexander is at a Moderate Risk from flood events.

Map of Floodplain for the City of Alexander



Cammack Village: No floodplain is located in Cammack Village, nor has Cammack Village been subject to flooding in the past. The City of Cammack Village is at a **Low Risk** from flood events.

Jacksonville: 658 structures in Jacksonville are located in the floodplain. The largest area of floodplain in Jacksonville includes most of the southwest portion of the City. Although sparsely populated in comparison to other parts of Jacksonville, significant numbers of structures are in the floodplain in several areas. These include structures along U.S. 161 near the 1-440 interchange, along U.S. 161 near

Bayou Meto, between Bayou Meto and Kellogg Creek off of Oneida Street, and north of Jacksonville Cutoff Road near Harris Road. Significant numbers of structures are also located in the floodplain in the northeast corner of the City. Numerous structures are in the floodplain in neighborhoods between U.S. 167 and Foxwood Country Club, as well as west of U.S. 167 along

Quince Hill Road and west of Evans Drive. Other floodplain areas with structures include north of Graham Road along Cherry and Laural Streets, and along U.S. 167 near Vanderburg Boulevard and south of Wright Loop Road. Refer to the map of the flood zones within the City of Jacksonville. The City of Jacksonville is at a **Severe Risk** from flood events

Map of the Floodplain for the City of Jacksonville



Little Rock: Little Rock is subject to riverine and flash flooding. There are approximately 573 buildings located in the floodplain within the City of Little Rock. The majority of the City of Little Rock's floodplain area is located near the Arkansas River. The City of Little Rock is at a **Severe Risk** from flood events.

Little Rock School District: Little Rock School District is subject to riverine and flash flooding. Portions of the campus are within the flood zone. The majority of the Little Rock School District's floodplain area is located near the Arkansas River map which provides a graphic depiction of the

educational facilities in Pulaski County relative to the flood risk areas. The data source is the Pulaski Area Geographic Information System (PAgis) , an independent governmental agency financially supported by Pulaski County local governments. Based on the PAgis data, overall the vast majority of educational facilities in the Little Rock School District are situated outside the AE flood zone. Therefore, the Little Rock School District is at a **Moderate Risk** from flood events with the exception of the schools listed below located within the boundaries of the School District.

Map of the Floodplain for the City of Little Rock

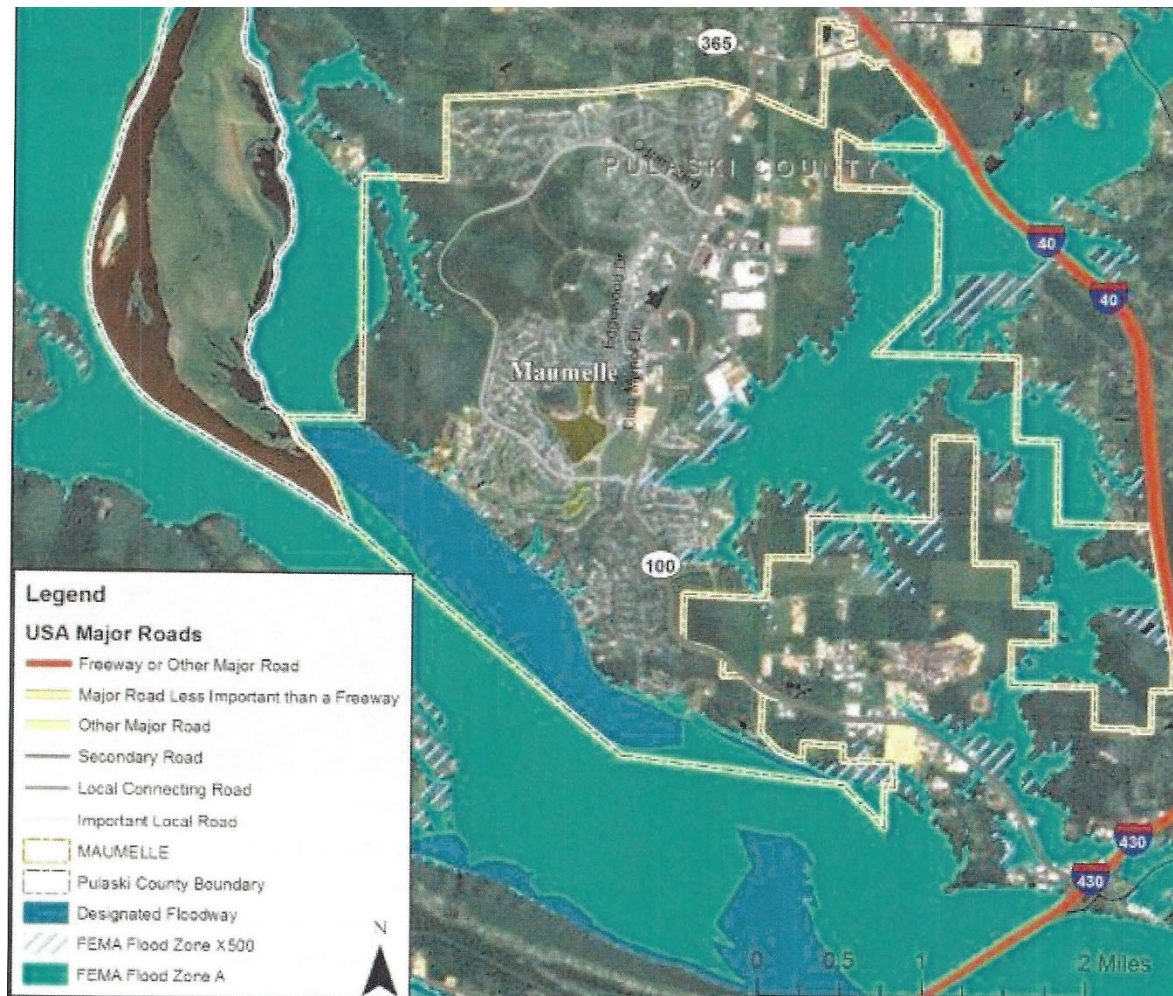


Maumelle: 175 structures in Maumelle are located in the floodplain. The largest areas of floodplain lie in the eastern part of the City and along the Arkansas River, which forms the southwestern City boundary.

Numerous structures north of Crystal Hill Road at the extreme southeast part of the City lie within the floodplain, as well as structures along Crystal Mountain Lane south of Maumelle Country Club and along Riverwood Cove and adjacent streets. Houses along Calais Drive and Chantilly

Circle and adjacent streets are built within the floodplain as well. Refer to for a map of the flood zones within the City of Maumelle. The City of Maumelle is at a **Moderate Risk** from flood events.

Map of the Floodplain for the City of Maumelle



North Little Rock: North Little Rock is subject to riverine and flash flooding. There are approximately 104 buildings located in the floodplain within the City of North Little Rock. The majority of the City of North Little Rock's floodplain area is located near the Arkansas River. Refer to the map of the flood zones within the City of North Little Rock. The City of North Little Rock is at a **Severe Risk** from flood events.

North Little Rock School District: The boundaries of the North Little Rock School District mirror those of the City of North Little Rock. While the City is subject to riverine and flash flooding, the vast majority of schools are not situated in the AE flood zone. The majority of the North Little Rock School District's floodplain area is located near the Arkansas River; however, most educational facilities in North Little Rock are located in the uplands of the City. In fact, Lynch Drive Elementary, the one school located in a flood zone is being closed at the end of the 2013-14 school year. There are five new schools being built and all are located outside the 100 year flood zone. Therefore, the North Little Rock School District is at a **Low Risk** from flood events with the exception of the schools shown below located within the boundaries of the School District.

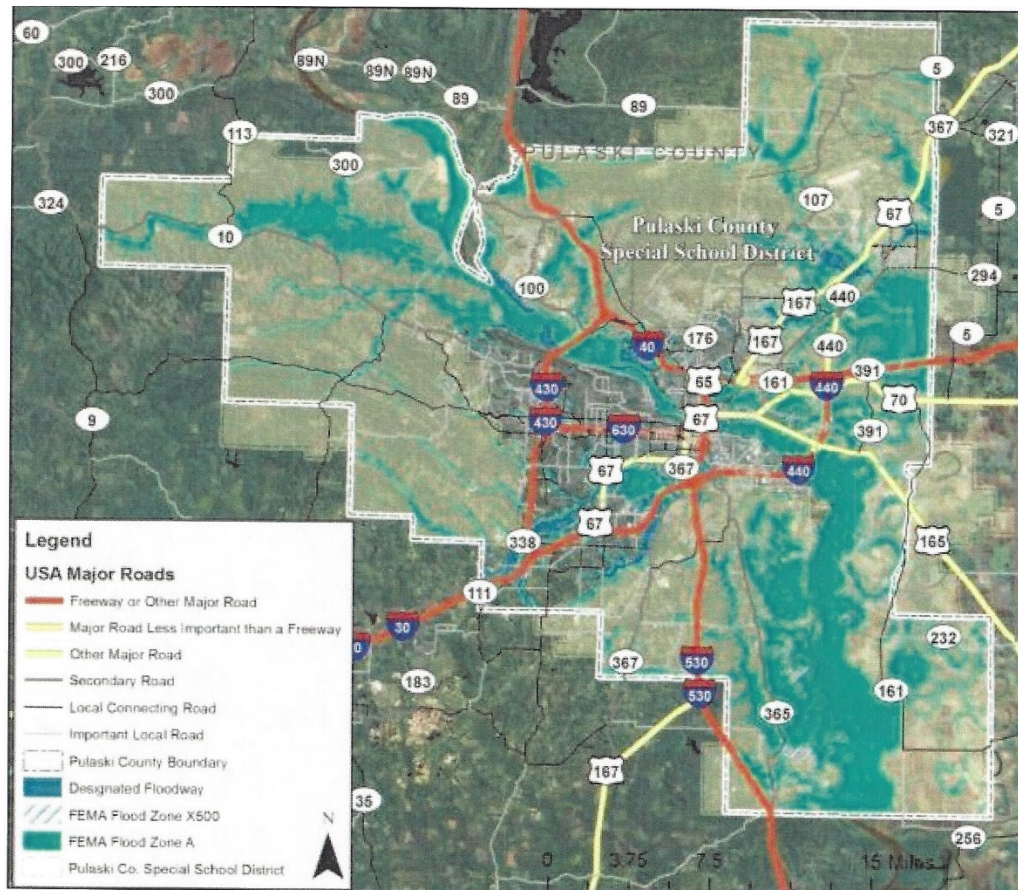
Map of the Floodplain for the City of North Little Rock



Pulaski County Special School District: Refer to the map depicting the vulnerable flood areas in the Pulaski County Special School District. As compared to the Little Rock and North Little Rock school districts, there is a greater chance of flooding. This map bears out this observation; however, as was the case with Little Rock and North Little Rock, the majority of schools are

located on high, dry land out of the 100 -year flood plain. All structures within the AE flood zone are vulnerable to flood. Since the majority of educational facilities, are outside the AE flood zone, Pulaski County Special School District is at **Moderate Risk** from flood.

Map of the Floodplain for the Pulaski County Special School District



Sherwood: Seven hundred and forty-eight structures in Sherwood are located in the floodplain. Most of the floodplain lies in the east and southeast and southern parts of the City. Many structures are located within the floodplain east of Indian head Lake near the eastern edge of the City and southeast of U.S. 167 surrounding Rest Hills. Other structures within the floodplain are found near Silver Creek Drive near the southern City boundary and along Bronco Lane and Palomino Drive among other nearby streets near the center of the city. The City has purchased and removed five structures in the floodplain. However, there are numerous other structures that have been repetitively flooded more than four times. The City would like to purchase and raze additional structures as funding becomes available. Another issue involves the Wind Chime Bridge. Not only do the approaches go underwater during heavy rains, but so does the deck of the structure. Another concern is the Jacksonville-Cato Road. It is a critical road connecting Sherwood and Jacksonville. During heavy rains, portions of the roadway become submerged and impassible. Refer to the map of the flood

zones within the City of Sherwood. The City of Sherwood is at a **Severe Risk** from flood events.

Map of the Floodplain for the City of Sherwood



Wrightsville: Five structures in Wrightsville are located within the floodplain. Three structures are along or north of Raney Drive, 1 structure is on Clark Street east of AR 365 and south of AR 386, and one structure lies just west of the end of North Street. No high or significant hazard class dams lie within or upstream from Wrightsville. Refer to the map of the flood zones within the City of Wrightsville. The City of Wrightsville is at a **Moderate Risk** from flood events.

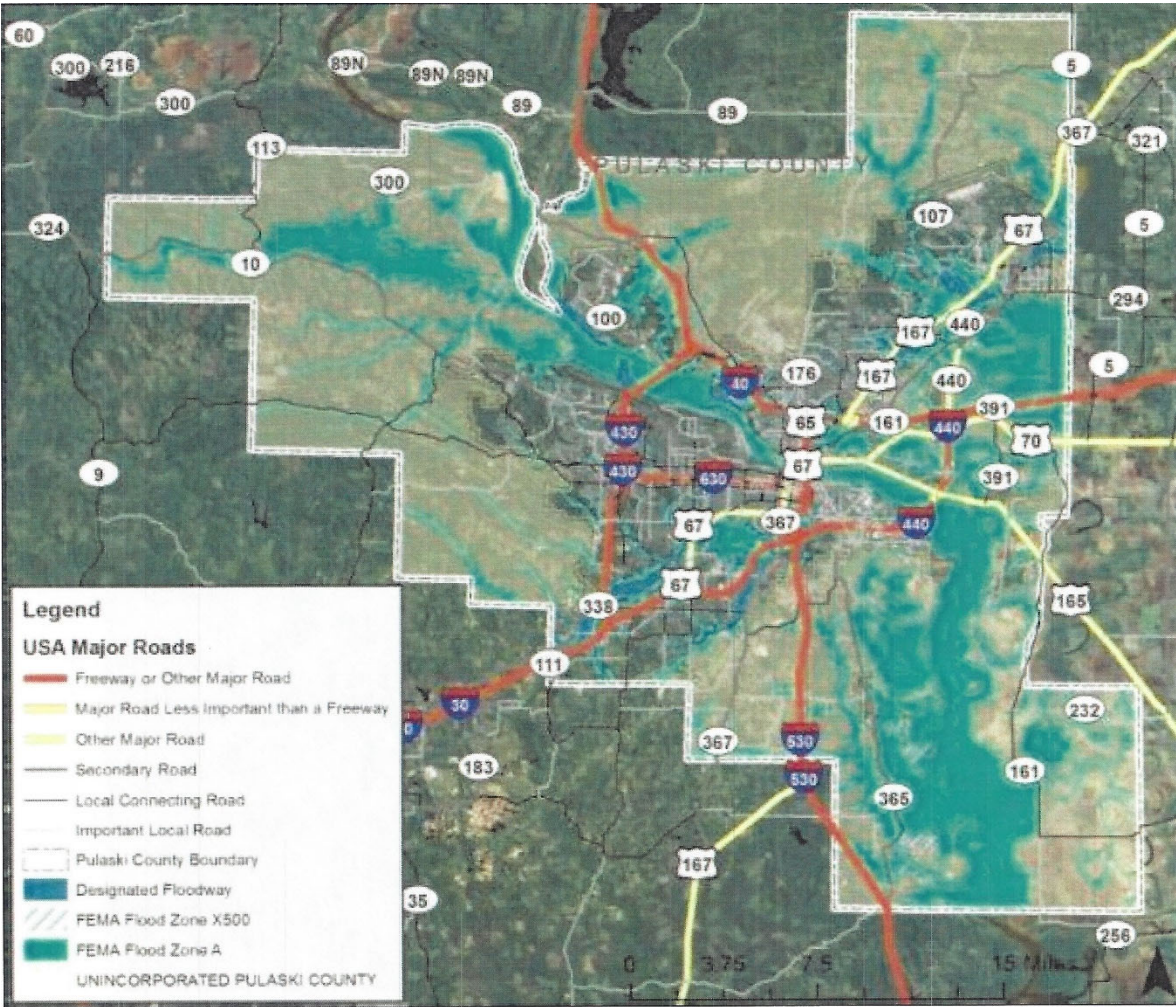
Map of the Floodplain for the City of Wrightsville



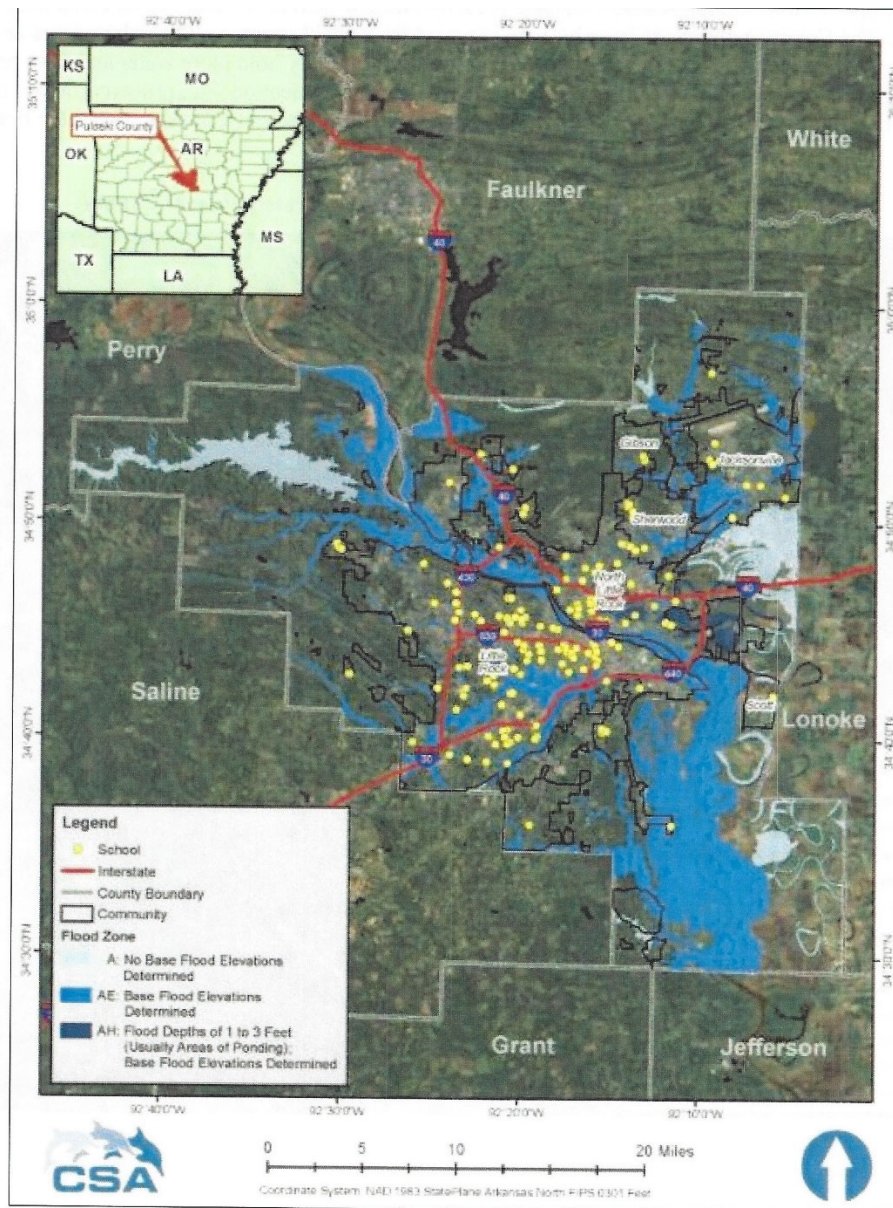
Unincorporated Pulaski County: According to the 2001 Flood Insurance Study for unincorporated Pulaski County, significant flood problems are generally found along highways and roads crossing streams. Encroachment into the floodplains has continued in spite of recent flooding. Flood damages are generally limited to houses and commercial buildings that are scattered along streams in the county. Flooding of the Arkansas River is not severe except near the confluence of the Little Maumelle River.

The developed fringe areas adjacent to Faulkner Lake, Five Mile Creek, and Bayou Meto suffer flood damages in residential developments along these streams. Following construction of Interstate 440 north of Interstate 40 in the eastern and northeastern parts of the county, flooding from wetlands and oxbow lake overflows have been exacerbated. Houses along State Highway 103 are no longer protected from high water. Drainage is easily blocked with debris and beaver dams pose a huge problem. The County contracts to have beavers removed from problem areas. The oxbow lakes and wetlands associated with the Arkansas River in this part of the County hold more water and have not drained as easily in recent years as they have in past years. Communication with property owners in the area has helped define problem areas. Unincorporated Pulaski County is at a **Severe Risk** from flood events.

Map of the Floodplain for Unincorporated Pulaski County



Pulaski County Schools in Flood Risk Areas



Educational Facilities in Pulaski County located in AE Flood Zone

| Name | Completely Within AE Flood Zone | Partially within AE Flood Zone* | Jurisdiction |
|-----------------------------------|---------------------------------|---------------------------------|-------------------|
| Baseline Baptist Day Care Center | No | Yes | Little Rock |
| Belwood Elementary School | No | Yes | North Little Rock |
| Central Arkansas Christian School | No | Yes | North Little Rock |
| Central Baptist Academy | No | Yes | Little Rock |
| Fairview Baptist School | No | Yes | Little Rock |
| Heritage Christian School | Yes | Yes | Little Rock |

| | | | |
|---------------------------------------|----|-----|-----------------------|
| Little Rock Junior Academy | No | Yes | Unincorporated County |
| Mann Magnet Middle School | No | Yes | Little Rock |
| Pathfinder School | No | Yes | Unincorporated County |
| Roper School | No | Yes | Little Rock |
| University of Arkansas of Little Rock | No | Yes | Little Rock |

* Presented for planning purposes only. User needs to verify precise location of school relative to Flood Zone

Source: PAGis, 2012 – Previous Pul Co Mit Plan

Previous Occurrences

There have been two Presidential Disaster Declarations within the last ten years.

| Presidential Disaster Declarations in Pulaski County from 2010 to current date | | | |
|--|----------|--|--|
| Declaration # | Date | Purpose | Amnt. Obligated for Public Assistance (PA) |
| DR-4441 | 6/8/2019 | Severe Storm & Flooding | \$25,187,569.74 |
| DR1975 | 5/2/2011 | Severe Storms, Tornadoes & Associated Flooding | \$49,951,392.96 |

The conditions listed in the Extent section are determined from previous occurrences.

FLOODs

| <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 | 2.000M | 500.00K |
| WOODLAND HGTS | PULASKI CO. | AR | 03/13/2015 | 10:25 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| BOOKER | PULASKI CO. | AR | 03/13/2015 | 11:28 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| (LIT)LITTLE ROCK ADA | PULASKI CO. | AR | 12/30/2015 | 14:40 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| FORT ROOTS | PULASKI CO. | AR | 01/01/2016 | 00:00 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| WOODLAND HGTS | PULASKI CO. | AR | 12/22/2017 | 20:20 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| JACKSONVILLE | PULASKI CO. | AR | 12/22/2017 | 20:20 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| GENEVIA | PULASKI CO. | AR | 12/22/2017 | 21:23 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |

| | | | | | | | | | | | |
|------------------------------|-------------|----|------------|-------|-------|-------|--|---|---|--------|---------|
| JACKSONVILLE | PULASKI CO. | AR | 02/21/2018 | 14:30 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| FORT ROOTS | PULASKI CO. | AR | 02/21/2018 | 16:56 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| LEVY | PULASKI CO. | AR | 02/21/2018 | 19:54 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| TATES MILL | PULASKI CO. | AR | 02/23/2018 | 10:00 | CST-6 | Flood | | 0 | 0 | 0.00K | 0.00K |
| FORT ROOTS | PULASKI CO. | AR | 05/28/2019 | 14:40 | CST-6 | Flood | | 0 | 0 | 1.000M | 500.00K |
| HAIG | PULASKI CO. | AR | 06/01/2019 | 00:00 | CST-6 | Flood | | 0 | 0 | 1.000M | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 2.000M | 500.00K |

FLASH FLOODS

| <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 | 180.00K | 0.00K |
| DIXIE | PULASKI CO. | AR | 05/11/2015 | 03:00 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| NORTH LITTLE ROCK | PULASKI CO. | AR | 05/20/2015 | 05:55 | CST-6 | Flash Flood | | 0 | 0 | 50.00K | 0.00K |
| TONEYVILLE | PULASKI CO. | AR | 05/20/2015 | 06:00 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| SHERWOOD | PULASKI CO. | AR | 05/20/2015 | 06:45 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LEVY | PULASKI CO. | AR | 11/17/2015 | 14:44 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| TONEYVILLE | PULASKI CO. | AR | 12/28/2015 | 03:00 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| MARCHE | PULASKI CO. | AR | 03/09/2016 | 16:45 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| CAMMACK VLG | PULASKI CO. | AR | 03/30/2016 | 13:40 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LEVY | PULASKI CO. | AR | 03/30/2016 | 13:42 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LITTLE ROCK | PULASKI CO. | AR | 03/30/2016 | 14:37 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LITTLE ROCK | PULASKI CO. | AR | 03/30/2016 | 14:40 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LITTLE ROCK | PULASKI CO. | AR | 03/30/2016 | 17:15 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| SHERWOOD | PULASKI CO. | AR | 03/30/2016 | 17:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |

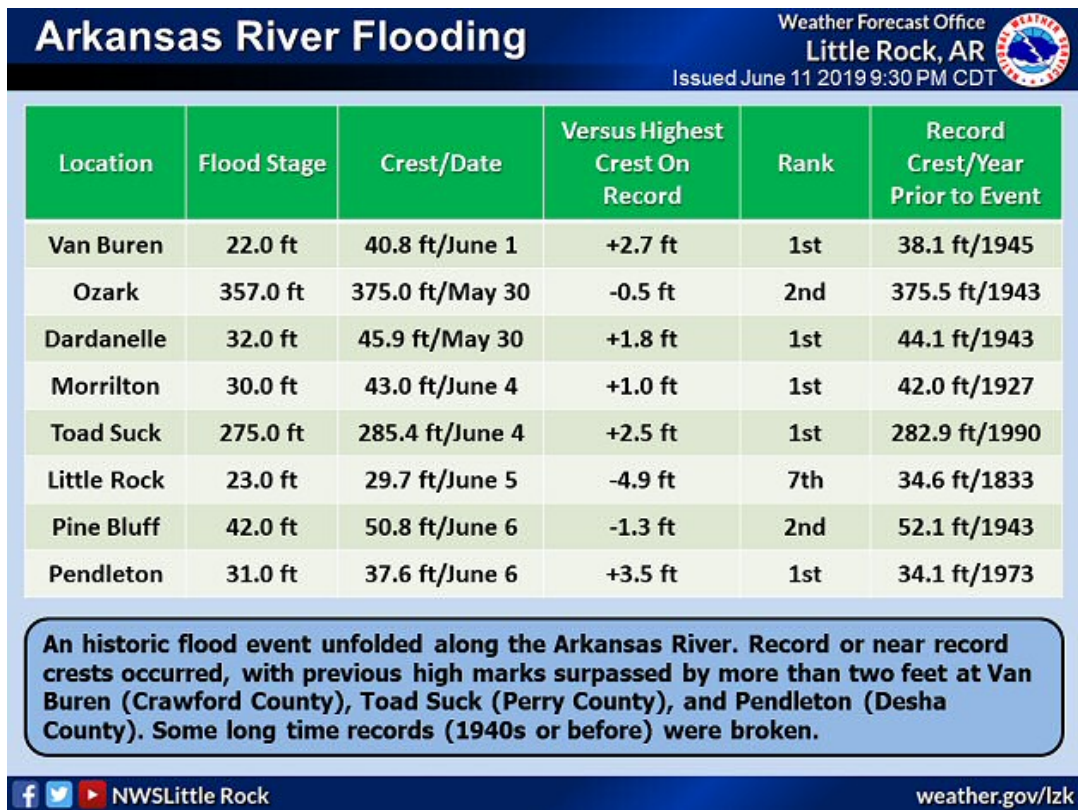
| | | | | | | | | | | | |
|--|-------------|----|------------|-------|-------|-------------|--|---|---|--------|-------|
| (ORK)NO LITTLE ROCK ARPT | PULASKI CO. | AR | 03/30/2016 | 18:30 | CST-6 | Flash Flood | | 0 | 0 | 50.00K | 0.00K |
| HENSLEY | PULASKI CO. | AR | 04/29/2016 | 11:47 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LITTLE ROCK | PULASKI CO. | AR | 07/15/2016 | 18:29 | CST-6 | Flash Flood | | 0 | 0 | 20.00K | 0.00K |
| PROTHRO JCT | PULASKI CO. | AR | 07/15/2016 | 18:55 | CST-6 | Flash Flood | | 0 | 0 | 60.00K | 0.00K |
| GIBSON | PULASKI CO. | AR | 02/07/2017 | 05:25 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| GENEVIA | PULASKI CO. | AR | 04/17/2017 | 20:05 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| CYPRESS JCT | PULASKI CO. | AR | 04/26/2017 | 14:46 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HAIG | PULASKI CO. | AR | 04/29/2017 | 23:15 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| CAMMACK VLG | PULASKI CO. | AR | 04/29/2017 | 23:16 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| SHERWOOD | PULASKI CO. | AR | 04/30/2017 | 00:00 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| (ORK)NO LITTLE ROCK ARPT | PULASKI CO. | AR | 04/30/2017 | 03:50 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| FORT ROOTS | PULASKI CO. | AR | 04/30/2017 | 06:05 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| CAMMACK VLG | PULASKI CO. | AR | 05/03/2017 | 14:25 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| JACKSONVILLE | PULASKI CO. | AR | 05/12/2017 | 16:28 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| PINNACLE | PULASKI CO. | AR | 05/20/2017 | 07:00 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| FERNDAL | PULASKI CO. | AR | 06/03/2017 | 14:34 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HAIG | PULASKI CO. | AR | 07/14/2017 | 14:29 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| (ORK)NO LITTLE ROCK ARPT | PULASKI CO. | AR | 07/14/2017 | 14:36 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| SHERWOOD | PULASKI CO. | AR | 08/18/2017 | 22:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| WOODLAND HGTS | PULASKI CO. | AR | 12/22/2017 | 17:50 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| MARCHE | PULASKI CO. | AR | 02/21/2018 | 08:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| FORT ROOTS | PULASKI CO. | AR | 02/22/2018 | 14:23 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |

| | | | | | | | | | | | |
|--|-------------|----|------------|-------|-------|-------------|--|---|---|-------|-------|
| LYNCH | PULASKI CO. | AR | 02/24/2018 | 16:15 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| ROLAND | PULASKI CO. | AR | 02/28/2018 | 20:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| CAMMACK VLG | PULASKI CO. | AR | 05/23/2018 | 15:11 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| CAMMACK VLG | PULASKI CO. | AR | 05/23/2018 | 15:15 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| (ORK)NO LITTLE ROCK ARPT | PULASKI CO. | AR | 05/23/2018 | 15:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| CAMMACK VLG | PULASKI CO. | AR | 05/23/2018 | 15:35 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LITTLE ROCK | PULASKI CO. | AR | 05/23/2018 | 15:38 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HALSTEAD | PULASKI CO. | AR | 05/23/2018 | 15:40 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LITTLE ROCK | PULASKI CO. | AR | 05/23/2018 | 15:50 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| FORT ROOTS | PULASKI CO. | AR | 05/23/2018 | 15:56 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LEVY | PULASKI CO. | AR | 05/23/2018 | 16:00 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| VALENTINE | PULASKI CO. | AR | 06/01/2018 | 20:30 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| MAUMELLE | PULASKI CO. | AR | 07/17/2018 | 18:16 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| PANKEY ADDITION | PULASKI CO. | AR | 07/17/2018 | 18:24 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| VALENTINE | PULASKI CO. | AR | 07/17/2018 | 19:09 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| ROLAND | PULASKI CO. | AR | 08/08/2018 | 08:35 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| MAUMELLE | PULASKI CO. | AR | 08/08/2018 | 15:53 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| DOUGLASVILLE | PULASKI CO. | AR | 09/08/2018 | 16:00 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HAIG | PULASKI CO. | AR | 11/05/2018 | 17:31 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| TONEYVILLE | PULASKI CO. | AR | 12/13/2018 | 16:20 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| DOUGLASVILLE | PULASKI CO. | AR | 04/18/2019 | 05:08 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| MACON | PULASKI CO. | AR | 04/18/2019 | 07:20 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |

| | | | | | | | | | | | |
|-------------------------------|-------------|----|------------|-------|-------|-------------|--|---|---|---------|-------|
| LEVY | PULASKI CO. | AR | 05/02/2019 | 12:15 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HAIG | PULASKI CO. | AR | 05/02/2019 | 13:20 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LITTLE ROCK | PULASKI CO. | AR | 05/02/2019 | 13:21 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| FORT ROOTS | PULASKI CO. | AR | 05/02/2019 | 13:35 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| WOODLAND HGTS | PULASKI CO. | AR | 05/08/2019 | 18:10 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| MAUMELLE | PULASKI CO. | AR | 05/08/2019 | 18:20 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HALSTEAD | PULASKI CO. | AR | 05/29/2019 | 17:34 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HALSTEAD | PULASKI CO. | AR | 05/29/2019 | 17:39 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| FORT ROOTS | PULASKI CO. | AR | 05/29/2019 | 17:52 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HALSTEAD | PULASKI CO. | AR | 05/29/2019 | 17:52 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| ALEXANDER | PULASKI CO. | AR | 05/29/2019 | 18:16 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| HENSLEY | PULASKI CO. | AR | 06/06/2019 | 22:00 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| LEVY | PULASKI CO. | AR | 07/10/2019 | 17:34 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| WARSAW | PULASKI CO. | AR | 08/10/2019 | 08:50 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| GEYER SPGS | PULASKI CO. | AR | 08/10/2019 | 09:05 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| PULASKI | PULASKI CO. | AR | 08/10/2019 | 10:41 | CST-6 | Flash Flood | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 180.00K | 0.00K |

Severe Flooding Pulaski County: Arkansas River Flooding 2019

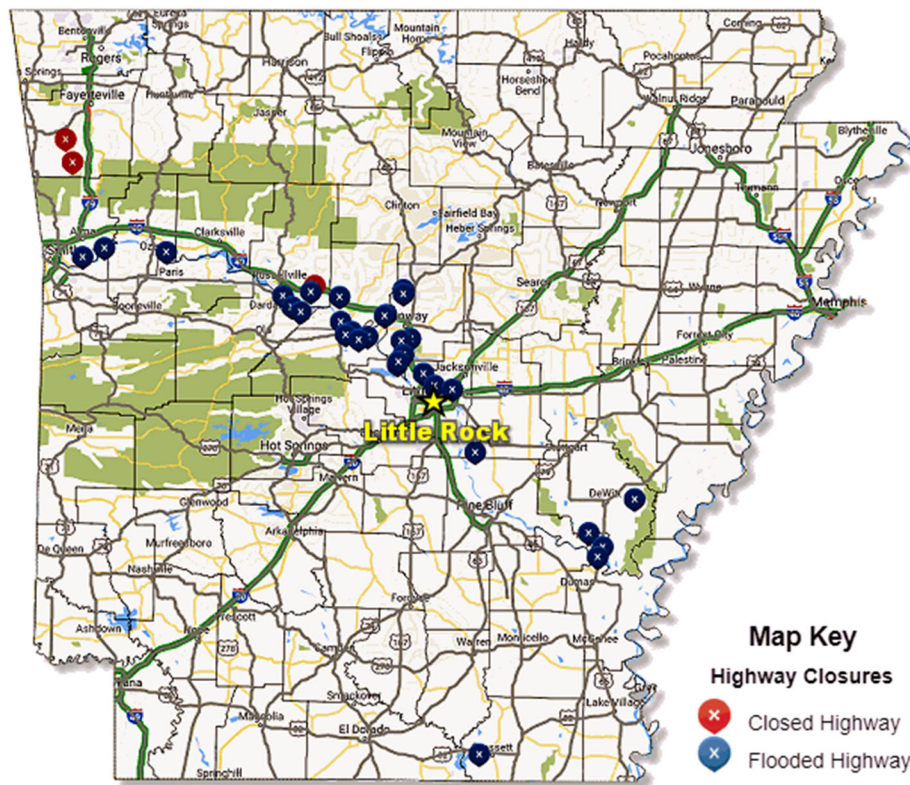
As June began, it was all about the Arkansas River. After fifteen to twenty inches of rain in May across northeast Oklahoma and southeast Kansas, and massive releases from nearby lakes, the Arkansas River rose to unprecedented levels. Crests in late May/early June were more than two feet above previous high marks at Van Buren (Crawford County), Toad Suck (Perry County), and Pendleton (Desha County).



Along the river, major flooding was experienced for almost two weeks in places through June 4th. Water this high for an extended period put levees to the test, and threatened hundreds of homes and businesses.

| <div> <div> <h3 style="margin: 0;">Consecutive Days Above Flood Stage</h3> <p style="margin: 0;">National Weather Service Little Rock Arkansas</p> <p style="margin: 0; text-align: right;">Current data as of June 4th 2019</p> </div> </div> | | | |
|---|---|--|---|
| Location | Minor (Days/Period) | Moderate (Days/Period) | Major (Days/Period) |
| Van Buren | 14 May 22 nd - Today | 14 Late May 22 nd - Today | 13 Late May 23 rd - Today |
| Ozark | 14 Late May 22 nd - Today | 12 Early May 24 th - Today | 12 May 24 th - Today |
| Dardanelle | 12 Late May 24 th - Today | 11 Late May 25 th - Today | 9 Early May 27 th - Today |
| Morrilton | 12 May 24 th - Today | 11 May 25 th - Today | 9 Early May 27 th - Today |
| Toad Suck | 11 May 25 th - Today | 10 Late May 26 th - Today | 9 May 27 th - Today |
| Little Rock | 8 May 28 th - Today | 7 Late May 29 th - Today | 5 Early May 31 st - Today |
| Pine Bluff | 10 Late May 26 th - Today | 8 Early May 28 th - Today | 8 Late May 28 th - Today |
| Pendleton | 8 Late May 28 th - Today | 6 May 30 th - Today | 6 Late May 30 th - Today |

Numerous highways were closed and flooded. This included Highway 22 near Barling (Sebastian County), which did not open until water receded on the 4th (after cresting on the 1st). A 64-year-old man lost his life on this highway on May 28th after driving around a barricad



In the photo: Water from the Arkansas River was flooding homes near Two Rivers Park about eight miles northwest of Little Rock (Pulaski County) on **05/29/2019**. The video/photo is courtesy of the Arkansas State Police.



Flooding in area of North Little Rock raises late-night levee alert

by [Stephen Simpson](#), [Clara Turnage](#) | June 1, 2019 at 4:30 a.m.



John Sehika (left) and Todd Nebling with the North Little Rock Street Department work Friday morning installing the floodgates to one of the entrances to the North Shore Riverwalk Park. ([Arkansas Democrat-Gazette / Staton Breidenthal](#))

Flooding in an industrial area on North Little Rock's southeastern side late Friday raised concerns about a levee and prompted a National Weather Service flash-flood warning that was later canceled. Lance Pyle, a meteorologist with the National Weather Service in North Little Rock, said the levee is near the 3200 block of Gribble Street south of U.S. 70, about 2 miles east of Interstate 30.

Pulaski County has issues with reoccurring flooding in Taylor Creek and feel that a study of the Watershed is needed to determine baseline for sustainable development and needs for drainage capacity improvements.

There is an issue with repetitive flooding of the property on Jim Hall Road in Pulaski County

North Little Rock has several areas that need more data to better manage the special flood hazard areas. A Hydraulic engineering study for Five-Mile Creek/Shilcott Bayou is needed to determine drainage improvements and associated costs to mitigate repetitive flooding. The same is needed for the Redwood Tunnel Drainage System as well at State Highway 161 and Bethany.

Jacksonville has identified there is repetitive flooding in the Northlake subdivision which could be mitigated by elevating and extending Oneida Street north to Jacksonville Cut Off Road.

Sherwood has two sections of road that continually flood with any significant rainfall. Jacksonville Cato Road and Wind Chime Bridge. Elevating the roads and offering to buy-out property is needed to mitigate the flooding.

Probability of Future Events

| Flood Return Intervals | Chance of Occurrence in Any Given Year |
|------------------------|--|
| 10-Year | 10% |
| 50-Year | 2% |
| 100-Year | 1% |
| 500-Year | 0.2% |

Based on previous occurrences, the planning area is likely to see 14.6 flash flood events per year, so the probability of a flash flood event is 146% in any given year. The planning area is likely to see 2.6 Flood events per year, or a 260% chance of flooding in any given year.

Impact and Vulnerability

Arkansas Natural Resources Commission under Cooperating Technical Partner (CTP) with FEMA completed the full Risk MAP following non-regulatory risk assessment products of “Flood Risk Map”, “Flood Risk Report,” and “Flood Risk Database” were made available:

1. Lower Arkansas - Maumelle Watershed (10/10/2013) covering Cammack Village, City of Little Rock, City of Maumelle, City of North Little Rock, City of Wrightsville and Unincorporated areas of Pulaski County
2. Bayou Meto Watershed (12/17/2017) covering City of Jacksonville, City of Sherwood and Unincorporated areas of Pulaski County
3. Lake Conway – Point Remove Watershed (09/01/2015) covering unincorporated areas of Pulaski County.
4. Upper Saline Watershed (12/23/2015) covering unincorporated areas of Pulaski County.

There are numerous ways that flooding could impact Pulaski County. Flooding causes problems by cutting off streets, collapsing overpasses and bridges and causing traffic-light failures. Cars may stall and can even be carried off by flood waters. Flood waters interrupt gas, electricity and water services and contaminate the water supply, making drinkable water unavailable. Transportation systems may go off-line because buses, cars and trucks can’t navigate the high water.

People can die in floods when their autos and homes are overtaken quickly by fast-rising flood waters. Homes, personal belongings and businesses can be damaged or lost entirely as a result of ravages of flooding. People may be unable to get to work, creating a loss of income and a lack of services they would provide. Listed below are other means in which flooding can affect Pulaski County:

Environmental- Flat areas that do not have trees or rocks to prevent erosion are often swept away. Farm fields, which typically are located in flat areas, become washed out and crops are lost. Contaminants from sewer back-ups and other waste may be washed into the water supply, resulting in water that is unsafe for residents to use. The shelters of animals in the area are also washed out, resulting in many homeless animals that can cause problems for their owners.

Economic- Residential loss or repair could have an impact. Businesses also suffer, not only from the loss of property, but the lack of customers during the flood and for a while during recovery. Farmers also suffer from the loss of their crops.

Financial- Some residents who do not carry flood insurance suffer a great financial hardship. Those who do not have insurance get help with the clean-up, but some costs may still come out of pocket. Towns and cities that are impacted by flood carry the financial burden of fixing the public buildings, roads and other structures damaged by the flood waters. People who are impacted by the flood may also lose wages because the business they work for suffered damages or they are unable to get to work.

Health- Flood waters can also damage the health of those living and working in the area. Because flood waters can wash dangerous waste into water supplies, tap water may become unsafe to use if the local authorities do not issue a boil advisory warning everyone to boil water before ingesting it. Mold is also likely to grow in homes and other buildings that were engulfed by the flood waters. It is important to search all homes for mold and remove it completely before moving back in. Breathing the mold spores is dangerous for your health. A flood can also contribute to other health problems from human waste that contaminates the ground.

Safety- Once flooding begins, strong currents can pull a grown man beneath the water to drown. Once the flood waters have settled, it is still unsafe to wander through the water by car or on foot. Deep spots may be undetectable and there may be electric currents running through the water as well. Low spots on County roads, city roads and state highways are vulnerable to flooding in Pulaski County.

Soil- Flooding results in poor soil aeration, leading to poor plant growth. Soil becomes more acidic following flooding. In addition, flooding can lead to soil erosion or soil contamination from such man-made pollutants as oils (on roadways), fertilizers (in yards and farms) and paints.

Rural Impact- Floods damage farmland by burying crops in silt, uprooting crops by the force of the water or drowning crops. Flood waters can drown livestock as well. Flooding devastates wetlands and other wildlife habitats by depositing massive amounts of silt or leaving behind toxic substances such as petroleum products, fertilizers and pesticides and other man-made chemicals. This can kill animals and lead to water and land pollution.

Disease- Flooding increases human exposure to dysentery and other diseases. Flooded sewage treatment plants contaminate drinking water supplies. Contaminated drinking water is a greater problem in developing countries.

Data is available from a HAZUS run for those parts of the planning area that are in the Lower Arkansas – Maumelle Watershed which included: Cammack Village, Little Rock, Maumelle, North Little Rock,

Wrightsville and a portion of unincorporated Pulaski County. Bayou Meto Watershed Risk Assessment included: Jacksonville and Sherwood and a portion of unincorporated Pulaski County.

Tables from Lower Arkansas - Maumelle Watershed:

| | | | City of Cammack Village Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | |
|--------------------------------------|---------------|------|--|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | | | Estimated Value | % of Total | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} |
| Residential Building/Contents | \$170,100,000 | 91% | \$0 | 0.0% | \$0 | 0.0% | \$0 | 0.0% | \$10,000 | 0.0% | \$0 | 0.0% | | |
| Commercial Building/Contents | \$6,500,000 | 4% | \$0 | 0.0% | \$10,000 | 0.2% | \$20,000 | 0.3% | \$20,000 | 0.3% | \$0 | 0.0% | | |
| Other Building/Contents | \$9,800,000 | 5% | \$0 | 0.0% | \$0 | 0.0% | \$0 | 0.0% | \$0 | 0.0% | \$0 | 0.0% | | |
| Total Building/Contents ² | \$186,400,000 | 100% | \$0 | 0.0% | \$10,000 | 0.0% | \$20,000 | 0.0% | \$30,000 | 0.0% | \$0 | 0.0% | | |
| Business Disruption ³ | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | | |
| TOTAL ⁴ | \$186,400,000 | N/A | \$0 | 0.0% | \$10,000 | 0.0% | \$20,000 | 0.0% | \$30,000 | 0.0% | \$0 | 0.0% | | |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios are rounded to nearest tenth for values under 1% and to the nearest percent for values over 1%.

| | | City of Little Rock Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | |
|--------------------------------------|--|--|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | | Estimated Value | % of Total | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} |
| Residential Building/Contents | | \$27,812,400,000 | 58% | \$104,600,000 | 0.4% | \$165,400,000 | 0.6% | \$233,800,000 | 0.8% | \$445,600,000 | 2.0% | \$15,800,000 | 0.1% |
| Commercial Building/Contents | | \$14,990,200,000 | 31% | \$145,800,000 | 1.0% | \$288,800,000 | 2.0% | \$336,900,000 | 2.0% | \$579,100,000 | 4.0% | \$23,100,000 | 0.2% |
| Other Building/Contents | | \$5,146,500,000 | 11% | \$48,600,000 | 0.9% | \$89,900,000 | 2.0% | \$109,200,000 | 2.0% | \$195,000,000 | 4.0% | \$7,500,000 | 0.1% |
| Total Building/Contents ² | | \$47,949,200,000 | 100% | \$299,000,000 | 0.6% | \$544,100,000 | 1.0% | \$679,900,000 | 1.0% | \$1,219,700,000 | 3.0% | \$46,400,000 | 0.1% |
| Business Disruption ³ | | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A |
| TOTAL ⁴ | | \$47,949,200,000 | N/A | \$299,000,000 | 0.6% | \$544,100,000 | 1.0% | \$679,900,000 | 1.0% | \$1,219,700,000 | 3.0% | \$46,400,000 | 0.1% |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios are rounded to nearest tenth for values under 1% and to the nearest percent for values over 1%.

| | | City of Maumelle Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | |
|--------------------------------------|-----------------|---|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | Estimated Value | % of Total | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} | Dollar Losses ¹ | Loss Ratio ^{1,4} |
| Residential Building/Contents | \$3,269,800,000 | 91% | \$17,400,000 | 0.5% | \$57,300,000 | 2.0% | \$70,900,000 | 2.0% | \$130,600,000 | 4.0% | \$4,000,000 | 0.1% |
| Commercial Building/Contents | \$225,300,000 | 6% | \$1,900,000 | 0.8% | \$4,700,000 | 2.0% | \$5,700,000 | 3.0% | \$10,000,000 | 4.0% | \$300,000 | 0.1% |
| Other Building/Contents | \$110,900,000 | 3% | \$500,000 | 0.5% | \$1,700,000 | 2.0% | \$2,000,000 | 2.0% | \$3,400,000 | 3.0% | \$100,000 | 0.1% |
| Total Building/Contents ² | \$3,606,000,000 | 100% | \$19,800,000 | 0.5% | \$63,700,000 | 2.0% | \$78,600,000 | 2.0% | \$144,000,000 | 4.0% | \$4,400,000 | 0.1% |
| Business Disruption ³ | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A |
| TOTAL ⁴ | \$3,606,000,000 | N/A | \$19,800,000 | 0.5% | \$63,700,000 | 2.0% | \$78,600,000 | 2.0% | \$144,000,000 | 4.0% | \$4,400,000 | 0.1% |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios are rounded to nearest tenth for values under 1% and to the nearest percent for values over 1%.

| | | | City of North Little Rock Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | |
|--------------------------------------|-----------------|------|--|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | | | Estimated Value | % of Total | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} |
| Residential Building/Contents | \$6,358,100,000 | 69% | \$10,900,000 | 0.2% | \$24,600,000 | 0.4% | \$32,000,000 | 0.5% | \$89,800,000 | 1.0% | \$2,100,000 | 0.0% | | |
| Commercial Building/Contents | \$1,923,200,000 | 21% | \$16,900,000 | 0.9% | \$49,800,000 | 3.0% | \$65,400,000 | 3.0% | \$128,900,000 | 7.0% | \$3,700,000 | 0.2% | | |
| Other Building/Contents | \$897,600,000 | 10% | \$6,400,000 | 0.7% | \$17,900,000 | 2.0% | \$25,400,000 | 3.0% | \$58,100,000 | 6.0% | \$1,400,000 | 0.2% | | |
| Total Building/Contents ² | \$9,178,900,000 | 100% | \$34,200,000 | 0.4% | \$92,300,000 | 1.0% | \$122,800,000 | 1.0% | \$276,800,000 | 3.0% | \$7,200,000 | 0.1% | | |
| Business Disruption ³ | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | | |
| TOTAL ⁴ | \$9,178,900,000 | N/A | \$34,200,000 | 0.4% | \$92,300,000 | 1.0% | \$122,800,000 | 1.0% | \$276,800,000 | 3.0% | \$7,200,000 | 0.1% | | |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios are rounded to nearest tenth for values under 1% and to the nearest percent for values over 1%.

| | City of Wrightsville Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | |
|--------------------------------------|---|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | Estimated Value | % of Total | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} |
| Residential Building/Contents | \$100,600,000 | 83% | \$30,000 | 0.0% | \$100,000 | 0.1% | \$100,000 | 0.1% | \$600,000 | 0.6% | \$10,000 | 0.0% |
| Commercial Building/Contents | \$10,200,000 | 8% | \$0 | 0.0% | \$0 | 0.0% | \$10,000 | 0.1% | \$30,000 | 0.3% | \$0 | 0.0% |
| Other Building/Contents | \$10,200,000 | 8% | \$0 | 0.0% | \$0 | 0.0% | \$0 | 0.0% | \$20,000 | 0.2% | \$0 | 0.0% |
| Total Building/Contents ² | \$121,000,000 | 100% | \$30,000 | 0.0% | \$100,000 | 0.1% | \$100,000 | 0.1% | \$700,000 | 0.6% | \$10,000 | 0.0% |
| Business Disruption ³ | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A |
| TOTAL ⁴ | \$121,000,000 | N/A | \$30,000 | 0.0% | \$100,000 | 0.1% | \$100,000 | 0.1% | \$700,000 | 0.6% | \$10,000 | 0.0% |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios are rounded to nearest tenth for values under 1% and to the nearest percent for values over 1%.

| | | | Pulaski County Unincorporated Areas Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | |
|--------------------------------------|-----------------|------|--|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | | | Estimated Value | % of Total | Dollar Losses ⁵ | Loss Ratio ^{1,4} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} |
| Residential Building/Contents | \$3,805,500,000 | 77% | \$44,100,000 | 1.0% | \$74,800,000 | 2.0% | \$89,100,000 | 2.0% | \$137,700,000 | 4.0% | \$6,300,000 | 0.2% | | |
| Commercial Building/Contents | \$618,200,000 | 13% | \$8,200,000 | 1.0% | \$14,500,000 | 2.0% | \$18,000,000 | 3.0% | \$32,100,000 | 5.0% | \$1,100,000 | 0.2% | | |
| Other Building/Contents | \$525,200,000 | 11% | \$6,500,000 | 1.0% | \$11,000,000 | 2.0% | \$13,000,000 | 2.0% | \$22,200,000 | 4.0% | \$900,000 | 0.2% | | |
| Total Building/Contents ² | \$4,949,000,000 | 100% | \$58,800,000 | 1.0% | \$100,300,000 | 2.0% | \$120,100,000 | 2.0% | \$192,000,000 | 4.0% | \$8,300,000 | 0.2% | | |
| Business Disruption ³ | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | \$0 | N/A | | |
| TOTAL ⁴ | \$4,949,000,000 | N/A | \$58,800,000 | 1.0% | \$100,300,000 | 2.0% | \$120,100,000 | 2.0% | \$192,000,000 | 4.0% | \$8,300,000 | 0.2% | | |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

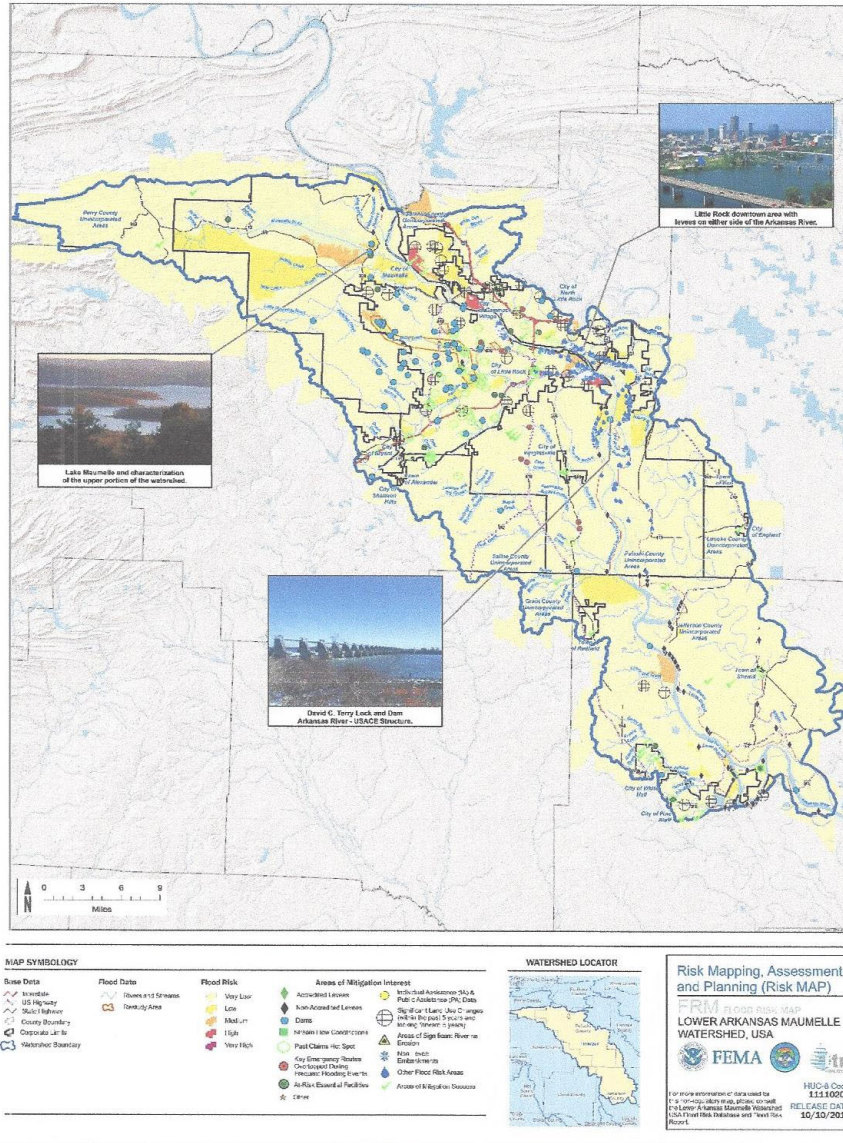
³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios are rounded to nearest tenth for values under 1% and to the nearest percent for values over 1%.

Flood Risk Map: Lower Arkansas Maumelle Watershed, 11110207



Sherwood

| | Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | |
|--------------------------------------|--|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | Estimated Value | % of Total | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} |
| Residential Building/Contents | \$2,598,200,000 | 81% | \$14,500,000 | 1% | \$21,800,000 | 1% | \$24,100,000 | 1% | \$33,400,000 | 1% | \$1,900,000 | N/A |
| Commercial Building/Contents | \$452,400,000 | 14% | \$7,300,000 | 2% | \$9,700,000 | 2% | \$10,700,000 | 2% | \$13,300,000 | 3% | \$900,000 | N/A |
| Other Building/Contents | \$156,100,000 | 5% | \$2,700,000 | 2% | \$3,600,000 | 2% | \$4,000,000 | 3% | \$4,900,000 | 3% | \$300,000 | N/A |
| Total Building/Contents ² | \$3,206,800,000 | 100% | \$24,400,000 | 1% | \$35,100,000 | 1% | \$38,800,000 | 1% | \$51,700,000 | 2% | \$3,100,000 | N/A |
| Business Disruption ³ | \$0 | N/A | \$1,000,000 | N/A | \$1,300,000 | N/A | \$1,400,000 | N/A | \$1,700,000 | N/A | \$100,000 | N/A |
| TOTAL ⁴ | \$3,206,800,000 | N/A | \$25,400,000 | 1% | \$36,400,000 | 1% | \$40,200,000 | 1% | \$53,400,000 | 2% | \$3,200,000 | N/A |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

Jacksonville

| | Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | |
|--------------------------------------|--|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | Estimated Value | % of Total | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} |
| Residential Building/Contents | \$2,492,200,000 | 77% | \$14,700,000 | 1% | \$20,700,000 | 1% | \$22,000,000 | 1% | \$26,200,000 | 1% | \$1,900,000 | < 1% |
| Commercial Building/Contents | \$440,500,000 | 14% | \$3,800,000 | 1% | \$5,200,000 | 1% | \$5,600,000 | 1% | \$6,600,000 | 1% | \$500,000 | < 1% |
| Other Building/Contents | \$300,700,000 | 9% | \$4,100,000 | 1% | \$5,300,000 | 2% | \$5,800,000 | 2% | \$6,800,000 | 2% | \$500,000 | < 1% |
| Total Building/Contents ² | \$3,233,400,000 | 100% | \$22,700,000 | 1% | \$31,200,000 | 1% | \$33,400,000 | 1% | \$39,600,000 | 1% | \$2,800,000 | < 1% |
| Business Disruption ³ | \$0 | N/A | \$1,100,000 | N/A | \$1,400,000 | N/A | \$1,500,000 | N/A | \$1,800,000 | N/A | \$100,000 | N/A |
| TOTAL ⁴ | \$3,233,400,000 | N/A | \$23,800,000 | 1% | \$32,600,000 | 1% | \$35,000,000 | 1% | \$41,400,000 | 1% | \$2,900,000 | < 1% |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

Pulaski County

| Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | | |
|--|-----------------|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | Estimated Value | % of Total | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} |
| Residential Building/Contents | \$1,157,400,000 | 83% | \$8,900,000 | 1% | \$12,600,000 | 1% | \$13,400,000 | 1% | \$16,400,000 | 1% | \$1,100,000 | N/A |
| Commercial Building/Contents | \$148,500,000 | 11% | \$2,700,000 | 2% | \$3,700,000 | 2% | \$3,900,000 | 3% | \$4,700,000 | 3% | \$300,000 | N/A |
| Other Building/Contents | \$92,000,000 | 7% | \$1,200,000 | 1% | \$1,600,000 | 2% | \$1,700,000 | 2% | \$2,100,000 | 2% | \$100,000 | N/A |
| Total Building/Contents ² | \$1,397,900,000 | 100% | \$12,900,000 | 1% | \$17,900,000 | 1% | \$19,000,000 | 1% | \$23,200,000 | 2% | \$1,600,000 | N/A |
| Business Disruption ³ | \$0 | N/A | \$400,000 | N/A | \$500,000 | N/A | \$500,000 | N/A | \$600,000 | N/A | \$30,000 | N/A |
| TOTAL⁴ | \$1,397,900,000 | N/A | \$13,300,000 | 1% | \$18,400,000 | 1% | \$19,600,000 | 1% | \$23,900,000 | 2% | \$1,600,000 | N/A |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

North Little Rock

| Estimated Potential Losses for Flood Event Scenarios | | | | | | | | | | | | |
|--|-----------------|------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | Total Inventory | | 10% (10-yr) | | 2% (50-yr) | | 1% (100-yr) | | 0.2% (500-yr) | | Annualized (\$/yr) | |
| | Estimated Value | % of Total | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} | Dollar Losses ⁵ | Loss Ratio ^{1,6} |
| Residential Building/Contents | \$1,443,400,000 | 70% | \$14,100,000 | 1% | \$16,200,000 | 1% | \$17,000,000 | 1% | \$21,000,000 | 1% | \$1,600,000 | N/A |
| Commercial Building/Contents | \$443,500,000 | 22% | \$2,600,000 | 1% | \$3,400,000 | 1% | \$4,100,000 | 1% | \$4,700,000 | 1% | \$300,000 | N/A |
| Other Building/Contents | \$168,700,000 | 8% | \$2,600,000 | 2% | \$3,400,000 | 2% | \$3,900,000 | 2% | \$4,600,000 | 3% | \$300,000 | N/A |
| Total Building/Contents ² | \$2,055,600,000 | 100% | \$19,300,000 | 1% | \$23,000,000 | 1% | \$25,000,000 | 1% | \$30,200,000 | 1% | \$2,200,000 | N/A |
| Business Disruption ³ | \$0 | N/A | \$900,000 | N/A | \$1,100,000 | N/A | \$1,300,000 | N/A | \$1,400,000 | N/A | \$90,000 | N/A |
| TOTAL⁴ | \$2,055,600,000 | N/A | \$20,200,000 | 1% | \$24,100,000 | 1% | \$26,300,000 | 1% | \$31,600,000 | 2% | \$2,300,000 | N/A |

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

Flood Risk Map: Bayou Meto Watershed, 08020402



MAP SYMBOLS

| Base Data | Flood Data | Flood Risk | Areas of Mitigation Interest |
|---|--------------------|------------|---|
| Corporate Limits | Rivers and Streams | Very Low | Accredited Levees |
| Major Roads | | Low | Non-Accredited Levees |
| Interstates | | Medium | Dams |
| Watershed Boundary | | High | Coastal Structures |
| Wildlife Management Areas / Federally Owned Lands | | Very High | Stream Flow Constrictions |
| | | | Past Claims Hot Spot |
| | | | Key Emergency Routes Overlapped During Frequent Flooding Events |
| | | | At-Risk Essential Facilities |
| | | | Individual Assistance (A) & Public Assistance (PA) Data (within the past 5 years and looking forward 5 years) |
| | | | Significant Land Use Changes (within the past 5 years and looking forward 5 years) |
| | | | Areas of Significant Riverine or Coastal Erosion |
| | | | Non-Levee Embankments |
| | | | Other Flood Risk Areas |
| | | | Areas of Mitigation Success |
| | | | Other |

WATERSHED LOCATOR



Risk Mapping, Assessment, and Planning (Risk MAP)

FRM FLOOD RISK MAP
BAYOU METO WATERSHED



HUC-8 Code

08020402

For more information of data used for this non-regulatory map, please consult the BAYOU METO USA Flood Risk Database and Flood Risk Report.

RELEASE DATE

9/23/2014

The above maps are from the “Flood Risk Report” for the Lower Arkansas – Maumelle Report Number 2, dated 12/17/2015 & Bayou Meto Report dated 12/17/2015, produced as part of FEMA’s Risk MAP program. It indicates that there is a “very low” flood risk for all the cities within Pulaski County.

3.4.6 Addressing Repetitive Loss Properties

Please see Section 2.2.2 for greater detail of each jurisdiction’s participation in the NFIP.

Per 2015 HMA Guidance, a severe repetitive loss property is a structure that:

- (a) Is covered under a contract for flood insurance made available under the NFIP
- (b) Has incurred flood related damage -
 - i. For which 4 or more separate claims payments (includes building and contents) have been made under flood insurance coverage with the amount of each such claim exceeding \$5,000, and which the cumulative amount of such claims payments exceeding \$20,000

OR

- ii. For which at least 2 separate claims payments (includes only building) have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

A **repetitive loss property** is a structure covered by a contract for flood insurance made available under the NFIP that:

- (a) Has incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event

AND

- (b) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage

Inventory of Repetitive Loss Structures by Community

| Community Name (Number) | RL Bldgs Total | RL Buildings Insured | Total Losses | RL Losses Insured | Total Loss Amount | Total Loss Amount Insured | Properties w/4 + Losses | Properties w/ 4 + Losses Insured | Properties w/ 2-3 Losses > Total Value | Properties w/ 2-3 Losses > Insured Value | Building Post- Firm A- V Zone | Building Post- Firm A- V Zone Insured |
|--|----------------------|----------------------------|-----------------|-------------------------|----------------------|---------------------------------|-------------------------------|---|--|--|--|---|
| LITTLE ROCK, CITY OF (050181) | 61 | 26 | 200 | 91 | 7,168,457.75 | 5,578,038.26 | 20 | 10 | 0 | 0 | 0 | 0 |
| NORTH LITTLE ROCK, CITY OF (050182) | 15 | 13 | 35 | 31 | 1,328,127.19 | 1,281,090.51 | 1 | 1 | 0 | 0 | 0 | 0 |
| JACKSONVILLE, CITY OF (050180) | 10 | 3 | 24 | 9 | \$520,122.37 | \$137,400.06 | 1 | 1 | 0 | 0 | 0 | 0 |
| PULASKI COUNTY * (050179) | 40 | 21 | 98 | 50 | 3,400,034.42 | 1,899,707.53 | 3 | 2 | 0 | 0 | 0 | 0 |
| SHERWOOD, CITY OF (050235) | 24 | 17 | 65 | 45 | 1,057,333.42 | 866,136.89 | 3 | 2 | 0 | 0 | 0 | 0 |
| | 150 | 80 | 422 | 226 | 13,474,075.15 | 9,762,373.25 | 28 | 16 | 0 | 0 | 0 | 0 |

Pulaski County RL Summary as of 06-30-2019:

| Community Name | NFIP_RL_ Mitigated? | NFIP_RL_ Mitigated? | nfip_rl_ losses | nfip_rl_bldg_ paid | nfip_rl contents paid | nfip_rl total paid |
|----------------------------|------------------------|------------------------|--------------------|-----------------------|-----------------------|--------------------|
| | | 165 | 470 | \$10,791,074.11 | \$3,403,271.84 | \$14,194,345.95 |
| JACKSONVILLE, CITY OF | | 11 | 26 | \$443,215.84 | \$80,495.19 | \$523,711.03 |
| | NO | 10 | 24 | \$440,331.18 | \$79,791.19 | \$520,122.37 |
| | YES | 1 | 2 | \$2,884.66 | \$704.00 | \$3,588.66 |
| LITTLE ROCK, CITY OF | | 73 | 237 | \$4,831,078.83 | \$2,731,439.67 | \$7,562,518.50 |
| | NO | 61 | 199 | \$4,520,267.56 | \$2,525,720.03 | \$7,045,987.59 |
| | YES | 12 | 38 | \$310,811.27 | \$205,719.64 | \$516,530.91 |
| NORTH LITTLE ROCK, CITY OF | | 16 | 41 | \$1,454,079.93 | \$63,452.34 | \$1,517,532.27 |
| | NO | 12 | 28 | \$1,081,429.58 | \$34,364.69 | \$1,115,794.27 |

| | | | | | | |
|-------------------|-----|-----|-----|-----------------|----------------|-----------------|
| | YES | 4 | 13 | \$372,650.35 | \$29,087.65 | \$401,738.00 |
| PULASKI COUNTY * | | 35 | 84 | \$2,360,415.09 | \$443,741.38 | \$2,804,156.47 |
| | NO | 34 | 82 | \$2,360,415.09 | \$436,366.94 | \$2,796,782.03 |
| | YES | 1 | 2 | \$0.00 | \$7,374.44 | \$7,374.44 |
| SHERWOOD, CITY OF | | 30 | 82 | \$1,702,284.42 | \$84,143.26 | \$1,786,427.68 |
| | NO | 24 | 65 | \$1,018,002.11 | \$39,331.31 | \$1,057,333.42 |
| | YES | 6 | 17 | \$684,282.31 | \$44,811.95 | \$729,094.26 |
| | | 165 | 470 | \$10,791,074.11 | \$3,403,271.84 | \$14,194,345.95 |

Pulaski County V-SRL Summary as of 06-30-2019:

| Community Name | NFIP_RL_ Mitigated? | SRL Properties | srl losses | srl bldg paid | srl contents paid | srl total paid |
|-------------------------|------------------------|----------------|------------|---------------|-------------------|----------------|
| | | 5 | 23 | \$623,930.72 | \$152,921.53 | \$776,852.25 |
| LITTLE ROCK, CITY OF | | 4 | 19 | \$428,899.76 | \$46,438.62 | \$475,338.38 |
| | NO | 4 | 19 | \$428,899.76 | \$46,438.62 | \$475,338.38 |
| PULASKI COUNTY * | | 1 | 4 | \$195,030.96 | \$106,482.91 | \$301,513.87 |
| | NO | 1 | 4 | \$195,030.96 | \$106,482.91 | \$301,513.87 |
| | | 5 | 23 | \$623,930.72 | \$152,921.53 | \$776,852.25 |

3.4.7 Thunderstorms

A thunderstorm, also known as an **electrical storm**, a **lightning storm**, **thundershower** or simply a **storm**, is a form of turbulent weather characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere known as thunder. The meteorologically assigned cloud type associated with the thunderstorm is the cumulonimbus. Thunderstorms are usually accompanied by strong winds, heavy rain and sometimes snow, sleet, hail, or no precipitation at all. Those that cause hail to fall are called hailstorms. Thunderstorms may line up in a series or rain bands, known as a squall line. Strong or severe thunderstorms may rotate, known as supercells. While most thunderstorms move with the mean wind flow through the layer of the troposphere that they occupy, vertical wind shear causes a deviation in their course at a right angle to the wind shear direction.

Lightning- Lightning is a channel of electrical charge called a stepped leader that zigzags downward in roughly 50-yard segments in a forked pattern. This step leader is invisible to the human eye, and shoots to the ground in less time than it takes to blink. As it nears the ground, the charged step leader is attracted to a channel of opposite charge reaching up, a streamer, normally through something tall, such as a tree, house, or telephone pole. When the oppositely-charged leader and streamer connect, a powerful electrical current begins flowing. A bright return stroke travels about 60,000 miles per second back towards the cloud. A flash consists of one or perhaps as many as 20 return strokes. We see lightning flicker when the process rapidly repeats itself several times along the same path. The actual diameter of a lightning channel is one-to-two inches.

Hail- Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into balls of ice. Hail can damage aircraft, homes and cars, and can be deadly to livestock and people.

According to data from the FEMA 1997 publication “Multi-Hazard - Identification and Risk Assessment,” Arkansas is within a part of the country that averages two to three hailstorms annually.

Strong Winds- Damaging winds are often called “straight-line” winds to differentiate the damage they cause from tornado damage. Strong thunderstorm winds can come from a number of different processes. Most thunderstorm winds that cause damage at the ground are a result of outflow generated by a thunderstorm downdraft. Damaging winds are classified as those exceeding 50-60 mph.

Damage from severe thunderstorm winds account for half of all severe reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds can reach up to 100 mph and can produce a damage path extending for hundreds of miles.

Location

All areas of the planning area will experience thunderstorm events and are equally at risk.

Extent

The entire planning area is subject to thunderstorms ranging from weak to extreme that includes up to a T-5 on the chart below.

Modified Extreme Weather Madness Thunderstorm Criteria published by AccuWeather:

| THUNDERSTORM CRITERIA | | | | | | | |
|--|------------------|---------------|-----------------|--------------|-------------------------------------|---|--|
| THUNDERSTORM TYPES | RAINFALL RATE/HR | MAX WIND GUST | HAIL SIZE | PEAK TORNADO | LIGHTNING FREQUENCY | DARKNESS FACTOR | STORM IMPACT |
| T-1 Weak Thunderstorms or Thundershowers | .03" .10" | 25 MPH | None | None | Only a few strikes during the storm | Slightly Dark. Sunlight may be seen under the storm. | 1. No Damage 2. Gusty Winds at times |
| T-2 Moderate Thunderstorms | .10" .25" | 25-40 MPH | None | None | Occasional 1 -10 | Moderately Dark. Heavy downpours may cause the need for car lights. | 1. Heavy Downpours. 2. Occasional lightning. 3. Gusty winds. 4. Very little damage. 5. Small tree branches may break. 6. Lawn furniture moved around |
| T-3 Heavy Thunderstorms 1. Singular or lines of storms | .25" .55" | 40-57 MPH | 1/4"-3/4" | EF 0 | Occasional to Frequent 10-20 | Dark. Car lights used. Visibility low in heavy rains. | 1. Minor Damage 2. Downpours that produce some flooding. 3. Frequent lightning 4. Hail occurs with the downpours 5. Small branches are broken. 6. Shingles are blown off roofs. |
| T-4 Intense Thunderstorms 1. Weaker Supercells 2. Bow echos or lines of storms | .55" 1.25" | 57-70 MPH | 1" - 1.5" | EF 0 to EF 2 | Frequent 20-30 | Very Dark. Car lights are used and street lights come on. | 1. Moderate Damage 2. Heavy rains can cause flooding to streams, creeks, and roadways. 3. Wind damage to trees and buildings 4. Tornado damage 5. Power outages |
| T-5 Extreme Thunderstorms 1. Supercells with family of tornadoes 2. Derecho Windstorms | 1.25" 4" | Over 70 MPH | Over 1.5" to 4" | EF 3 to EF5 | Frequent to Continuous < 30 | Pitch Black with the need for street lights and housing lights. | 1. Severe damage to trees and property. Damage is widespread. 2. Flooding rains. 3. Damaging hail. 4. Damaging wind gusts to trees and buildings. 5. Tornadoes F3-F5 or family of tornadoes can occur and cause total devastation. 6. Widespread power outage |

Previous Occurrences

There have been 137 events reported from January 2015 to January 2020. Reported damage for these events totals \$525K.

Probability of Future Events

Based on previous occurrences, the planning area is likely to see 27 Thunderstorm events per year, so the probability of an event is 100% in any given year. The entire planning area is expected to experience a T-1 to a T-5 event any given year.

Impact and Vulnerability

All parts of the planning area are equally likely to experience severe thunderstorm, lighting, strong winds and hail storm events.

In all participating jurisdictions, structures and their contents are vulnerable to damage by thunderstorms winds. Strong winds can down trees onto power lines, damage mobile homes (and other light construction) that are not anchored, and rip off roofing. Winds can cause death and injuries by lifting unanchored objects. On average, 55 people are killed and hundreds are injured each year in the United States by Lightning. Lightning can strike communications equipment (e.g. radio or cell towers, antennae, satellite dishes, etc.) and hamper communication and emergency response. Lightning strikes can cause significant damage to buildings, critical facilities, and infrastructure, largely by igniting a fire (and even wildfires). Hailstorms will cause damage to all structures, mainly roof shingles which can lead to roof leaks and further damage to the structure interiors. All types of real estate and personal property are vulnerable to hail; such as cars, trailers, boats, and crops. Hailstorms can cause bodily injury if caught outside without protection.

In Pulaski County a total of 626 State owned structures valued at \$854,340,146 and 198 Critical facilities valued at \$848,605,823 vulnerable to this hazard. According to the 2018 Arkansas All-Hazards Mitigation Plan, HAZUS Data for Pulaski County indicates \$18,618 in crop. Any structures not properly constructed or anchored could be damaged.

3.4.8 Tornado

A tornado is a rapidly rotating vortex or funnel of air extending ground ward from a cumulonimbus cloud. Most of the time, vortices remain suspended in the atmosphere (Golden and Snow, 1991). When the lower tip of the vortex touches earth, the tornado becomes a force of destruction. Approximately 1,000 tornadoes are spawned by severe thunderstorms each year.

Tornadoes are related to larger vortex formations and therefore often form in convective cells such as thunderstorms or in the right forward quadrant of a hurricane, far from the hurricane eye. The strength and number of tornadoes are not related to the strength of the hurricane that generates them. Often, the weakest of hurricanes produce the most tornadoes (Bryant, 1991). In addition to hurricanes, events such as earthquake induced fire and fires from atomic bombs or wildfires may produce tornadoes.

The path of a single tornado generally is less than 0.6 mi (1km). The path length of a single tornado can range from a few hundred meters to dozens of kilometers. A tornado typically moves at speeds between 30 and 125 mph (50 and 200 km/h) and can generate internal winds exceeding 300 mph (500km/h). However, the lifespan of a tornado rarely is longer than 30 minutes.

Location

Because there is no defined geographic hazard boundary, all people and property in Pulaski County and the entire planning area are exposed to the risk of damage from tornadoes. Based on the short 50-year dataset, no clear areas of high tornado occurrence happen at any particular county scale. Thus, although tornado risk appears to vary at a statewide scale, variable tornado risk at the county scale cannot be demonstrated. Thus, mapping variations in tornado risk at a local or county scale is not currently possible. For the purpose of this plan, all parts of this plan are considered equally likely to experience a tornado event. This is proven to be the case in tornadoes that have occurred in a wide variety of areas.

Extent

The Enhanced Fujita (EF) Scale was devised by a panel of meteorologists and engineers convened by the Wind Science and Engineering Research Center at Texas Tech University. The Weather Channel's severe weather expert Dr. Greg Forbes was on the team of experts who determined the revised wind speed ranges. Since 2007, the EF Scale has been used to rate tornadoes.

| Enhanced Fujita Scale | | |
|-----------------------|-----------------------------|---|
| Category | Wind Speed | Potential Damage |
| EF0 | 105–137 km/h 65–85 mph | Light damage. Peels surface off roofs; some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; mobile homes pushed off foundations or overturned; sign boards damaged. |
| EF1 | 138–179 km/h 86–110 mph | Moderate damage. Roofs torn off frame houses; windows and glass doors broken; moving autos blown off roads; mobile homes demolished; boxcars overturned. |
| EF2 | 180–217 km/h 111–135 mph | Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground. |
| EF3 | 218–266 km/h 136–165 mph | Severe damage. Some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance. |
| EF4 | 267–324 km/h 166–200 mph | Devastating damage. Well-constructed houses and whole frame houses completely leveled; structures with weak foundations blown away some distance; trees debarked; cars thrown and small missiles generated. |
| EF5 | >324 km/h >200 mph | Incredible damage. Strong frame houses leveled off foundations and swept away; with strongest winds, brick houses completely wiped off foundations; automobile-sized missiles fly through the air in excess of 100 m (109 yd); cars thrown and large missiles generated; incredible phenomena will occur. |

Associated hazards include:

- Wind- Tornadoes consist of strong, often destructive winds that can uproot trees and damage buildings and cars
- Rain/Hail-Tornadoes are associated with thunderstorms and may be preceded or followed by heavy rainfall or hail. Depending on the hydrological conditions, flash flooding may occur.
- Obstacles to Response- Damage or destruction of public facilities, including hospitals, can complicate emergency response efforts. Additionally, debris may block roadways, there may be extensive damage to electric and telephone lines, utility lines may be broken, and communication may be cut off because of damaged or destroyed cell, radio and television towers.

All participating jurisdictions could experience a tornado on the Enhanced Fujita Scale from an EF0 to EF5.

The entire planning area could experience any of the below damages corresponding to the wind speed on the Enhanced Fujita Scale.

| RESIDENTIAL HOME DAMAGE CLASSES | | |
|---------------------------------|---|---------------------------------|
| Degree of Damage (DOD) | | Expected Wind Speed Value (mph) |
| 1 | Threshold of visible damage | 65 |
| 2 | Loss of roof covering material (<20%), gutters, and/or Awning; loss of vinyl or metal siding | 79 |
| 3 | Broken glass in doors and windows | 90 |
| 4 | Uplift of roof deck and loss of significant roof covering material (>20%); collapse of chimney, garage doors; collapse inward, failure of porch or carport. | 97 |
| 5 | Entire house shifts off foundation | 121 |
| 6 | Large sections of roof structure removed; most walls remain standing | 122 |
| 7 | Exterior walls collapsed | 132 |
| 8 | Most walls collapsed, except small interior rooms | 152 |
| 9 | All walls collapsed | 170 |
| 10 | Destruction of engineered and/or well-constructed residence; slab swept clean. | 200 |

Source: FEMA

Previous occurrences

In Pulaski County there have been 8 reported tornadoes between 2015 and 2019.

| <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> |
|---------------------|--------------------|------------|-------------------|--------------|--------------|----------------|------------|------------|------------|----------------|---------------|
| <u>WYE</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>03/13/2016</u> | <u>17:15</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF0</u> | <u>0</u> | <u>0</u> | <u>5.00K</u> | <u>0.00K</u> |
| <u>OLMSTEAD</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>03/24/2017</u> | <u>22:20</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF2</u> | <u>0</u> | <u>6</u> | <u>350.00K</u> | <u>0.00K</u> |
| <u>OLMSTEAD</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>03/24/2017</u> | <u>22:23</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF1</u> | <u>0</u> | <u>0</u> | <u>100.00K</u> | <u>0.00K</u> |
| <u>WAMPOO</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>03/09/2019</u> | <u>10:24</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF1</u> | <u>0</u> | <u>2</u> | <u>100.00K</u> | <u>10.00K</u> |
| <u>TERRYTOWN</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>05/02/2019</u> | <u>11:37</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF1</u> | <u>0</u> | <u>0</u> | <u>100.00K</u> | <u>30.00K</u> |
| <u>SYLVAN HILLS</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>05/02/2019</u> | <u>12:14</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF0</u> | <u>0</u> | <u>0</u> | <u>100.00K</u> | <u>20.00K</u> |
| <u>OLMSTEAD</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>05/02/2019</u> | <u>12:26</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF0</u> | <u>0</u> | <u>0</u> | <u>0.00K</u> | <u>2.00K</u> |
| <u>OLMSTEAD</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>05/02/2019</u> | <u>12:28</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF0</u> | <u>0</u> | <u>0</u> | <u>0.00K</u> | <u>5.00K</u> |
| <u>WARSAW</u> | <u>PULASKI CO.</u> | <u>AR</u> | <u>05/02/2019</u> | <u>12:33</u> | <u>CST-6</u> | <u>Tornado</u> | <u>EF0</u> | <u>0</u> | <u>0</u> | <u>30.00K</u> | <u>10.00K</u> |
| <u>Totals:</u> | | | | | | | | <u>0</u> | <u>8</u> | <u>785.00K</u> | <u>77.00K</u> |

Probability of Future Events

Based on previous occurrences, the planning area is likely to see 1 tornado event per year ranging from an EF1 to an EF2. There is a 4.69% chance a tornado will occur in any given year in the planning area.

Impact and Vulnerability

Tornadoes can cause significant damage to trees, building, and power infrastructure. They can cause fatalities, particularly when people are unable to get to a protective shelter. All areas, residents, structures, and critical facilities in Pulaski County are of high risk of tornado events. Mobile Homes are of the highest risk.

Because there is no defined geographic hazard boundary, all people and property in Pulaski County are exposed to the risk of damage from tornadoes. All structures in Pulaski County are vulnerable to tornadoes. Data for Pulaski County indicates a total of the total building exposure for Pulaski County is \$53,619,942 and Crop Exposure is \$18,618,000. Those structures not properly constructed or anchored could be damaged or destroyed. The most vulnerable to tornadoes are wood frame structures and manufactured homes; 70% of dwellings in Pulaski County are standard frame homes, and 5.9% are mobile homes. This is a substantial portion of the housing stock that is highly vulnerable to damages from tornado events. Damage to residential structures could cause hundreds to be without shelter, or try to live in unsafe conditions.

Utilities most vulnerable to tornado winds are electrical power (e.g. power generation facility, above ground transmission lines and sub-stations) and communication structures (radio towers, cell phone towers). Most transportation systems such as highways, railways are not highly vulnerable to tornadoes, but downed power lines and trees and limbs can delay travel until roads are cleared. This would not only affect the day to day traffic but also critical services such as emergency police, fire, and ambulance.

Vulnerable populations including retirement homes, schools and child care centers are located in about every section in the county.

All of the planning area would be affected due to the lost power, water, sewer, gas, and communications. Power and water outages would cause food spoilage and sanitation problems for communities. Hospitals, grocery stores and other critical need and economically important facilities are damaged and closed for extended periods. The School Districts located in Pulaski County could be closed for extended periods due to these outages or possible damage to building structures on school campuses. The school buses are also vulnerable to damage or may face disruption due to unclear roadways and bridges. Employment would be affected from school closings.

Businesses and local government infrastructure often suffer extensive damage in tornadoes as well as the death of people, wildlife and livestock. Employment is often affected because of businesses that close due to the tornado damage and loss of business. Even with the advances in meteorology, tornado warning times may be issued in a short period of time.

3.4.9 Wildfire

A wildfire is any outdoor fire that is not controlled, supervised, or arranged that spreads through vegetative fuels, exposing and possibly consuming structures. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. There are essentially two types of fires. They are known as wildland fires and Wildland-Urban Interface (WUI) fires. A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. A WUI fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels. Areas with a large amount of wooded, brush and grassy areas are at highest risk of wildfires. Additionally, areas anywhere that have experienced prolonged droughts or are excessively dry are also at risk of wildfires. WUI is further described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire.

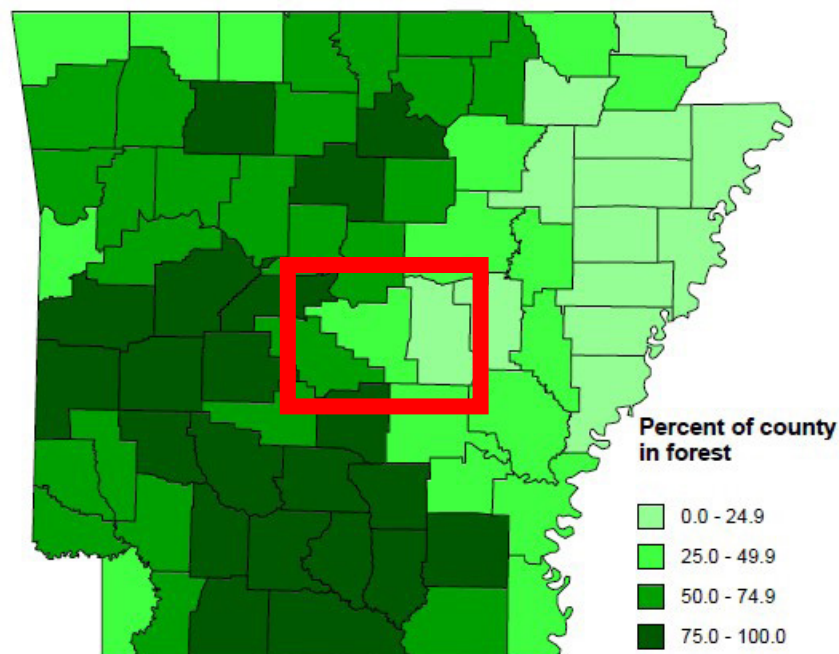
Location

The Wildland Urban Interface (WUI) Risk Index is a rating of the potential impact of a wildfire on people and their homes. The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the Wildland Urban Interface and rural areas is key information for defining potential wildfire impacts to people and homes.

Pulaski County and any jurisdiction located in zones that inhibit the primary factors of fuel, topography, and weather is susceptible to wildfire. These three factors can predict wildfire behavior in WUI areas and wildland areas. Large amount of wooded, brush, and grassy areas are considered fuel that promotes the

spread of wildfires. Topography affects the movement of air over the ground surface, and the slopes of terrain will change the rate of speed that the fire spreads. Lastly, areas that have experienced prolonged droughts or excessive dry spells can predict wildfires. For WUI fires, any location that intermixes with wildland fuel and human development along with topography and weather are at risk to wildfire. The entire county possesses some type of fuel, whether grass, agriculture, forestry, shrubs, structures, or other vegetation types. An estimated 50-74.9% of Pulaski County is forest.

Maps for each plan participant showing the location of areas at risk for wildfire are included in the next section.



Extent

Based on Arkansas Forestry Commission data from 2013 through 2019, there were 141 fires and 1,850 acres burned in Pulaski County. The most acres burned in a year in the County were 401 acres in 2018; the #1 cause of the fires that year was “debris”.

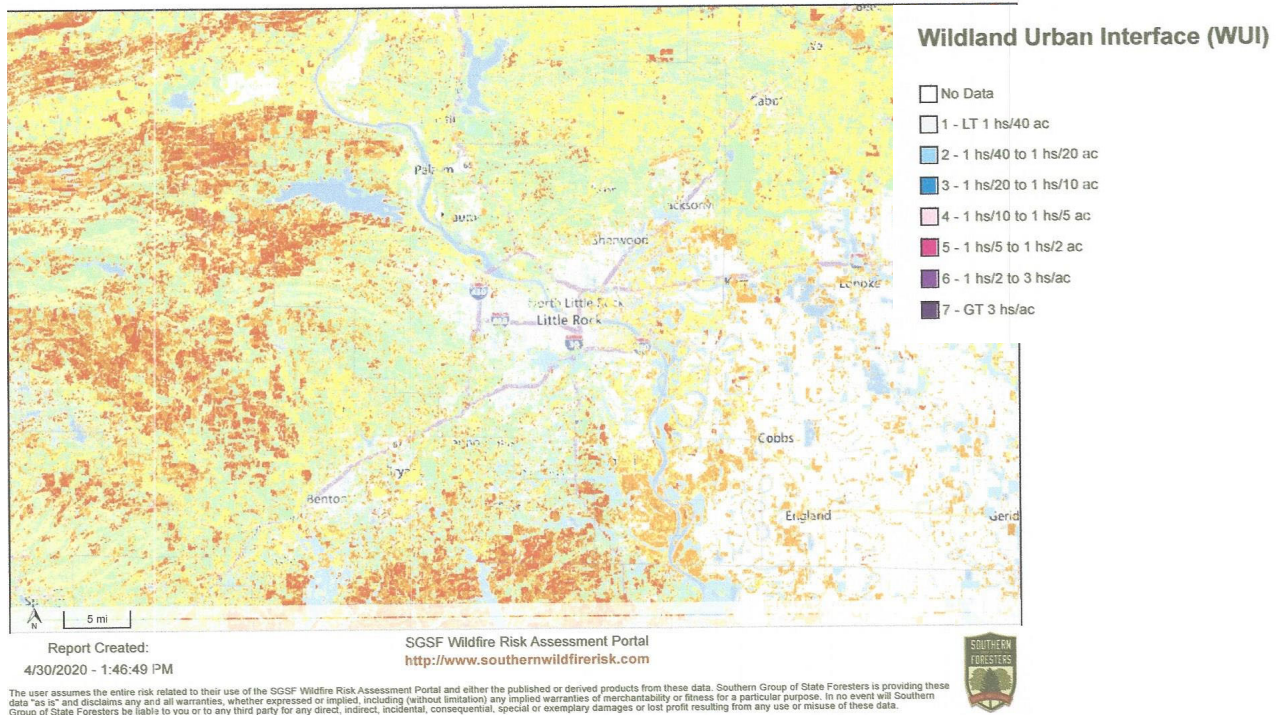
The Fire Intensity Scale (FIS) Scale, retrieved from the Southern Wildfire Risk Assessment, specifically identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on weighted average of four percentile weather categories. Fire intensity scale is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each weather influence zone in the planning area. A weather influence zone is an area where, for analysis purposes, the weather on any given day is considered uniform.

Similar to the Richter scale for earthquakes, FIS provides a standard scale to measure potential wildfire intensity. FIS consist of 5 classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities. Refer to descriptions below.

| Fire Intensity Scale (FIS) | | |
|-----------------------------------|--------------------------|--|
| Class 1 | Very Low Fire Intensity | Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools. |
| Class 2 | Low Fire Intensity | Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools. |
| Class 3 | Moderate Fire Intensity | Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential to cause harm or damage to life and property. |
| Class 4 | High Fire Intensity | Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property. |
| Class 5 | Very High Fire Intensity | Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property. |

The Fire Intensity Scale for Pulaski County, the cities of Cammack Village, Jacksonville, Little Rock, Maumelle, North Little Rock, Sherwood, Wrightsville (as well as, Jacksonville – North Pulaski School District, Little Rock School District, Pulaski County Special School District, North Little Rock School District, Arkansas School for the Blind, Arkansas School for the Deaf) shows the locations, impact and vulnerability of wildfire. As indicated on the below map, the planning area could see a Class 1-2.5 on the FIS.

Fire Insensity Map - Pulaski County

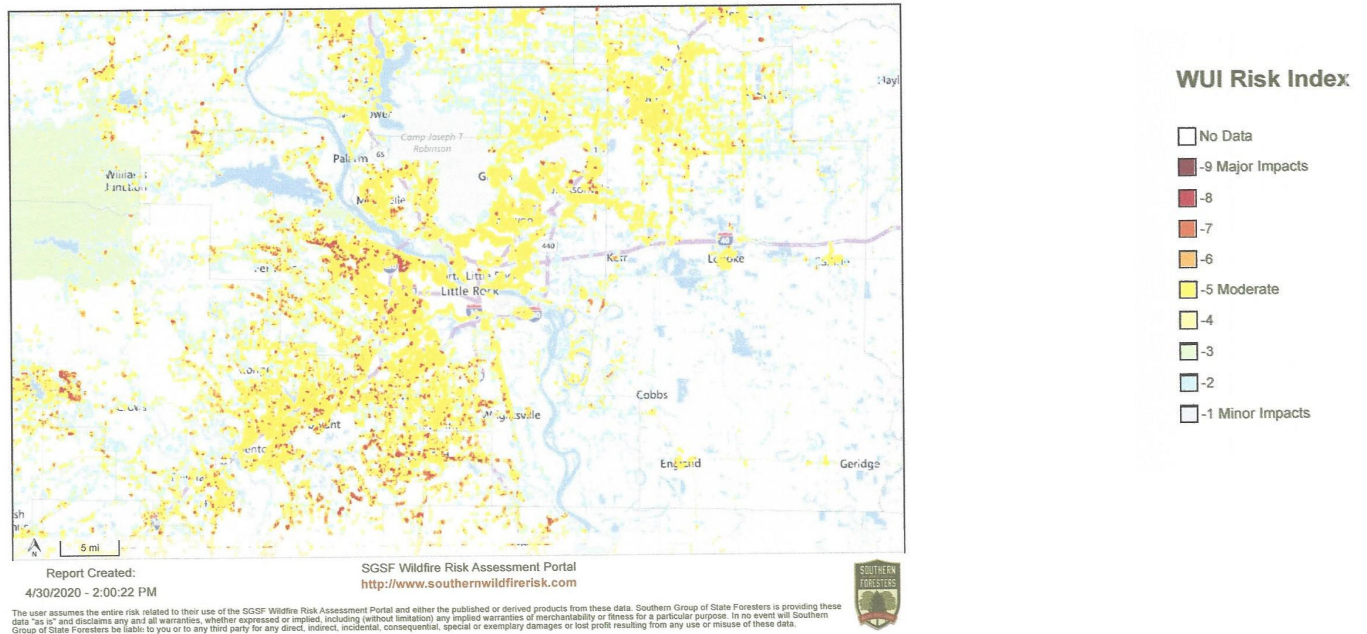


The WUI Risk Index is derived using a Response Function modeling approach. Response functions are a method of assigning a net change in the value to a resource or asset based on susceptibility to fire at different intensity levels, such as flame length. The WUI Risk Index range of values is from -1 to -9, with -1 representing the least negative impact and -9 representing the most negative impact. For example, areas with high housing density and high flame lengths are rated -9 while areas with low housing density and low flame lengths are rated -1. To calculate the WUI Risk Index, the WUI housing density data was combined with Flame Length data and response functions were applied to represent potential impacts for all unique conditions of WUI housing density and flame length. The response functions were defined by a team of experts based on values defined by the SWRA Update technical team. By combining flame length with the WUI housing density data, you can determine where the greatest potential impact to homes and people is likely to occur.

Flame Length is used as a measure of fire intensity. With the WUI Risk Index the analysis incorporates penetration into urban fringe areas so that outputs better reflect real world conditions for fire spread and impact in urban interface areas. With this enhancement, houses in urban areas adjacent to wildland fuels are incorporated into the WUI risk modeling.

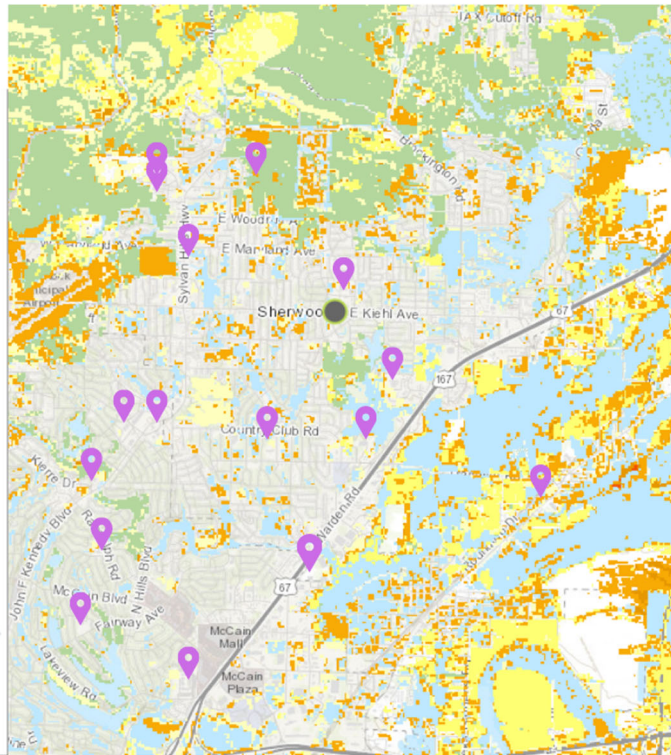
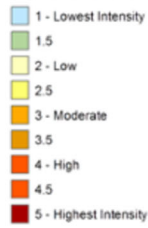
A summary of the WUI Risk Index for the entire planning area (Pulaski County as a whole) is provided in the table below. The majority of the planning area is at a 1-5 risk index level. Risk indexes for each participating jurisdiction are depicted in the following maps.

WUI Risk Index - Pulaski County



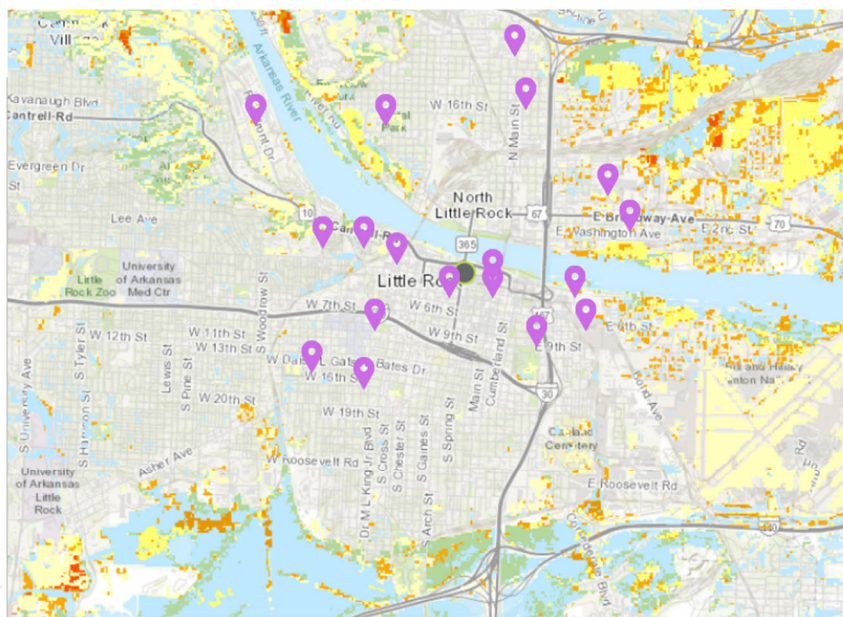
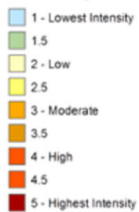
Sherwood

Fire Intensity Scale



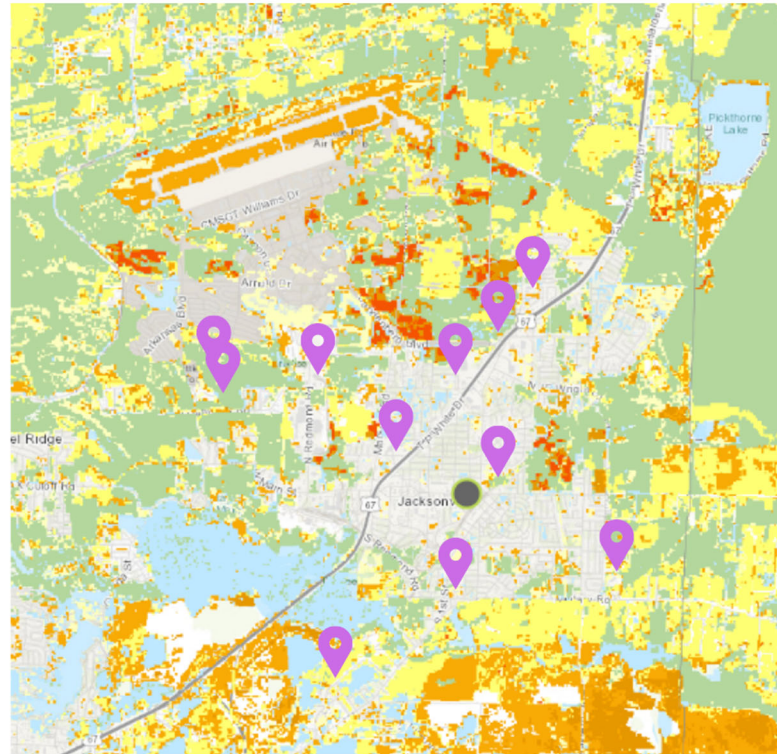
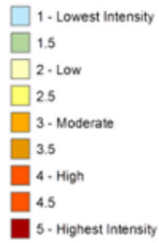
North Little Rock & Little Rock

Fire Intensity Scale



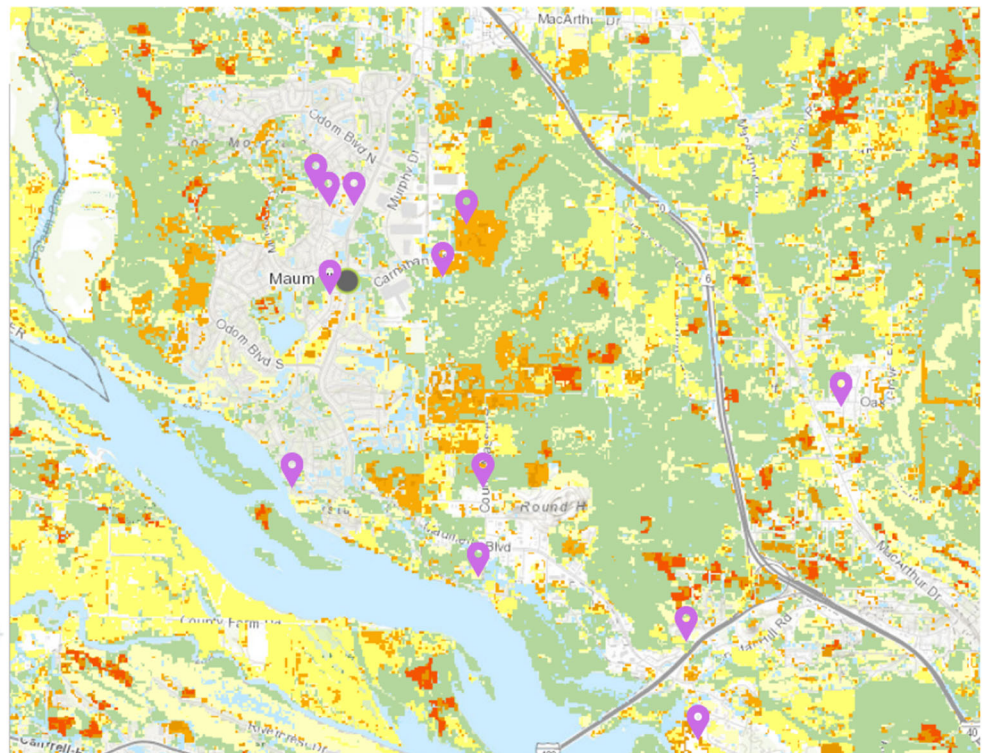
Jacksonville

Fire Intensity Scale

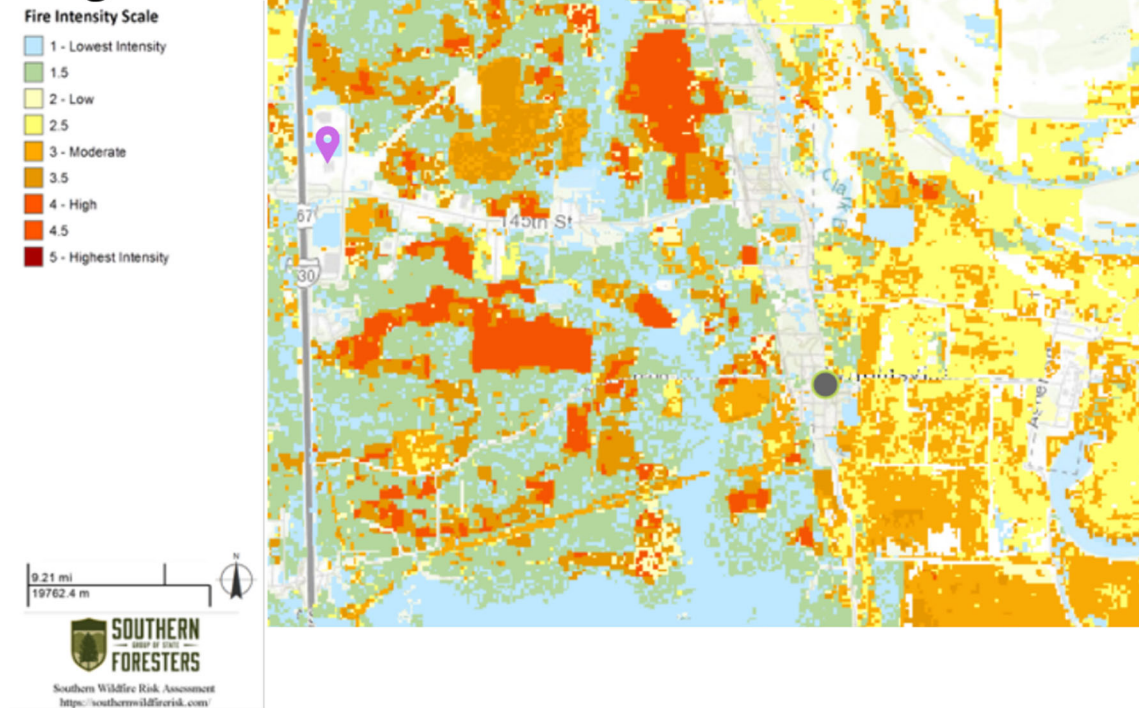


Maumelle

Fire Intensity Scale



Wrightsville



Previous Occurrences

There have been 103 wildfire events reported between 2015 and 2019 by the Arkansas Forestry Commission.

Wildfire Summary

| <i>Years</i> | <i>Number of Fires</i> | <i>Total Acres Burned</i> | <i>5-Year Average # of Fires</i> | <i>5-Year Average # of Acres Burned</i> |
|---------------------|-------------------------------|----------------------------------|---|--|
| 2015 | 21 | 343 | | |
| 2016 | 25 | 395 | | |
| 2017 | 28 | 174 | | |
| 2018 | 16 | 401 | | |
| 2019 | 13 | 71 | | |
| TOTALS | 103 | 1,384 | 21 | 271 |

Probability of Future Events

Based on previous occurrences, the planning area is likely to see 21 wildfire events per year of varying severities.

Impact and Vulnerability of Wildfire

According to the Arkansas State All-Hazards Mitigation Plan (2013) Pulaski County's population was 192,820 with 84,444 Housing Units with an estimated loss of \$8,875,065 that could be affected by wildfire.

WUI- Population and Acres¹

| Housing Density | WUI Population | Percent of WUI Population | WUI Acres | Percent of WUI Acres |
|----------------------|----------------|---------------------------|----------------|----------------------|
| LT 1hs/40ac | 1,556 | 9.5% | 72,787 | 59.6% |
| 1hs/40ac to 1hs/20ac | 1,508 | 9.2% | 20,565 | 16.8% |
| 1hs/20ac to 1hs/10ac | 1,945 | 11.9% | 13,857 | 11.3% |
| 1hs/10ac to 1hs/5ac | 2,589 | 15.8% | 8,132 | 6.7% |
| 1hs/5ac to 1hs/2ac | 2,583 | 15.8% | 4,014 | 3.3% |
| 1hs/2ac to 3hs/1ac | 6,181 | 37.8% | 2,816 | 2.3% |
| GT 3hs/1ac | 0 | 0.0% | 0 | 0.0% |
| Total | 16,362 | 100.0% | 122,172 | 100.0% |

The majority of the planning area's population (382,748) is in a density area of 1 house /2 acres to 3 houses/1 acre, meaning the majority of the planning area's population is vulnerable to wildfire.

Fire Fighters are the most vulnerable populations during wildfires. Fire fighters can face mortality due to heat exhaustion. Other vulnerable populations are those that live in a High Intensity area (FIS), the population in the dense housing area referenced in the paragraph above, and those that reside in wood frame structures or manufactured homes, especially the elderly and children.

| Location | Wood/Frame Structures | Manufactured Homes |
|---------------|-----------------------|--------------------|
| Entire County | 70% | 5.9% |

¹ Excerpts from the Southern Wildfire Risk Assessment Summary Report for Pulaski County: WUI housing density is categorized based on the standard Federal Register and U.S. Forest Service SILVIS data set categories, long considered a de facto standard for depicting WUI. However, in the SWRA WUI data the number of housing density categories is extended to provide a better gradation of housing distribution to meet specific requirements for fire protection planning activities. While units of the actual data set are in *houses per sq. km.*, the data is presented as the *number of houses per acre* to aid with interpretation and use by fire planners in the South.

In the past, conventional wildland urban interface data sets, such as USFS SILVIS, have been used to reflect these concerns. However, USFS SILVIS and other existing data sources do not provide the level of detail for defining population living in the wildland as needed by Southern state WUI specialists and local fire protection agencies.

The new SWRA WUI 2012 dataset is derived using advanced modeling techniques based on the SWRA Where People Live (housing density) dataset and 2012 LandScan population count data available from the Department of Homeland Security, HSIP Freedom Data Set. WUI is simply a subset of the Where People Live dataset. The primary difference between the WPL and WUI is that populated areas surrounded by sufficient non-burnable areas (i.e. interior urban areas) are removed from the Where People Live data set, as these areas are not expected to be directly impacted by a wildfire. Simply put, the SWRA WUI is the SWRA WPL data with the urban core areas removed.

Data is modeled at a 30-meter cell resolution, which is consistent with other SWRA layers. The following table shows the total population for each WUI area within the project area.

3.4.10 Winter Storm

Severe winter storms, which may include heavy snowfall, ice storms, winter storms, and/or strong winds, affect every state in the continental United States. Areas where such weather is uncommon, such as Arkansas, are typically disrupted more severely by severe winter storms than are regions that experience this weather more frequently.

The National Weather Service (NWS) defines snow as a steady fall of **snow** for several hours or more. **Heavy snow** is defined as either a snowfall accumulating to 4 inches in depth in 12 hours or less, or snowfall accumulation to 6 inches or more in depth in 24 hours or less. In states such as Arkansas, where lesser accumulations can cause significant impacts, lower thresholds may be used. A **blizzard** means that the following conditions prevail for a period of three hours or longer: 1) sustained wind or frequent gusts to 35 miles an hour or greater; and 2) considerable falling and/or blowing snow (i.e., reducing visibility to less than 1/4 mile). **Sleet** is defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. **Heavy sleet** is a relatively rare event defined as the accumulation of ice pellets covering the ground to a depth of 0.5 inch or more.

Freezing rain or freezing drizzle occurs when rain or drizzle freezes on surfaces such as the ground, trees, power lines, vehicles, streets, highways, etc. Small accumulations of ice can cause driving and walking difficulties while heavy accumulations produce extremely dangerous and damaging conditions. An **ice storm** is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulations are usually accumulations of 0.25 inches or greater.

A combination of severe winter weather types occurring over a wide area is usually called a **winter storm**. Winter-storm formation requires below freezing temperatures, moisture, and lift to raise the moist air to form the clouds and cause precipitation. Lift is commonly provided by warm air colliding with cold air along a weather front. Various causes exist for winter storms in the United States. Winter storms in Midwestern and plains states typically develop over southeast Colorado on the lee side of the Rockies. These storms move east or northeast and use both the southward plunge of cold air from Canada and the northward flow of moisture from the Gulf of Mexico to produce ice, snow, and sometimes blizzard conditions. These fronts may push deep into the interior regions, sometimes as far south as Florida.

Location

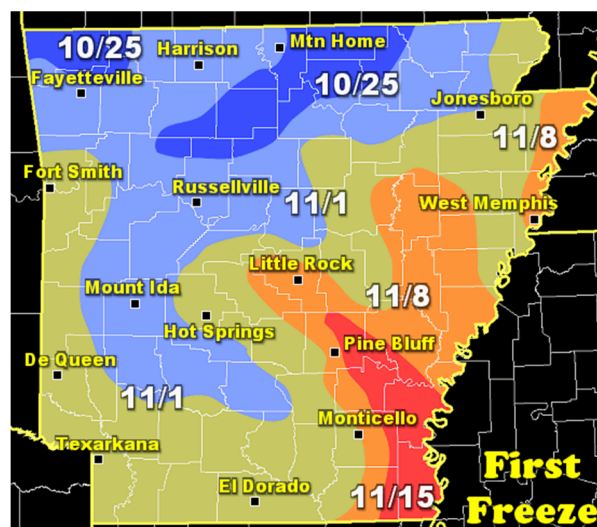
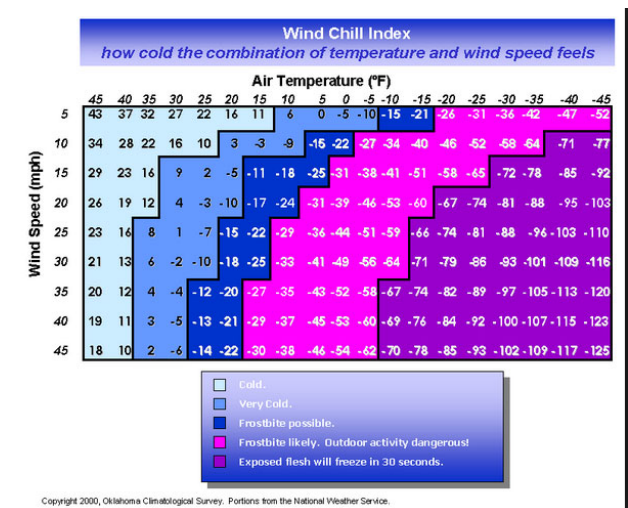
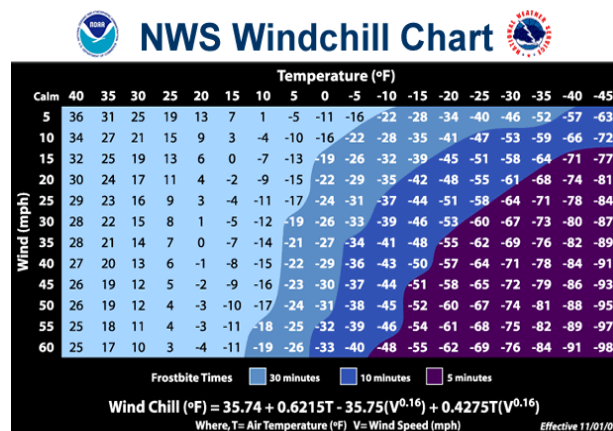
All areas of the planning area are equally susceptible to severe winter storm events.

Extent

According to National Climatic Data Center (NCDC) and National Weather Service Data, typical snow accumulations in Pulaski County during heavy snow and winter storm events ranges from 2 inches to 8 inches. Typical ice storm accumulations range from 1 inch to 1 ½ of inches. When severe winter storm

events do occur (the worse typically associated with ice), they are usually wide-spread over the area and impede the movement of vehicles – limiting regular movement of traffic, causing accidents and limiting responsiveness of emergency services – and can down power and communications lines and seriously damage some structures, thus creating potentially critical conditions for the entire area.

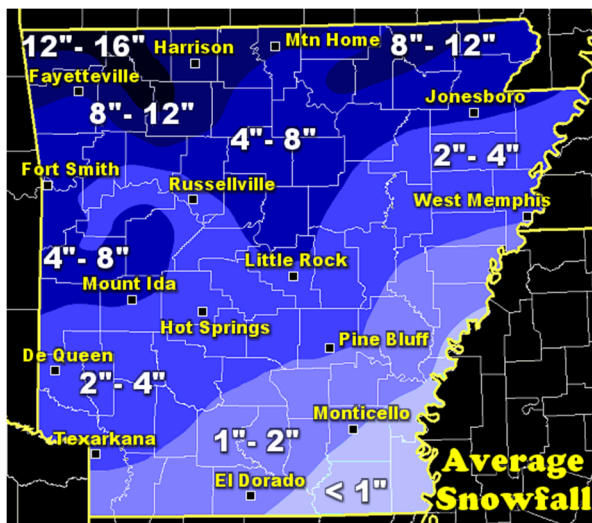
Students may be kept inside by the determination of the building principals if there are extreme cold temperatures. Wind chill would be the determining factor in keeping students inside. Some districts initiate monitoring for wind chill is below 32 degrees, some 40 degrees.



First Freeze (Fall)

In the pictures: Average first freeze dates in the fall and last freeze dates in the spring across Arkansas.

In Arkansas, freezes typically occur by the last week in October across northern and western sections of the state (Ozark and Ouachita Mountains). Elsewhere, freezes tend to hold off until the first couple of weeks in November. In the spring, the last freeze usually happens by mid-March in the southeast. For the remainder of the region, freezes usually linger into April and sometimes into early May in parts of the north.



In the picture: Average annual snowfall across Arkansas

In Arkansas, most snow falls in the months of January, February, March, and December. Average annual accumulations range from less than an inch in the southeast to more than a foot in the northwest. Pulaski County's average annual snowfall is between 2'-4'.

Previous Occurrences

There have been 3 countywide winter storm events between 2015 and 2019; and 0 of these events were classified as ice storms.

| <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 | 160.00K | 0.00K |
| PULASKI (ZONE) | PULASKI (ZONE) | AR | 02/15/2015 | 23:00 | CST-6 | Winter Storm | | 0 | 0 | 100.00K | 0.00K |
| PULASKI (ZONE) | PULASKI (ZONE) | AR | 03/04/2015 | 17:00 | CST-6 | Winter Storm | | 0 | 0 | 60.00K | 0.00K |
| PULASKI (ZONE) | PULASKI (ZONE) | AR | 01/21/2016 | 23:00 | CST-6 | Winter Storm | | 0 | 0 | 0.00K | 0.00K |
| Totals: | | | | | | | | 0 | 0 | 160.00K | 0.00K |

Probability of Future Events

Based on previous occurrences, the planning area is likely to see .6 chance of a winter storm events per year of varying severities.

Impact and Vulnerability

The occurrence of severe winter weather has a substantial impact on communities, utilities, transportation systems, and agriculture, and often results in loss of life due to accidents or hypothermia. Severe winter weather hazards include snowstorms, ice storms, storms with strong winds, and extreme cold. Heavy snow from a snowstorm can immobilize a region and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. The cost of snow removal, repairing damages, and loss of business can have large economic impacts on cities and towns.

Heavy accumulations of ice or snow commonly result in collapse of structural damage to buildings. The damage may be caused directly by the excessive weight of the ice/snow accumulation, or by ice-laden trees or branches falling on structures. Homes, business, as well as weaker nonresidential structures

commonly sustain structural damage. Poultry houses in Arkansas are particularly at risk. Additional agricultural revenues are lost because of the time it takes to rebuild the poultry houses.

Heavy accumulations of ice from ice storms or heavy snow can also bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the damage. Power and communications disruptions are common consequences of ice storms and heavy snow. The monetary values of power and communications losses to businesses are significant but difficult to estimate.

Accumulations of ice and snow may also cause extreme hazards to motorists. Motorists in Pulaski County are generally unaccustomed to driving on slick roads resulting in an increase in traffic accidents, some of which may result in fatalities. Travel is hampered by ice or heavy snow because the state lacks sufficient snow removal equipment and road treatments (sand, salt) because of the infrequent occurrence of severe winter weather events. The cost of the numerous traffic accidents, as well as the cost of business and school closings that occur due to hazardous travel conditions, are difficult to estimate.

Winter storms are sometimes accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines.

The elderly are at increased risk for hypothermia because the skin thins with age. Accidents involving gas heaters and fires for warmth could also occur when not properly supervised, or ventilation is poor when used indoors.

SECTION 4: Mitigation Strategy

The Pulaski County Hazard Mitigation plan includes a mitigation strategy that provides the Pulaski County's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools by funding through county, city and school district taxes, yearly budgets and passing ordinances.

The following capabilities describe what the County, Cities and School Districts may or may not have to implement and maintain mitigation efforts, are addressed in the existing authorities, policies, programs and resources available to accomplish hazard mitigation.

The cities of Cammack Village, Jacksonville, Little Rock, Maumelle, North Little Rock, Sherwood and Wrightsville each are different in terms of staffing, funding, policies and program giving them the ability to carry out their local hazard mitigation goals. Each city has the capability to be an active member in the NFIP, to pass mitigation ordinances for their local government, regulate and limit the development in flood prone and other hazard areas through land use planning implement retrofit construction plans, brace equipment, and provide emergency preparedness information to area residents through FEMA brochures.

All participating jurisdictions would be dependent upon grant funding to assist with larger mitigation projects, such as safe rooms and heavy duty generators to back up and maintain electrical power for critical facilities. The Cities would need assistance in financing drought communication and early warning systems, heating and cooling centers.

There are seven incorporated municipalities in Pulaski County in addition to Pulaski County government. Communities range in size. The Table below shows the diversity in their population.

| Population | Community |
|------------|-----------|
|------------|-----------|

| | |
|-----------------|-----------------------------------|
| Over 100,000 | Pulaski County, Little Rock |
| Over 50,000 | North Little Rock |
| Over 10,000 | Jacksonville, Maumelle & Sherwood |
| Less than 3,000 | Wrightsville & Cammack Village |

Cammack Village and Wrightsville have populations less than 3,000, and therefore have less capacity and resources to reduce losses in the future when compared to Little Rock, North Little Rock Jacksonville, Maumelle, Sherwood and unincorporated Pulaski County. Each of the School Districts follows their respective jurisdiction's policies and programs. These education institutions also have varying resources to implement mitigation activities. It is likely grant funds may be needed to help all jurisdictions implement identified mitigation projects.

4.1 Mitigation Goals and Objectives for Each Hazard

Based upon the results of the local and State risk assessments, the Pulaski County Hazard Mitigation Planning Team, with input from local jurisdictions and officials, developed hazard mitigation goals and objectives and selected those that were determined to be of greatest benefit. These goals and objectives represent what Pulaski County believes is a long-term vision for reduction and enhancement of mitigation capabilities:

Goal 1. Reduce the potential for loss of life, injury and economic damage created by exposure to natural hazard for residents of Pulaski County due to natural disasters.

- Objective 1.1 Identify, describe, and characterize the natural hazards to which Pulaski County is susceptible
- Objective 1.2 Assess the risk of each hazard including probability and frequency, exposure, and consequences
- Objective 1.3 Examine feasible mitigation opportunities appropriate for the identified hazards and prioritize those opportunities.
- Objective 1.4 Implement mitigation actions to reduce loss of lives and property
- Objective 1.5 Identify mitigation opportunities for long-range planning consideration
- Objective 1.6 Encourage members of the Pulaski County Local Emergency Planning Committee (LEPC) and other stakeholders to include mitigation measures in emergency planning efforts
- Objective 1.7 Promote NFIP compliance throughout the County

Goal 2- Provide a framework and coordination to encourage all levels of government and public and private organizations to undertake mitigation to minimize potential disasters and to employ mitigation in the recovery following disasters.

- Objective 2.1 Hold regular LEPC meetings to discuss mitigation actions with city officials, county emergency office, and private sectors
- Objective 2.2 Keep records of all natural hazards and analyze areas that are at risk to prevent future losses

Goal 3- Seek grants for mitigation projects through the State and Federal funding.

- Objective 3.1 Update Hazard Mitigation plan every 5 years
- Objective 3.2 Inquire grant information from Arkansas Department of Emergency Management, and Planning and Development District

Goal 4- Protect existing properties from natural disasters.

Object 4.1 Protect existing structures from natural hazards using cost-effective approaches

4.2 Implementation of Mitigation Actions

The mitigation actions are prioritized based upon their effect on the overall risk to life and property. Ease of implementation, community and agency support and ease of obtaining funding. The County and participating jurisdictions have used the STAPLEE method to prioritize mitigation actions. This method has the benefit that the Mitigation actions are considered in discrete categories of Social, Technical, Administrative, Political, Economic and Environmental. Prioritization can therefore be made taking each of these categories into account, so that nothing is overlooked when considering which actions may be best for each jurisdiction to consider.

Criteria used for prioritization and review of mitigation actions based on STAPLEE

| Evaluation Category | Sources of Information |
|-----------------------|--|
| Social | Members of Local governments and the County Government were members of the Hazard Mitigation Planning Team and had input throughout the planning process. It must be noted that many small town political leaders are also business or professional persons. They are also members of the LEPC. Existing community plans were and will be relied on wherever possible. Members of the media were contacted and invited to all attend all HMPT meetings. |
| Technical | The following persons/agencies were consulted as to the technical feasibility of the various projects: Arkansas Geological Commission, University of Arkansas Extension Service, Arkansas Soil and Water Conservation Commission, Arkansas Health Department, Arkansas Highway and Transportation Department, Arkansas Department of Environmental Quality, Arkansas Governor's Pre-Disaster Advisory Council, Arkansas Governor's Earthquake Advisory Council, Arkansas Forestry Service, Arkansas Natural Resources Commission and. Arkansas Department of Emergency Management. All of these had their comments and suggestions incorporated. |
| Administrative | Staffing for proper implementation of the plan currently will rely largely on existing members of the various agencies involved. Technical assistance is available from various local and state agencies. Some local jurisdictions have incorporated Hazard Mitigation efforts into their Capital Improvement Plans. Operations costs are under discussion by the appropriate agency or department heads. |
| Political | The County Quorum Court has passed resolutions in support of mitigation activities involving floodplain ordinances, mitigation planning, and fire districts, among others. The Governor of Arkansas issued an Executive Order in August of 2004 (EO 04-02) instructing all state agencies to assist ADEM in mitigation planning and implementation of mitigation goals. |
| Legal | Members of the HMPT discussed legal issues, and it was their opinion that no significant legal issues were involved in the projects that were selected by the HMPT. However, where legalities may be an issue, this is noted. |
| Economic | Economic and benefit cost issues were the predominant topics discussed by all concerned. Each entity felt that the projects selected would have positive effects, but yet realized that actions often have costs, sometimes hidden, imposed on the community, residents and businesses. Funding for the various activities was a major concern as local budgets are always under pressures with existing and competing projects and activities. Where necessary, particularly for costly capital projects, outside grants would be relied on heavily. |
| Environmental | The Arkansas Geological Survey, Arkansas Department of Environmental Quality, Arkansas Forestry Commission, and Arkansas Soil and Water Conservation Commission were all consulted as to the environmental impact of the various projects and it was felt that there would be no negative impact. Local environmental issues and concerns were also taken into consideration. |

The Pulaski County Office of Emergency Management (ACOEM) will be responsible for evaluating actions among competing actions. The HMPT prioritized the list of mitigation actions by conducting a cost-benefit review. This review was conducted by; first considering the number of people who would be affected by a chosen project, determining the area the project would cover, considering how critical the structures were within in the project area, and which structure were most critical, and finally how would it benefit the entire community. The PCOEM shall evaluate actions based on funding availability, comparative value to mitigation objectives, and consideration of economic benefits and environmental concerns of the communities. Actions are prioritized in three different categories; **High need for immediate action**, **Medium need for action**, **Low lacking in urgency**.

All Pulaski County actions are the responsibility of the director of Pulaski County Office of Emergency Management, the County Judge and the Pulaski County Quorum Court. The Cammack Village, Jacksonville, Little Rock, Maumelle, North Little Rock, Sherwood and Wrightsville actions are the responsibility of their Mayors and City Councils. The School Districts of Jacksonville-North Pulaski, Little Rock, Pulaski County Special, North Little Rock, Arkansas

School for the Blind and Arkansas School for the Deaf will be the responsibility of their Board Administration and Superintendents.

The Responsible Agency for each mitigation action will identify resources. Their responsibility will be to examine resources from all levels of government. The responsible parties will integrate the requirements of the mitigation plan into other plans when appropriate. This also, includes funding and support for enacting and enforcing building codes and zoning ordinances, and developing public education programs to alert residents to risks and how they can reduce hazard losses. Plans will be made to earmark resources for implementing these actions. Each jurisdiction and school district within the County that participated in the planning process has at least two actions that will benefit the jurisdiction.

For the purpose of developing the Pulaski County Hazard Mitigation Plan, mitigation actions are categorized into five types;

- Local plans and regulations
- Structure and infrastructure projects
- Natural systems protection
- Education and awareness programs
- Other (may lend more toward preparedness, recovery or response capabilities)

All of the following Mitigation Actions meets all criteria for STAPLEE.

4.3 Previous Mitigation Actions

Below is a summary of progress of the mitigation actions determined in the 2014 Pulaski County Mitigation Plan. Those not completed were deferred due to lack of resources. The “Update Status” is as follows:

- **C**=Completed
- **PC**= Partially Complete; some action is still a need, and was partially deferred due to lack of resources
- **NLR**= No Longer Relevant
- **Deferred**

| Action | Hazard(s) Mitigated | Funding Source and Situation | Administration/Agency Responsible | Timeframe | Benefiting Jurisdiction | Update Status |
|-------------------------------------|-----------------------------------|--|---|------------|---|---------------|
| Safe-rooms are critical | Tornado and Thunderstorm | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | Pulaski County Office of Emergency Management (OEM), Little Rock OEM, North Little Rock Office of Emergency Services (OES), each participating Jurisdiction's Mayor's Office and each School District's Facilities/Operations Departments | Long Term | All Jurisdictions and School Districts | PC |
| Alert system code Red, call, (AWS). | All Natural and Manmade Hazards** | All Funding Sources (NFIP consideration: CRS 610 Flood Warning Program) | Jurisdiction's Mayor's Office and School District Administrative Staff/IT Department | Short Term | All Jurisdictions and School Districts | C |
| Owners Agency Program. | Tornado and Thunderstorm | Local Budget | Pulaski County OEM, Little Rock OEM, North Little Rock OES, each participating Jurisdiction's Mayor's Office | Short Term | All Jurisdictions* | NLR |
| of clips and facilities. | Tornado, Thunderstorm, and Hail | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | Appropriate Department at County and Municipal Government and with each School District's Facilities/Operations Departments | Long Term | All Jurisdictions* and School Districts | D |
| it a designated er. school s may be | Extreme Heat | Local Budget, State and Federal Grants | Pulaski County OEM, Little Rock OEM, North Little Rock OES, each participating Jurisdiction's Mayor's | Long Term | All Jurisdictions* and School Districts | PC |

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|---|--|-----------------------------------|---|--|------------|---|----|
| | | | | Office and each School District's Facilities/Operations Departments | | | |
| 6 | Update the existing Commodity Flow Study to determine what chemicals are being transported throughout the County. | Chemical Spill | Local Budget, State, and Federal Grants | Pulaski County OEM, Little Rock OEM, North Little Rock OES, each participating Jurisdiction's Mayor's Office | Short Term | All Jurisdictions* | PC |
| 7 | Purchase generators for all critical facilities and shelters. | All Natural and Manmade Hazards** | All Funding Sources | Pulaski County OEM, Little Rock OEM, North Little Rock OES, and each participating Jurisdiction's Mayor's Office and each School District's Facilities/Operations Departments | Short Term | All Jurisdictions* and School Districts | PC |
| 8 | Ensure that the Hazard Mitigation Plan is available to the public in hard copy and on existing OEM websites. | All Natural and Manmade Hazards** | Local Budget | Pulaski County, Little Rock, North Little Rock, Jacksonville, Maumelle, and Sherwood agencies responsible for emergency management activities and each School District's Facilities/Operations Departments | Short Term | All Jurisdictions* and School Districts | C |
| 9 | For communities not already in the Community Rating System (CRS) apply to FEMA for inclusion in the CRS program to receive a 5% reduction in flood insurance rates for all citizens. | Flood | Local Budget | Pulaski County OEM, North Little Rock OES, and each participating Jurisdiction's Mayor's Office | Short Term | Pulaski County, Alexander, Cammack Village, Maumelle, North Little Rock, Sherwood, Wrightsville | PC |

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|----|--|---------------------------------------|--|--|-------------|---|-----|
| 10 | Obtain additional points in the CRS program to receive flood insurance premium discounts for residents. | Flood | Local Budget and Federal Grants | Cities of Little Rock and Jacksonville | Short Term | Little Rock and Jacksonville | PC |
| 11 | Implement a Countywide Master Drainage Plan – identifies specific infrastructure improvements to reduce flood risk. | Flood, Levee Failure, and Dam Failure | Local Budget | Each participating Jurisdiction's Mayor's Office and each School District's Facilities/Operations Departments | Long Term | All Jurisdictions* and School Districts | PC |
| 12 | Structurally harden all existing and future critical facilities to withstand strong winds. | Tornado, Thunderstorm, and Hail | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | Each Local Government and each School District's Facilities/Operations Departments | Long Term | All Jurisdictions* and School Districts | PC |
| 13 | Replace critical facility windows with shatterproof glass. | Tornado, Thunderstorm, and Hail | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | Each Local Government and each School District's Facilities/Operations Departments | Long Term | All Jurisdictions* and School Districts | PC |
| 14 | Develop a weatherization education outreach program. | Severe Winter Storm and Extreme Heat | Local Budget, State and Federal Grants | Central Arkansas Development Council, Inc. coordinating with local emergency officials | Long Term | All Jurisdictions* | D |
| 15 | Establish, fund and Implement weatherization program by first identifying substandard housing without proper air-conditioning or insulation. | Winter Cold/ Extreme Heat | Local Budget, State and Federal Grants | Pulaski County OEM, Little Rock OEM, North Little Rock, each participating Jurisdiction's Mayor's Office | Long Term | All Jurisdictions* | NLR |
| 16 | Identify and maintain water alternative sources in neighborhoods (small ponds, cisterns, wells, pools, hydrants, etc.). | Drought | Local Budget | Pulaski County OEM, Little Rock OEM, North Little Rock OES, and each participating Jurisdiction's Mayor's Office | In Progress | All Jurisdictions* | PC |

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| 17 | Prepare a county-wide long-term recovery and redevelopment plan to identify policies, operational strategies, and role and responsibilities for implementation following a major or catastrophic disaster (e.g., tornado, flood). | Tornado/Flash Flood/Flooding/Dam Failure/Levee Failure | Local Budget, State and Federal Grants | County & municipal planning departments, Pulaski County OEM, Little Rock OEM , North Little Rock OES , County and municipal public safety departments and each participating Jurisdiction's Mayor's Office and each School District's Facilities Managers. | Within five years | All Jurisdictions* and School Districts | PC |
| 18 | Certify NLR Levee. | Levee Failure | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | City of North Little Rock's Department of Public Works | Short Term | North Little Rock | D |
| 19 | Continuation of local mosquito-borne disease educational outreach programs mosquito abatement programs (i.e., Little Rock, North Little Rock). | Mosquito-borne Disease | Local Budget | Health Units in Pulaski County /Arkansas Department of Health coordinating with each School District's Facilities/Operations Departments | On-going | All Jurisdictions* and School Districts | C - ongoing |
| 20 | Continue implementing mosquito-borne disease abatement program. | Mosquito-borne Disease | Local Budget | Pulaski County, Little Rock and North Little Rock Health Units | On-going | All Jurisdictions* | C |
| 21 | Develop brochures, websites, educational programs, and Public Service Announcements that increase public awareness of hazard risk and mitigation activities. | All Natural and Manmade Hazards** | Local Budget | Pulaski County OEM, Little Rock OEM, and North Little Rock and each School District's IT Department and Teachers and Administrative Staff | Short Term | All Jurisdictions and School Districts | PC |
| 22 | Implement burn bans based on recommendation from Arkansas Forestry Commission and drought index data. | Wildfire | Local Budget | Issued by County Judge on a case by case basis | | In Progress All Jurisdictions* | C |

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| 23 | Prepare a county-wide Community Wildfire Mitigation Plan that addresses wildfire risk through mitigation activities including regulation, fuel reduction, and public education. | Wildfire | FEMA – Fire Prevention & Safety Grant Program | Pulaski County OEM, Little Rock OEM, Regional Association of Fire Districts/Departments; Arkansas Firewise Program, Arkansas Forestry Commission and each School District’s Facilities/Operations Departments | Within Five Years | All Jurisdictions* and School Districts | PC |
| 24 | Direct fire-risk communities to work with Arkansas Forestry to become Firewise communities and support efforts of school districts to become firewise. | Wildfire | Local Budget and State Grants | Arkansas Forestry Commission (AFC) has a very active Firewise program. Where local governments identify communities/ neighborhoods with a wildland fire risk, direct to the state FireWise program. If requested, AFC will work with school facility managers to make them firewise. | In Progress | All Jurisdictions* and School Districts | D |
| 25 | Acquire all-hazard weather radios for all schools, city halls, large businesses, churches, and other critical facilities. | Tornadoes, Flood, Dam Failure, Levee Failure, Severe Winter Storm | Local Budget (NFIP consideration: CRS 610 Flood Warning Program) | Pulaski County OEM, Little Rock OEM, and North Little Rock and coordinate with each School District safety office | Short Term | All Jurisdictions* and School Districts | PC |
| 26 | Implement the National Weather Service “Storm Ready Program” guidelines. | Tornadoes, Flood, Dam Failure, Levee Failure, Severe Winter Storm | Local Budget | Pulaski County OEM, Little Rock OEM, North Little Rock, and each participating Jurisdiction’s Mayor’s Office and coordinate each School District’s Facilities/Operations Departments | Short Term | All Jurisdictions* and School Districts | C |

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| 27 | Conduct a watershed study of Taylor Creek to determine baseline for sustainable development and needs for drainage capacity improvements. | Flood | Local Budget (NFIP consideration: CRS 510 Floodplain Management Planning). | Pulaski County Public Works | Short Term | Pulaski County | D |
| 28 | Perform hydraulic engineering studies for Five Mile Creek/Shilcott Bayou to determine needed drainage improvements and associated costs to reduce repetitive flooding. | Flood | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | City of North Little Rock's Department of Public Works | Long Term | North Little Rock | D |
| 29 | Increase capacity of drainage facilities in areas of the County where drainage restrictions result in frequent flooding. | Flood, Levee Failure, and Dam Failure | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | Pulaski County OEM, Little Rock OEM, North Little Rock, and each participating Jurisdiction's Mayor's Office | Long Term | All Jurisdictions* | PC ONGOING |
| 30 | Require anchoring of all new manufactured structures to permanent foundations. | Tornado and Thunderstorm | Local Budgets | Each participating Jurisdiction's Building and Permits Department | Long Term | All Jurisdictions* | PC |
| 31 | Physically secure building equipment and protect public records through off-site storage in all critical facilities. | Earthquake | Local Budgets | Pulaski County OEM, Little Rock OEM, North Little Rock, each participating Jurisdiction's Mayor's Office, School District's Facilities/Operations Departments | Short Term | All Jurisdictions* and School Districts | PC |
| 32 | Collaborate with the Arkansas Geological Survey and USGS to develop more accurate earthquake risk maps. Information to be used to assist in identifying appropriate mitigation projects. | Earthquake | Local Budgets | Pulaski County OEM, Little Rock OEM, North Little Rock, each participating Jurisdiction's Mayor's Office | Short Term | All Jurisdictions* | PC |

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| 33 | Advertise National Flood Insurance Program through a Public Service Announcement. | Flood | Local Budgets | Pulaski County OEM, Little Rock OEM, North Little Rock, and each participating Jurisdiction's Mayor's Office | Short Term | All Jurisdictions* | PC |
| 34 | Mitigate repetitively flooded property on Jim Hall Road. | Flood | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | City of Jacksonville's Department of Engineering (Should be Pul. County) | Short Term | Jacksonville (Should be Pul. County) | D |
| 35 | Perform engineering studies for Redwood Tunnel Drainage System to identify where significant weaknesses exist in the drainage system. Data to be used to identify appropriate mitigation projects. | Flood | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | City of North Little Rock's Department of Public Works | Long Term | North Little Rock | D |
| 36 | Conduct drainage study to identify specific improvements needed to reduce flooding at State HW 161/Bethany. | Flood | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | City of North Little Rock's Department of Public Works | Long Term | North Little Rock | D |
| 37 | Implement water restriction ordinance/regulations for drought event. | Drought | Local Budget | Pulaski County OEM, Little Rock OEM, North Little Rock, each participating Jurisdiction's Mayor's Office and School District's Facilities/Operations Departments | In Progress | All Jurisdictions and School Districts | D |
| 38 | Incorporate all-hazard education program into school curriculum. | All Natural and Manmade Hazards** | Local Budget | Each participating School District's School Board and School Superintendent | Short Term | Little Rock School District, North Little Rock School District, Pulaski County Special School District | D |

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|----|---|---------------------------------------|--|--|-------------|-----------------------------------|----|
| 39 | Acquire or elevate repetitive loss and severe repetitive loss structures above the Base Flood Elevation (BFE). Additional 1 to 2 feet of freeboard suggested. | Flood | State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | Pulaski County OEM, Little Rock OEM, North Little Rock, and each participating Jurisdiction's Mayor's Office | Long Term | All Jurisdictions* | PC |
| 40 | Consider adding a freeboard incentive component into the community's floodplain ordinance. | Flood | Local Budget | Pulaski County OEM, Little Rock OEM, North Little Rock, and each participating Jurisdiction's Mayor's Office | Long Term | All Jurisdictions* | PC |
| 41 | Improve drainage capacity in northeast portion of the County through buyouts. | Flood | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | Pulaski County Public Works | Short Term | Pulaski County | |
| 42 | Mitigate flooding in Northlake subdivision by elevating and extending Oneida Street north to Jacksonville Cutoff Rd. | Flood | Local Budget | City of Jacksonville's Department of Engineering Pulaski Co | In Progress | Jacksonville /Pulaski Co | PC |
| 43 | Enact zoning buffer to minimize the intensity of new development around natural gas pipelines. | Chemical Spill | Local Budget | Each participating Jurisdiction's Planning Department or Mayor's Office | Short Term | All Jurisdictions* | D |
| 44 | Mitigate flooding into lowest level of building located at 2300 Poplar Street, North Little Rock with construction of levee, check drainage pump, or demolition of a portion of the building. | Flood, Levee Failure, and Dam Failure | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | North Little Rock School District Safety/Security Office and North Little Rock Public Works Dept | Long Term | North Little Rock School District | D |
| 45 | Remediate/Rehabilitate Main Street Pump Station Outfall. | Flood, Levee Failure, and Dam Failure | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | City of North Little Rock's Department of Public Works | Short Term | North Little Rock | D |

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| 46 | Construct new power utility lines underground. | Severe Winter Storm | Local Budget, State and Federal Grants: HMGP, PDM, FMA, RL and SRL Grant Program | Each participating Jurisdiction's Building and Permits Department or Department of Engineering | Long Term | All Jurisdictions* | D |
| 47 | Arrange for floodplain management workshops and training for local jurisdictions to improve program administration and effectiveness and qualifications of managers. | Flood | Local Budget (NFIP consideration: CRS 510 Floodplain Management Planning). | Each participating Jurisdiction's Floodplain Managers | In Progress | All Jurisdictions* | PC |
| 48 | Adopt a land use plan with zoning and development restrictions to protect residents from special high-risk flood areas. | Flood, Levee Failure, Dam Failure | Local Budget (NFIP consideration: CRS 310 Elevation Certificates, CRS 340 Hazard Disclosure, CRS 430 Higher Regulatory Standards, CRS 510 Floodplain Management Planning). | Each participating Jurisdiction's Floodplain Managers – coordinate with each School District Administration/Planning Division | In Progress | All Jurisdictions* and School Districts | PC |
| 49 | Implement Memorandums of Understandings (MOU) or a Memorandums of Agreements (MOA) that enable Pulaski County, City of Little Rock, or North Little Rock to regulate and/or oversee the operation of alternative floodplain management facilities or administrative procedures for their respective school districts and for small jurisdictions that lie within their respective jurisdictional boundaries. | Flood | Local Budget (NFIP consideration: CRS 510 Floodplain Management Planning). | Pulaski County Planning and Development; City of Little Rock Planning and Development; City of North Little Rock Community and Permits and each School District's Governing Board | Short Term | Pulaski County Special School District; Little Rock School District; North Little Rock School District; small municipalities with no Floodplain management capacity. | D |

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| 50 | Each school district along with each school will review the school's incident plans for to ensure that they effectively address all potential hazards that might impact each school. | All appropriate hazards - will differ by school | Local Revenue | School Safety/Security and Facilities Operations staff | On-Going | School Districts | ONGOING |
| 51 | Each school district will undertake a comprehensive assessment of school structural deficiencies relative to earthquakes, identify, and prioritize actions needed to retrofit each school. | Earthquakes | Pre-Disaster Mitigation Grant, CDBG, Local Revenue | School Safety/Security and Facilities Operations staff | Five years | School Districts | D |
| 52 | All new schools will have safe rooms. | Tornado | Local funding; Federal Grants - Pre- Disaster Mitigation and Hazard Mitigation Grant Funds, CDBG | School Safety/Security and Facilities Operations staff | Long Term | School Districts | C |
| 53? | (INFORMATION WAS NOT IN PLAN) | | | | | | |
| 54 | Each school district will retrofit existing schools that have no safe room. | Tornado | Local funding; Federal Grants - Pre- Disaster Mitigation and Hazard Mitigation Grant Funds, CDBG | School Safety/Security and Facilities Operations staff | Long Term | School Districts | PC |

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| 55 | Where appropriate, school districts request technical assistance from the Arkansas Forestry Commission to add wildfire mitigation component to critical incident management plans for schools located in fire risk areas. | Wildfire | No cost – Technical Assistance provided by Arkansas Forestry Commission; FEMA – Fire Prevention & Safety Grant Program | Individual local governments and school district | Within 5 years | School Districts | D |
| 56 | Develop operational options that address excessive heat and reduce energy demands – add to critical incident management plans (e.g., white roofs). | Excessive Heat | Local funding | Arkansas Department of Health (ADH) working with school districts facilities/operations departments | On-going | School Districts | D |
| 57 | Each school district will identify schools that are at risk from catastrophic dam failure event, and develop a plan that will enable the school district to recover more quickly. | Dam Failure Flood | Local funding | School Safety/Security and Facilities Operations staff | Short Term | School Districts | C |
| 58 | Where applicable, schools that are located within the shadow of the 100-year flood zone of a levee will integrate strategies into their school incident management plans. Hazard risk strategy to address the issue. | Levee Failure Flood | Local funding | School Safety/Security and Facilities Operations staff | Short Term | School Districts | NLR |
| 59 | Elevate Jacksonville Cato Road and purchase properties within those limits of the project. | Flood | HMGP, PDM | Department of Engineering, Permits and Planning | Short Term | City of Jacksonville (Should be City of Sherwood) | D |
| 60 | Elevate Wind Chime Bridge to avoid road closure during heavy rains. | Flood | HMGP, PDM | Department of Engineering, Permits and Planning | Short Term | City of Jacksonville (Should be City of Sherwood) | D |

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| 61 | Elevate, purchase, or remove all non-compliant structures within the flood plain that repetitively flood. | Flood | HMGP, PDM | Department of Engineering, Permits and Planning | Short Term | City of Jacksonville | PC |
| 62 | Construct new neighborhood community tornado shelter | Tornado | HMGP, PDM | Department of Engineering, Permits and Planning | Short Term | City of Jacksonville | C |
| 63 | As recommended by the CAW, all jurisdictions will adopt Watershed Protection Ordinance or incorporate provisions in their subdivision ordinance or facilities SOP. | Drought | No funding necessary | City Councils and County Quorum Court and Each School District's Board of Supervisors/Facilities Operation Staff | Short-Term | All Jurisdictions and School Districts | PC |
| 64 | Develop a funding strategy with the State of Arkansas ARNRC to result in EAPs for all High and Significant Hazard Dams. | Dam Failure | To be determined based on funding strategy | The HMPT working through the Pulaski County OEM office | Long-term | All Jurisdictions and School Districts | PC |
| 65 | The HMPT will work with the ARNRC to generate technical data that enables a more accurate determination of the level of risk each jurisdiction has to dam failure. | Dam Failure | Local Funding | The HMPT working through the Pulaski County OEM office | Long-term | Cammack Village, Little Rock, Little Rock School District, Maumelle, North Little Rock, Wrightsville | PC |
| 66 | As more specific data regarding landslides in Pulaski County becomes available from the Arkansas Geological Survey, local governments will reassess their vulnerabilities to landslides and create development standards to reduce hazard risk in such areas. | Landslides | State Funding | Arkansas Geological Survey | Long-term | All Jurisdictions and School Districts | PC |

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| 67 | The HMPT, working with Pulaski County OEM/USACE – Little Rock District, will work to generate technical data that enables a more accurate determination of the level of risk each jurisdiction has to levee failure. | Levee Failure | Local Funding | Pulaski County Emergency Management and LR School District Facilities Operations staff | Long-term | Cammack Village, Little Rock, Little Rock School District, Maumelle, North Little Rock, Wrightsville | PC |
| 68 | Install water restriction flow devices to reduce potable water usage and irrigation water demand | Drought | Local School Revenue and/or potentially financial assistance from Central Arkansas Water | Each school district's Facilities Operations staff | Long-Term | School Districts | PC |

| Changes in development from previous Mitigation Plan | | |
|---|---|--|
| Year Funded | Project Location | Project Description |
| 2018 | Jacksonville Cato Road | Drainage |
| 2017 | Pulaski County – 751 Stagecoach Road | Acquisition (1 home) |
| 2018 | North Little Rock, Christopher Homes | Storm Box |
| 2018 | Pulaski County – Storm Boxes | 2 Storm Boxes (W. 16 th St and Dahlia Drive) |
| 2018 | Little Rock, - Curtis Cove | Acquisition (3 homes) |
| 2019 | City of Maumelle | Drainage |
| Ongoing | Pulaski County | Raise existing manholes above BFE |
| Ongoing | Pulaski County/ Cities/ Utility Companies/Schools | Purchased generators for emergency power during outages to keep utilities functional |
| Ongoing | Cities and Counties | Warning systems upgrades and or replaced on a regular basis |
| Ongoing | Fire Departments/PCOEM | Better coverage of notifying public of Burn Bans |
| Ongoing | Storm Ready Programs/ Storm Warnings | Better coverage of notifying public of pending storm events |
| Ongoing | Jacksonville – North Pulaski School District | Implemented new regulation requiring all new schools to have a safe room incorporated into design. |

Jurisdictional Changes in Development

One could surmise that the entire Planning Area would be considered more vulnerable to all hazards due to the overall increase in population over the last 5 years; however, Pulaski County, Jacksonville, Little Rock, North Little Rock, Pulaski Co School District, Little Rock School District, Jacksonville – North Pulaski School District, School for the Blind and School for the Deaf have all added Safe Rooms to their entities making them less vulnerable to severe storms, extreme wind and tornadoes. Pulaski County, Jacksonville, Little Rock, North Little Rock, and Sherwood have all participated in Acquisition projects reducing the number of Repetitive Loss/Severe Repetitive Loss Structures affected by flooding. Maumelle is currently preparing to begin construction on a massive drainage project that will also reduce their vulnerability to flooding. Also, to be taken into consideration is the volume of digital information that can be shared over social media and websites that can provide education and warnings to allow better preparation to natural disasters help to save lives. This resources can also be used to provide education on how home and property owners can properly mitigate against disaster by making home improvements that make homes safer and disaster resistant (example: upgrading roofs, windows, foundations, etc).

4.4 Mitigation Actions/Projects

Actions from the 2014 plan that were deferred, and that the HMPT would still like to accomplish will be repeated on the table below, and are indicated in *italics*.

| Action # | Action | Associated Hazard | Type | Priority | Address New or Existing Buildings | Timeline | Projected Resources | Responsible Party | Jurisdiction |
|----------|---|-------------------|---------------------------------------|----------|-----------------------------------|-----------|---|---|---|
| D-01 | <i>Develop and implement a County-Wide drought communication plan to facilitate timely communication of relevant information to officials, decision makers, school administration, emergency managers and the general public</i> | Drought | Local Plans and Regulations | Medium | Non-Applicable | 2020-2025 | Staff Time of HMPT | HMPT | All plan participants |
| D-02 | <i>Implement water restriction ordinance/regulations for drought event</i> | Drought | Local Plans and Regulations | Low | New & Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | Water Distribution Authorities, Municipal Water Districts | Pulaski County and all participating cities |
| D-03 | Educate citizens on water saving techniques such as installing low-flow water saving showerheads and toilets, running dishwashers and washing machines only when they are full and checking for leaks in plumbing and dripping faucets for water conservation | Drought | Education and Awareness Programs | Low | Non-Applicable | 2020-2025 | County, Cities, and local water suppliers; State Technical Assistance, FEMA resources | State and Federal Water Conservation District. Local Water Distribution Authorities, Municipal Water District, HMPT | All plan participants |
| D-04 | <i>As recommended by the CAW, all jurisdictions will adopt Watershed Protection Ordinance or incorporate provisions in their subdivision ordinance or facilities SOP</i> | Drought | Local Plans and Regulations | Low | New & Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | Quorum Court and City Councils | Pulaski County and all participating cities |
| D-05 | <i>Identify and maintain water alternative sources in neighborhoods (small ponds, cisterns, wells, pools, hydrants, etc.)</i> | Drought | Local Plans and Regulations | Low | New and Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | Local OEMs and Fire Departments | Pulaski County and all participating cities |
| D-06 | Install water restriction flow devices to reduce potable water usage and irrigation water demand | Drought | Structure and Infrastructure Projects | Medium | New | 2020-2025 | Covered within utility costs | Local and Municipal Water Districts | All plan participants |
| DL-01 | Conduct inspections, maintenance and enforcement programs on Dams to ensure structural integrity (NFIP consideration; CRS 330 Outreach, CRS 350 Flood Protection Information) | Dam/Levee Failure | Local Plans and Regulations | High | New and Existing | 2020-2025 | Existing Federal, State, County and local resources | Federal Natural Resources Conservation, State Natural Resources Commission and Local Levee Districts | Pulaski County, Little Rock, North Little Rock & Wrightsville |

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| DL-02 | Adopt Ordinances that limit development in areas that could be affected by flooding caused by a Dam failure. | Dam/Levee Failure | Local Plans and Regulations | High | New and Existing | 2020-2025 | County and Cities Staff Time, State Technical Assistance | Pulaski County Quorum Court, City Councils | Pulaski County, Little Rock, North Little Rock & Wrightsville |
| DL-03 | To correct data deficiency, obtain data to indicate inundation areas related to Dam Failure | Dam/Levee Failure | Local Plans and Regulations | Low | New and Existing | 2020-2025 | County and Cities Staff Time, State Technical Assistance | Federal & State Partners. Pulaski County, Jacksonville, Little Rock & NLR Emergency Management & Flood Plain Manager | Pulaski County, Little Rock, North Little Rock & Wrightsville |
| DL-04 | <i>The HMPT, working with Pulaski County OEM/USACE & ANRC – Little Rock District, will work to generate technical data that enables a more accurate determination of the level of risk each jurisdiction has to levee failure.</i> | Dam/Levee Failure | Local Plans and Regulations | Low | New & Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | PCOEM, Federal and State partners, Levee Districts | Pulaski County, Little Rock, North Little Rock & Wrightsville |
| E-01 | Develop and implement an outreach program to encourage homeowners to secure furnishings and utilities to prevent injuries and damage during an earthquake | Earthquake | Education and Awareness Programs | Medium | New and Existing | 2020-2025 | County, City and School Staff, FEMA and State Resources/Technical Assistance | HMPT | All plan participants |
| E-02 | Conduct seismic retrofitting for critical public facilities most at risk to earthquakes | Earthquake | Structure and Infrastructure Projects | Low | Existing | 2020-2025 | County, City and School operating budgets, FEMA Grant Resources | Local Planning commissions/Boards, School Construction Manager and Local jurisdiction Engineers | All plan participants |
| E-03 | Collaborate with the Arkansas Geological Survey and USGS to develop more accurate earthquake risk maps. Information to be used to assist in identifying appropriate mitigation projects. | Earthquake | Structure and Infrastructure Projects | Low | Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | Local OEM offices | Pulaski County and all participating cities |
| EH-01 | Develop operational options that address excessive heat and reduce energy demands – add to critical incident management plans (e.g., white roofs). | Excessive Heat | Local Plans and Regulations | Low | New & Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | Construction Managers and Design Professionals | Pulaski County and all participating cities & schools |
| F-01 | Acquire and demolish, elevate, relocate or flood proof flood-prone structures | Flood | Structure and Infrastructure Projects | High | New and Existing | 2020-2025 | County and City operating budgets, property owner funds | PCOEM, Property Owners, Floodplain Managers | Pulaski County and all participating cities |

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|------|--|-------|---------------------------------------|--------|------------------|-----------|--|---|---|
| | | | | | | | and FEMA Grant Resources | | |
| F-02 | Upgrade drainage structures such as culverts, detention ponds, drains and bridges for increased water capacity allowing for flood prevention | Flood | Structure and Infrastructure Projects | High | New and Existing | 2020-2025 | Existing County, City and school resources; Grant funding | County Road and Bridge, City street Dept. School Construction Managers | All plan participants |
| F-03 | Conduct county-wide NFIP workshops for newly elected officials and the public | Flood | Education and Awareness Programs | Low | Non-Applicable | 2020-2025 | Existing County and City resources, State and Federal Resources/Technical Assistance | PCOEM and local Floodplain Managers | Pulaski County and all participating cities |
| F-04 | Join the National Flood Insurance Program (NFIP) and adopt a local floodplain ordinance | Flood | Local Plans and Regulations | High | New and Existing | 2020-2025 | City of Cammack Village, Staff Time and State Technical Assistance | City Council | City of Cammack Village |
| F-05 | Obtain information via HAZUS or a flood study to correct flood data deficiency; especially in areas of t Watersheds where available data is limited | Flood | Other | High | Non-Applicable | 2020-2025 | FEMA, County, City Operating Budgets | HMPT | Pulaski County and all participating cities |
| F-06 | For communities not already in the Community Rating System (CRS) apply to FEMA for inclusion in the CRS program to receive a 5% reduction in flood insurance rates for all citizens. | Flood | Structure and Infrastructure Projects | High | Existing | 2020-2025 | County and City operating budgets, property owner funds and FEMA Grant Resources | PCOEM, Local Floodplain Managers | Pulaski County and all participating cities |
| F-07 | Consider adding a freeboard incentive component into the community's floodplain ordinance. | Flood | Local Plans and Regulations | High | New & Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | Quorum Court and City Councils for each NFIP and Mitigation Plan participating jurisdiction | Pulaski County and all participating cities |
| F-08 | Adopt a land use plan with zoning and development restrictions to protect residents from special high-risk flood areas. | Flood | Local Plans and Regulations | High | New & Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | Local Floodplain Managers, Planning Commission, Quorum Court and City Councils | Pulaski County and all participating cities |
| F-09 | Advertise National Flood Insurance Program through a Public Service Announcement | Flood | Education and Awareness Programs | Medium | Non-Applicable | 2020-2025 | County and City Personnel | Local Floodplain Managers, PCOEM | Pulaski County and all participating cities |

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| F-10 | Implement Memorandums of Understandings (MOU) or a Memorandums of Agreements (MOA) that enable Pulaski County, City of Little Rock, or North Little Rock to regulate and/or oversee the operation of alternative floodplain management facilities or administrative procedures for their respective school districts and for small jurisdictions that lie within their respective jurisdictional boundaries. | Flood | Local Plans and Regulations | High | Non-Applicable | 2020-2025 | Existing local and county government resources; State Technical Assistance | Quorum Court, City Councils and School Boards for each NFIP and Mitigation Plan participating jurisdiction | Pulaski County and all participating cities and schools (Cammack Village which currently is not part of the NFIP) |
| MH-01 | Construct public safe-rooms at current and future critical facilities | Tornado and Thunderstorm | Structure and Infrastructure Projects | High | New & Existing | 2020-2025 | Existing County, local and schools resources and FEMA Grant Funds | Local Planning commissions/Boards, School Construction Manager and Local jurisdiction Engineers | All plan participants |
| MH-01 | Purchase heavy-duty generators to back up and maintain electrical power for critical facilities, schools, shelters and nursing homes to maintain power and water supply during disasters. | ALL HAZARDS: Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunder Storm, Tornado, Wildfire, Winter Storm | Structure and Infrastructure Projects | High | New and Existing | 2020-2025 | Existing County, local, and schools resources and possible grant funds | Building Managers, School Construction Manager and Local jurisdiction Engineers | All plan participants. |
| MH-02 | Purchase all-hazard NOAA weather radios in all schools, city halls, churches, assisted living facilities, hospitals, nursing homes, day care facilities, businesses, industries, or other locations where large numbers of people congregate; provide information to public on importance of having and how to acquire | ALL HAZARDS: Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunder Storm, Tornado, Wildfire, Winter Storm | Education and Awareness Programs | High | Non-Applicable | 2017-2023 | Public funds, private funds and grant funds | HMPT | All plan participants |
| MH-03 | Implement a county-wide Master Drainage Plan- identifies specific infrastructure improvements to reduce flood risk | Flood, Levee Failure and Dam Failure | Local Plans and Regulations | low | New and Existing | 2020-2025 | Existing local and county government resources; State Technical Assistance | County Road Dept., City Street Dept in conjunction with engineering dept | Pulaski County and all participating cities |

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|-------|--|--|---------------------------------------|--------|------------------|-----------|---|---|---|
| MH-04 | Provide education about use of roof clips and anchors in new construction and retro-fitting existing structures | Earthquake, Tornado, Thunderstorm | Structure and Infrastructure Projects | Low | New & Existing | 2020-2025 | County, City and School Construction Budgets; State and FEMA grants | HMPT | All plan participants |
| MH-05 | Establish heating and cooling centers to protect exceptionally vulnerable populations from the impacts of Extreme Heat and Winter Storm events through identifying specific at risk populations in the event of long-term power outages | Extreme Heat, Winter Storm | Structure and Infrastructure Projects | High | Existing | 2020-2025 | Existing County, local resources, school locations and possible grant funds | Local Offices of Emergency services Department. | All plan participants |
| MH-06 | Create a database within each fire district to track those individuals at high risk of death, such as small children elderly, shut-ins, homeless, and those requiring medical attention or medical equipment that require transportation to heating or cooling centers | Extreme Heat, Winter Storm | Education and Awareness Programs | High | Non-Applicable | 2020-2025 | Existing City and fire departments funding | Fire Department and Emergency Response Personnel | Pulaski County and all participating cities |
| MH-07 | Educate the public on the benefits of installing a safe room/shelter at residences | Thunderstorm, Tornado | Education and Awareness Programs | Low | New and Existing | 2020-2025 | Existing County, local, state and Federal resources | HMPT | Pulaski County and all participating cities |
| MH-08 | Install surge protection devices on all communications infrastructure and critical facilities to prevent equipment damage and damage to electrical systems and components | Thunderstorm, Tornado, Winter Storm | Structure and Infrastructure Projects | High | New and Existing | 2020-2025 | Existing County, City and School resources; grant funding | Building Maintenance Managers, School Construction Manager and Local jurisdiction Engineers | All plan participants |
| MH-09 | Implement a public awareness program to regularly trim trees, especially those near power lines and buildings | Thunderstorm, Wildfire and Winter Storm | Education and Awareness Programs | Low | New and Existing | 2020-2025 | County and City Personnel, Electricity providers | HMPT, Street & Road Departments | Pulaski County and all participating cities |
| MH-10 | Keep trees that are on public or school property regularly trimmed, especially those near power lines and buildings | Thunderstorm, Tornado, Wildfire and Winter Storm | Natural Systems Protection | Low | New and Existing | 2020-2025 | County, City and School Personnel, Electricity providers | AHTD, Local Street and Road Dept, Property owners | All plan participants |
| MH-11 | Implement mitigation construction techniques for construction of new school and public facilities including the use of anchors and clips | Earthquake, Tornado | Structure and Infrastructure Projects | Medium | New | 2020-2025 | County, City and School Construction Budgets; State and FEMA grants | Planning Commission/Boards, Building Managers, School Construction Managers, Local jurisdiction Engineers | All plan participants |

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| MH-12 | Construct new power utility lines underground | ALL HAZARDS: Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunder Storm, Tornado, Wildfire, Winter Storm | Structure and Infrastructure Projects | High | New | 2020- 2025 | County, City and School Construction Budgets; State and FEMA grants | Planning Commission/Boards, Building Managers, School Construction Managers, Local jurisdiction Engineers | All plan participants |
| TS-01 | Install hail resistant roofing and window coverings, shutters and laminated glass in window panes, especially at critical facilities and schools | Thunderstorm | Structure and Infrastructure Projects | Medium | New and Existing | 2020- 2025 | Existing county, local and school resources; Possible grant funding | Planning Commission/Boards, Building Managers, School Construction Managers, Local jurisdiction Engineers | All plan participants |
| TS-02 | Install lightning protection devices and methods, such as lightning rods and grounding, on communications infrastructure and other critical facilities | Thunderstorm | Structure and Infrastructure Projects | High | New and Existing | 2020- 2025 | Existing county, local and school resources or grant funding | Planning Commission/Boards, Building Managers, School Construction Managers, Local jurisdiction Engineers | All plan participants |
| WF-01 | Prepare a county-wide Community Wildfire Mitigation Plan that addresses wildfire risk through mitigation activities including regulation, fuel reduction, and public education | Wildfire | Local Plans and Regulations | High | New and Existing | 2020- 2025 | Existing local and county government resources; State Technical Assistance | HMPT, Local Fire Departments | Pulaski County and all participating cities |
| WF-02 | Direct fire-risk communities to work with Arkansas Forestry to become Firewise communities | Wildfire | Local Plans and Regulations | Low | New and Existing | 2020- 2025 | Existing local and county government resources; State Technical Assistance | Quorum Court and City Councils, Local Fire Departments | Pulaski County and all participating cities |
| WF-03 | Where appropriate, school districts request technical assistance from the Arkansas Forestry Commission to add wildfire mitigation component to critical incident management plans for schools located in fire risk areas. | Wildfire | Local Plans and Regulations | Medium | New & Existing | 2020- 2025 | Existing school resources; State Technical Assistance | Superintendents working with local fire departments | All participating schools |

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| WF-04 | Install roof coverings, sheathing, flashing, skylights, roof and attic vents, eaves, and gutters that conform to ignition-resistant construction standards in new and existing public and school buildings | Wildfire | Structure and Infrastructure Projects | Low | New | 2020-2025 | County, City and School District operating budgets; Potential grant funding | <i>Planning Commission/Boards, Building Managers, School Construction Managers, Local jurisdiction Engineers</i> | All plan participants |
|-------|--|----------|---------------------------------------|-----|-----|-----------|---|--|-----------------------|

SECTION 5: Acronyms

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| ADEM | Arkansas Department of Emergency Management |
| ANRC | Arkansas Natural Resources Commission |
| CAPDD | Central Arkansas Planning and Development District |
| CAV | Community Assistance Visit |
| CFR | Code of Regulations |
| CRS | Community Rating System |
| ACOEM | Pulaski County Office of Emergency Management |
| DMA 2000 | Disaster Mitigation Act of 2000 |
| EAP | Emergency Action Plan |
| EF | Enhanced Fujita |
| EOP | Emergency Operations Plan |
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Map |
| FIS | Flood Insurance Study |
| FMA | Flood Mitigation Assistance (Grant) |
| FR | Final Rule |
| GIS | Geographic Information System |
| HAZUS | Hazards United States (Software Program) |
| HMA | Hazard Mitigation Assistance |
| HMGP | Hazard Mitigation Grant Program |
| HMPT | Hazard Mitigation Planning Team |
| IBC | Internal Building Code |
| ISO | International Standards Organization |
| LEPC | Local Emergency Planning Committee |
| LOMR | Letter of Map Revision |
| MOU | Memorandum of Understanding |
| NCDC | National Climatic Data Center |
| NFIP | National Flood Insurance Program |
| NIMS | National Incident Management System |
| NLCD | National Land Cover Dataset |
| NOAA | National Oceanic and Atmospheric Administration |
| NWS | National Weather Service |
| OEM | Office of Emergency Management |
| PA | Public Assistance (Grant) |
| PDM | Pre-Disaster Mitigation (Grant) |
| PGA | Peak Ground Acceleration |
| Risk MAP | Risk Mapping Assessment and Planning |
| SD | School District |

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| SEAEDD | Southeast Arkansas Economic Development District |
| SHMO | State Hazard Mitigation Officer |
| STAPLEE | Social, Technical, Administrative, Political, Legal, Economic |
| UCC | Uniform Construction Code |
| USGS | United States Geological Survey |
| WUI | Wildland Urban Interface |
| OPA | Outside Protected Area |

SECTION 6: Plan Adoption

Attached are approved resolutions the County, cities and school districts passed after FEMA approved the Pulaski County Hazard Mitigation Plan.

6.1 Resolutions

(To be added after FEMA approves DRAFT copy of Hazard Mitigation Plan)

SECTION 7: Appendix

Appendix Food Risk Maps

- Jacksonville
- Little Rock
- Maumelle
- North Little Rock
- Pulaski County Special School District
- Sherwood
- Wrightsville
- Unincorporated Pulaski County
- Pulaski County Schools in Flood Risk Areas