

HAZARD MITIGATION PLAN



CRAIGHEAD COUNTY

EFFECTIVE THROUGH 2027

PREPARED BY:
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Craighead County Hazard Mitigation Plan

FEMA 4544-DR-AR, Project #0001

Awarded June 28th, 2021

Table of Contents				
		Adoption Resolution		
		Participating Jurisdictions and School Districts		
			Sample Resolutions	5
Section	1	Planning Process		6
	1.1	Plan Introduction		6
		1.1.1	Disaster Mitigation Act of 2000	6
		1.1.2	Parts of the Plan	7
		1.1.3	Involvement for Local Governments	7
		1.1.4	Neighboring Community Involvement	8
		1.1.5	Public Review	9
		1.1.6	Plan Developers	11
	1.2	Plan Maintenance Process		15
		1.2.1	Monitoring, Evaluation, and Updating the Plan	15
		1.2.2	Incorporating into Existing Mechanicals	16
		1.2.3	Continuous Public Involvement	17
Section	2	Planning Area and Resources		18
		General Geography		18
	2.1	Analyzing Development Trends		18
		2.2	Critical Facilities	19
		2.3	Demographics	22
		2.4	NFIP Participation	23
		2.5	Capability Assessment	27
		2.6	Improving Capabilities	30
Section	3	Hazard Identification and Risk Assessment		31
	3.1	Hazard Identification and Prioritization		31
	3.2	Vulnerability and Risk Assessment by Hazard		33
	3.3	Methodology Estimating Potential Loss		33
	3.4	Natural Hazard Affecting Craighead County		33
		3.5.1	Dam Failure	35
		3.5.1.1	Description of Dam Failure	35
		3.5.1.2	Location of Dam Failure Events	35
		3.5.1.2	Extent, Magnitude or Severity of Dam Failure	35
		3.5.1.3	Previous Occurrences	41
		3.5.1.4	Vulnerability and Impact of Dam Failure Events	41
		3.5.1.5	Probability of Future Dam Failure Events	41
		3.5.1.7		
	4.5.2	Drought		42

		4.5.2.1	Description of Drought	42
		4.5.2.2	Location of Drought	42
		4.5.2.3	Extent, Magnitude or Severity of Drought	42
		4.5.2.4	Previous Occurrences	44
		4.5.2.5	Probability of Future Drought	44
		4.5.2.6	Impact of Drought	46
		4.5.2.7	Vulnerability and Estimating Potential Loss	46
		4.5.2.8	Multi-Jurisdictional Risk Assessment	46
	5.5.3	Earthquake		47
		5.5.3.1	Description of Earthquake	47
		5.5.3.2	Location Affected by Previous Occurrences	47
		5.5.3.3	Extent, Magnitude or Severity of	49
		5.5.3.4	Probability of Future Earthquakes	50
		5.5.3.5	Impact and Vulnerability Estimating Potential Loss	50
	6.5.4	Extreme Heat		51
		6.5.4.1	Description of Extreme Heat	51
		6.5.4.2	Location Affected by Extreme Heat	51
		6.5.4.3	Extent, Magnitude or Severity of Extreme Heat Events	52
		6.5.4.4	Previous Occurrences	53
		6.5.4.5	Probability of Extreme Heat	53
		6.5.4.6	Impact of Extreme Heat	54
		6.5.4.7	Vulnerability and Estimating Potential Loss	54
	7.5.5	Flooding		54
		7.5.5.1	Description of Flooding	54
		7.5.5.2	Location of Flooding Events	54
		7.5.5.3	Extent, Magnitude or Severity of Flooding Events	93
		7.5.5.4	Previous Occurrences	93
		7.5.5.5	Probability of Future Flooding	97
		7.5.5.6	Impact of Flooding	97
		7.5.5.7	Addressing Repetitive Loss Properties	98
	8.5.6	Thunderstorms		100
		8.5.6.1	Description of Thunderstorms, Lightning, Hail, and High Winds	100
		8.5.6.2	Location of Thunderstorms, Lightning, Hail and High Winds	100
		8.5.6.3	Extent, Magnitude or Severity of Thunderstorms, Lightning, Hail and High Wind	100
		8.5.6.4	Previous Thunderstorms, Lightning, Hail and High Winds	101
		8.5.6.5	Probability of Future Thunderstorm, Lightning, Hail and High Wind Events	101
		8.5.6.6	Impact and Vulnerability of Thunderstorms, Lightning, Hailstorm and High Winds	101
	9.5.7	Tornado		102
		9.5.7.1	Description of Tornado	102
		9.5.7.2	Location of Tornado Events	102
		9.5.7.3	Extent, Magnitude or Severity of Tornados	103
		9.5.7.4	Previous Occurrences	103
		9.5.7.5	Probability of Future Tornados	103

			9.5.7.6	Impact of TORNADOS	103
			9.5.7.7	Vulnerability and Estimating Potential Loss	105
		10.5.8	Wildfire		105
			10.5.8.1	Description of Wildfire	105
			10.5.8.2	Location of Wildfire Events	106
			10.5.8.3	Extent, Magnitude or Severity of Wildfire	106
			10.5.8.4	Previous Occurrences	107
			10.5.8.5	Probability of Future Wildfire Events	107
			10.5.8.6	Impact of Wildfire	107
			10.5.8.7	Vulnerability and Estimating Potential Loss	140
		11.5.9	Winter storms		140
			11.5.9.1	Description of Winter storms	140
			11.5.9.2	Location of Winter storm Events	140
			11.5.9.3	Extent, Magnitude or Severity of Winter storms	141
			11.5.9.4	Previous Occurrences	143
			11.5.9.5	Probability of Future Winter storms	143
			11.5.9.6	Impact of Winter storms	143
			11.5.9.7	Estimating Potential Loss	144
			11.5.9.8	Multi-Jurisdictional Risk Assessment	145
Section	4	Mitigation Strategy			146
	4.1	Mitigation Goals and Objectives for Each Hazard			146
	4.2	Implementation of Mitigation Actions			148
	4.3	Mitigation Actions			150
Section	5	Acronyms			163
Section	6	Plan Adoption			164
					TBD

Adoption Resolution
County, Participating Jurisdictions and School Districts

Sample Resolution

RESOLUTION #

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

WHEREAS, certain areas of Craighead 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 this requirement, Craighead County, with the assistance of East Arkansas Planning & 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 ____, 2022

APPROVED:

Mayor/Judge/Superintendent

ATTEST:

Secretary

SECTION 1

Planning Process

1.1 Plan Introduction

Hazard mitigation is the cornerstone of emergency management. It is defined as any sustained action to reduce or eliminate long-term risk to life and property from a hazard event. Mitigation encourages long term reduction of hazard vulnerability. The goal of mitigation is to save lives and reduce property damage.

The purpose of the Craighead County Hazard Mitigation Plan is to provide guidance for hazard mitigation activities in Craighead County. The Craighead 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 (the “Stafford Act”) (Public Law 93-288, as amended). Regulations for this activity can be found in Title 44 of the Code of Federal Regulations Part 206, Subpart M.

This plan meets requirements for a local mitigation plan under Interim 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 Craighead 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.

Craighead County initiated the Hazard Mitigation planning process by securing a FEMA HMGP grant to complete the Plan. Craighead County hired East Arkansas Planning and Development District, Inc. (EAPDD) to author the plan. Craighead County Judges Office and EAPDD worked together to engage the County, cities, communities, and school districts in the planning process.

1.1.1 Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (DMA 2000) is the latest legislation to improve this planning process. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). This new section emphasizes the need for State, Tribal, and local entities to closely coordinate mitigation planning and implementation efforts. The new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, this Act establishes a pre-disaster hazard mitigation program (PDM) and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). It also requires that communities must have an approved hazard mitigation plan to receive Stafford Act assistance, excluding assistance provided pursuant to emergency provisions.

The goals of this Craighead County Hazard Mitigation plan are to;

- Goal 1:** Reduce the potential for loss of life, injury and economic damage created by exposure to natural hazard for residents of Craighead County due to natural disasters.
- 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.
- Goal 3:** Seek grants for mitigation projects through the State and Federal funding.
- Goal 4:** Protect existing properties from natural disasters.

The Craighead County Hazard Mitigation Plan is being developed to assess the ongoing natural hazard mitigation activities in Craighead 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 unincorporated Craighead County and municipalities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette. This plan also includes the Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School Districts, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Formal adoption and implementation of a hazard mitigation plan presents many benefits to Craighead County and its residents. By identifying problems and possible solutions in advance of a disaster, Craighead County and 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 pre-disaster hazard mitigation 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. Adoption of this hazard mitigation strategy will also increase Craighead County's eligibility for assistance from FEMA's Flood Mitigation Assistance (FMA) program. Craighead 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, Craighead County will be able to recover faster and more wisely from a disaster. Through planning and acting on local mitigation strategies, the city 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.

1.1.2 Parts of the Plan

The Craighead 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

This Hazard Mitigation Plan is multi-jurisdictional with a planning area that includes all unincorporated Craighead County including the Cities and jurisdictions of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

All jurisdictions and school district listed above actively participated in the planning process from its inception. Each jurisdiction provided a representative to participate on the planning team or if a representative was unable to attend, they chose to be represented by the Craighead County Office of Emergency Management. Planning team members actively participated in meetings, 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

Craighead County's mitigation planning process began on East Arkansas Planning & Development District (EAPDD) to facilitate the mitigation planning efforts on June 28th, 2021. The process of formally creating the governing participants was established through a series of participation agreement letters, email exchanges, and some verbal acceptance for those who attended the first planning meeting that was public. Craighead County began working with EAPDD to schedule planning meetings, create public surveys, and begin gathering updated data. East Arkansas Planning & Development District served as facilitator while Craighead County Judge and OEM, led the planning effort.

Once all participating cities and school districts for which the Craighead County OEM is responsible formally agreed

to participate, an initial planning team comprised of representatives from Craighead County and participating jurisdiction was organized. This initial team was instructed to solicit interested persons from their community to participate on the planning team. This solicitation led to the addition of several additional planning team members.

The planning team members include representatives from County government, local city governments, public works officials, emergency management officials, 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 city or school district could not attend a meeting, all minutes and materials were mailed out to the jurisdiction. The Craighead County Mitigation Planning Team also discussed mitigation actions, projects, and past hazard occurrences with EAPDD during conference calls.

Multiple planning events were scheduled throughout the planning process. Training events began the planning process. The East Arkansas Planning & Development District also utilized technical assistance provided by the Arkansas Department of Emergency Management by receiving during webinars provided by ADEM and FEMA. 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.

Neighboring communities; local agencies; and regional agencies involved in hazard mitigation activities, emergency services, and other expertise were informed of LMPC and HMPT meetings. While some of these agencies consisted of those that have the authority to regulate development, many of the neighboring community attendees were individuals that contributed information relating to the complications of transportation and communications during regional hazard events. Participating stakeholders included: Craighead County Sheriff's Office, Craighead County Road Department, Craighead County Water District, and other volunteers. The agencies and neighboring communities were requested by personal invitation from the Craighead County OEM, EAPDD, or by a Local Mitigation Planning Committee (LMPC). Neighboring communities were also invited to participate in the public review of the draft hazard mitigation plan during the public review event that began in February 2022.

1.1.4 Neighboring Community Involvement

During the Mitigation Planning Process for Craighead County, neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development were informed of the meetings and invited personally by Craighead County Judges Office to attend planning meetings. Representatives from Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric attended the planning meetings.

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

- County appointed a planning committee consisting of mayors and city personnel, school personnel, fire department members, emergency workers, planning and development district employees, and LEPC/Citizens Corp/Hazard Mitigation Planning Team Members.
- County engaged East Arkansas Planning & Development District (EAPDD), the regional planning organization, to provide staff support in conducting the planning process and preparing the plan.
- Meetings were held with committee members to understand and agree on planning processes and steps required, including organizing resources, assess hazards, develop a mitigation plan, and implement the plan and mentor progress.
- East Arkansas Planning & Development District staff attended workshops presented by FEMA and ADEM on the preparation of the mitigation plan.

- East Arkansas Planning & Development District conducted a public survey. This survey was made available to the public through many efforts of outreach that included local news station, County/City social media pages, and the EAPDD social media page. This survey resulted in 242 responses with feedback on the public's concerns for natural hazards.
- East Arkansas Planning & Development District staff also had numerous subsequent discussions about the planning process with ADEM staff. The EAPDD staff also discussed planning process issues with others in the state that were involved in, other Planning and Development Districts.

The Planning Committee utilized the following technical documents.

- Arkansas Hazard Mitigation Plan was used as a guidance tool for past occurrences and risk assessments.
- EAPDD Comprehensive Economic Development Strategy.
- National Oceanic Atmospheric (NOAA) Past Hazard Events
- FEMA's National Flood Hazard Layer
- Southern Wildfire Risk Assessment

Timeline:

First Meeting 2021

Planning Grant was awarded June 28th, 2021, as a HMGP under disaster FEMA-4544-DR-AR-Project #0001

First organized planning meeting was held August 4th, 2021, via zoom due to trying to reduce the exposure of COVID-19. Each person in attendance was able to review a copy of the PowerPoint "Overview of the Mitigation Planning Process" Worksheets from the FEMA's Local Mitigation Planning Handbook March 2013; Tasks 4- Community Capabilities, Task 5- Risk Assessment and Critical Facilities Task 6-Development a Mitigation Strategy and Task 7- Procedures to Keep Plan Updated.

- The information was presented, then a time for question-and-answer session.
- Craighead County Hazard Mitigation Questionnaires were put online with the ability to print for hardcopies.
- The questionnaire was released digitally to the public for better participation gain. We received 200+ responses from across the county. The questionnaire links were made available on the EAPDD social media page, the Craighead County website, Region 8 news TV Broadcast, the Region 8 weather Facebook page, etc.

1.1.5 Public Review

Craighead County is dedicated to involving the public directly in the continual reshaping and updating of the Craighead County Hazard Mitigation Plan. The Craighead County Judge and Office of Emergency Management are responsible for the annual monitoring, evaluation, and update of the plan. The public will be notified of the date(s), time(s), and location(s) of subsequent planning processes that are made available for public feedback and participation via public announcement in the local newspapers. Although the planning team represents the community to some extent, the public will have the opportunity to provide feedback about the plan by contacting their local planning team representative(s) or the Craighead County Office of Emergency Management by phone, mail, email, or in-person.

Copies of the FEMA approved Craighead County Hazard Mitigation Plan will be available at:

- www.eapdd.com
- Craighead County Office of Emergency Management
- City Halls of City of Bay, Town of Black Oak, City of Bono, City of Brookland, City of Caraway, Town of Cash, town of Egypt, City of Jonesboro, City of Lake City, City of Monette, Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District,

Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric. Contained on the title page are the address, phone number, and e-mail of the Director of the Craighead County Office of Emergency Management, the primary point of contact for the plan.

1.1.6 Plan Developers

Team Member	Title(s)	Agency/Organization	Level of Involvement
Marvin Day	Craighead County Judge	Craighead County	Attended Meetings; Provided Local Data; Assisted with Mitigation Actions; and Aided the Development of the Local Hazard Mitigation Committee
Harold Copenhaver	Mayor	Jonesboro	Attended Meetings; Provided Local Data; Assisted with Mitigation Actions; and Aided the Development of the Local Hazard Mitigation Committee
Anthony Coy	OEM Director	Craighead County Office of Emergency Management (OEM)	Provided Local Data; Assisted with Mitigation Actions; Attended Meetings; Assists with Project Planning; and Aided the Development of the Local Hazard Mitigation Committee
Jan Biggers	Craighead County Floodplain Manager	Craighead County	Attended Meetings; Provided Local Data; Assisted with Mitigation Actions; and Aided the Development of the Local Hazard Mitigation Committee
Lisa Lawrence	Craighead County Administrator	Craighead County	Attended Meetings; Provided Local Data; Assisted with Mitigation Actions; and Aided the Development of the Local Hazard Mitigation Committee
Darrel Kirby	Mayor	City of Bay	Attended Meetings; Provided Local Data; Assisted with Mitigation Actions; and Aided the Development of the Local Hazard Mitigation Committee
Eddie Dunigan	Mayor	Town of Black Oak	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Danny Shaw	Mayor	City of Bono	Attended Meetings; Provided Local Data; Assisted with Mitigation Actions; and aided the Development of the Local Hazard Mitigation Committee
Kenneth Jones	Mayor	City of Brookland	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Bo James	Mayor	City of Caraway	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Michael Cureton	Mayor	Town of Cash	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions

Jerry Cook	Mayor	Town of Egypt	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
	Mayor	City of Lake City	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Bob Blankenship	Mayor	City of Monette	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Jon Carvell	Safety & Emergency Management Coordinator	Arkansas State University	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Lori Wynn	Human Resources	Arkansas State University	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Luke Lovins	Superintendent	Bay School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Mary Kay Jones	Principal	Blessed Sacrament Schools	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Keith McDaniel	Superintendent	Brookland School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Doug Formon	Director of Security	Brookland School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Gaylon Taylor	Superintendent	Buffalo Island Central Schools	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Lisa Moad	Office Manager	Buffalo Island Central Schools	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Dr. Kim Wilbanks	Superintendent	Jonesboro Public Schools	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Connie Summers	Executive Assistant	Jonesboro Public Schools	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Steve Whitehurst	Director of Safety & Security	Jonesboro Public Schools	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Karen Curtner	Assistant Superintendent	Nettleton School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Linda Graham	Crisis Coordinator	Nettleton School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Jennifer Morgan	Superintendent Admin Assistant	Nettleton School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions

Brian Carter	Athletic Director	Nettleton School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Matt Brewer	Head of Schools	Ridgefield Christian Schools	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Jeff Priest	Superintendent	Riverside Schools	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Bryan Russell	Superintendent	Valley View School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Greg Brannon	Dean	Valley View School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Scott Gauntt	Superintendent	Westside School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Ryan Tolbert	Security Director	Westside School District	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Jake Rice	General Operations Director	Jonesboro City Water & Light	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Nate Schimmel	General Operations Coordinator	Jonesboro City Water & Light	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Kevin Lawrence	Admin Services Director	Jonesboro City Water & Light	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Josh Vick	Compliance Assistant	Jonesboro City Water & Light	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Brian Duncan	CEO	Craighead Electric	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Carla Moore	V-P of Accounting & Administration	Craighead Electric	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Mindy Smith	Director of IT	Craighead Electric	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Sandi Griffin	Clerk/ Recorder	City of Bay	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Terri Cureton	Treasurer	City of Cash	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions

Tony Thomas	Chief Operating Officer	City of Jonesboro	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Brian Richardson	Chief Administrative Officer	City of Jonesboro	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Craig Light	Engineering Director, P.E.	City of Jonesboro	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Roger Gibson	Stormwater Coordinator/Floodplain Manager	City of Jonesboro	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Terry Thomas	Treasurer	City of Monette	Attended Meetings, Provided Local Data, Assisted with Mitigation Actions
Sarah Griggs	Economic & Community Development Manager	East Arkansas Planning & Development District	Collected National, State, and Local Level Data; Assisted with Drafting of Plan; Assisted with Identification of Future Hazards from Data Analysis; Utilized GIS and Basic Mapping Services; Gathered Map Images from FEMA Flood Service Center; Facilitated Meetings; Drafted the Plan; and Provided Meeting Materials.

Planning Team-

Point of Contacts

Craighead County Judge Marvin Day 511 Union St, Jonesboro, AR 72401	<u>(870) 933-4500</u>
Craighead County OEM Anthony Coy 511 Union St, Jonesboro, AR 72401	<u>(870) 933-4575</u>

1.2 Plan Maintenance Process

1.2.1 Monitoring, Evaluation and Updating the Plan

Although FEMA regulations require a plan update within five years, Craighead County has developed a method to ensure that monitoring, evaluation, and updating of the Craighead County Hazard Mitigation Plan occurs annually or as needed. The plan will be submitted to FEMA within five-years for review. The County will form a Hazard Mitigation Plan Evaluation Sub-Committee of the existing Craighead County Local Emergency Planning Committee (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 Director of the Craighead County Office of Emergency Management will be the initial Chair of the sub-committee or Planning Team Leader. The Planning Team Leader will contact the planning team committee, set up meeting dates, and ensure that each community will maintain a representative on the team.

During the update period representatives of the Hazard Mitigation team will verify that information such as point of contact information for the jurisdictions and entities that are a part of this plan is still correct. Also, as events occur within the jurisdictions that are covered by this plan it will be recorded in the appropriate sections throughout. If the planning team feels as if a new hazard is faced by the county and its jurisdictions, then this should be added and addressed in the plan. In the event Craighead County receives a new presidential declaration this information will be recorded in the appropriate sections of the plan. As mitigation actions are completed then this should be updated in the appropriate section as well.

The responsible party for overseeing and assuring plan updates is the Craighead 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 Craighead County, as well as changes in State or Federal policy, and to ensure that they are addressing current and expected conditions. During these meetings the sub-committee will also need evaluate if the way Craighead County is implementing the public, updating planning team members to keep them involved and participating, evaluating the current risk assessment, and making necessary adjustments based on what is and is not working throughout the planning process. Also, during these meetings, the planning team will consider if what the jurisdictions say the plan is doing to ensure public participation succeeding? If not, the jurisdictions can work on better communicating and educating the public in their communities. It is important to for the jurisdictions to understand what works best for their specific audience. This could be different forms of outreach social media, newspaper, flyers, etc.

The Craighead County Office of Emergency Management 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.

In addition, the Craighead County Hazard Mitigation Plan will be integrated into other plans. Integrating hazard mitigation into the local comprehensive plan thereby establishes resilience as an overarching value of a community and provides the opportunity to continuously manage development in a way that does not lead to increased hazard vulnerability.

Craighead County is covered by the following plans either from a local level or regional level involvement. Once these plans are updated the Craighead County Mitigation Plan is expected to help facilitate in the plans. Also, any relevant changes that may impact mitigation will also be incorporated from the following plans into the Craighead County mitigation plan.

Land Use and Development Plans will guide future growth and development away from areas with known hazards, or to ensure design standards for new or improved construction take potential hazards into account. Land use policies can build community resilience by taking information on location, frequency, and severity of hazards into consideration and setting forth recommendations that influence development in a way that does not increase risks to life and property.

Transportation Plans can build community resilience by adopting policies that direct growth away from known hazard areas. Also, by ensuring that transportation systems and other critical infrastructure are designed to withstand the effect of known hazards, so they still function in the event of an emergency or disaster.

Housing Plans can help strengthen community resilience by ensuring that the location and design of new or improved housing complies not only with existing building codes, but with potential hazards. Opportunities to strengthen or replace structures unidentified as vulnerable to hazard can be promoted through existing maintenance or rehabilitation programs, and particularly through policies regarding non-conforming, substantially damaged, or substantially improved properties.

Economic Development Plans can promote commercial or industrial expansion in areas that are not vulnerable to damage or disruption from hazard and by making community resilience a key feature in attracting, expanding and retaining businesses and industry.

Public Facilities and Infrastructure Plans policies can be adopted to ensure critical facilities such as police and fire stations, as well as key infrastructure such as water and wastewater treatment plants, are protected from the effects of hazards. This provides opportunities to establish goals and policies in support of mitigation projects such as stormwater drainage improvements or the public acquisition of hazard areas for open space.

Natural Resource Protection Plans have policies designed to preserve or enhance environmental areas of concern, such as wetlands, riparian corridors, and floodplains, often include the added benefit of avoiding or minimizing development in hazard areas. These types of policies build community resilience by protecting lives and property and maintaining natural and beneficial functions of systems that act as buffers against hazardous events.

Historic Properties and Cultural Resources Plans are designed to protect and preserve historic and cultural sites, buildings, and other resources and can be linked with mitigation strategies to prevent damage and losses from hazardous events.

The Hazard Mitigation Plan will consider any changes in these plans and incorporate the information accordingly in its next update.

The Planning Committee will 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 Craighead County Hazard Mitigation Plan.

Since future plans and government regulations might need to be adopted into the Hazard Mitigation Plan, Craighead 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.

1.2.2. Incorporation into Existing Planning Mechanisms

Craighead 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. Craighead 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 Craighead County Hazard Mitigation Plan has been updated based off of the findings in the previous mitigation plan as well as data presented from the public surveys, feedback from the planning team, etc. The Craighead County Hazard Mitigation Plan will be available for public view on the East Arkansas Planning & Development District's website www.eapdd.com 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 Craighead County Courthouse in Craighead and each participating jurisdiction's city hall. The cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric will be adopting the approved Hazard Mitigation Plan in their existing plans that are relevant to Hazard Mitigation. 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 Craighead 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 Emergency Operations Council for inclusion in its annual report. After each update of the Craighead County Hazard Mitigation Plan, each incorporating participant will be informed of the changes so they can reflect these changes in their plans also.

Craighead County will be incorporating the Craighead County Hazard Mitigation Plan into the Craighead County Emergency Operations Plan and County land use ordinances and/or plans by following the laws set forth by the County government. Incorporating the plan into other plans will be done by vote at the regular quorum court meetings and passed by resolution.

Mitigation action will be adopted by the appropriate governing authority for each jurisdiction. This will also include current and future actions that may be added during the planning process. The County will adopt the action via resolution at the appropriate quorum court meeting at that time. Each city will adopt the actions via resolution at the appropriate city council meeting and each school will update all appropriate actions via resolution at the appropriate school board meeting. The previous plan has been incorporated in the Jonesboro Community Rating System and recognized in many of the Assistant to Firefighter Grants that the City of Jonesboro has successfully applied for. The previous plan was deemed not relevant and was not incorporated throughout Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Lake City, Monette, City Water and Light, and Craighead Electric.

1.2.3 Continuous Public Involvement

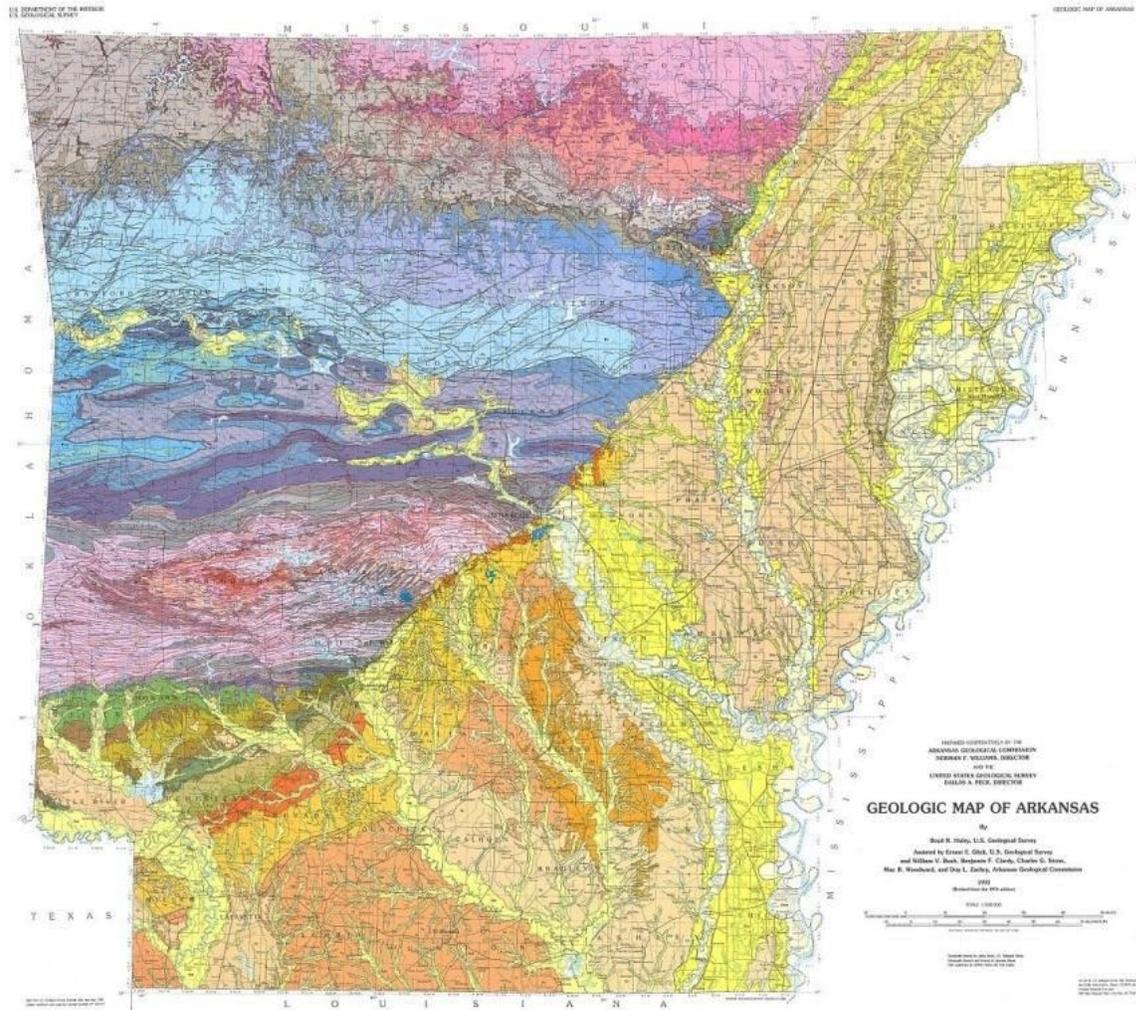
Craighead County is dedicated to involving the public directly in the continual reshaping and updating of the Craighead County Hazard Mitigation Plan. The Hazard Mitigation Plan Evaluation Sub-Committee members are responsible for the annual monitoring, evaluation, and update of the plan. Although they 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 Craighead County Hazard Mitigation Plan will be available at www.eapdd.com . Contained in the plan are the address, phone number, and e-mail of the Director of the Craighead 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 regularly scheduled LEPC meeting, including the first calendar year LEPC meeting during which the Hazard Mitigation Planning Sub-Committee reviews and evaluates the plan in its entirety. This meeting will provide the public a forum for which the public can express concerns, opinions, or ideas about the plan. The Craighead County Office of Emergency Management and the Craighead 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 Analyzing Development and Economic Trends

With some areas shrinking and others growing at a modest amount, it is unlikely the planning area as a whole has a significantly changing hazard vulnerability. Municipalities with stagnant growth can be an opportunity to focus its mitigation efforts on its current vulnerabilities by continuing to enforce and inspect its zoning, ordinances, and building codes. Similarly, these methods can be used in the growing communities to ensure hazard resiliency through new construction.

Jonesboro and Lake City have experienced modest, but significant, growth. Jonesboro's growth has manifested in the form of large, sprawling subdivisions in the southwest portion of the city (Around Highway 49) and the northeastern portion of the city (Between Highway 49 and County Road 18). Lake City has built a few modest size subdivisions. The subdivisions are located to the immediate northeast of County Roads 135 and 18 and the second is located in the southwestern tip of the city on County Road 813.

Jonesboro's growth

The City of Bono has seen substantial growth in their residential and commercial status. Currently they have Jonesboro Cycle and ATV and the Busy Bean in development. These two developments will be off Highway 63. Bono also has many new developments and redevelopments. There are additions developing on the Crast Berry subdivision, East Hills subdivision towards Lake Bono, and a new development of Ridge Park subdivision off Stella St.

Lake City has seen some significant residential interest. The development of subdivisions can be found off Hickory Road and Northeast of the County Road 18.

For hazards that affect the entire planning area, increased population growth increases a jurisdiction's overall vulnerability, while decreased population growth decreases it. It is difficult to quantify the exact change in vulnerability in either direction but can be depicted as generally directly proportional to the population change itself. For hazards which have easily measured extents, changes in vulnerability are more difficult to calculate. Over the past 3 years, dramatic improvements in available geographic data and improvements in risk assessment methodology make this plan update's risk assessment far superior to the previous plan. However, the downside of utilizing improved methodologies and data is that they are incapable of being directly compared to the previous plan's methods and data. For instance, the previous plan does not accurately depict the probability of future hazards based on the Poisson Distribution $P(k) = \frac{\lambda^k (e^{-\lambda})}{k!}$

λ = average number of times the event happens in the past over the whole time

k = average number of times the event happens in one year

$e = 2.71828$

$k!$ = the Factorial of k . (exp. $1 * 2 * 3 * 4 * \dots * 8$)

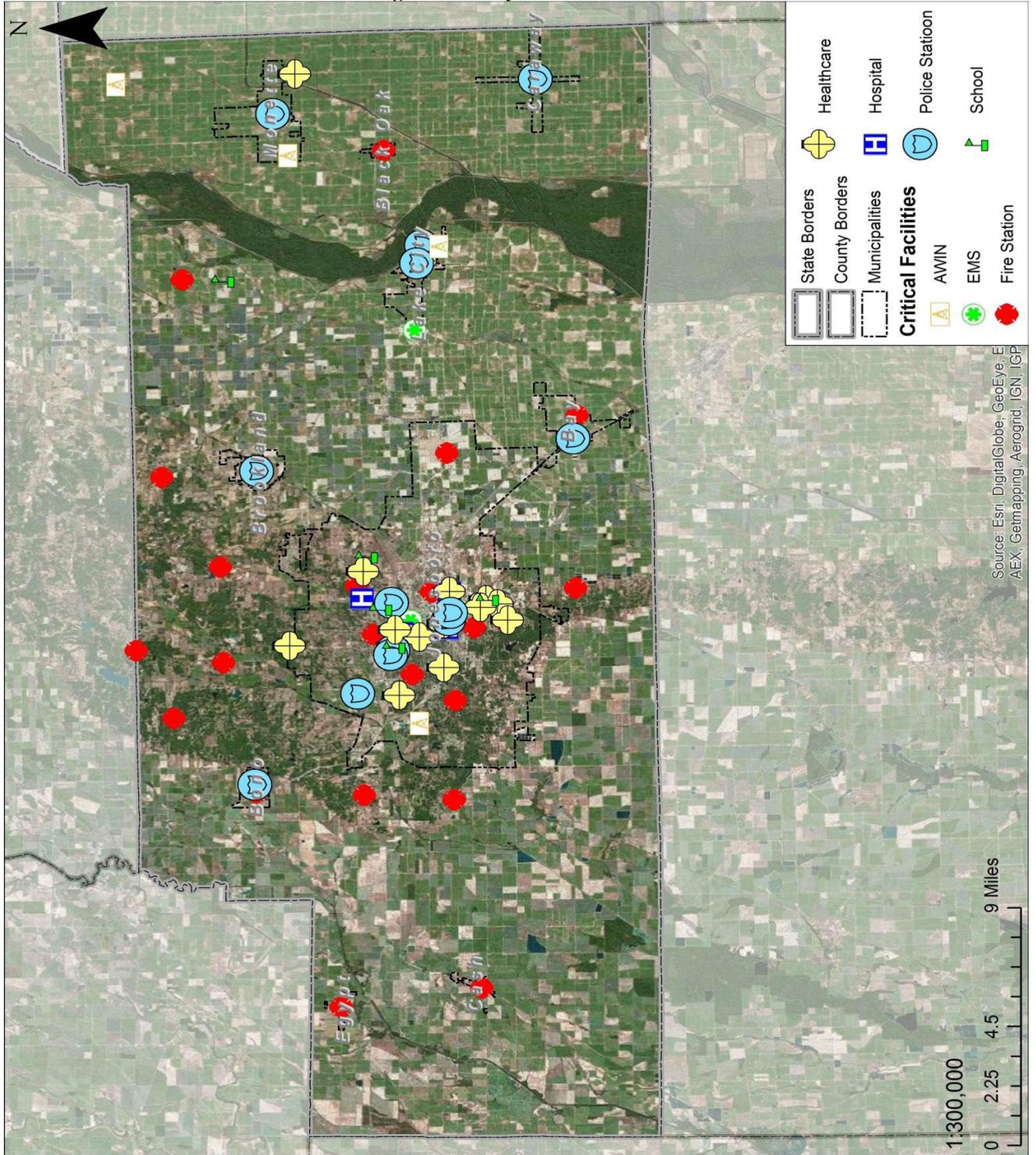
For the sake of having a comparison, although not as accurate as desired, this plan considers any jurisdiction with a positive population growth rate, in this case all participating jurisdictions, to have increased vulnerability, while any with a decreasing population, none of the participating jurisdictions, have a decreased vulnerability. Craighead County does not allow construction within its FEMA designated floodplains without a floodplain construction certificate. The certificate requires any structure to be raised to a BFE.

2.2 Critical Facilities

Critical Facilities Certain facilities have a net positive value on the community, that is, they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the economy function. Additionally, there are infrastructure and facilities integral to disaster response and recovery operations. Conversely, some infrastructure and facilities are of extreme importance due to the negative externalities created when they are impacted by a disaster. What fits these definitions will vary slightly from community to community, but the definitions remain as a guideline for identifying infrastructure and critical facilities. For Craighead County and its participating jurisdictions, the table below summarized their identified infrastructure and critical facilities.

Type	Name
AWIN	AWIN - Monette
EMS	Air - Evac Life team - Lake City (02)
Fire Station	Bono Fire Department - Westside Station
Fire Station	Southridge Fire Station 1
Fire Station	Philadelphia Fire Station 1
Fire Station	Philadelphia Fire Station 2
Fire Station	Lake City Fire Protection District - Dixie Station
Fire Station	Bono Fire Department - Center Hill Station
Fire Station	Brookland Volunteer Fire Department - Greensboro Station
Fire Station	Brookland Volunteer Fire Department - Goobertown Station
Fire Station	Valley View Fire Department
School	Brookland East School
AWIN	AWIN - Jonesboro
Utility Services	City Water& Light- Jonesboro
Utility Services	Craighead Electric – Jonesboro
AWIN	Jonesboro Repeater
EMS	Emerson Ambulance Service
EMS	Medic One - Jonesboro
Fire Station	Jonesboro Fire Station 1
Fire Station	Jonesboro Fire Station 2
Fire Station	Jonesboro Fire Station 3
Fire Station	Jonesboro Fire Station 4
Fire Station	Jonesboro Fire Station 5
Fire Station	Jonesboro Fire Station 6
Fire Station	Jonesboro Fire Station 7
Fire Station	Southridge Fire Station 2
Hospital	HealthSouth Rehabilitation Hospital of Jonesboro
EMS	Caraway Volunteer Ambulance Service
Police Station	Caraway Police Department
Fire Station	Cash Fire Department
Fire Station	Egypt Volunteer Fire Department

Craighead County- Critical Facilities



2.3 Demographics

DEMOGRAPHICS ¹	TOTAL CRAIGHEAD COUNTY	Jonesboro	Bay	Black Oak	Bono	Brookland	Caraway	Cash	Egypt	Lake City	Monette
TOTAL POPULATION	111,231	78,576	1,876	215	2,409	3,312	1,133	280	113	2,741	1,678
AGE											
<i>Under 5 years</i>	7,211	5,105	106	17	231	376	36	41	7	133	78
<i>18 years and over</i>	84,196	60,668	1,429	159	1,711	2,356	768	179	50	2,204	1,438
<i>62 years and over</i>	18,351	12,370	391	33	355	420	247	42	18	585	499
RACE											
<i>White/ Caucasian</i>	80,639	50,720	1,696	208	2,108	4,064	1,075	270	97	2,275	1,380
<i>Black/ African American</i>	18,473	17,889	63	2	110	175	1	0	2	42	7
<i>American Indian/ Alaskan Native</i>	356	266	11	0	2	14	5	2	1	13	1
<i>Asian</i>	1,692	1,635	2	0	0	10	0	1	0	8	0
<i>Native Hawaiian/ Other Pacific Islander</i>	61	55	2	0	0	1	0	0	0	2	0
<i>Other Race</i>	3,446	2,970	11	15	44	49	12	7	9	32	63
<i>Two or More Races</i>	6,564	5,041	91	8	136	214	40	0	4	122	55
HOUSEHOLDS											
<i>Total Households</i>	46,942	33,769	806	102	1,072	1,398	526	111	47	1,159	805
<i>Median Household Income</i>	\$47,286	\$45,931	\$42,438	\$51,071	\$40,455	\$44,092	\$43,958	\$27,083	\$26,406	\$47,222	\$43,611

2.4 NFIP Participation and Capability Assessment

National Flood Insurance Program (NFIP)

Craighead County – CID: 050427

Init FHBM Identified- 11/15/77
Init FIRM Identified- 09/27/91
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 12/20/93
Tribal-NO

Craighead County will assist residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The county will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The County stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits. The county floodplain manager is appointed by the county judge.

City of Bay – CID: 050045

Init FHBM Identified- 10/12/73
Init FIRM Identified- 01/03/86
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 01/03/86
Tribal-NO

Bay assists residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

Town of Black Oak – CID: 050389

Init FHBM Identified- 02/21/75
Init FIRM Identified- 09/27/91
Curr Eff Map Date- (NSFHA)
Reg-Emer Date- 04/15/79
Tribal-NO

Black Oak assist residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical

assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

City of Bono– CID: 050125

Init FHBM Identified- 08/30/74
Init FIRM Identified- 12/04/85
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 12/04/85
Tribal-NO

Bono assist residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

City of Brookland – CID: 050047

Init FHBM Identified- 08/23/74
Init FIRM Identified- 04/15/80
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 04/15/80
Tribal-NO

Brookland assist residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

City of Caraway – CID: 050311

Init FHBM Identified- 01/10/75
Init FIRM Identified- 06/18/80
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 06/18/80
Tribal-NO

Caraway assists residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management.

regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

Town of Cash– CID: 050396

Init FHBM Identified- 04/18/75
Init FIRM Identified- 09/21/82
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 09/21/82
Tribal-NO

Caraway assists residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

Town of Egypt – CID: 050585

Init FHBM Identified- N/A
Init FIRM Identified- 09/27/91
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 04/26/11
Tribal-NO

Egypt assists residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

City of Jonesboro – CID: 050048

Init FHBM Identified- 10/26/73
Init FIRM Identified- 06/15/81
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 06/15/81
Tribal-NO

Jonesboro assist residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

City of Lake City – CID: 050049

Init FHBM Identified- 05/24/74
Init FIRM Identified- 04/15/86
Curr Eff Map Date- 09/27/91
Reg-Emer Date- 04/15/86
Tribal-NO

Lake City assist residents with document completion for the NFIP and educates the citizens about the NFIP program. Permits are issued for those building in the floodplain, and then the floodplain manager monitors the construction process to ensure compliance. The town will continue to participate through continuing floodplain education and staying in compliance with the NFIP by participating in the Community Assistance Visit (CAV) with FEMA/ISO staff members and with members of the Arkansas Natural Resource Commission (ANRC). The ANRC provides technical assistance to the community assuring that the community is adequately enforcing its floodplain management regulations. The town stays in compliance with FEMA/ISO and ANRC by doing their recommendations that are determined at their visits.

City of Monette is not currently participating in the NFIP. There is no plan currently to join. They do not have the resources to participate in the NFIP.

School District National Flood Insurance Program (NFIP)

The Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, and Ridgefield Christian are not required to be a member of the NFIP, but they are located in Craighead County and the Cities of Brookland, Jonesboro, Bay, and Monette.

***Note- Please see Arkansas State Legislature Act 754 of 2003 regarding Floodplain management and Administration**<http://www.floodplain.ar>

2.5 Craighead County Capability Assessment

<i>JURISDICTION</i>	PLANNING AND REGULATORY CAPABILITIES														
	Comprehensive Master Plan	Capital Improvements Plan	Economic Development Plan	Local Emergency Operations Plan	Continuity of	Transportation Plan	Stormwater Management Plan	Community Wildfire Management Plan	Fire Department ISO Rating	Zoning Ordinance	Subdivision	Floodplain Ordinance	Building Codes	Acquisition of land for open space	BCEGS Score
Craighead County	X	X	X	X	X	X	X		X	X		X	X	X	
Bay				X					X			X	X		
Black Oak				X					X			X	X		
Bono				X					X			X	X		
Brookland											X				
Caraway		X	X	X			X		X	X		X	X	X	
Cash				X					X			X	X		
Egypt				X					X			X	X		
Jonesboro	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Lake City												X			
Monette												X			
Bay School District												X			
Brookland School District				X	X	X						X	X	X	
Buffalo Island Central School District						X						X			
Jonesboro School District						X						X			
Nettleton School District						X						X			
Riverside School District						X						X			
Valley View School District						X						X			
Westside Consolidated School District						X						X			
ASU	X				X	X						X	X		
Blessed Sacrament	X				X	X									
Ridgefield Christian	X				X	X									
City Water and Light	X				X										
Craighead Electric	X				X										

<i>JURISDICTIONS</i>	FINANCIAL CAPABILITIES							
	Fees for Utilities	Capital Improvement Project Funds	Community Development Block Grant	Federal Funding Program	State Funding Programs	Impact Fees for New Development	Authority to levy taxes	
Craighead County	X	X	X	X	X	X	X	
Bay	X			X		X	X	
Black Oak	X			X		X	X	
Bono	X			X		X	X	
Brookland	X			X		X	X	
Caraway	X	X	X	X		X	X	
Cash	X			X		X	X	
Egypt	X			X		X	X	
Jonesboro	X	X	X	X	X	X	X	
Lake City	X			X		X	X	
Monette	X			X		X	X	
Bay School District	X			X		X		
Brookland School District	X			X	X	X		
Buffalo Island Central School District	X			X	X	X		
Jonesboro School District	X			X	X	X		
Nettleton School District	X			X	X	X		
Riverside School District	X			X	X	X		
Valley View School District	X			X	X	X		
Westside Consolidated School District	X			X	X	X		
ASU	X			X	X	X		
Blessed Sacrament	X			X	X	X		
Ridgefield Christian	X			X	X	X		
City Water and Light	X					X		
Craighead Electric	X					X		

JURISDICTIONS ADMINISTRATIVE AND TECHNICAL CAPABILITIES					
	Non-Profit Organizations Focused on Environmental	Ongoing Public Education or program information	Natural Disaster or Safety related School Program	Public-Private Partnership Initiatives	Storm Ready Certifications
Craighead County	X	X	X	X	X
Bay	X	X	X	X	
Black Oak	X	X	X	X	
Bono	X	X	X	X	
Brookland	X	X	X	X	
Caraway	X	X	X	X	
Cash	X	X	X	X	
Egypt	X	X	X	X	
Jonesboro	X	X	X	X	X
Lake City	X	X	X	X	
Monette	X	X	X	X	
Bay School District		X	X	X	
Brookland School District		X	X	X	X
Buffalo Island Central School District		X	X	X	X
Jonesboro School District		X	X	X	X
Nettleton School District		X	X	X	X
Riverside School District		X	X	X	X
Valley View School District		X	X	X	X
Westside Consolidated School District		X	X	X	X
ASU		X	X	X	X
Blessed Sacrament		X	X	X	X
Ridgefield Christian		X	X	X	X
City Water and Light	X	X		X	
Craighead Electric	X	X		X	

2.6 Improving Capabilities

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

- Regularly attend state-wide full-scale drills for evacuation
- Become a Storm Ready Certified
- Employee a Certified Emergency Manager and a Certified Floodplain Manager
- Conduct county exercises to test plans in place
- Expand upon education and outreach by establishing and promoting mitigation activities.
- Expand the Road Department Budget to improve culverts and water crossings.
- Work with schools to construct saferooms.

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. Craighead 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.

The following hazards were identified from historical information provided by planning team 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
Dam Failure	There have been 0 Dam failure events between 1950-2022
Drought	There have been 18 Drought events between 1950 - 2022
Earthquake	There have been 9 Earthquake events between 1950-2022
Extreme Heat	There have been 23 Extreme Heat event between 1950 - 2022
Flood	There have been 79 flash flood events and 10 flood events between 1950-2022
Hailstorm	There have been 166 Hail events between 1950 - 2022
Lightning	There have been 5 Lightning events between 1950 - 2022
Thunderstorm Winds	There have been 261 Thunderstorm wind events between 1950 - 2022
Tornado	There have been 42 Tornadoes between 1950 - 2022
Wildfire	There have been 32 Wildfire events between 1950 - 2022
Winter Storms	There have been 20 Winter Storm event and 4 Ice Storm events 7 Heavy Snow events between 1950 - 2022

Presidential Disaster Declarations in Craighead County from 2008 to current date

Disaster Number	Incident Begin Date	Incident End Date	Declaration Date	Type	Description
239	5/29/1968	5/29/1968	5/29/1968	DR	Tornado
254	2/15/1969	2/15/1969	2/15/1969	DR	Flood
375	4/27/1973	4/27/1973	4/27/1973	DR	Flood
389	5/29/1973	5/29/1973	5/29/1973	DR	Flood
673	12/13/1982	12/13/1982	12/13/1982	DR	Severe Storm(s)
817	11/15/1988	11/20/1988	11/23/1988	DR	Tornado
1176	4/4/1997	4/21/1997	4/14/1997	DR	Flood
1162	3/1/1997	3/4/1997	3/2/1997	DR	Severe Storm(s)
1363	2/14/2001	3/21/2001	3/13/2001	DR	Severe Storm(s)
1400	12/15/2001	1/30/2002	1/24/2002	DR	Severe Storm(s)
1450	12/3/2002	12/4/2002	1/6/2003	DR	Severe Ice Storm
1472	5/2/2003	6/10/2003	6/6/2003	DR	Severe Storm(s)
3215	8/29/2005	10/1/2005	9/2/2005	EM	Hurricane
1804	9/13/2008	9/23/2008	10/22/2008	DR	Severe Storm(s)
1751	3/18/2008	4/28/2008	3/26/2008	DR	Severe Storm(s)
3301	1/26/2009	1/30/2009	1/28/2009	EM	Severe Ice Storm
1819	1/26/2009	1/30/2009	2/6/2009	DR	Severe Storm(s)
1872	12/23/2009	1/2/2010	2/4/2010	DR	Severe Storm(s)
1975	4/14/2011	6/3/2011	5/2/2011	DR	Severe Storm(s)
4318	4/26/2017	5/19/2017	6/15/2017	DR	Severe Storm(s)
3461	1/20/2020		3/13/2020	EM	Biological
3541	8/26/2020	8/28/2020	8/27/2020	EM	Hurricane
4544	3/28/2020	3/28/2020	5/8/2020	DR	Tornado
4518	1/20/2020		4/3/2020	DR	Biological
4633	12/10/2021	12/11/2021	12/23/2021	DR	Tornado

3.2 Vulnerability and Risk Assessment by Hazard

The Craighead 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.

Previous Occurrences of hazard events for each jurisdiction (44 CFR 201.6 (c)(2)(i) have been addressed.

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.

Probability was determined by using Poisson Distribution $P(k)=\frac{\lambda^k}{k!} (e^{-\lambda})$

- λ =average number of times the event happens in the past over the whole time period
- k = average number of times the event happens in one year
- $e=2.71828$
- $k!$ =the Factorial of k . (exp. $1*2*3*4*....*8$)

Impact – 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.

Vulnerability of Estimating Potential Loss- identifies 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 address 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. (44 CFR 201.6(c)(2)(ii)

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. If we were unable to obtain information of a certain type of past hazard event, we did not estimate a potential loss due to the lack of information.

3.4 Natural Hazards Affecting Craighead County

This mitigation plan addresses the natural hazards that can affect Craighead County, the cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas

State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric. The Hazards which have affected Craighead County in the past or could possibly affect Craighead County in the near future are; Drought, Extreme Heat, Earthquake, Flooding, Thunderstorms (Lightening, Hail and High Winds), Tornadoes, Wildfire and Winter storms.

3.5.1 Dam Failure

3.5.1.1 Description of Dam Failure

A dam is a barrier across flowing water that obstructs, directs, or slows down the flow, often creating a reservoir, lake, or impoundments. Most dams have a section called a spillway or weir, over or through, which water flows, either intermittently or continuously.

Dams fail in two ways, a controlled spillway release done to prevent full failure, or the partial or complete collapse the dam itself. In each instance an overwhelming amount of water, and potentially debris, is released. Dam failures are rare, but when they occur can cause loss of life, and immense damage to infrastructure and the environment.

3.5.1.2 Location and Extent to Dam Failure

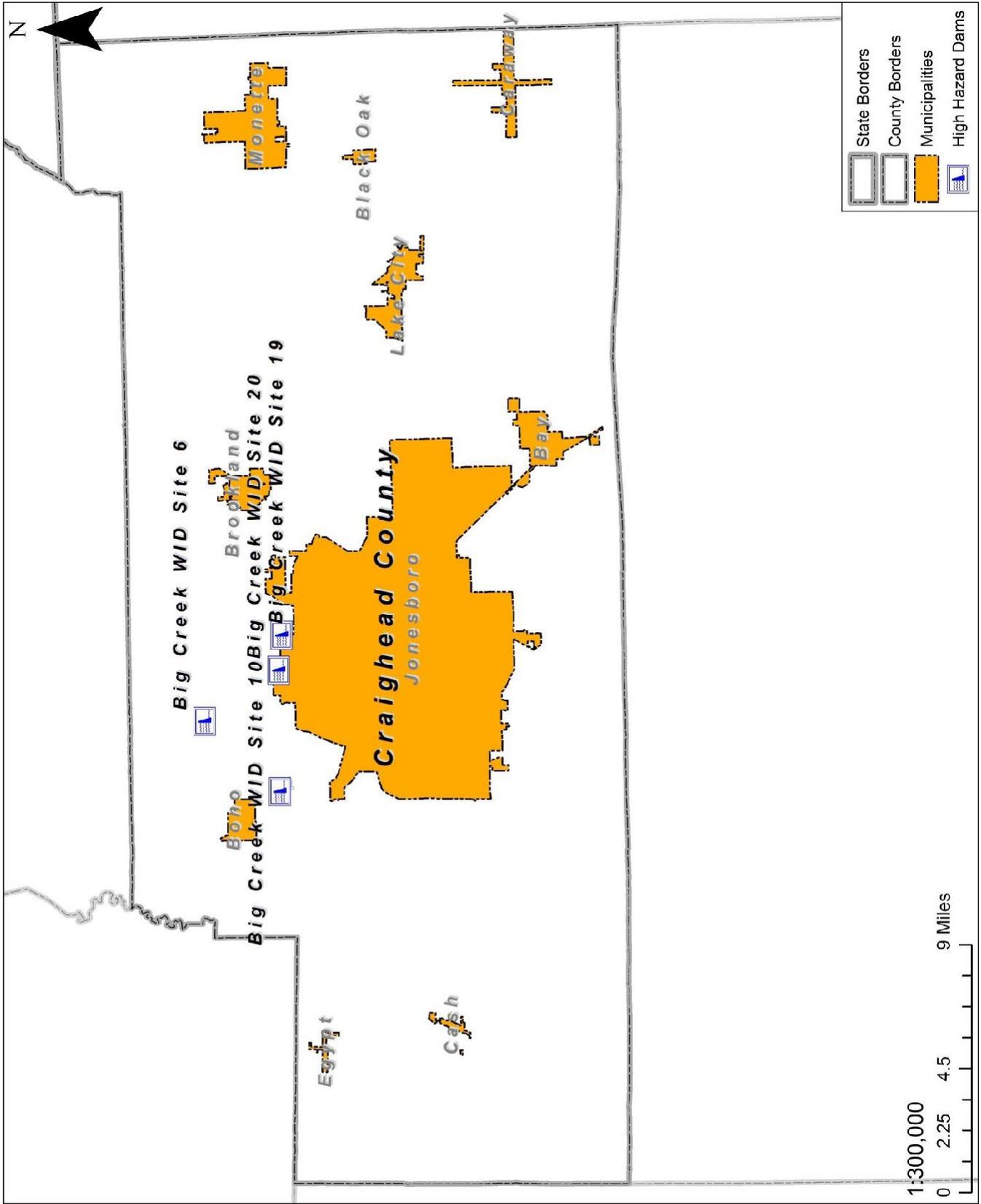
Dam failure can occur with little warning. Intense storms may produce a flood in a few hours or even minutes from upstream locations. Dam failure can occur within hours of the first signs of breaching. Although the floodwaters will drain, the area will be affected by flooding from the dam failure for days to weeks and the destruction will affect the area for years.

The USACE ranks each dam, reservoir, and WID according to a hazard risk of low, significant, and high. Craighead County and its participating jurisdictions have 4 dams labeled as “high hazard” by the USACE. These are; the Big Creek Watershed Improvement District Site (WID) 06, Big Creek Watershed Improvement District Site (WID) 10, Big Creek Watershed Improvement District Site (WID) 19, and the Big Creek Watershed Improvement District Site (WID) 20. These dams have the potential to affect the county at large and the identified areas within the Jonesboro city limits.

The expected intensity of a dam failure is based on the speed at which the water is released from the dam, whether or not it fails instantly or slowly over a period of time. If one of these dams fails slowly, it is possible the depth of water affecting the inundation area is a little as a few inches. However, if one of these dams fails catastrophically, the identified inundation areas could be filled the maximum capacity water stored behind the dam. These values, in acre-feet, are 804 for the Big Creek WID Site 06, 2,045 acre-feet for the Big Creek WID Site 10, 3,077 acre-feet for the Big Creek WID Site 19, and 308 acre-feet for the Big Creek WID Site 20.

The maps on the following pages depict the locations of these dams as well as their modeled impact zone. These maps were gathered based off the past successful mitigation plan.

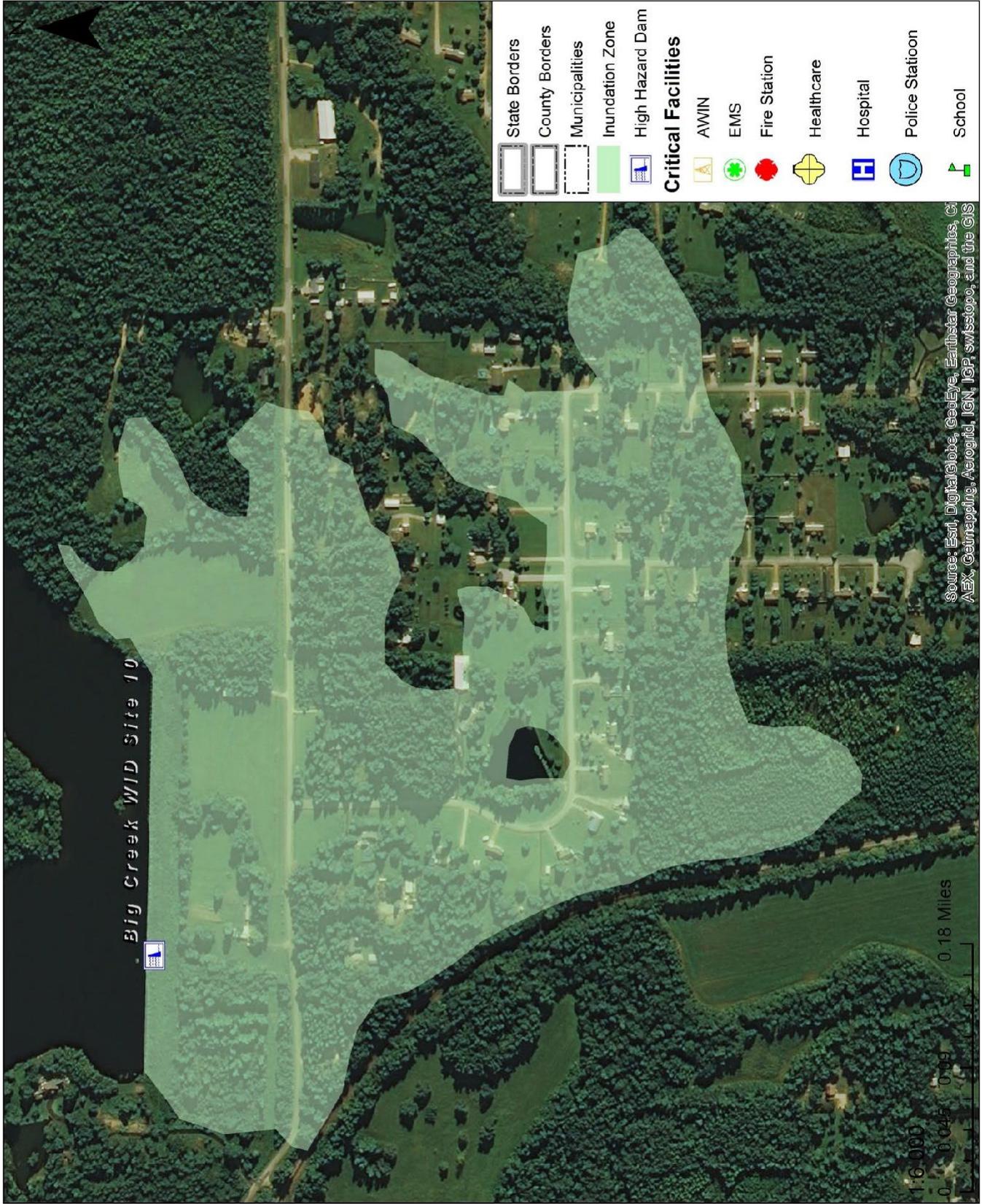
Map 35 – Dam Locations, Craighead County



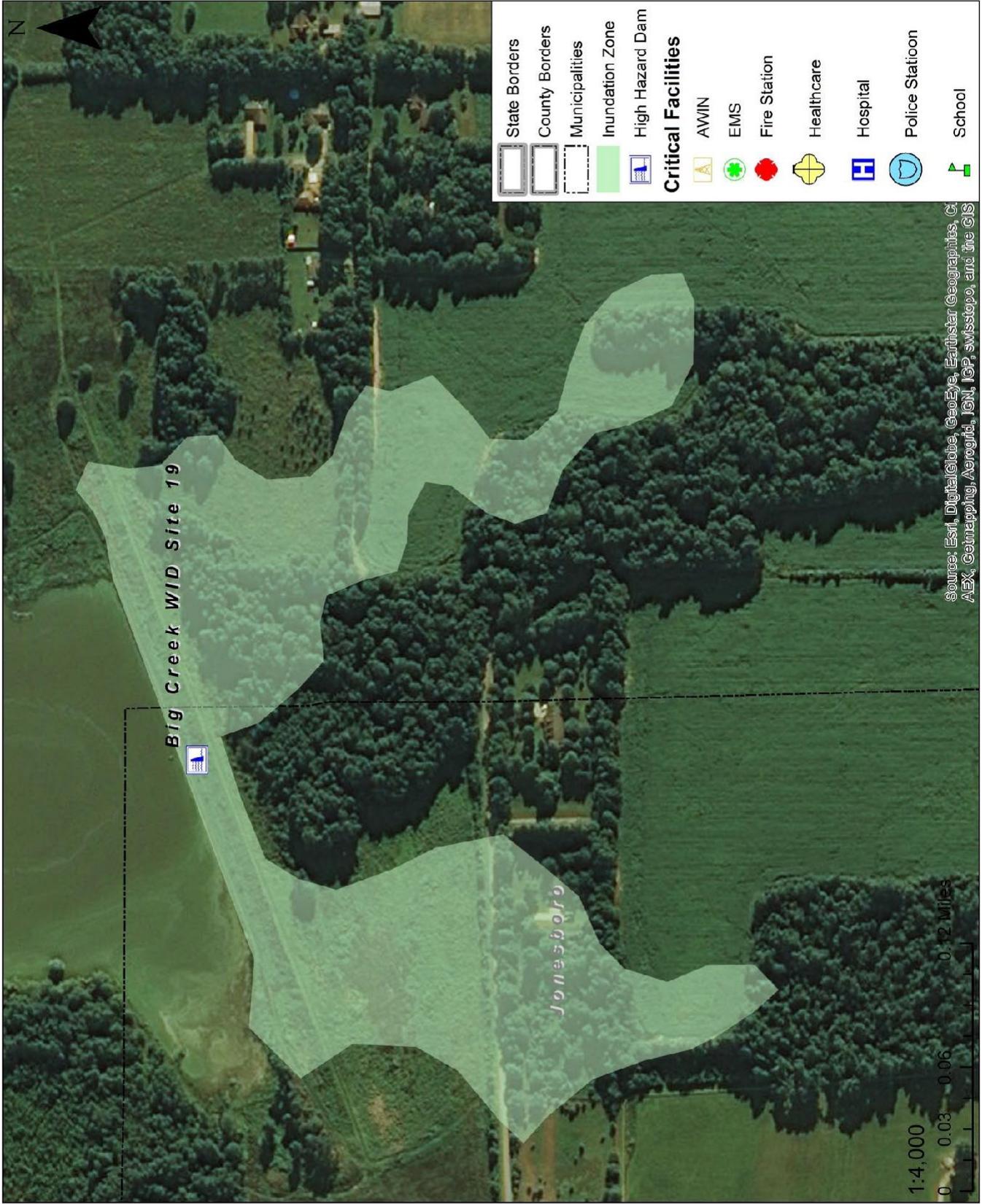
Map 36 – Inundation Zone, Big Creek WID Site 06



Map 37 – Inundation Zone, Big Creek WID Site 10



Map 38 – Inundation Zone, Big Creek WID Site 19



Map 39 – Inundation Zone, Big Creek WID Site 20



3.5.1.3 Previous Occurrences

There are more than 80,000 dams in the United States, according to the USACE's National Inventory of Dams. Approximately one third of these are classified as a high or significant hazard to life and property in the event of a breach of failure.

Presently there are no incidents of dam failure in Craighead County or its participating jurisdictions.

3.5.1.4 Vulnerability and Impact of Dam Failure Events

Populations within a dam failure inundation area are at extreme risk. Depending on the speed of the water's arrival, a community's population may not have time to evacuate. Additionally, evacuation routes can be blocked by the dam waters. If flood waters arrive quickly, many people can die. Depending on the elevation of the water, a community's population may not have any available shelter to avoid the waters. Through a GIS analysis, 104 people and 34 housing units are threatened by dam failure.

Given the USACE's inundation studies that were incorporated in the previous plan, only the county at large and Jonesboro are exposed to any risk from a dam failure. None of the participating school districts are at risk from a dam failure.

Businesses can suffer economic losses when buildings are damaged, or roads are closed, as well as during times of forced closure to protect public health and safety if fresh water is unavailable or if fire safety poses a risk. Although Craighead County has never experienced their own dam failure, no lives are predicted to be lost in this type of hazard event. Based on USACE's study it has been determined that no infrastructure or critical facilities will be impacted in all participating jurisdictions by Dam Failure. The table below shows potential populations at risk.

Dam	Jurisdiction	Housing Units	Population
Big Creek WID Site 06	Craighead County	8	21
Big Creek WID Site 10	Craighead County	22	63
Big Creek WID Site 19	Craighead County, Jonesboro	1	3
Big Creek WID Site 20	Jonesboro	3	17
	Total =	34	104

3.5.1.5 Probability of Future Events

As previously stated there can be advanced warning to no warning at all for a dam failure event. At present, there is no history of a dam failure of any size in Craighead County or its participating jurisdictions. In lieu of any historical events, the next best prediction tool would be based on the structural state of the dam. However, maintenance and structural information on the USACE's dams in Craighead County and its participating jurisdictions is confidential information and not for public use.

Given the absence of any historical precedence of dam failure in Craighead County and Jonesboro, information on the dams being poorly maintained, or having reoccurring structural flaws, based on the lack of previous occurrences a future Dam Failure event has less than 1% of probability of occurrence in any given year at this time.

4.5.2 Drought

4.5.2.1 Description of 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.

4.5.2.2 Location of Drought Events

All areas of Craighead County, the cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are equally likely to experience severe drought, there is no defined geographic hazard boundary.

4.5.2.3 Extent, Magnitude or Severity of Drought

Periods of droughts can have significant environmental, agricultural, health, economic and social consequences. The effect varies according to vulnerability. Drought can also reduce water quality, because lower water flows reduce dilution of pollutants and increase contamination of remaining water sources. Common consequences of drought include:

- Diminished crop growth or yield productions
- Lack of water for households
- Lack of water for livestock
- Lack of water for irrigation
- Habitat damage, affecting both terrestrial and aquatic wildlife
- Drought provides too little water to support food crops.
- Malnutrition, dehydration and related diseases
- Shortages of water for industrial users
- Social unrest
- Wildfires are more common during times of drought.
- Death of vulnerable population such as elderly and young people

Drought Severity Classification								
RANGES								
Category	Description	Possible Impacts	Palmer Drought	CPC Soil Moisture Model	USGS Weekly Streamflow	Percent of Normal Precip	Standardized Precipitation Index (SPI)	Satellite Vegetation Health Index
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.	-1.0 to -1.9	21-30	21-30	<75% for 3 months	-0.5 to -0.7	36-45
D1	Moderate Drought	Some damage to crops, pastures; fire risk high; 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	<70% for 3 months	-0.8 to -1.2	26-35
D2	Severe Drought	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	<65% for 6 months	-1.3 to -1.5	16-25
D3	Extreme Drought	Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	<60% for 6 months	-1.6 to -1.9	6-15
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies	-5.0 or less	0-2	0-2	<65% for 12 months	-2.0 or less	1-5

All areas of Craighead County, the cities Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are equally likely to experience severe drought, there is no defined geographic hazard boundary and can experience a drought that is rated between a D0 and D4 in any given year.

D0-D4: The Drought Monitor summary map identifies general drought areas, labeling droughts by intensity, with D1 being the least intense and D4 being the most intense. D0, drought watch areas, are either drying out and possibly heading for drought, or are recovering from drought but not yet back to normal, suffering long-term impacts such as low reservoir levels.

The Drought Severity Classification has a variety of different ranges to measure drought severity.

- Palmer Drought Index – is used to measure the extent of drought by measuring the duration and intensity of long-term drought inducing circulation patterns. Long-term drought is cumulative, with the intensity of drought during the current month dependent upon the current weather patterns plus the cumulative patterns of previous months.
- Climate Prediction Center Soil Moisture- is used to monitor the soil moisture as a predictor in monthly and seasonal temperature and precipitation outlooks.
- USGS Weekly Steam flow- is the average streamflow during the past 7 days. Averaging streamflow values over an entire week.
- Percent of Normal Precipitation- is one of the simplest measurements of rainfall for a location. Analyses using the percent of normal are very effective when used for a single region or a single season. Percent of normal is also easily misunderstood and gives different indications of conditions, depending on the location and season. It is calculated by dividing actual precipitation by normal precipitation—typically considered to be a 30-year mean—and multiplying by 100%. This can be calculated for a variety of time scales. Usually, these time scales range from a single month to a group of months representing a particular season, to an annual or water year. Normal precipitation for a specific location is 100%.
- Standardized Precipitation Index (SPI)- is a toll which was developed primarily for defining and monitoring drought. It allows an analyst to determine the rarity of a drought event at any given time. It can also be used to determine periods of irregular wet events. The SPI is not a drought prediction tool.
- Satellite Vegetation Health Index- a satellite-based global VH System designed to monitor, diagnose, and predict long- and short-term land environmental conditions and climate-dependent socioeconomic activities. The System is based on satellite observations of the Earth, biophysical theory of vegetation response to the environment, set of algorithms for satellite data processing, interpretation, product development, validation, calibration, and applications.

4.5.2.4 Previous Drought Occurrences

There have been 18 drought events in Craighead County between 1950 – 2021.

4.5.2.5 Probability of Future Drought Events

All of Craighead County based on the lack of previous occurrences, future Drought events has less than 1% probability of a drought event in any given year and is highly likely to occur. Although, the probability of D2, D3, and D4 classified events are occasional in nature, and less likely to occur, it is still important to remember that it can happen in any given year. Probability of each drought classification can be found in Table 4. Drought Probability in Craighead County.

Table 1. Drought Probability in Craighead County

Classification	Probability Percentage	Probability Level	Estimated Length of Time	Likely Months
D4	5.00%	Occasional	1 to 8 weeks	July through September
D3	13.00%	Occasional	1 to 12 weeks	September through October

D2	2.00%	Occasional	1 to 2 weeks	September through November
D1	16.00%	Likely	1 to 8 weeks	January; August; and October through December
D0	26.00%	Likely	1 to 12 weeks	Any Month

Craighead County will most likely experience severe drought events between the months of June and August. Overall, a drought can occur at any time of the year, but an event is most likely to occur in the late Summer, Fall, and Winter months.

4.5.2.6 Impact of Drought

Drought impacts communities in several ways, spanning all regions, and can affect the economy as well as the environment. Specific impacts can include:

- reduced crop, rangeland.
- increased livestock and wildlife mortality rates
- reduced income for farmers and agribusiness.
- increased fire hazard
- reduced water supplies for municipal/industrial, agricultural, and power uses.
- damage to fish and wildlife habitat
- increased consumer prices for food
- reduced tourism and recreational activities.
- increased unemployment
- reduced tax revenues because of reduced expenditures.
- increased foreclosures on bank loans to farmers and businesses

The most direct impact of drought is economic per agriculture rather than loss of life or immediate destruction of property. Impacts experienced in the agricultural community include direct losses of both crop and livestock production due to a lack of surface and subsurface water; and increases in insect infestations, plant disease, and wind erosion.

In smaller communities, reduced flow in rivers and streams can have a significant effect on the water amount allowed for municipal use. Hot weather during the summer increases supply and demand. In turn, higher water demand can stress many smaller and obsolete treatment facilities to the point of collapse. Prolonged drought has a much greater impact on rural communities, which usually rely on relatively small watersheds and are especially vulnerable during such periods.

Water deficiencies can likewise influence firefighting capacities in both urban and rural settings through decreased water flows and pressures. Most droughts dramatically increase the danger of fires on wild land. When wild lands are destroyed by fire, the resulting erosion can cause heavy silting of streams, rivers, and reservoirs. Serious damage to aquatic life, irrigation, and power production then occurs. Although drought can have serious impact during winter months, it is most often associated with extreme heat. Wildlife, pets, livestock, crops, and humans are vulnerable to the high heat that can accompany drought. When temperatures reach 90 degrees and above, people and animals are more likely to suffer heat stroke, heat cramps, and heat exhaustion. Craighead County scored a 61.9% risk to Drought on the Hazard Vulnerability Assessment. Property impact in the planning area was estimated as high risk, while human impact and continuity of business were identified as moderate risk. The biggest strength of the planning area is the high level of preparedness and internal response for this type of event. Weakness for the planning area is external response and funding for mitigation activities.

4.5.2.7 Vulnerability and Estimating Potential Loss

There is no evidence that drought has any kind of potential loss on building structures. It primarily affects agriculture, livestock, and water supply. The most vulnerable population is those with health conditions, elderly, homeless, and farmers.

4.5.2.8 Multi-Jurisdictional Risk Assessment

Craighead County, cities Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City,

Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric of are all equally subject to drought, there is no defined geographic hazard boundary. Damages from drought are generally economic. Assets at risk would include open land that could become vulnerable to the wildfire hazard due to extended periods of low rain and high heat. Water supply resources would be affected and the vulnerable populations such as the farmers.

Public Health would be affected through lack of water supply, unsafe water in ponds and creeks, and airborne dust. Those affected most would be the homeless, children, those with health conditions and elderly. Thus, the threat is Countywide, multi-jurisdictional.

5.5.3 Earthquake

5.5.3.1 Description of 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.

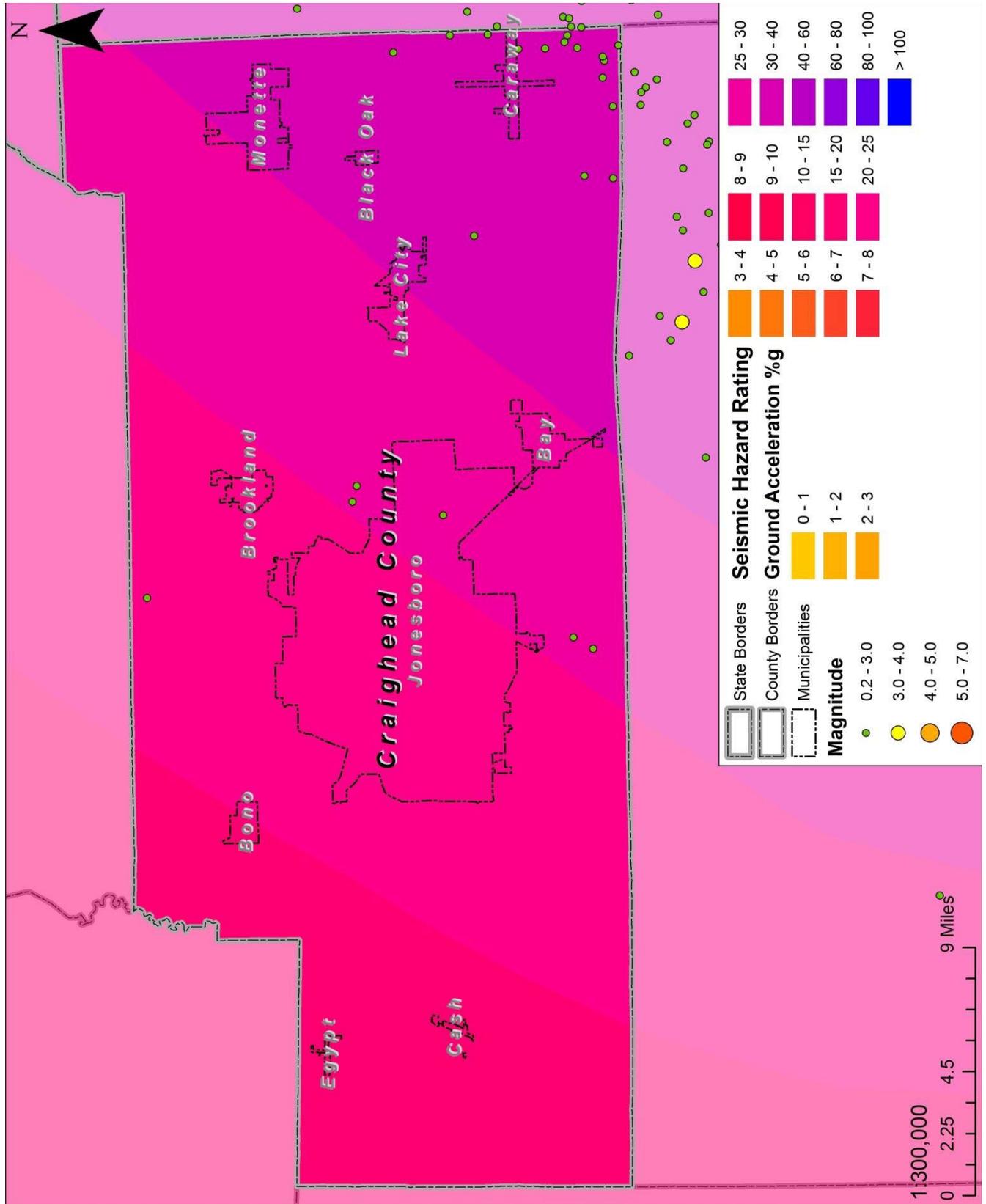
Sometimes an earthquake has foreshocks. These are smaller earthquakes that happen in the same place as the larger earthquake that follows. Scientists can’t tell that an earthquake is a foreshock until the larger earthquake happens. The largest, main earthquake is called the mainshock. Mainshocks always 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.

5.5.3.2 Locations affected by Earthquake and Previous Occurrences

There have been 9 recorded earthquake events within the boundaries of Craighead County since 1974. However, all of Craighead County is equally at risk to be affected by an Earthquake.

Earthquake Event Date	Magnitude	Location
February 4 th , 2015	2.6	Bono, Arkansas
February 4 th , 2015	2.3	Bono, Arkansas
June 15 th , 2012	2.2	Brookland, Arkansas
December 15 th , 2010	2.1	Brookland, Arkansas
December 12 th , 2009	2.0	Cash, Arkansas
March 3 rd , 1984	1.7	Brookland, Arkansas
June 27 th , 1975	2.3	Lake City, Arkansas
November 19 th , 1974	1.9	Bay, Arkansas
February 24 th , 1974	3.2	Black Oak, Arkansas

*Please see the table below for the Seismic Hazard Rating, Craighead County.



*This data was provided by the previous plan.

5.5.3.3 Extent, Magnitude or Severity of Extreme Earthquake Events:

During a New Madrid Earthquake Craighead County could experience a magnitude VI on the Mercalli Scale. All participating jurisdictions are equally likely to experience an earthquake and could see up to a VI, it's likely that they will experience between a II-IV based on past occurrences.

The severity of an earthquake is typically judged by the Richter Scale, which refers to the magnitude of the event. Magnitude is based on the amount of energy that is released and is universal regardless of where the earthquake occurs. However, the intensity of the event is what measures the total damage associated with the earthquake and varies depending on many different factors, such as social vulnerability, building counts, geography, fault zone, and mitigation tools utilized. 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. The Modified Mercalli Intensity (MMI) scale (Figure 2) is made of increasing levels of intensity, designated by Roman numerals, that range from undetected shaking (Not Felt) to catastrophic destruction (Extreme).

Category	Effects	Richter Scale (approximate)
I. Instrumental	Not felt	1-2
II. Just perceptible	Felt by only a few people, especially on upper floors of tall buildings	3
III. Slight	Felt by people lying down, seated on a hard surface, or in the upper stories of tall buildings	3.5
IV. Perceptible	Felt indoors by many, by few outside; dishes and windows rattle	4
V. Rather strong	Generally felt by everyone; sleeping people may be awakened	4.5
VI. Strong	Trees sway, chandeliers swing, bells ring, some damage from falling objects	5
VII. Very strong	General alarm; walls and plaster crack	5.5
VIII. Destructive	Felt in moving vehicles; chimneys collapse; poorly constructed buildings seriously damaged	6
IX. Ruinous	Some houses collapse; pipes break	6.5
X. Disastrous	Obvious ground cracks; railroad tracks bent; some landslides on steep hillsides	7
XI. Very disastrous	Few buildings survive; bridges damaged or destroyed; all services interrupted (electrical, water, sewage, railroad); severe landslides	7.5
XII. Catastrophic	Total destruction; objects thrown into the air; river courses and topography altered	8

*This data is from USGS

5.5.3.4 Probability of Future Events

There have 9 recorded events in regard to an earthquake occurring in Craighead County in the past scoring a probability of 11% for the entire planning area. This is since when using the Poisson Distribution equation; it relies on past occurrences over a period to assign a numerical probability in regard to what the probability of failure may be. This equation was used to assign probability to all hazards throughout this plan. A data deficiency exists and will be addressed as a mitigation action for in the event probability cannot be assigned due to an event not occurring.

5.5.3.5 Impact and Vulnerability Estimating Potential Loss

The Mid America Earthquake Center ran a comprehensive region wide NMSZ simulation in 2008. They estimate Craighead County will sustain 1,001 to 2,900 casualties and between 10,001 and 30,000 buildings will be damaged. The results of the estimates are shown in the maps on the following pages. The range of expected impacts from a NMSZ event on Craighead County and its jurisdictions is estimated as a 5 to 6 on the Richter Scale and between a category VI and VIII on the Mercalli Scale. The potential impacts of a NMSZ earthquake on each jurisdiction are detailed in the table below. According to the study, Craighead County is located far outside the estimated area of a NMSZ impact. However, it is possible that a NMSZ event could occur at a greater than predicted magnitude and impact Craighead County.

Vulnerable Structures, Earthquakes					
Jurisdiction	Agricultural	Commercial	Government	Industrial	Residential
Craighead County	\$16,333,000	\$89,385,000	\$4,207,000	\$73,219,000	\$694,940,000
Bay	\$1,390,000	\$5,206,000	\$0	\$1,014,000	\$73,432,000
Black Oak	0	\$591,000	\$83,000	\$0	\$12,390,000
Bono	0	\$7,232,000	\$485,000	\$3,766,000	\$60,226,000
Brookland	\$226,000	\$4,368,000	\$248,000	\$2,085,000	\$62,295,000
Caraway	\$567,000	\$11,650,000	\$365,000	\$451,000	\$46,283,000
Cash	\$247,000	\$571,000	\$0	\$0	\$14,383,000
Egypt	\$94,000	\$90,000	\$949,000	\$153,000	\$4,908,000
Jonesboro	\$23,100,000	\$1,461,161,000	\$29,546,000	\$548,593,000	\$2,654,278,000
Lake City	\$1,098,000	\$10,607,000	\$658,000	\$405,000	\$72,420,000
Monette	\$4,405,000	\$15,477,000	\$1,416,000	\$8,074,000	\$61,493,000
Total =	\$47,460,000	\$1,606,338,000	\$37,957,000	\$637,760,000	\$3,757,048,000
Campus		Structural Value			
Bay School District		\$21,770,269			
Brookland School District		\$52,042,388			
Buffalo Island Central School District		\$11,734,999			
Jonesboro School District		\$102,819,087			
Nettleton School District		\$114,211,440			
Riverside School District		\$65,453,956			
Valley View School District		\$32,403,033			
Westside Consolidated School District		\$35,809,743			
Total =		\$436,244,915			

*This data and research for these tables were provided by the previous plan. There have been no studies since then to determine new figures. Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are not listed in the table above because this data was not available.

Craighead County and its jurisdictions' structural vulnerability to earthquakes vary based on the construction quality, construction material, soil and foundation, and earthquake resilience of each structure. Buildings in Arkansas must abide by the Arkansas Fire Prevention Code 2012 which set a minimum standard for structural earthquake resilience. However, a high magnitude earthquake will still damage or destroy structures.

Historically, there are no recorded incidents of property damage from earthquakes to any of Craighead County or its jurisdictions' structures. However, during the Craighead County Natural Hazard Questionnaire one of the responses stated that living closely to the fault line increases the residents fear and home insurance.

6.5.4 Extreme Heat

6.5.4.1 Description of Extreme Heat

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground.

6.5.4.2 Locations Affected by Extreme Heat

The entire planning area is uniformly affected by extreme heat. There is no geographical hazard boundary for extreme heat in this planning area. Extreme heat generally affects people rather than property. However, agriculture can be majorly impacted during events if not mitigated. All participating jurisdictions within the planning area are equally likely to experience an extreme heat event, especially between the months of June, July, and August. The location of extreme heat throughout the planning area is extensive.

6.5.4.3 Extent, Magnitude or Severity of Extreme Heat Events

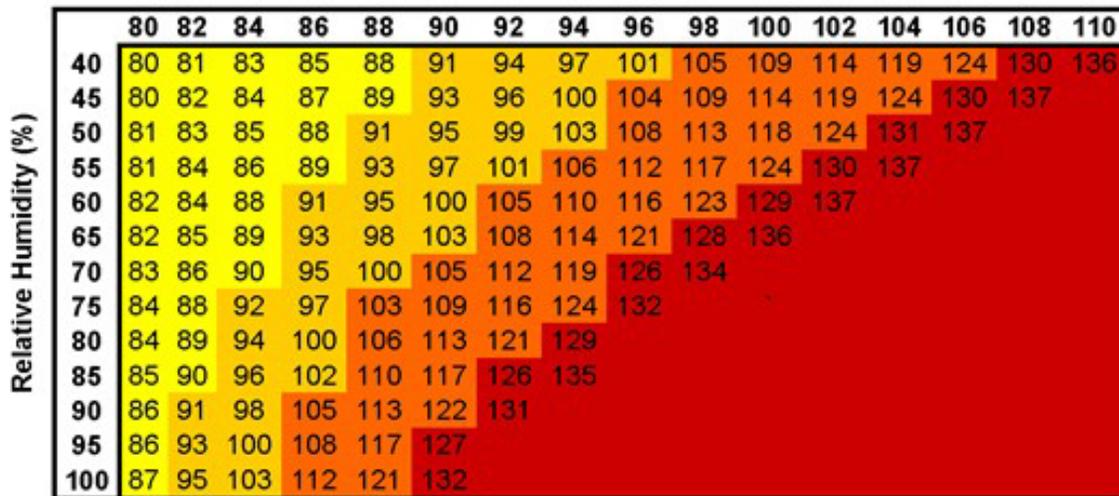
All participating jurisdictions, including unincorporated areas of Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette; and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are affected seasonally by summer heat, with summer temperatures averaging 80 degrees and maximum around 92 degrees. But in 2010 heat waves made extremely hot summers with temperatures in Craighead County ranging from 105 degrees and greater resulting in the death of a 53-year-old male. The past occurrences help predict that the participating jurisdictions mentioned above are likely to expect extreme heat up to 120 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.

NOAA's National Weather Service

Heat Index

Temperature (°F)



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

- Caution
- Extreme Caution
- Danger
- Extreme Danger

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.

The Heat Index Chart shaded zone above 105°F (orange or red) shows a level that may cause increasingly severe heat disorders with continued exposure or physical activity.

The colored zones indicate varying symptoms or disorders that could occur depending on the magnitude or intensity of the event.

	Caution- is the first level of intensity where fatigue due to heat exposure is possible
	Extreme Caution- indicates that sunstroke, muscle cramps or heat exhaustion are possible
	Danger- indicates that sunstroke, muscle cramps or heat exhaustion are likely
	Extreme Danger- indicates that heat stroke is likely

Based on the latest research findings, the National Weather Service has devised the “Heat Index” (HI), (sometimes referred to as the “apparent temperature”). The HI, given in degrees F, is an accurate measure of how hot it really feels when relative humidity (RH) is added to the actual air temperature.

To find the HI, look at the Heat Index Chart. As an example, if the air temperature is 95°F (found on the top of the table) and the RH is 55% (found at the left side of the table), the HI-or how hot it really feels-is 110°F. This is at the intersection of the 95° row and the 55% column.

IMPORTANT: Since HI values were devised for shady, light wind conditions, EXPOSURE TO FULL SUNSHINE CAN INCREASE HI VALUES BY UP TO 15°F. Also, STRONG WINDS, PARTICULARLY WITH VERY HOT, DRY AIR, CAN BE EXTREMELY HAZARDOUS.

Heat Index/Heat Disorders: Possible heat disorders for people in higher risk groups.

Heat Index of 130° OR Higher: HEATSTROKE/SUNSTROKE HIGHLY HIGHER LIKELY WITH CONTINUED EXPOSURE,

Heat Index of 105°- 130°: SUNSTROKE, HEAT CRAMPS OR HEAT EXHAUSTION LIKELY, AND HEATSTROKE POSSIBLE WITH PROLONGED EXPOSURE AND/OR PHYSICAL ACTIVITY.

Heat Index of 90°- 105°: SUNSTROKE, HEAT CRAMPS AND HEAT EXHAUSTION POSSIBLE WITH PROLONGED EXPOSURE AND/OR PHYSICAL ACTIVITY.

Heat Index of 80° - 90°: FATIGUE POSSIBLE WITH PROLONGED EXPOSURE AND/OR PHYSICAL ACTIVITY

Note on the HI chart the shaded zone above 105°F. This corresponds to a level of HI that may cause increasingly severe heat disorders with continued exposure and/or physical activity.

The “Heat Index vs. Heat Disorder” table (next to the HI chart) relates ranges of HI with specific disorders, particularly for people in higher risk groups.

6.5.4.4 Previous Occurrences

There have been 23 occurrences in Craighead County between 1950-2022.

6.5.4.5 Probability of Future Extreme Heat Events

According to data analysis, Craighead County has a 23% chance of experiencing extreme heat in any given year. However, an extreme heat event is most likely to occur between 3 and 4 times in a year that experiences temperatures above 95°F. Data indicates that Craighead County is highly likely to experience extreme heat in the next five years.

6.5.4.6 Impact of Extreme Heat

Heat is the number one weather-related killer in the United States, resulting in hundreds of fatalities each year. On average, excessive heat claims more lives each year than floods, lightning, tornadoes, and hurricanes combined.

Extreme heat, though not a serious threat to structures, can negatively affect agri-businesses, particularly poultry grow-out operations, thus affecting the local economy. Heat stress also adversely affects dairy and livestock production. Optimal temperatures for milk production are between 40 °F and 75 °F.

Extreme heat can also be a hazard to critical facilities that must be temperature controlled, such as hospitals, nursing homes, and communications facilities (due to the heat sensitive electronic equipment). A total power outage or brown-out during a time of extreme heat would create a very serious situation for facilities that do not have a backup power supply, such as a generator, to power air conditioning systems.

An extreme heat event will extend throughout the entire planning area.

As with drought, high temperatures strongly affect people of all types, but particularly the elderly, farmers, homeless, and youth. All agriculture crops, livestock, water supply, and forestlands are vulnerable to extreme heat. No area can be said to be immune from extreme heat. The most vulnerable population is the elderly, young, children, and those who are sick, overweight, live alone, or who work outside.

6.5.4.7 Vulnerability and Estimating Potential Loss by Jurisdiction to Extreme Heat

An extreme heat event can extend throughout the unincorporated areas of Craighead County, cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric. It affects people of all ages, primarily the elderly, children and homeless. All agriculture crops, livestock, water supply and timber plantations are vulnerable to extreme heat. No area can be said to be immune from, or any more or less vulnerable to extreme heat. Heat exhaustion usually affects people who are working or exercising in a hot environment. Those at risk for heat exhaustion include:

- Infants and young children are at risk because their temperature regulation mechanisms are not fully developed. They also are dependent upon others for water and appropriate clothing. In Craighead County 6.5% of the County's population is under the age of 5 years.
- The elderly is similarly at risk because of underlying medical conditions that limit the ability to sweat including poor circulation, skin changes, and chronic medication usage. In Craighead County 13.5% of the County's populations is over the age of 65 years.

Socioeconomic issues increase the risk of heat exhaustion if access to air conditioning is limited. During heat waves, large cities often open cooling centers to help minimize the risk of large numbers of people succumbing to heat-related illness. Certain medications may impair the ability of the body to sweat as well.

7.5.5 Flooding

7.5.5.1 Description of 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 Craighead County. Common impacts of flooding include damage to personal property, buildings, and infrastructure; bridge and road closures; service disruptions; and injuries or even fatalities.

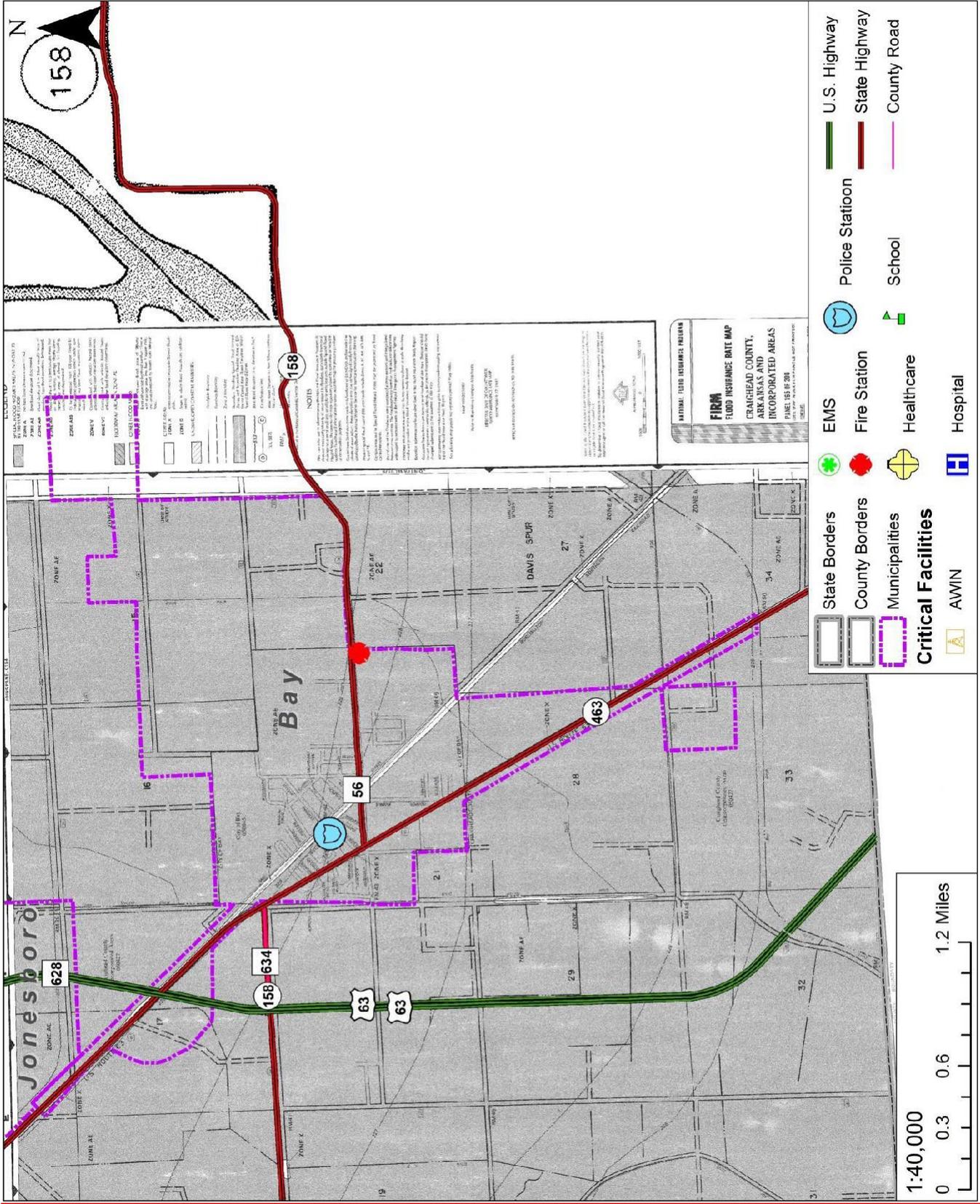
7.5.5.2 Location of Flooding Events

All parts of Craighead County are subject to flash flooding. The Hazard Mitigation Planning Team has

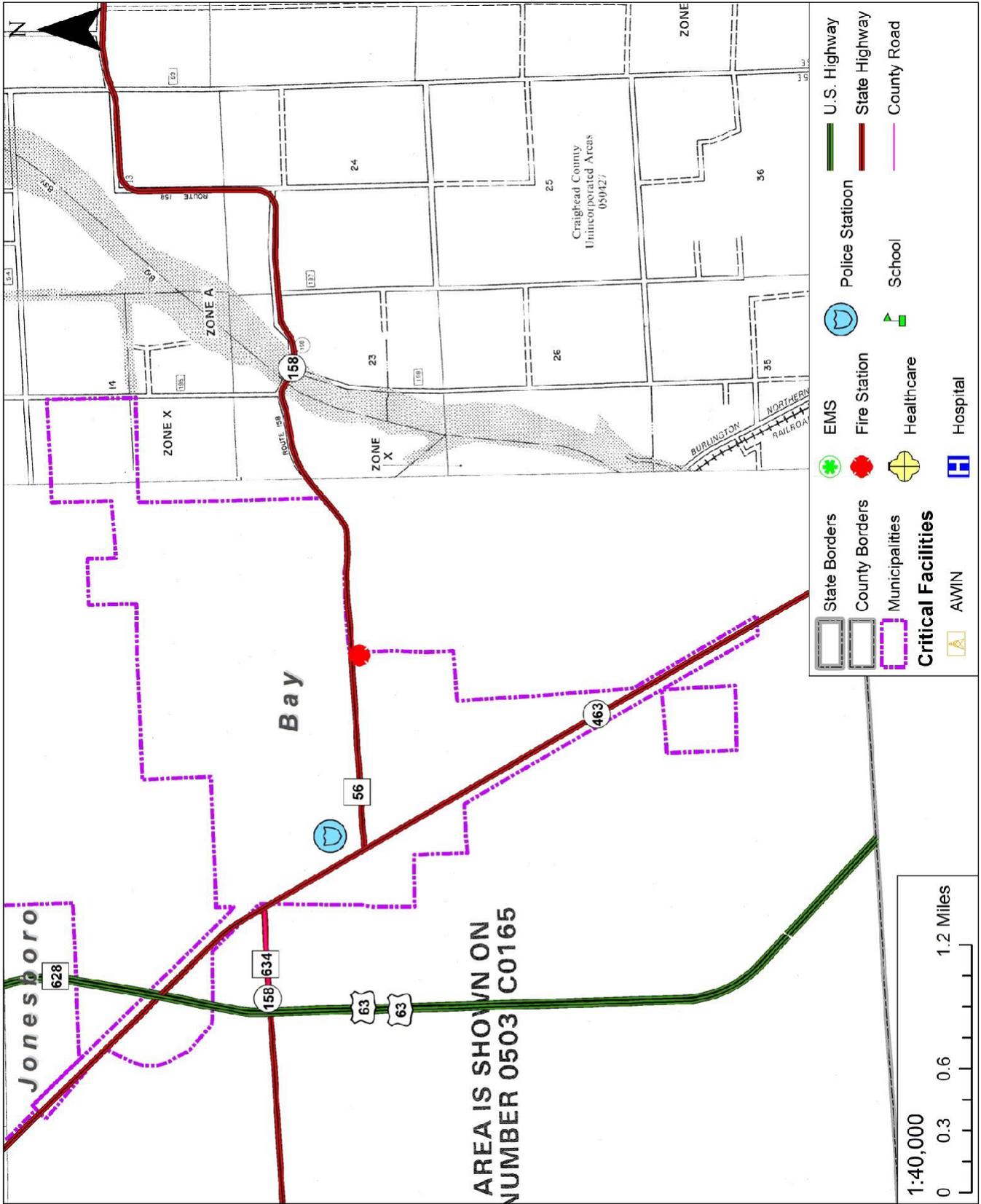
reviewed Craighead County's Flood Insurance Rate Maps (FIRMs) and worked with the County Floodplain Administrator to compile a profile of the flooding hazard within the County. Research on flooding history in the County included newspaper accounts of major floods, data collected by the National Climatic Data Center and the National Flood Insurance Program, and interviews with individual County residents. The County's floodplain maps were developed in 1980s-1990s, and therefore the County's FIRMs do not provide an accurate picture of areas and structures most vulnerable to flooding. Due to the age of the FIRMs and the lack of information provided on them updated maps are needed to gain a better understanding of what areas can be impacted by flooding and the various flooding inundation levels.

Zone	Description
A	Areas of 100-year Flood; Base flood elevations and flood hazard factors not determined
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundations are shown, but no flood hazard factors are determined.
AE	Base flood elevations determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; Base Flood Elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; Base Flood Elevations and Flood Hazard Factors determined.
A-99	Areas of 100-year flood to be protected by flood protection system under construction; Base Flood Elevations and Flood Hazard Factors not determined.
AR	The base floodplain that results from the de-certification of a previously accredited flood protection system that is in the process of being restored to provide a 100 year or greater level of flood protection.
V	The coastal area subject to a velocity hazard (wave action) where BFE's are not determined on the FIRM.
VE	The coastal area subject to a velocity hazard (wave action) where BFE's are provided on the FIRM.
B & X Shaded	Areas of moderate flood hazard, usually the area between the limits of the 100 year and 500-year floods. B zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from the 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C & X Unshaded	Areas of minimal flood hazard usually depicted on FIRMs as exceeding in 500-year flood level. Zone C may have ponding and local drainage problems that do not warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood.
D	Areas of undetermined but possible flood hazards.

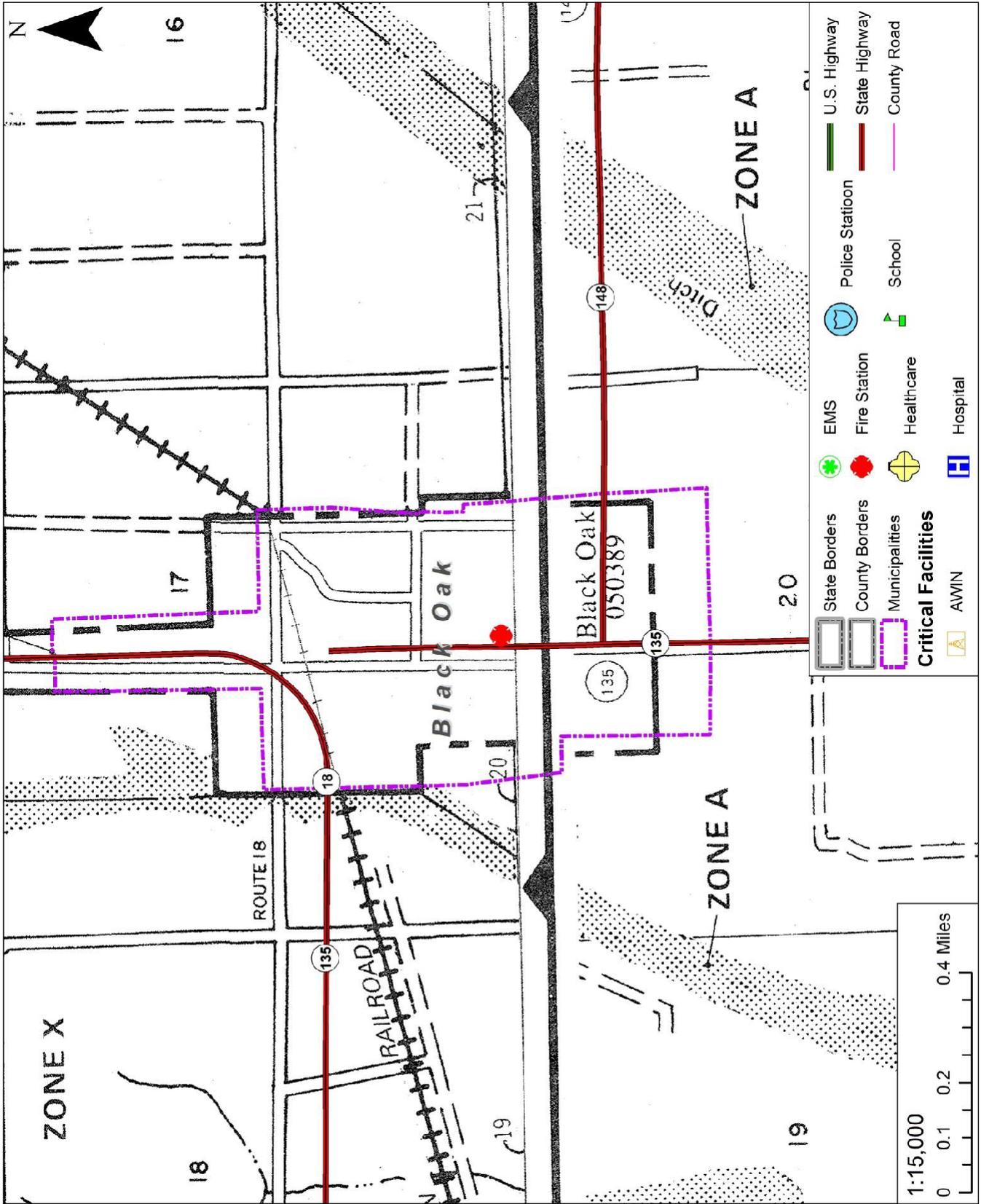
Bay – Westside Floodplain Map



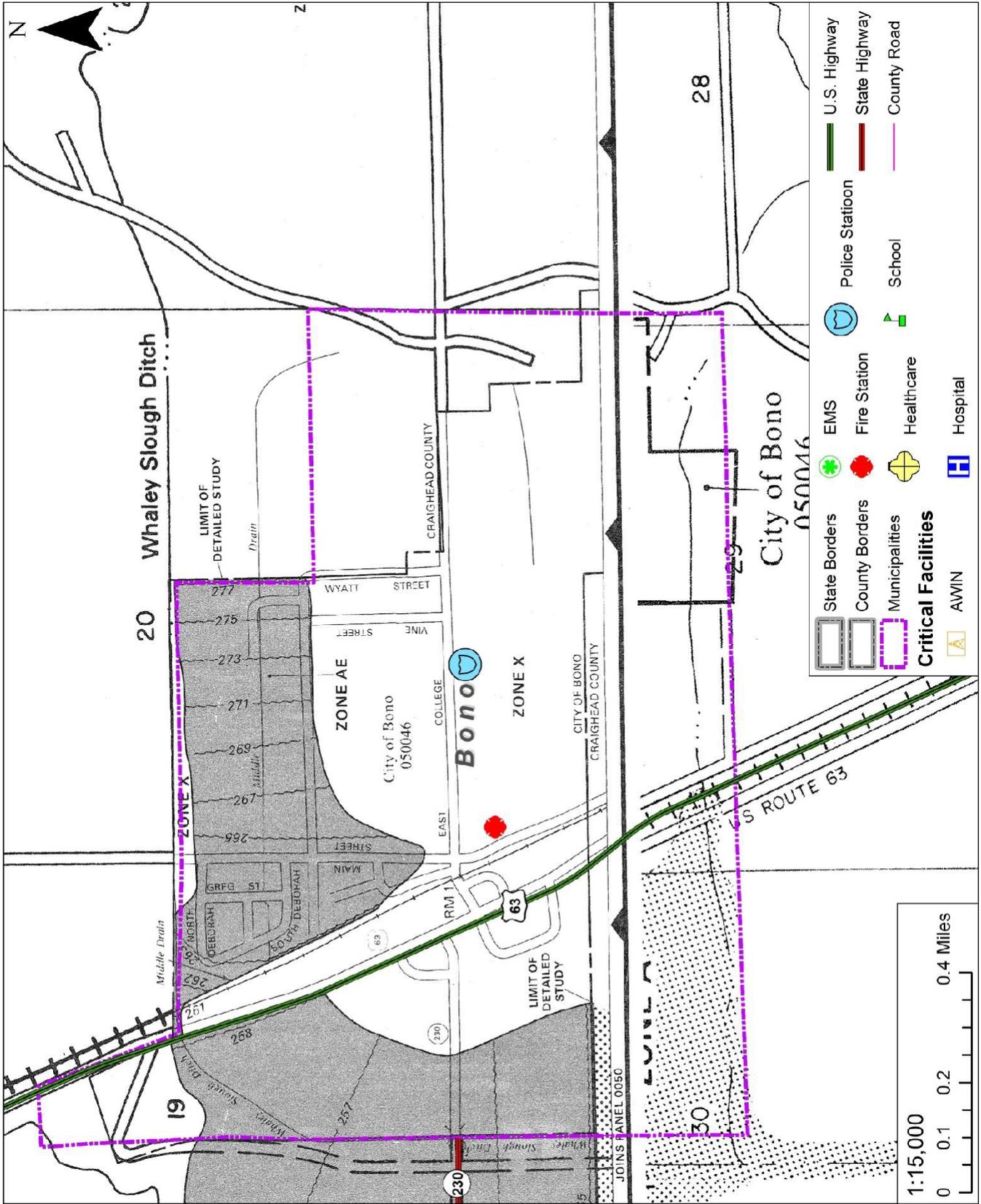
Bay – Eastside Floodplain Map



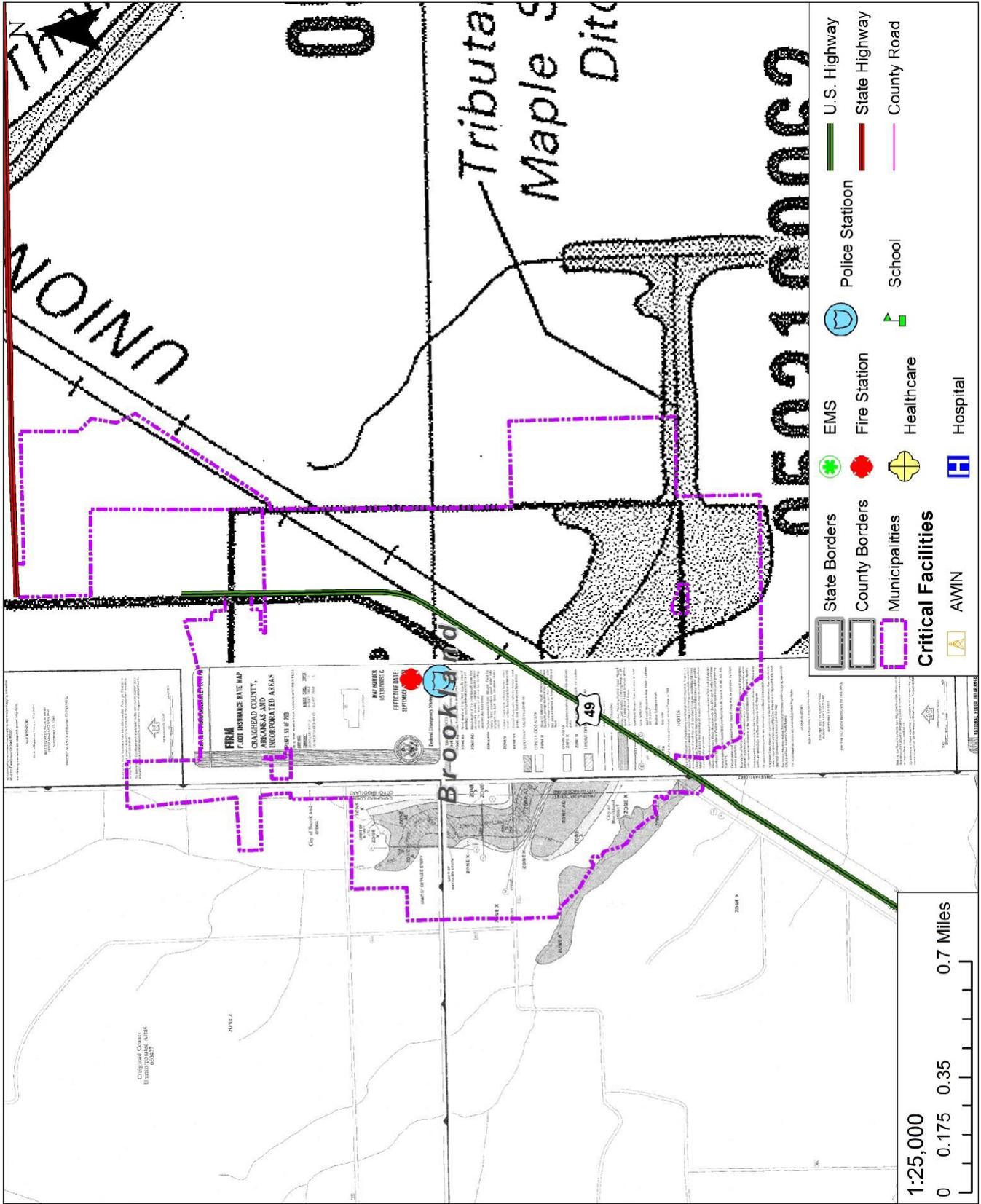
Black Oak Floodplain Map



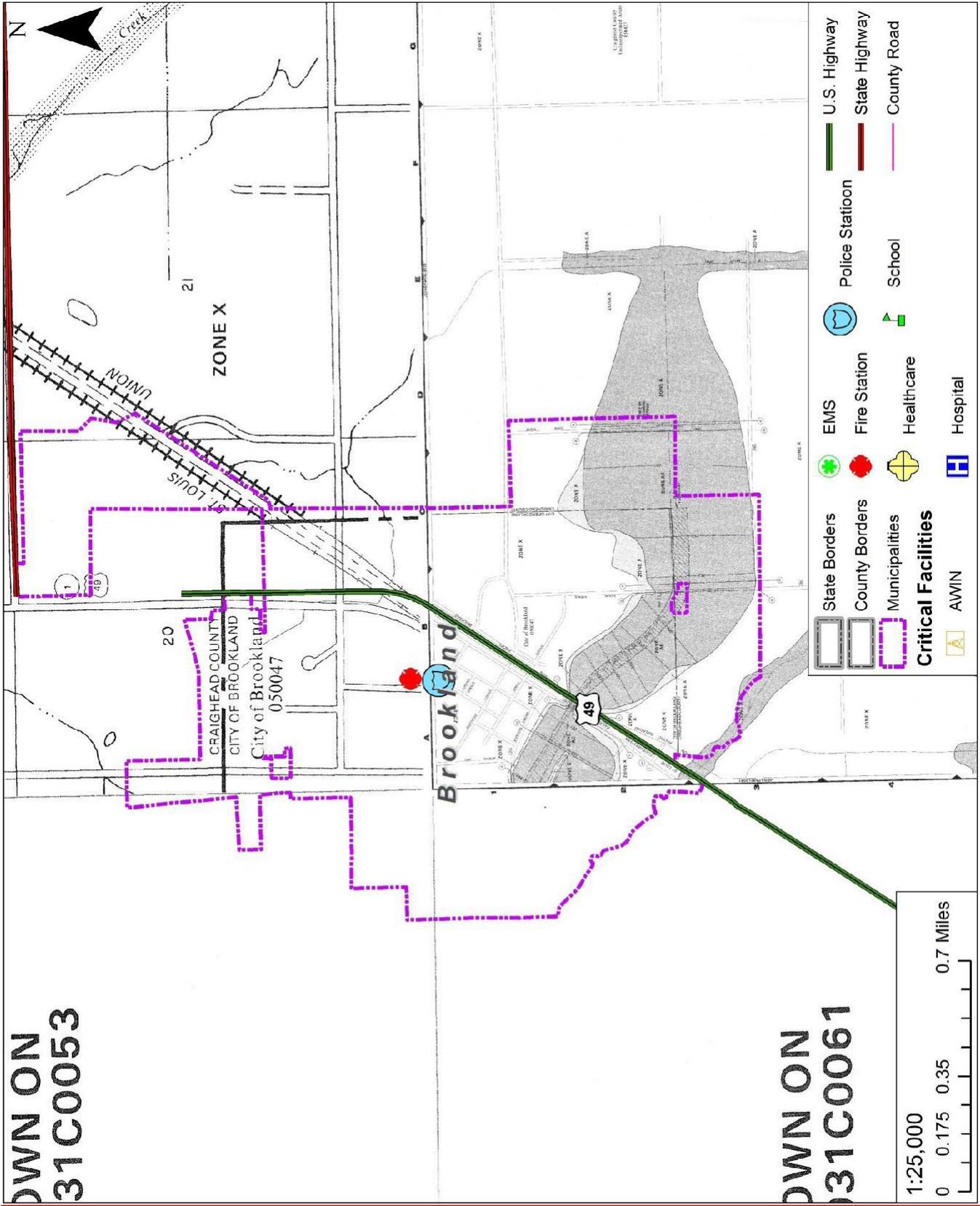
Bono Floodplain Map



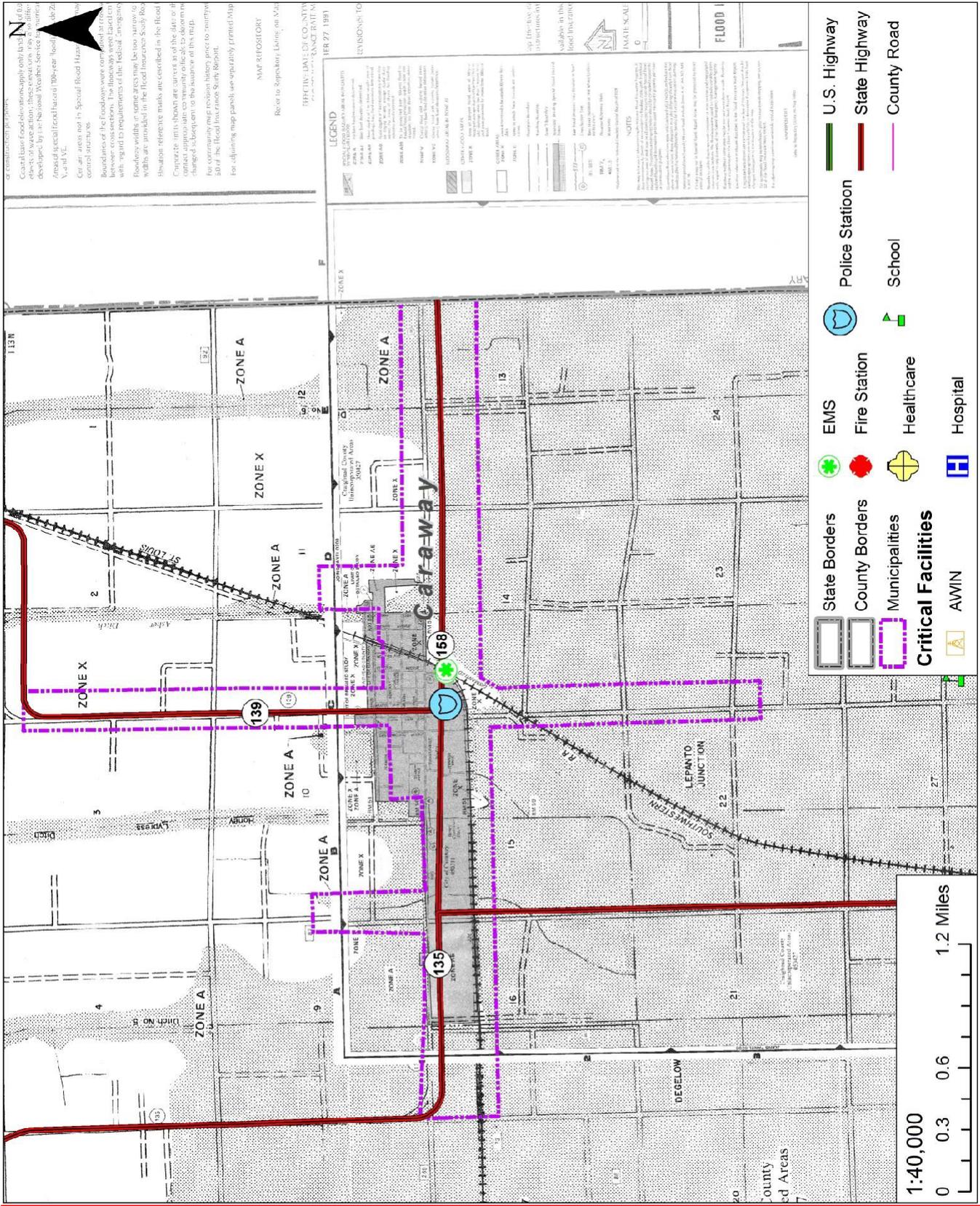
Brookland – Westside Floodplain Map



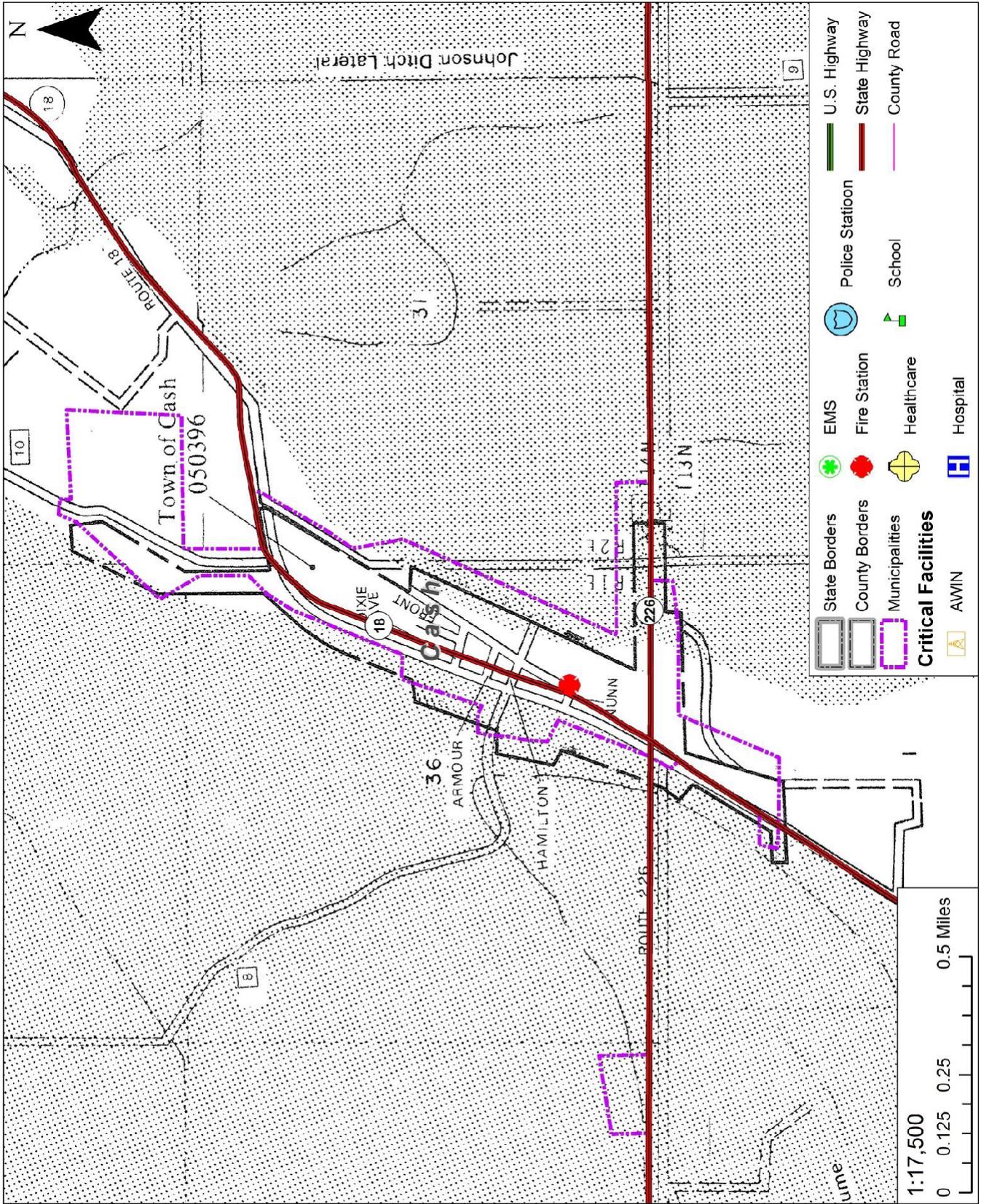
Brookland – Eastside Floodplain Map



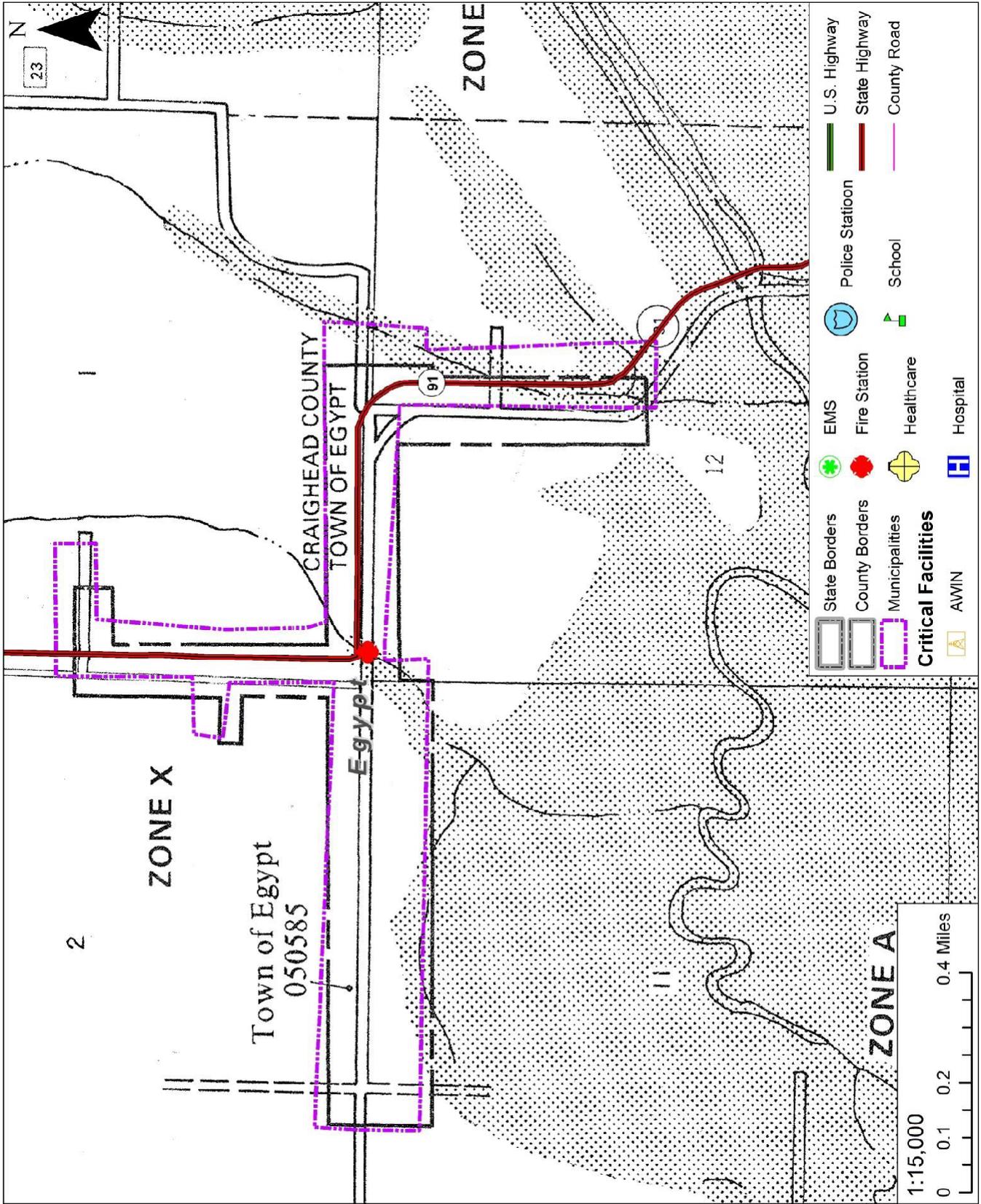
Caraway Floodplain Map



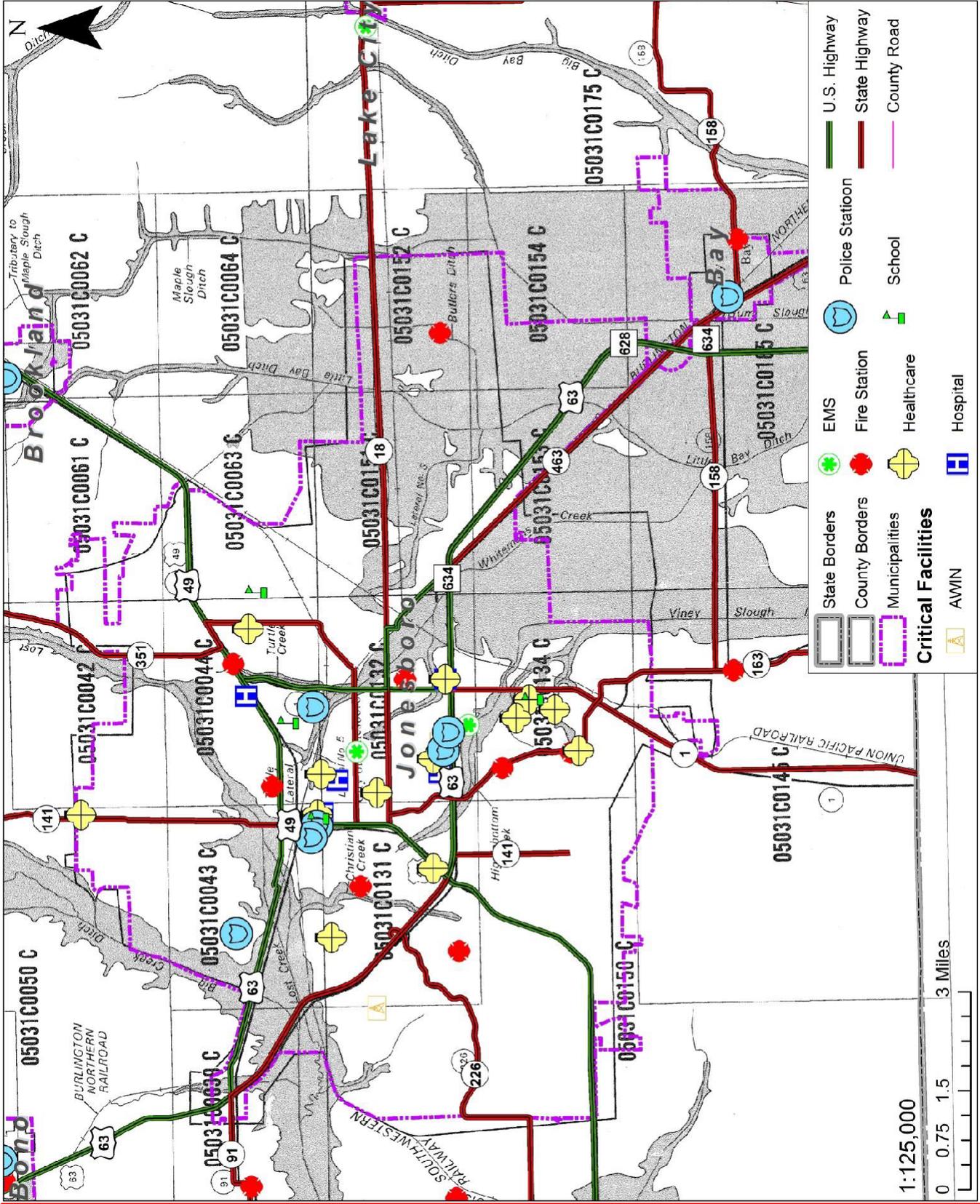
Cash Floodplain Map



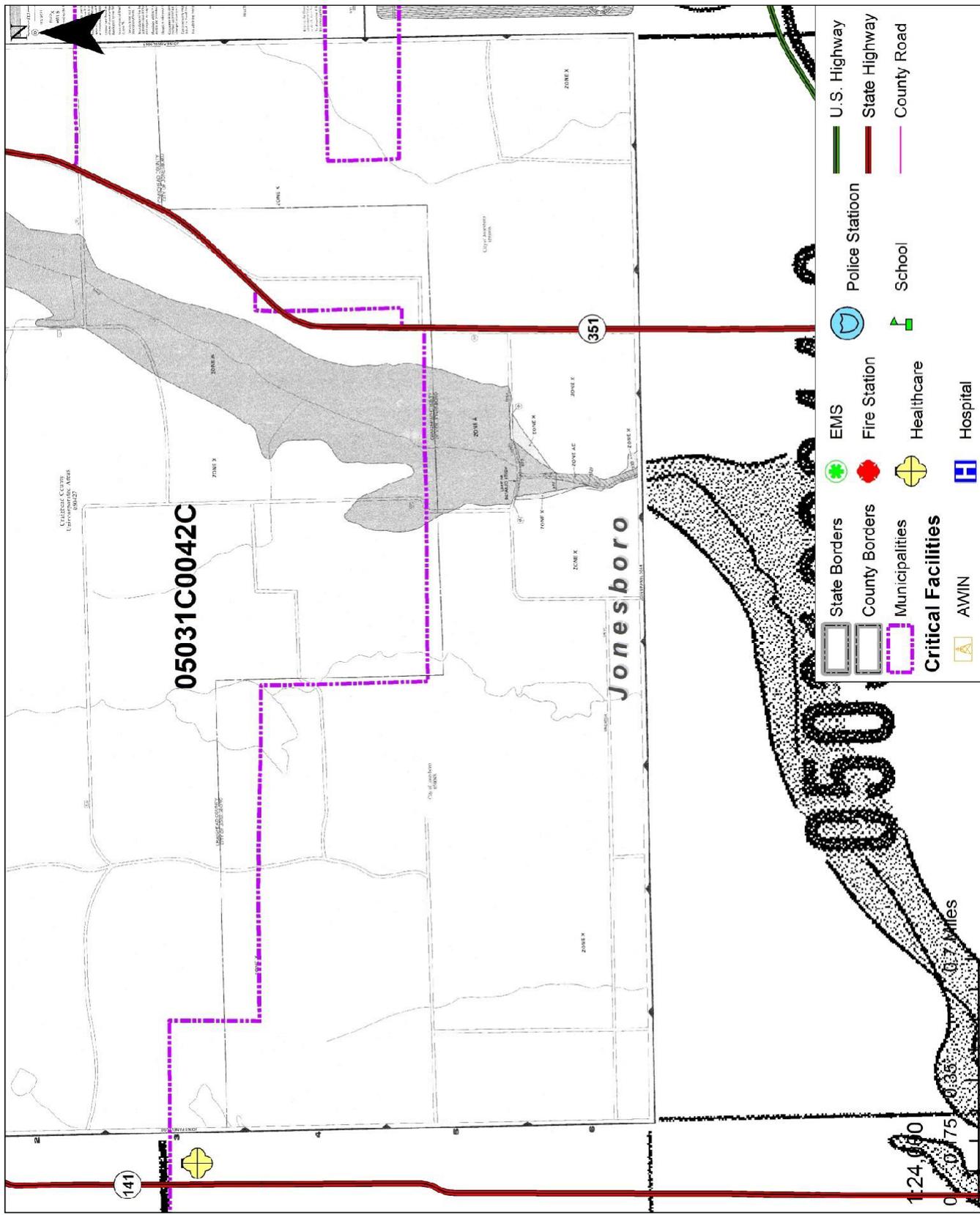
Egypt Floodplain Map



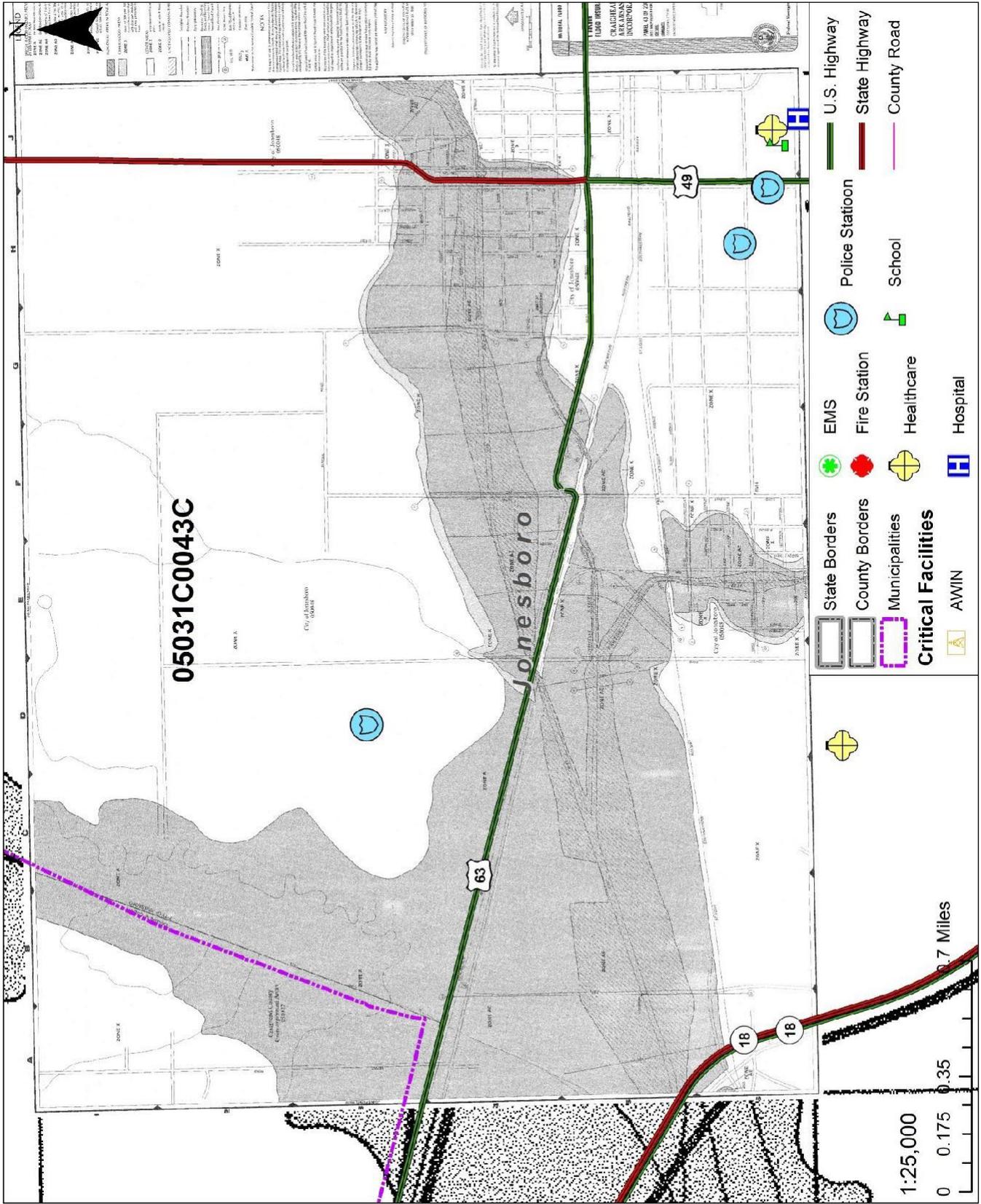
Jonesboro Floodplain Map



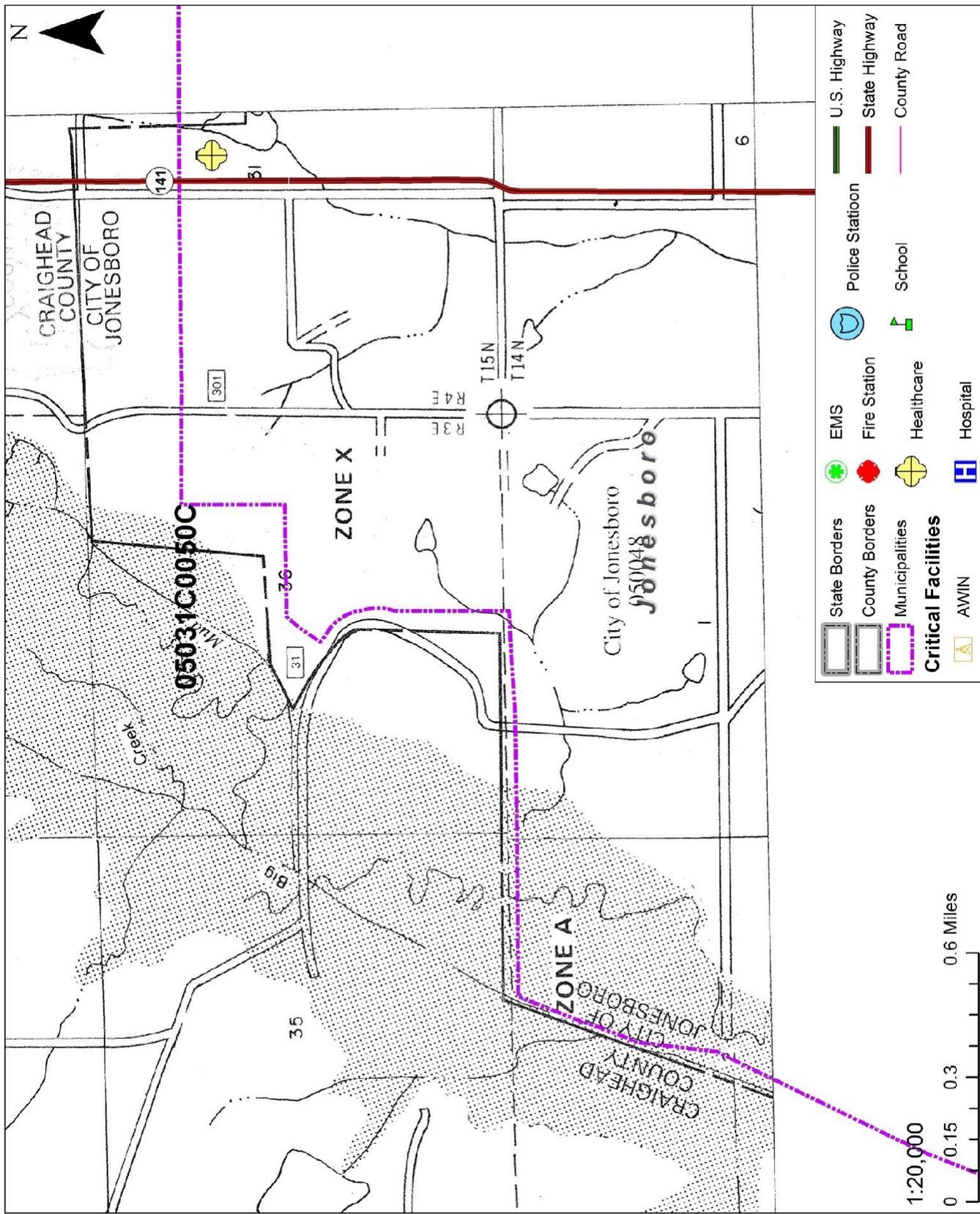
Jonesboro – 05031C0042C Floodplain Map



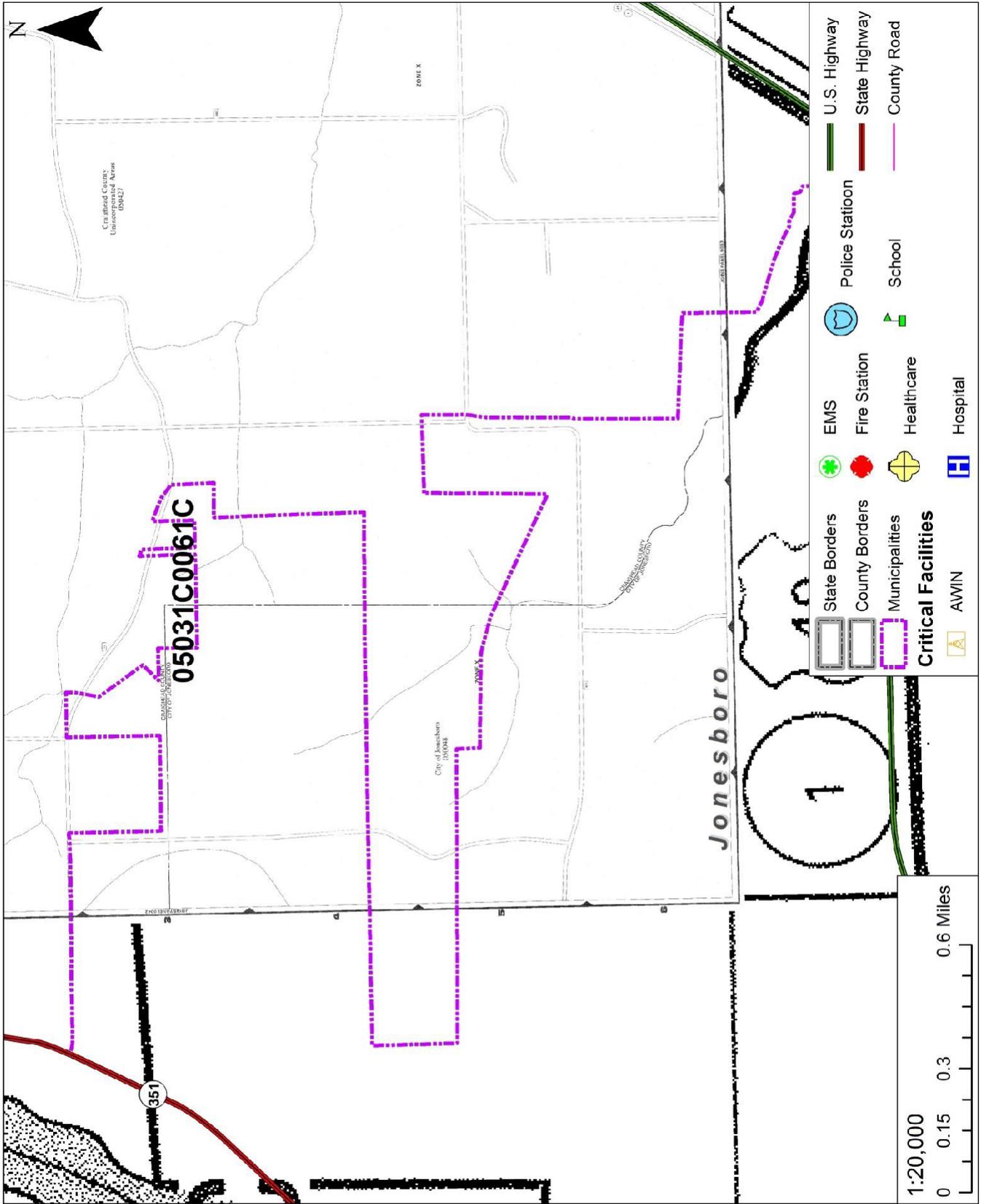
Jonesboro – 05031C0043C Floodplain Map



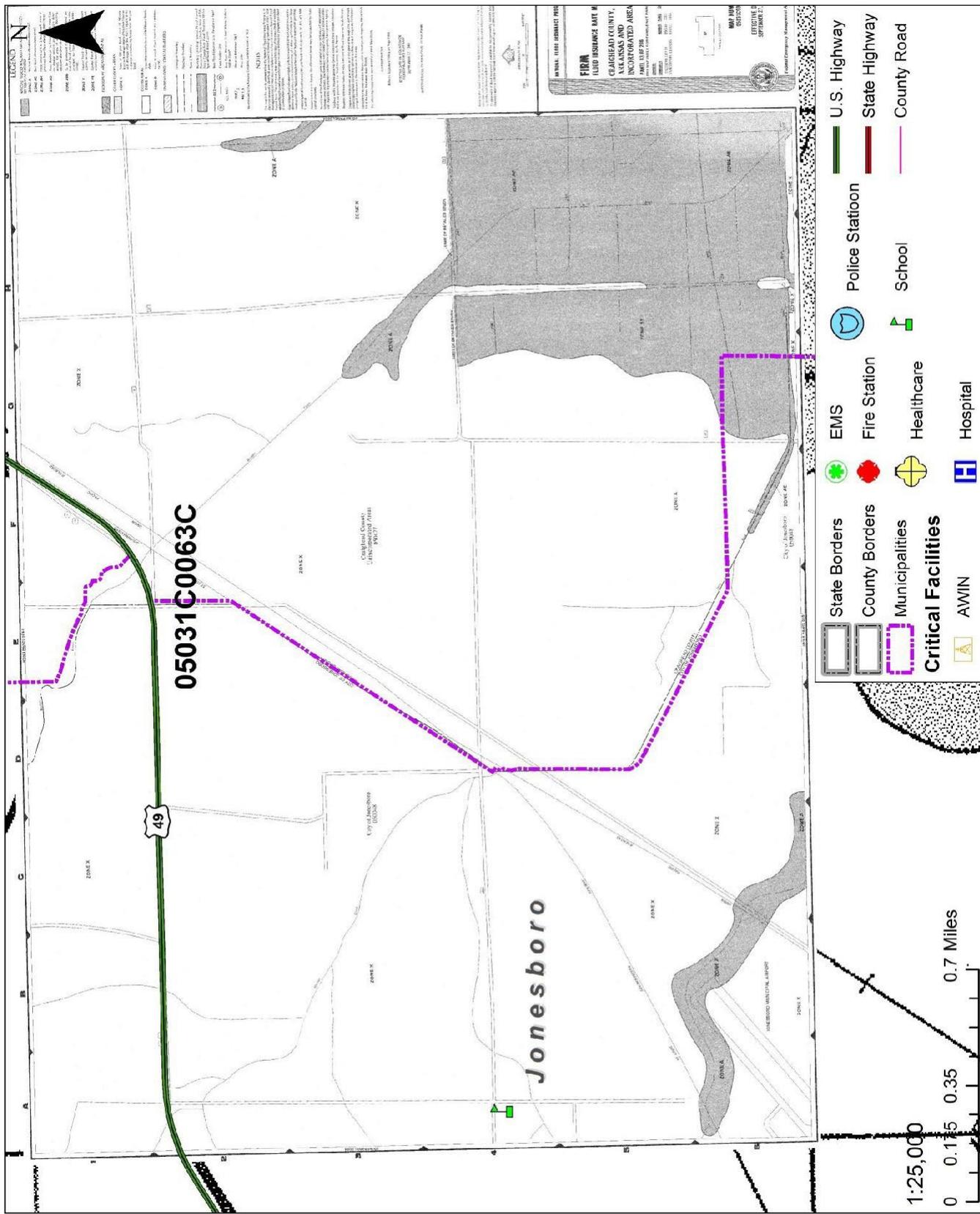
Jonesboro – 05031C0050C Floodplain Map



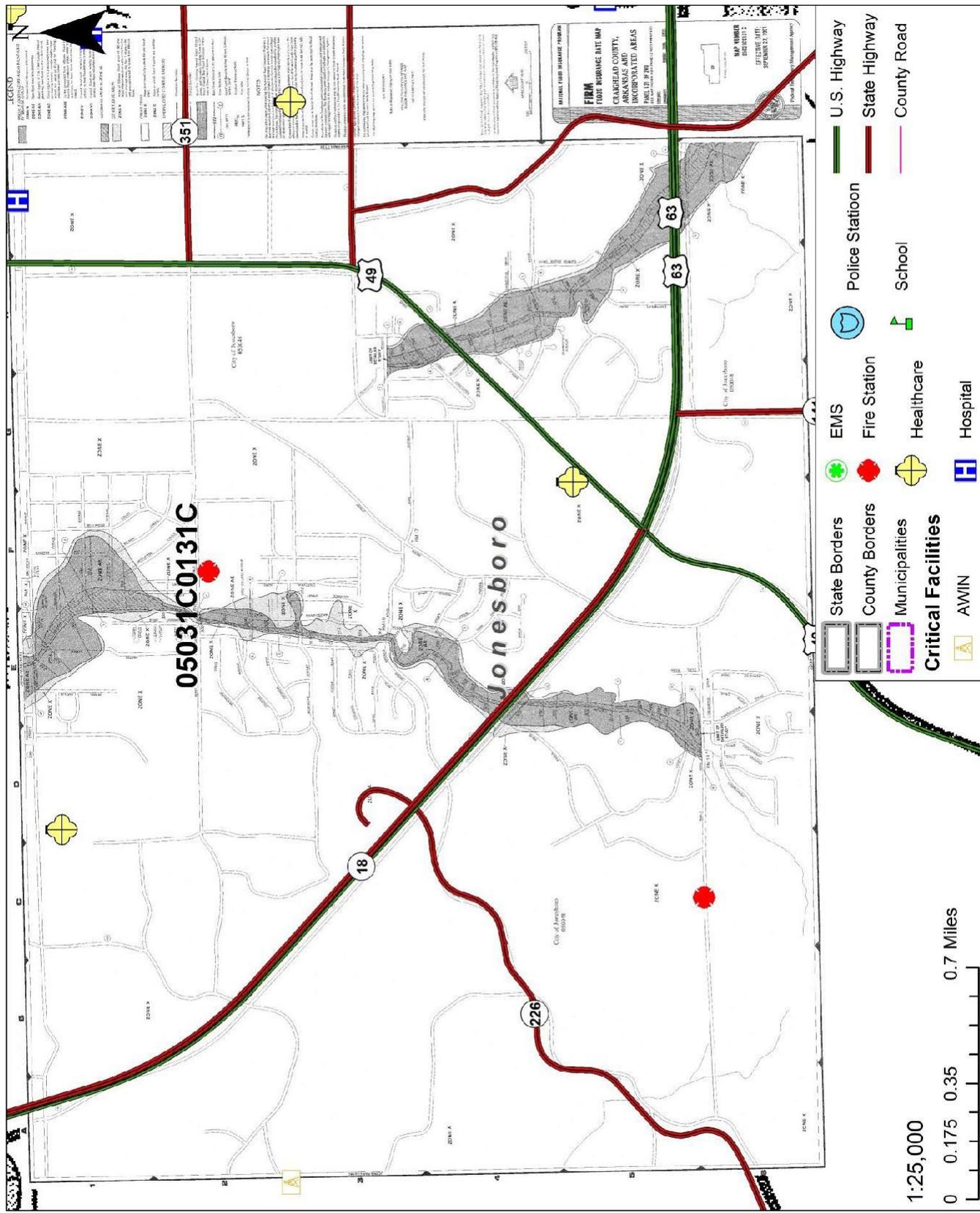
Jonesboro – 05031C0061C Floodplain Map



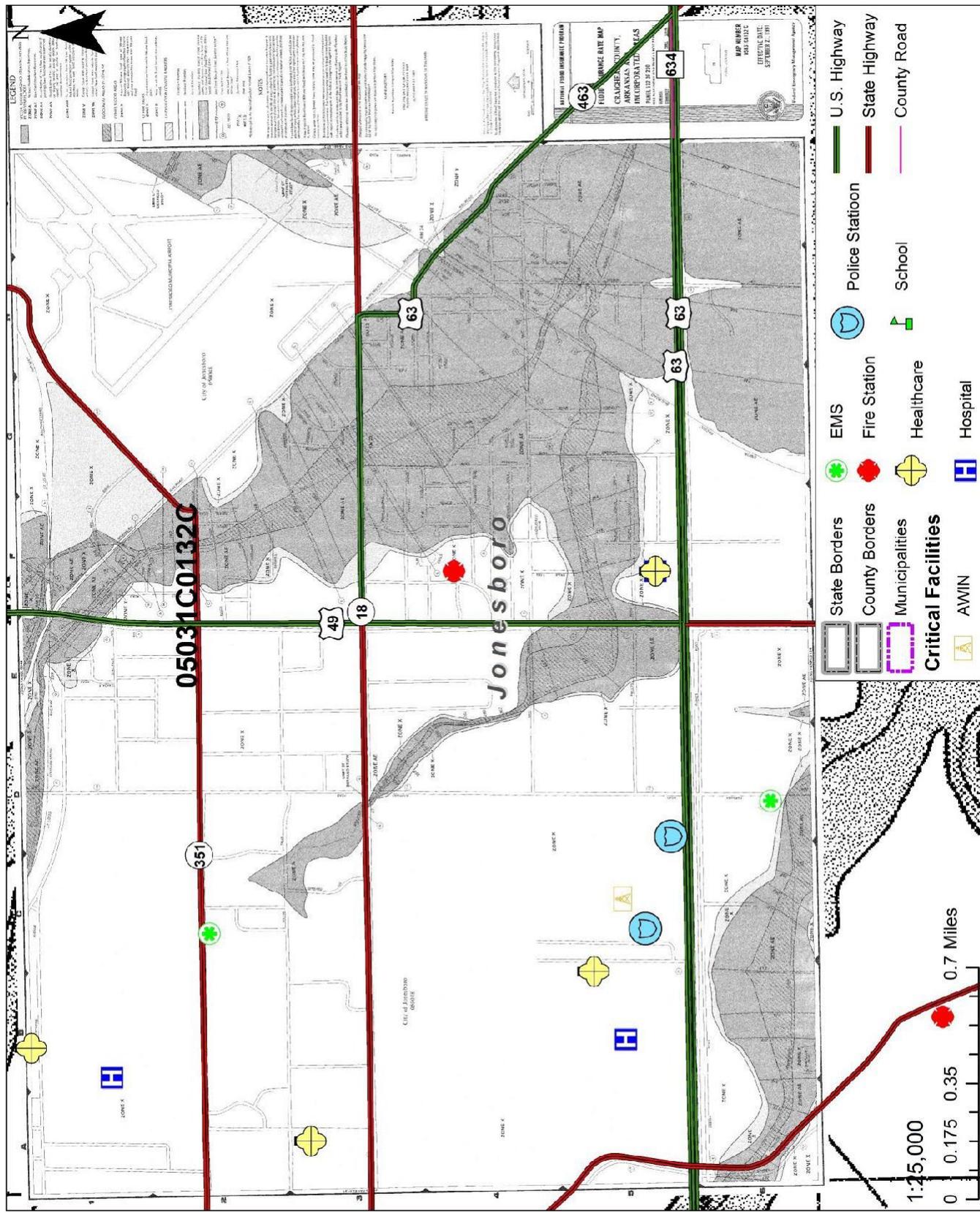
Jonesboro – 05031C0063C Floodplain Map



Jonesboro – 05031C0131C Floodplain Map



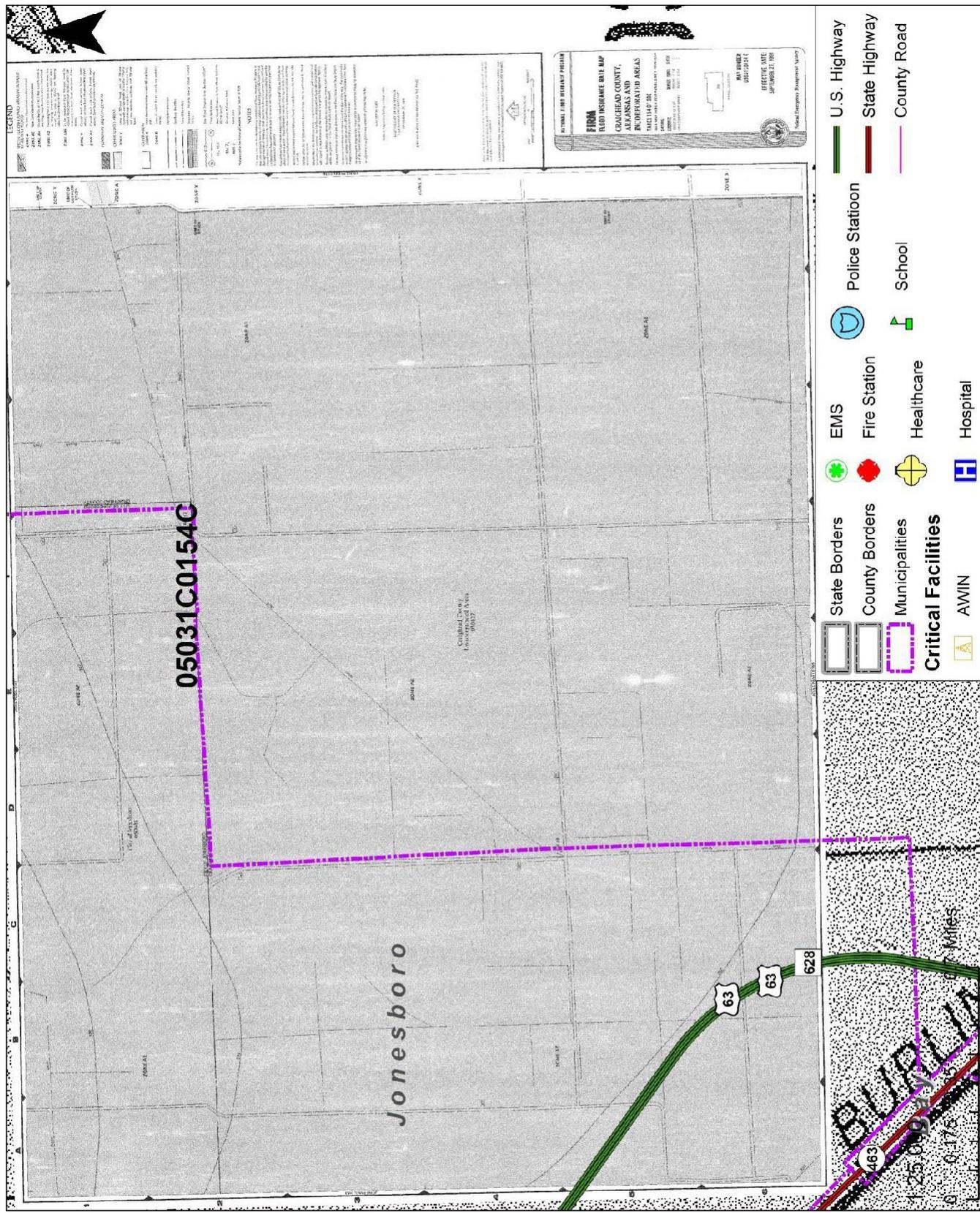
Jonesboro – 05031C0132C Floodplain Map



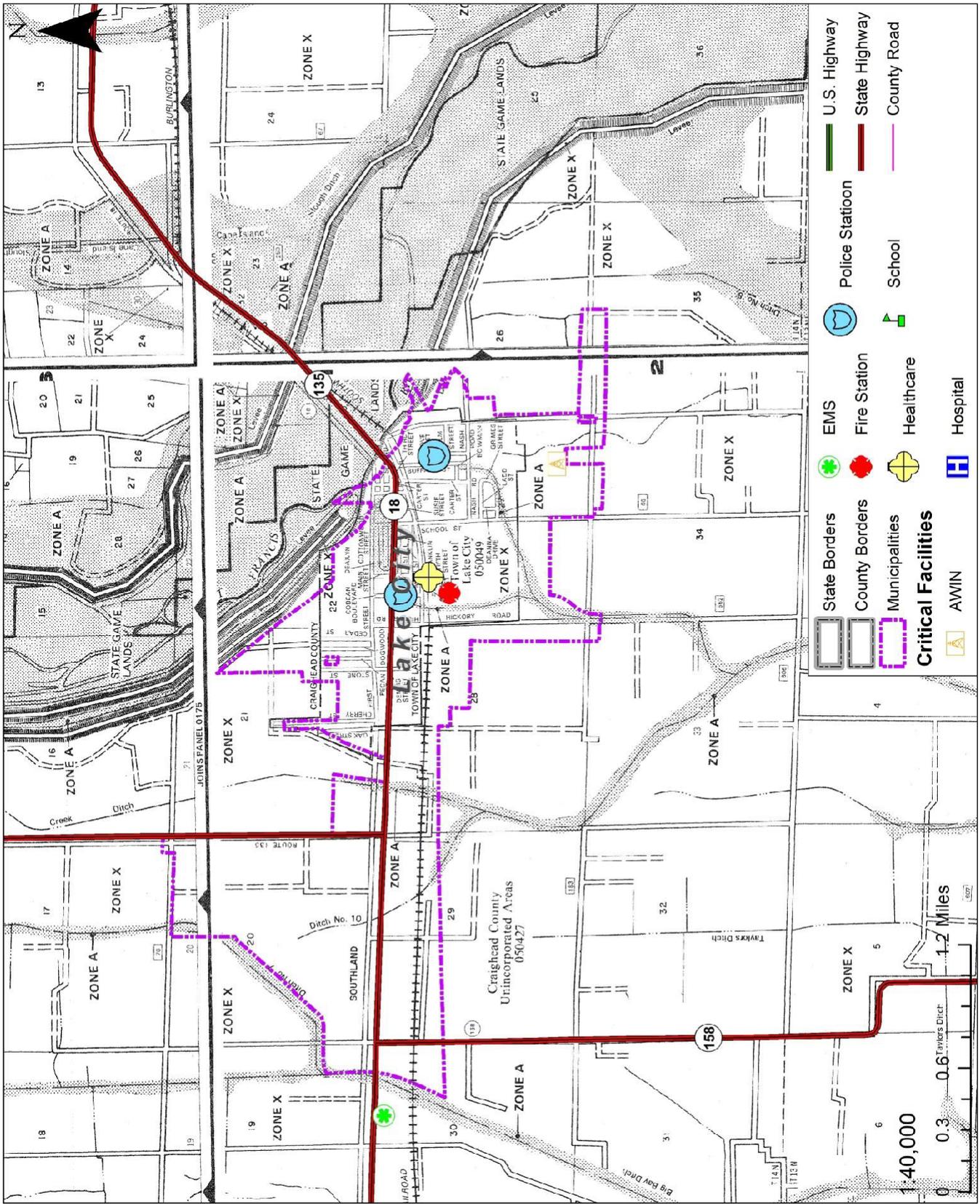
Jonesboro – 05031C0152C Floodplain Map



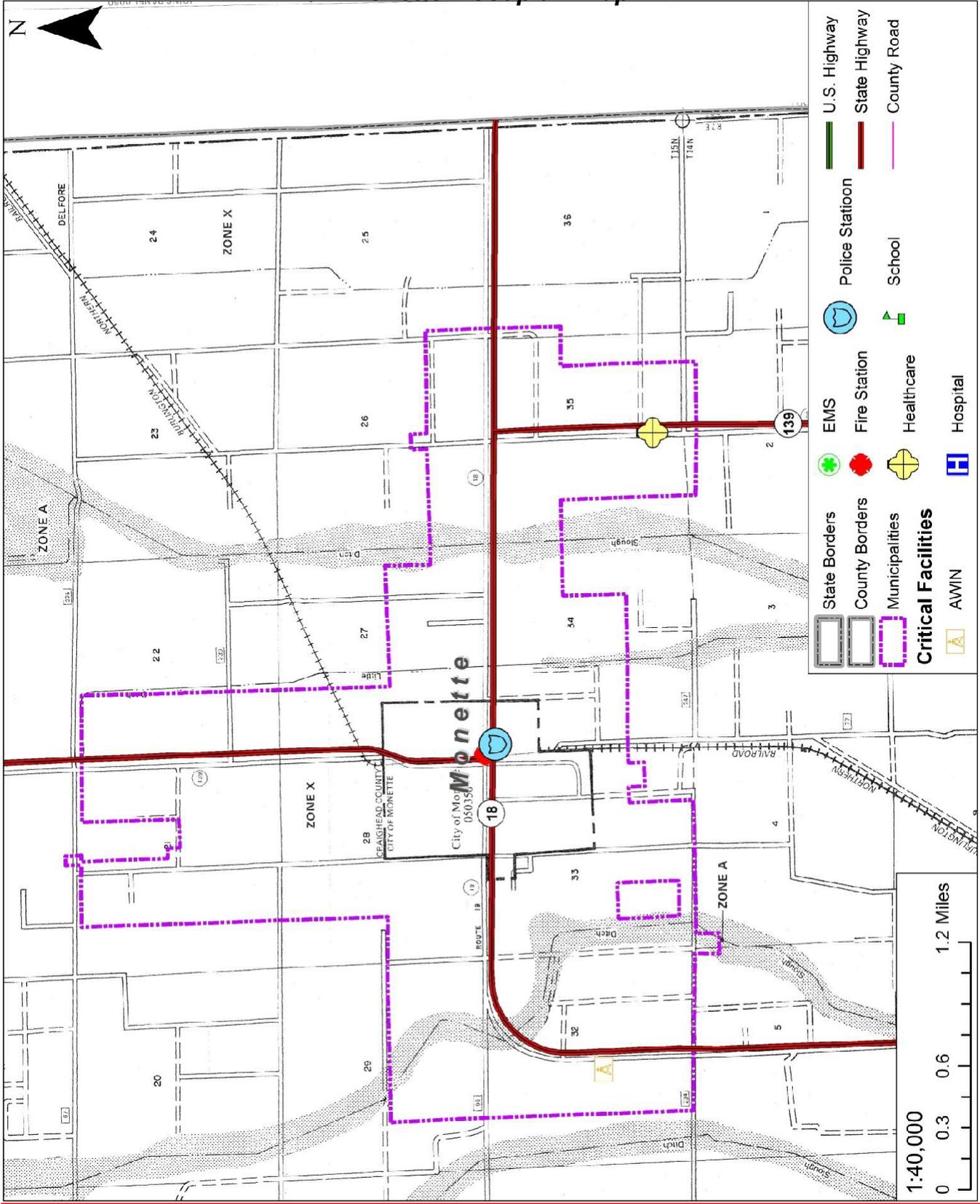
Jonesboro – 05031C0154C Floodplain Map



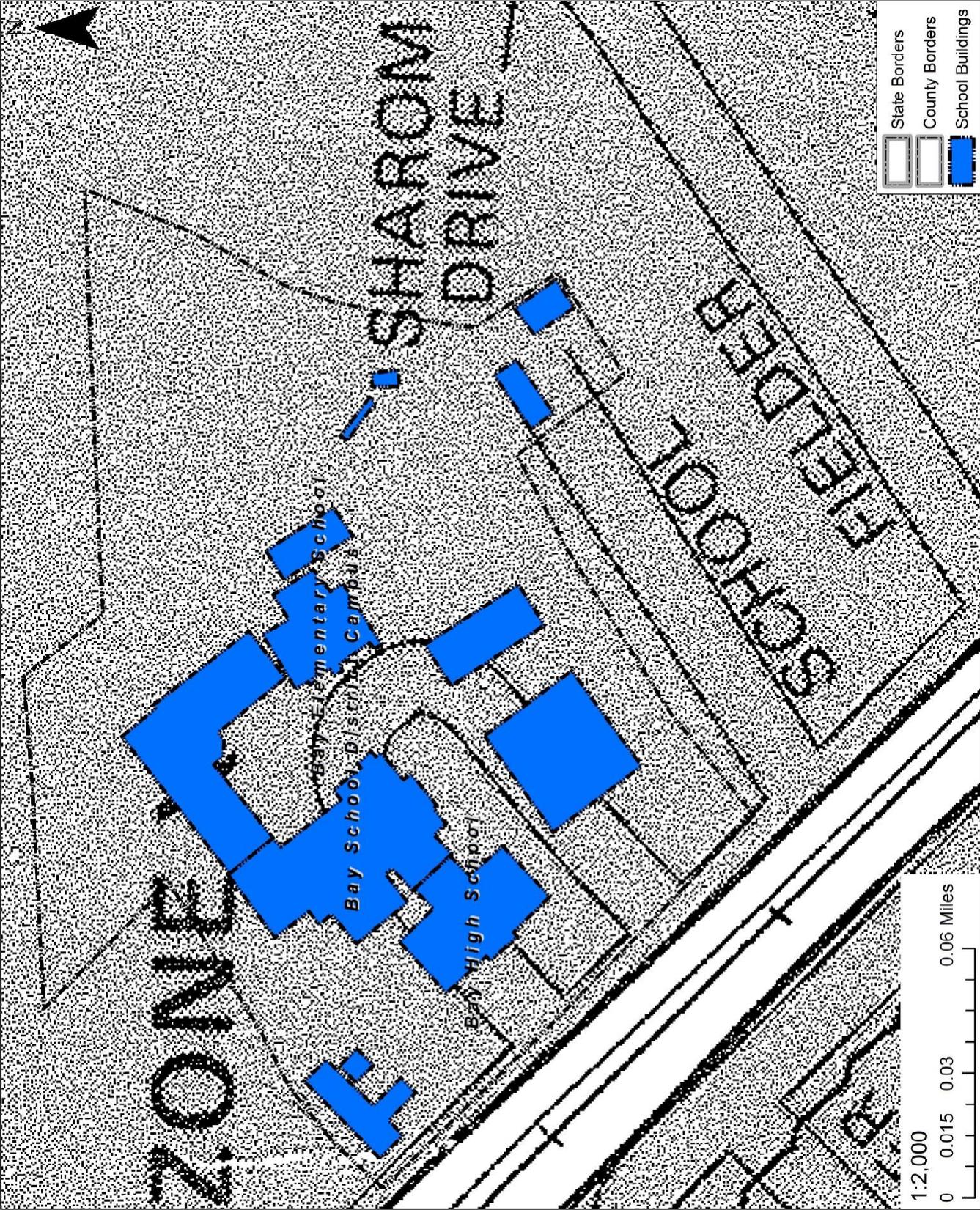
Lake City Floodplain Map

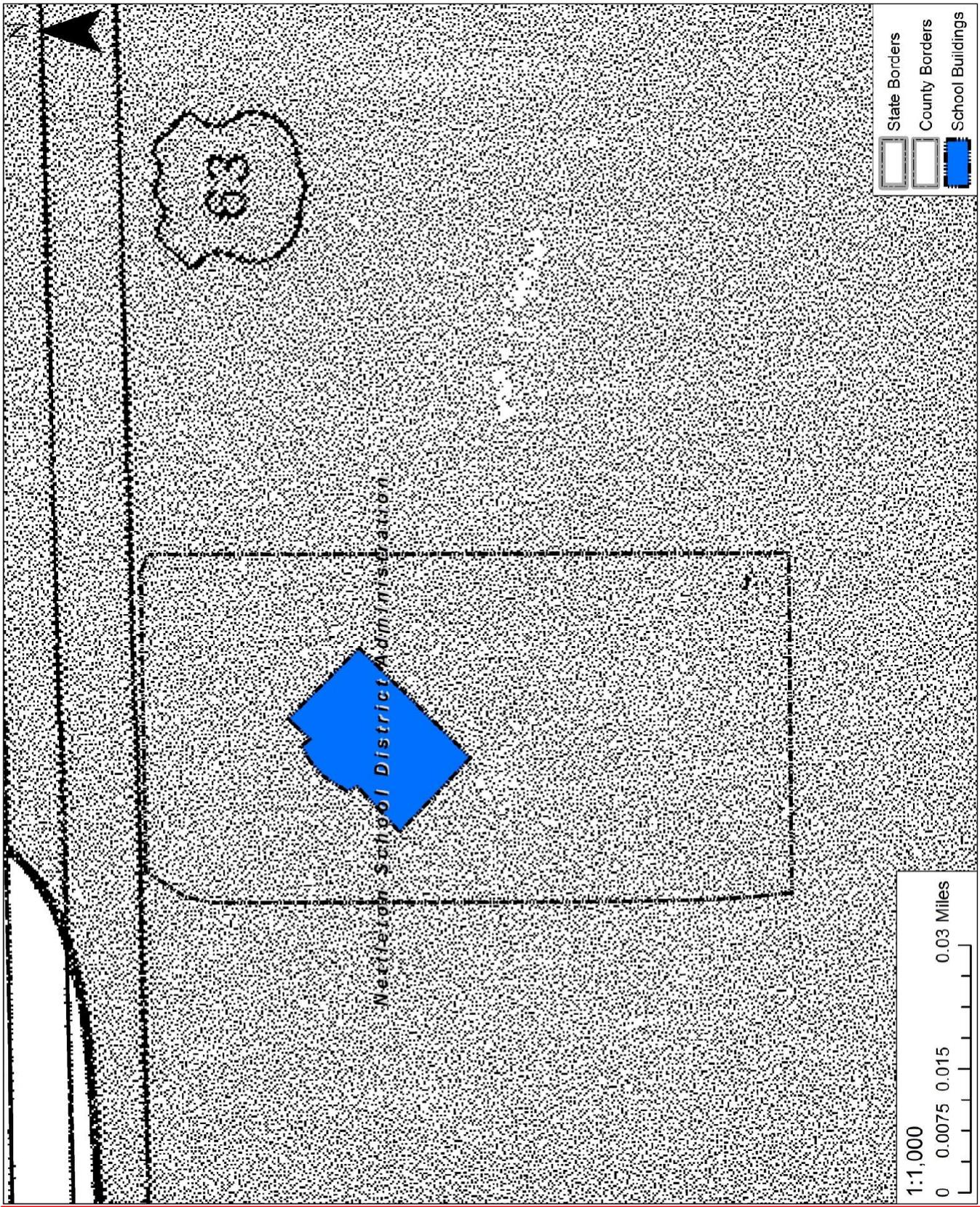


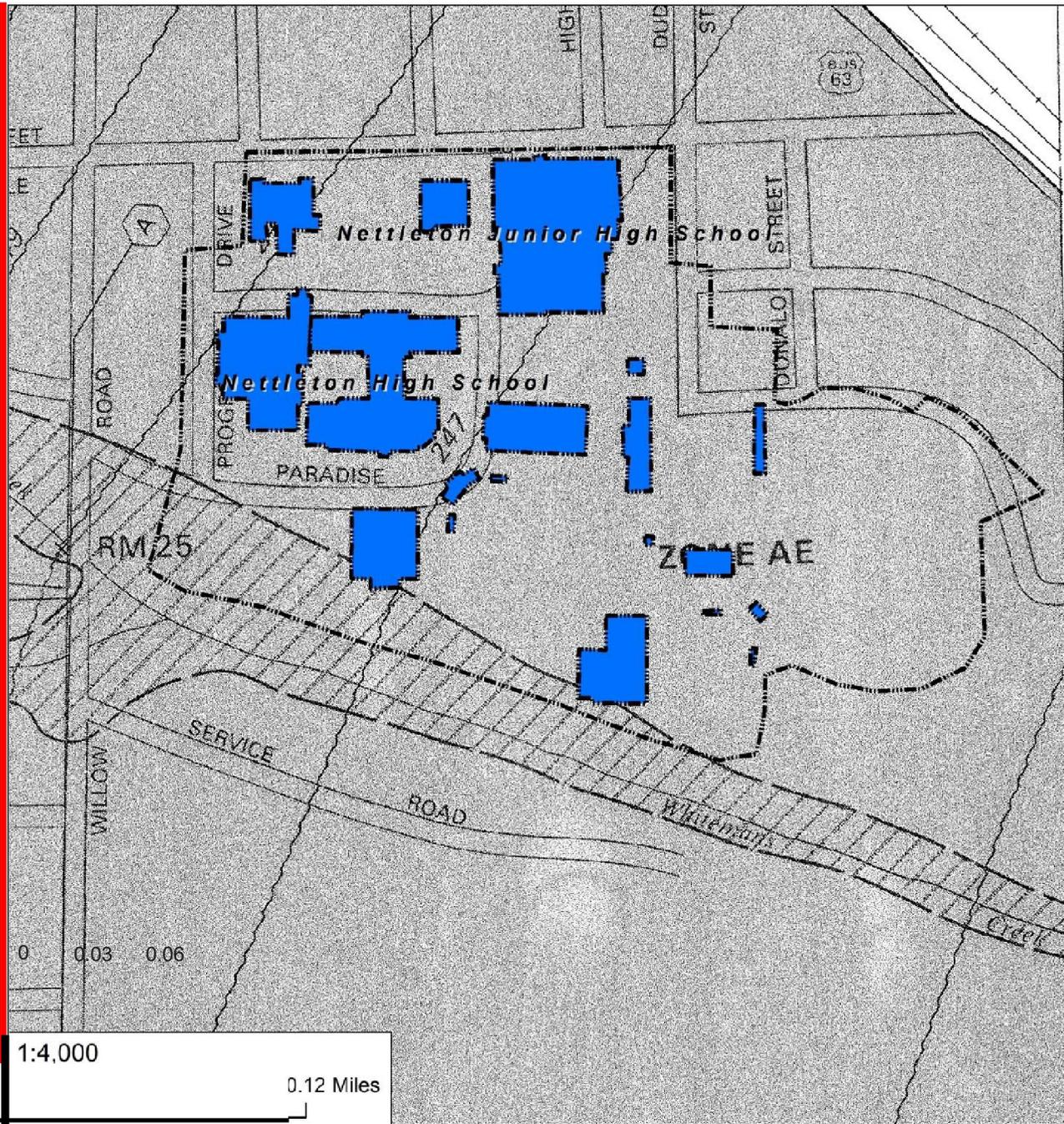
Monette Floodplain Map



Bay School District Floodplain Map







500

NA

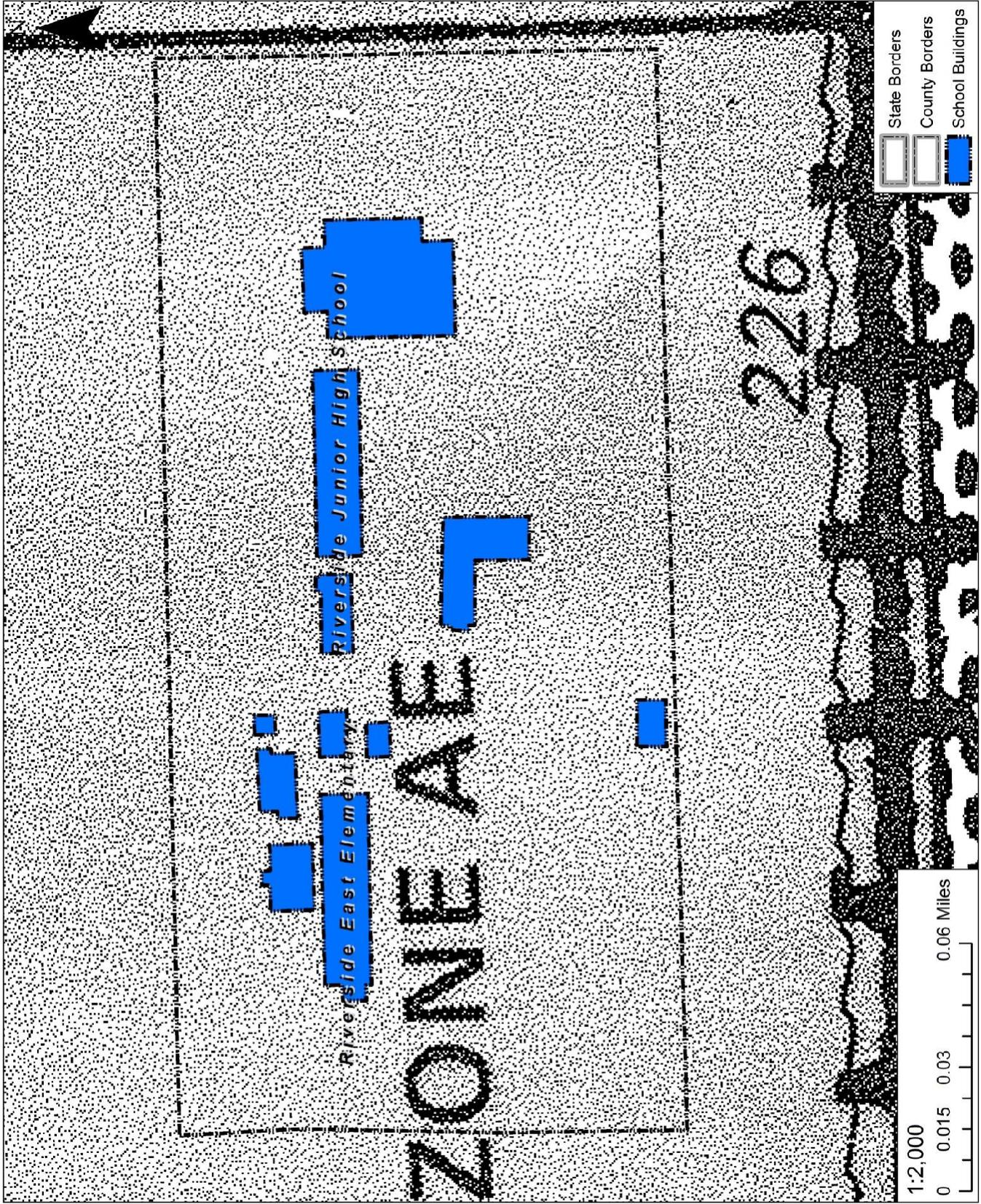
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U
A
II

- State Borders
- County Border
- School Buildings







The maps on the previous pages cover the available NFIP designated areas that have FIRM maps available for public review. If an area of a city or unincorporated area of the county has not been mapped, then a data deficiency exists at this time.

Riverine Flood Depths		
Jurisdiction	100 Year Depth (Feet)	500 Year Depth (Feet)
Craighead County	30.37	36.99
Bay	2.37	4.77
Black Oak	No data	No data
Bono	0.51	1.31
Brookland	1.98	4.14
Caraway	4.68	4.79
Cash	2.73	3.51
Egypt	3.43	5.85
Jonesboro	8.78	10.77
Lake City	6.21	6.67
Monette	2.09	2.41
Bay SD	1.78	2.39
Brookland SD	No data	No data
Buffalo Island Central SD	No data	No data
Jonesboro SD	No data	No data
Nettleton SD	1.56	2.13
Riverside SD	1.68	2.11
Valley View SD	No data	No data
Westside Consolidated SD	No data	No data
Arkansas State University	No Data	No data
Blessed Sacrament	No Data	No Data
Ridgefield Christian	No data	No data
City Water & Light	No data	No data
Craighead Electric	No data	No data

7.5.5.3 Extent, Magnitude or Severity of Flooding

Craighead County, including cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric can expect flash flooding events when receiving 3” or more of rainfall. In one hour, these jurisdictions could expect to receive 3 inches of rainfall. All affected jurisdictions are expected to receive around the same amount of rainfall.

7.5.5.4 Previous Flood and Flash Flooding Occurrences

There have been 79 flash floods and 10 flood events throughout Craighead County since 1950. Craighead County has totaled \$5.152M in damages, no deaths, and no injuries from all recorded flood events. Craighead County had some files discussing some of the past flood and flash flood occurrences. On August 13th, 2008, twenty homes, many businesses, and many roads were flooded in the City of Jonesboro resulting in \$50,000 worth of damages. However, it is difficult to record all damages as they may not be reported for several reasons, including minor or unnoticeable deterioration of property. According to one of the responses received from the Craighead County Natural Hazard Questionnaire one resident of Craighead County has had damage due to floods. It has taken out poles and even caused electrical damage for several days in many parts of their neighborhood.

Flood Events									
Totals:								921.00K	5.00K
CRAIGHEAD (ZONE)	CRAIGHEAD (ZONE)	AR	03/01/1997	04:00	CST	Flood		500.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	09/12/2001	14:00	CST	Flood		1.00K	0.00K
CRAIGHEAD (ZONE)	CRAIGHEAD (ZONE)	AR	05/14/2002	06:00	CST	Flood		0.00K	5.00K
FISHER	CRAIGHEAD CO.	AR	03/18/2008	23:00	CST-6	Flood		250.00K	0.00K
AETNA	CRAIGHEAD CO.	AR	05/01/2011	00:00	CST-6	Flood		100.00K	0.00K
WHITBURG	CRAIGHEAD CO.	AR	02/21/2018	07:25	CST-6	Flood		20.00K	0.00K
HERGETT	CRAIGHEAD CO.	AR	02/11/2019	13:30	CST-6	Flood		0.00K	0.00K
OAK RIDGE	CRAIGHEAD CO.	AR	02/11/2019	14:26	CST-6	Flood		0.00K	0.00K
DOROTHY	CRAIGHEAD CO.	AR	02/11/2019	14:38	CST-6	Flood		0.00K	0.00K
FISHER	CRAIGHEAD CO.	AR	02/22/2019	07:50	CST-6	Flood		50.00K	0.00K

Flash Flood Records							
Totals:						4.231M	25.00K
BONO	CRAIGHEAD CO.	AR	04/05/1997	04:00	Flash Flood	2.00K	0.00K
BONO	CRAIGHEAD CO.	AR	05/27/1997	01:30	Flash Flood	1.00K	0.00K
EAST PORTION	CRAIGHEAD CO.	AR	10/05/1998	18:30	Flash Flood	5.00K	0.00K
BAY	CRAIGHEAD CO.	AR	01/22/1999	03:00	Flash Flood	1.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	02/14/2001	03:00	Flash Flood	25.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	08/13/2002	06:00	Flash Flood	50.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	05/16/2003	18:30	Flash Flood	1.00K	25.00K
JONESBORO	CRAIGHEAD CO.	AR	06/18/2003	13:00	Flash Flood	1.00K	0.00K
BROOKLAND	CRAIGHEAD CO.	AR	04/22/2004	23:45	Flash Flood	1.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	04/23/2004	19:19	Flash Flood	1.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	11/01/2004	17:30	Flash Flood	5.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	07/04/2005	17:06	Flash Flood	1.00K	0.00K
CASH	CRAIGHEAD CO.	AR	01/15/2007	02:00	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	07/28/2007	16:15	Flash Flood	0.00K	0.00K
BROOKLAND	CRAIGHEAD CO.	AR	09/26/2007	17:26	Flash Flood	750.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	10/08/2007	14:26	Flash Flood	1.00K	0.00K
CARY	CRAIGHEAD CO.	AR	10/17/2007	19:20	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	03/03/2008	17:00	Flash Flood	0.00K	0.00K
EGYPT	CRAIGHEAD CO.	AR	03/18/2008	17:18	Flash Flood	0.00K	0.00K
(JBR)JONESBORO MUNI	CRAIGHEAD CO.	AR	03/19/2008	00:50	Flash Flood	0.00K	0.00K
TRINITY	CRAIGHEAD CO.	AR	03/19/2008	09:55	Flash Flood	0.00K	0.00K
OAK RIDGE	CRAIGHEAD CO.	AR	05/02/2008	11:50	Flash Flood	0.00K	0.00K
EGYPT	CRAIGHEAD CO.	AR	08/15/2008	13:20	Flash Flood	0.00K	0.00K
AGGIE	CRAIGHEAD CO.	AR	04/28/2009	05:31	Flash Flood	0.00K	0.00K
LAKE CITY	CRAIGHEAD CO.	AR	04/28/2009	06:10	Flash Flood	0.00K	0.00K

JONESBORO	CRAIGHEAD CO.	AR	04/30/2009	16:35	Flash Flood	0.00K	0.00K
BROOKLAND	CRAIGHEAD CO.	AR	05/09/2009	05:00	Flash Flood	0.00K	0.00K
NETTLETON	CRAIGHEAD CO.	AR	05/24/2009	15:36	Flash Flood	0.00K	0.00K
LAKE CITY	CRAIGHEAD CO.	AR	05/24/2009	16:10	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	05/24/2009	16:50	Flash Flood	50.00K	0.00K
GREENSBORO	CRAIGHEAD CO.	AR	05/24/2009	17:49	Flash Flood	25.00K	0.00K
TRINITY	CRAIGHEAD CO.	AR	06/03/2009	17:30	Flash Flood	0.00K	0.00K
OAK RIDGE	CRAIGHEAD CO.	AR	06/03/2009	17:45	Flash Flood	0.00K	0.00K
GLENDALE	CRAIGHEAD CO.	AR	06/15/2009	16:26	Flash Flood	0.00K	0.00K
BONO	CRAIGHEAD CO.	AR	07/21/2009	12:00	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	08/05/2009	01:30	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	09/15/2009	13:30	Flash Flood	5.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	09/21/2009	15:20	Flash Flood	1.00K	0.00K
CASH	CRAIGHEAD CO.	AR	10/30/2009	12:30	Flash Flood	25.00K	0.00K
CASH	CRAIGHEAD CO.	AR	12/24/2009	09:30	Flash Flood	10.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	04/07/2010	16:28	Flash Flood	0.00K	0.00K
LAKE CITY	CRAIGHEAD CO.	AR	06/03/2010	13:30	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	07/16/2010	16:35	Flash Flood	0.00K	0.00K
AGGIE	CRAIGHEAD CO.	AR	05/01/2011	12:12	Flash Flood	0.00K	0.00K
TRINITY	CRAIGHEAD CO.	AR	03/08/2012	15:01	Flash Flood	0.00K	0.00K
SANDY	CRAIGHEAD CO.	AR	03/08/2012	16:59	Flash Flood	25.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	09/07/2012	19:00	Flash Flood	0.00K	0.00K
WHITBURG	CRAIGHEAD CO.	AR	05/31/2013	05:00	Flash Flood	0.00K	0.00K
BROOKLAND	CRAIGHEAD CO.	AR	06/17/2013	12:56	Flash Flood	0.00K	0.00K
GLENDALE	CRAIGHEAD CO.	AR	12/21/2013	16:35	Flash Flood	25.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	04/13/2015	11:00	Flash Flood	0.00K	0.00K
BROOKLAND	CRAIGHEAD CO.	AR	05/27/2015	10:30	Flash Flood	0.00K	0.00K
HERNDON	CRAIGHEAD	AR	07/07/2015	17:01	Flash	0.00K	0.00K

	CO.				Flood		
OAK RIDGE	CRAIGHEAD CO.	AR	07/21/2015	22:11	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	11/17/2015	19:35	Flash Flood	5.00K	0.00K
AGGIE	CRAIGHEAD CO.	AR	03/30/2016	18:17	Flash Flood	1.000M	0.00K
OAK RIDGE	CRAIGHEAD CO.	AR	05/24/2016	15:19	Flash Flood	2.100M	0.00K
HERGETT	CRAIGHEAD CO.	AR	05/27/2016	11:32	Flash Flood	0.00K	0.00K
NETTLETON	CRAIGHEAD CO.	AR	04/30/2017	01:27	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	04/30/2017	02:45	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	04/30/2017	04:00	Flash Flood	0.00K	0.00K
GLENDALE	CRAIGHEAD CO.	AR	04/30/2017	09:30	Flash Flood	0.00K	0.00K
GREENSBORO	CRAIGHEAD CO.	AR	06/05/2017	11:07	Flash Flood	10.00K	0.00K
NETTLETON	CRAIGHEAD CO.	AR	07/25/2017	15:30	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	07/25/2017	15:30	Flash Flood	0.00K	0.00K
HERNDON	CRAIGHEAD CO.	AR	05/17/2018	08:30	Flash Flood	0.00K	0.00K
OAK RIDGE	CRAIGHEAD CO.	AR	02/11/2019	05:07	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	02/11/2019	05:07	Flash Flood	20.00K	0.00K
WHITBURG	CRAIGHEAD CO.	AR	02/11/2019	05:10	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	02/23/2019	10:09	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	02/23/2019	10:25	Flash Flood	0.00K	0.00K
VALLEY VIEW	CRAIGHEAD CO.	AR	03/14/2019	06:31	Flash Flood	0.00K	0.00K
NETTLETON	CRAIGHEAD CO.	AR	01/11/2020	03:54	Flash Flood	0.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	09/01/2020	07:44	Flash Flood	5.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	03/17/2021	18:00	Flash Flood	50.00K	0.00K
VALLEY VIEW	CRAIGHEAD CO.	AR	03/17/2021	18:00	Flash Flood	0.00K	0.00K
RIDGE	CRAIGHEAD CO.	AR	03/17/2021	18:15	Flash Flood	0.00K	0.00K
TUNIS	CRAIGHEAD CO.	AR	03/17/2021	18:30	Flash Flood	10.00K	0.00K
OAK RIDGE	CRAIGHEAD CO.	AR	08/13/2021	01:00	Flash Flood	20.00K	0.00K

7.5.5.5 Probability of Future Flooding

Craighead County and all participating jurisdictions have a 12% probability of a future flood event and 37% likelihood of a flash flood in any given year. These problematic areas can be a result of changes in floodplain development and demographics, development in watershed (channels of rainfall, snowmelt, creeks, streams, rivers, etc. to outflow points such as reservoirs, bays, and oceans) , and climate change.

7.5.5.6 Impact and Vulnerability of Flooding

There are numerous ways that flooding could impact Craighead County. Flooding causes traffic 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 loss of income and a lack of services they would provide.

Listed are other areas in which flooding can affect Craighead 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. Businesses also suffer, not only from the loss of property, but the lack of customers during the flood and for a while after 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 have insurance get help with the clean-up, but some costs may still come out of pocket. Towns and cities that are impacted by a 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. The region 8 news team does a wonderful job warning the public in advance of floods. This gives them enough time to evacuate the area.

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.

7.5.5.7 Addressing Repetitive Loss Properties

As of 2022 Arkansas Natural Resources Commission has reported there are 54 RL/SRL properties in Craighead County and its participating jurisdictions. These properties have filed a total of 158 claims for a total of \$1393440 with an average payout of \$4445406.

Only Bono, Lake City, and Jonesboro have RL/SRL properties. Of the fifty-four, two properties are commercial, three properties are non-residential and the remaining 49 are residential. Both commercial properties are within the City of Jonesboro.

RL/Properties					
Jurisdiction	Building Type	NFIP Insured	Total Losses	Average Paid	Total Paid
BOND	SINGLE FMLY	NO	2	7922.63	15845.26
BONO	SINGLE FMLY	NO	5	5805.29	29026.45
BONO	SINGLE FMLY	NO	3	2434.71	7304.12
BONO	2-4 FAMILY	NO	4	11373.04	45492.15
BONO	SINGLE FMLY	NO	2	11569.79	23139.58
BONO	SINGLE FMLY	NO	2	13797.7	27595.4
BONO	SINGLE FMLY	NO	2	10656.99	21313.97
BONO	SINGLE FMLY	NO	4	15088.84	60355.34
BONO	SINGLE FMLY	NO	2	8297.16	16594.31
BONO	SINGLE FMLY	NO	2	8408.88	16817.75
BONO	SINGLE FMLY	NO	2	9933.26	19866.52
BONO	SINGLE FMLY	NO	2	11467.63	22935.26
BONO	SINGLE FMLY	NO	2	9527.08	19054.15
CARAWAY	SINGLE FMLY	NO	2	4151.37	8302.73
JONESBORO	SINGLE FMLY	NO	2	2424.58	4849.15
JONESBORO	SINGLE FMLY	NO	2	2416.15	4832.29
JONESBORO	SINGLE FMLY	NO	8	12079.12	96632.98
JONESBORO	SINGLE FMLY	NO	10	16814.69	168146.89
JONESBORO	SINGLE FMLY	NO	6	13706.29	82237.76

JONESBORO	OTHR-NONRES	NO	4	289137.13	1156548.52
JONESBORO	SINGLE FMLY	YES	5	5427.44	27137.2
JONESBORO	SINGLE FMLY	NO	2	2649.33	5298.65
JONESBORO	SINGLE FMLY	NO	2	16700.79	33401.57
JONESBORO	SINGLE FMLY	NO	2	12781.21	25562.42
JONESBORO	SINGLE FMLY	NO	2	4773.67	9547.33
JONESBORO	SINGLE FMLY	NO	2	19808.51	39617.02
JONESBORO	SINGLE FMLY	NO	2	7891.34	15782.67
JONESBORO	SINGLE FMLY	NO	2	4479.45	8958.89
JONESBORO	SINGLE FMLY	NO	2	9727.74	19455.47
JONESBORO	SINGLE FMLY	NO	2	2343.24	4686.47
JONESBORO	OTHR-NONRES	NO	2	8446.88	16893.75
JONESBORO	SINGLE FMLY	NO	5	6590.69	32953.46
JONESBORO	SINGLE FMLY	NO	6	21748.92	130493.5
JONESBORO	SINGLE FMLY	NO	2	1912.63	3825.25
JONESBORO	SINGLE FMLY	YES	2	34866.82	69733.64
JONESBORO	SINGLE FMLY	YES	2	7273.67	14547.33
JONESBORO	SINGLE FMLY	NO	2	1383.2	2766.4
JONESBORO	SINGLE FMLY	NO	2	7815.74	15631.47
JONESBORO	SINGLE FMLY	NO	7	18996.06	132972.43
JONESBORO	SINGLE FMLY	SDF	4	36772.9	147091.58
JONESBORO	OTHR-NONRES	YES	3	47530.72	142592.15
JONESBORO	SINGLE FMLY	YES	2	9765.17	19530.33
JONESBORO	UNKNOWN	YES	3	355851.03	1067553.09
JONESBORO	SINGLE FMLY	YES	2	11959.45	23918.9
JONESBORO	SINGLE FMLY	YES	2	16810.9	33621.8
JONESBORO	SINGLE FMLY	NO	3	11190.61	33571.83
JONESBORO	SINGLE FMLY	NO	2	61417.09	122834.18
JONESBORO	SINGLE FMLY	NO	2	7557.66	15115.31
JONESBORO	SINGLE FMLY	NO	2	16997.39	33994.78
JONESBORO	BUSI-NONRES	YES	3	39512.58	118537.73
JONESBORO	BUSI-NONRES	YES	2	90129.84	180259.68
JONESBORO	SINGLE FMLY	YES	2	21197.03	42394.05
LAKE CITY	SINGLE FMLY	NO	2	4117.75	8235.49
TOTALS			158	4445406	1393440

8.5.6 Thunderstorms

8.5.6.1 Description of Thunderstorm, Lightning, Hail and High Wind Events

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, hail, or no precipitation at all. Those that cause hail to fall are called **hailstorms**. Thunderstorms may line up in a series or rainband, 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.

Thunderstorm 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.

8.5.6.2 Location of Thunderstorm, Lightning, Strong Winds and Hail Events

All areas of the Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric including cities have experienced Thunderstorm events and are equally at risk.

8.5.6.3 Extent, Magnitude or Severity of Thunderstorm, Lightning, Strong Winds and Hail Events

All jurisdictions of Craighead County, including cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are equally subject to thunderstorms ranging from Marginal to Category 5- High on the chart below. This would result in lightning, hail from 2 to 4 in, and possible tornadoes up to an EF5. Thunderstorms winds with a category 5 may be in excess of 70 mph.

Understanding Severe Thunderstorm Risk Categories

THUNDERSTORMS (no label)	1 - MARGINAL (MRGL)	2 - SLIGHT (SLGT)	3 - ENHANCED (ENH)	4 - MODERATE (MDT)	5 - HIGH (HIGH)
No severe* thunderstorms expected	Isolated severe thunderstorms possible	Scattered severe storms possible	Numerous severe storms possible	Widespread severe storms likely	Widespread severe storms expected
Lightning/flooding threats exist with all thunderstorms	Limited in duration and/or coverage and/or intensity	Short-lived and/or not widespread, isolated intense storms possible	More persistent and/or widespread, a few intense	Long-lived, widespread and intense	Long-lived, very widespread and particularly intense
					
<ul style="list-style-type: none"> • Winds to 40 mph • Small hail 	<ul style="list-style-type: none"> • Winds 40-60 mph • Hail up to 1" • Low tornado risk 	<ul style="list-style-type: none"> • One or two tornadoes • Reports of strong winds/wind damage • Hail ~1", isolated 2" 	<ul style="list-style-type: none"> • A few tornadoes • Several reports of wind damage • Damaging hail, 1 - 2" 	<ul style="list-style-type: none"> • Strong tornadoes • Widespread wind damage • Destructive hail, 2" + 	<ul style="list-style-type: none"> • Tornado outbreak • Derecho
<small>* NWS defines a severe thunderstorm as measured wind gusts to at least 58 mph, and/or hail to at least one inch in diameter, and/or a tornado. All thunderstorm categories imply lightning and the potential for flooding. Categories are also tied to the probability of a severe weather event within 25 miles of your location.</small>					

8.5.6.4 Previous Thunderstorm, Lightning, Strong Winds and Hail Events

Event	Event Total	Fatalities	Injuries	Property Damage	Crop Damage
Hail	166	0	0	\$8.43K	\$0
Lightning	5	0	1	\$71K	\$0
Thunderstorm Winds	261	1	2	\$2.358M	\$0

8.5.6.5 Probability of Future Thunderstorm, Lightning, Hail and Strong Wind Events

In any given year there is a 22% chance of a hail event, 1% chance of a lightning event, and a 34% chance of a thunderstorm wind event occurring.

8.5.6.6 Impact and Vulnerability of Thunderstorm Events

All structures in the County and their contents are vulnerable to damage by thunderstorms winds. Strong winds can down trees onto power lines, damage mobile homes that are not anchored, and rip off roofing. Winds can cause death and injuries by lifting unanchored objects creating flying missiles.

Lightning strikes have the power to fell trees many times disrupting service, and structural fires. Lightning can possibly cause death and injuries. Wind and lightning can damage communication towers located throughout the County.

Hailstorms events are frequent in the County and can 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 and personal property are vulnerable to hailstorms, cars, trailers, boats, and crops. Hailstorms can cause bodily injury if caught outside without protection.

The entire County is subject to thunderstorm events where usually high winds, lightning and hail are involved.

Craighead County and all participating jurisdictions

There are concentrations of manufactured homes, unreinforced masonry homes, older construction types located in the unincorporated areas of Craighead County as well as the participating jurisdictions. These homes are susceptible to damage during high wind events and hail and can easily be engulfed in fire if struck by lightning. There are no safe rooms in these areas that offer protection to life during high wind events. Wooden, unreinforced masonry homes and older construction types are also susceptible to damage during high wind and hail. Lightning will destroy these homes by fire. Often, hail creates thousands of dollars of personal property in the unincorporated areas Craighead County.

The unincorporated areas of Craighead County are concerned about the communication system, and electric grid during thunderstorms. During thunderstorms, the community can lose power and communication capabilities. This threatens safety of the community and hinders response operations. Thunderstorms also can cause crop damage which is also of concern to the communities.

9.5.7 Tornado

9.5.7.1 Description of a 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.

9.5.7.2 Locations of Tornado Events

Because there is no defined geographic hazard boundary, all people and property in Craighead County, including cities Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are exposed to the risk of damage from Tornadoes. Based on the short 50-year dataset, no clear areas of high tornado occurrence occur at any 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.

9.5.7.3 Extent, Magnitude or Severity of Tornado

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.

Craighead County could experience the entire range of tornadoes from and EF0 – EF5.

9.5.7.4 Previous occurrences

There have been a reported 42 tornadoes between 1950 and 2022, resulting in 2 Death and 8 injuries as well as \$330.562M in property damage and \$0 in Crop Damage.

9.5.7.5 Probability of Future Tornadoes

There is a 33% chance of a Tornado impacting Craighead County in any given year.

9.5.9.6 Impact of Tornado

The table below describes the impact of tornados to residential homes in the participating jurisdictions.

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.GOV

The methodology for the potential loss estimate was developed by using past hazard events data from the NCDC. The following is the resources used in the loss estimation.

- Arkansas Hazard Mitigation Plan
- National Climatic Data Center (NCDC) Storm Events Database

The National Climatic Data Center provides historical details about past hazard events in the County. The chart shows a breakdown of the magnitudes of the tornadoes which have occurred in Craighead County in 1950 - 2022.

Select: Sort By:

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								37	638	330.562M	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	03/20/1955	15:30	CST	Tornado	F2	0	1	25.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	04/25/1957	23:59	CST	Tornado	F3	0	0	0.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	05/15/1968	21:50	CST	Tornado	F4	34	350	25.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	04/07/1972	16:10	CST	Tornado	F3	0	0	250.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	05/26/1973	23:15	CST	Tornado	F4	3	257	25.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	03/29/1976	17:10	CST	Tornado	F2	0	0	25.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	09/14/1977	16:30	CST	Tornado	F0	0	0	0.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	08/13/1978	05:50	CST	Tornado	F2	0	3	2.500M	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	08/16/1978	19:30	CST	Tornado	F0	0	0	2.50K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	08/16/1978	20:45	CST	Tornado	F0	0	0	0.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	12/24/1982	18:47	CST	Tornado	F1	0	1	250.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	12/24/1982	19:32	CST	Tornado	F1	0	0	25.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	12/24/1982	20:10	CST	Tornado	F1	0	0	250.00K	0.00K
CRAIGHEAD CO.	CRAIGHEAD CO.	AR	04/03/1984	16:38	CST	Tornado	F3	0	2	25.000M	0.00K
Cash	CRAIGHEAD CO.	AR	07/02/1994	16:27	CST	Tornado	F0	0	0	5.00K	0.00K
Caraway	CRAIGHEAD CO.	AR	04/19/1995	21:30	CST	Tornado	F0	0	0	3.00K	0.00K
EGYPT	CRAIGHEAD CO.	AR	03/01/1997	16:19	CST	Tornado	F3	0	2	25.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	05/27/1997	00:55	CST	Tornado	F0	0	0	0.01K	0.00K
RISHER	CRAIGHEAD CO.	AR	01/17/1999	15:45	CST	Tornado	F0	0	0	5.00K	0.00K
LAKE CITY	CRAIGHEAD CO.	AR	01/17/1999	16:45	CST	Tornado	F2	0	0	150.00K	0.00K
LANIEVE	CRAIGHEAD CO.	AR	01/21/1999	20:10	CST	Tornado	F0	0	0	0.10K	0.00K
EGYPT	CRAIGHEAD CO.	AR	01/21/1999	20:55	CST	Tornado	F0	0	0	50.00K	0.00K
JONESBORO	CRAIGHEAD CO.	AR	01/21/1999	21:20	CST	Tornado	F0	0	0	0.10K	0.00K
LAKE VIEW	CRAIGHEAD CO.	AR	01/21/1999	21:40	CST	Tornado	F0	0	0	5.00K	0.00K
BAY	CRAIGHEAD CO.	AR	01/21/1999	22:00	CST	Tornado	F0	0	0	5.00K	0.00K
BLACK OAK	CRAIGHEAD CO.	AR	05/09/2000	15:40	CST	Tornado	F0	0	0	10.00K	0.00K
BLACK OAK	CRAIGHEAD CO.	AR	05/04/2003	18:39	CST	Tornado	F2	0	0	1.00K	0.00K
NETTLETON	CRAIGHEAD CO.	AR	04/03/2007	17:54	CST-6	Tornado	EF1	0	0	250.00K	0.00K
NEEDHAM	CRAIGHEAD CO.	AR	04/03/2007	17:57	CST-6	Tornado	EF0	0	0	2.50K	0.00K
SANDY	CRAIGHEAD CO.	AR	05/01/2010	20:58	CST-6	Tornado	EF0	0	0	0.00K	0.00K

9.5.9.7. Vulnerability and Estimating Potential Loss

All areas, residents, structures, and critical facilities in Craighead County, including cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are of high risk of tornado events. Because there is no defined geographic hazard boundary, all people and property in Craighead County are exposed to the risk of damage from tornadoes. All structures in Craighead County are vulnerable to tornadoes. The most vulnerable to tornadoes are wood frame structures and manufactured homes. Damage to residential structures could cause hundreds to be without shelter or try to live in unsafe conditions.

In the Craighead County Natural Hazard Questionnaire 51% of the responses stated that they had experienced some impact from a tornado. These responses ranged from property damage, emotional damage, loss of business, etc.

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 (retirement homes, schools and childcare centers) are located in about every section of the County. Long term care facilities/Nursing Homes are in Craighead County. There are numerous schools and childcare centers are located in Craighead County.

The Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, and Ridgefield Christian could be closed for extended periods due to power and water outages, or possible damage to building structures on school campuses. The school buses are also disrupted due to damaged or destroyed roads and bridges. Employment would be affected from school closings.

All areas of Craighead County, including cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric 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.

Businesses and local government infrastructure often suffer extensive damage in tornados 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, warning times may be short.

10.5.8 Wildfire Profile

10.5.8.1 Description of Wildfire

A wildfire is any outdoor fire that is not controlled, supervised, or arranged those spreads through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly and are usually signaled by dense smoke that fills the area for miles around. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. 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 Wildland-Urban Interface (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.

10.5.8.2 Location of Wildfire

Any jurisdiction located in zones that inhibit the primary factors of fuel, topography, and weather are 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.

10.5.8.3 Extent, Magnitude or Severity of Wildfire

Burn Severity

From a landscape perspective, burn severity is defined as the degree of environmental change caused by fire. Heterogeneity in burn severity is a result of the spatial variation of factors such as fire intensity, topography and vegetation type. Burn severity can be broken down into several categories, useful in gauging post burn ecological responses:

Rank	Burn Severity	Description	Characteristics
0	Unburned	Fire extinguished before reaching microsite	<ul style="list-style-type: none"> • Leaf litter from previous years intact and uncharred • No evidence of char around base of trees and shrubs • Pre-burn seedlings and herbaceous vegetation present.
1	Low Severity Burn	Surface fire which consumes litter yet has little effect on trees and understory vegetation.	<ul style="list-style-type: none"> • Burned with partially consumed litter present • Evidence of low flame heights around base of trees and shrubs (<0.5 m) • No significant decreases in overstory & understory basal area, diversity or species richness from pre-burn assessments • Usually burning below 80 ° C
2	Medium-Low Severity Burn	No significant differences in overstory density and basal area, & no significant differences in species richness. However, understory density, basal area, and species richness declined.	<ul style="list-style-type: none"> • No litter present and 100% of the area covered by duff • Flame lengths < 2 m • Understory mortality present, little or no overstory mortality

3	Medium-High Severity Burn	Flames that were slightly taller than those of Medium-low intensity fires, but these fires had occasional hot spots that killed large trees, With significant reduction in the understory	<ul style="list-style-type: none"> • Soil exposure on 1-50% of the area • Flame lengths <6m • High understory mortality with some overstory trees affected
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4	High Severity Burn	Crown fires, usually a stand replacing burn with relatively high overstory mortality	<ul style="list-style-type: none"> • Soil exposure >50% • Flame lengths >6m • Higher overstory mortality >20% • Usually burning above 800 ° C
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All jurisdictions including the unincorporated areas Craighead County, including cities Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric fall between the ranks of 0 to 1.

10.5.8.4 Previous Occurrences

According to the Arkansas Forestry Commission published by Arkansas.gov there have been 32 previous occurrences in regard to wildfires affecting Craighead County and its jurisdictions since 2013.

10.5.8.5 Probability of Future Wildfire Occurrences

Even though there have been 32 recorded meaning there could be a 28% chance that one could occur in Craighead County in any given year.

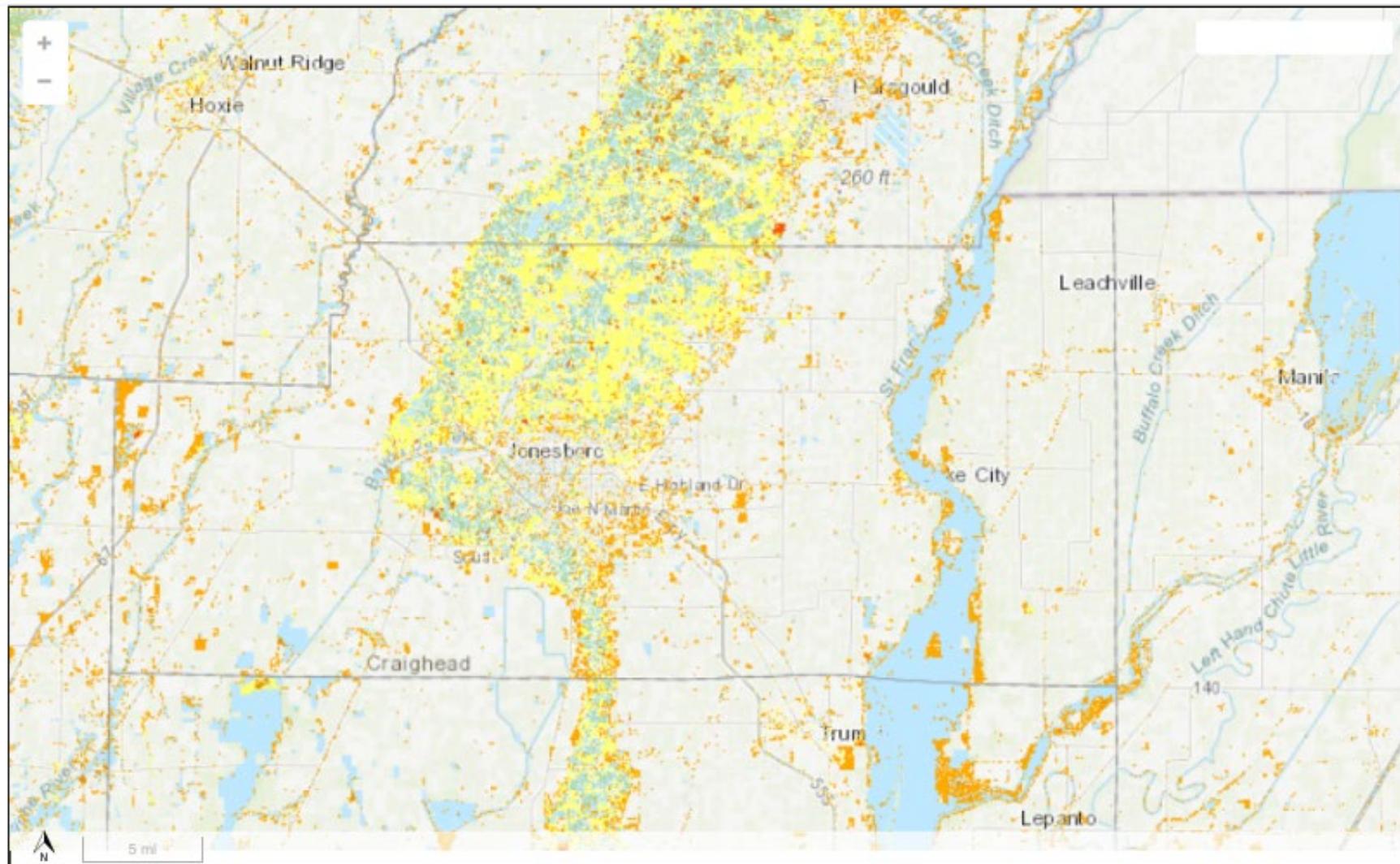
10.5.8.6 Impact of Wildfire

The maps on the following pages is from the Southern Wildfire Risk Assessment. The color legend shows the Fire Intensity Scale Maps.

Characteristic Fire Intensity Scale

- No Data
- 1 - Lowest Intensity
- 1.5
- 2 - Low
- 2.5
- 3 - Moderate
- 3.5
- 4 - High
- 4.5
- 5 - Highest Intensity

Craighead County



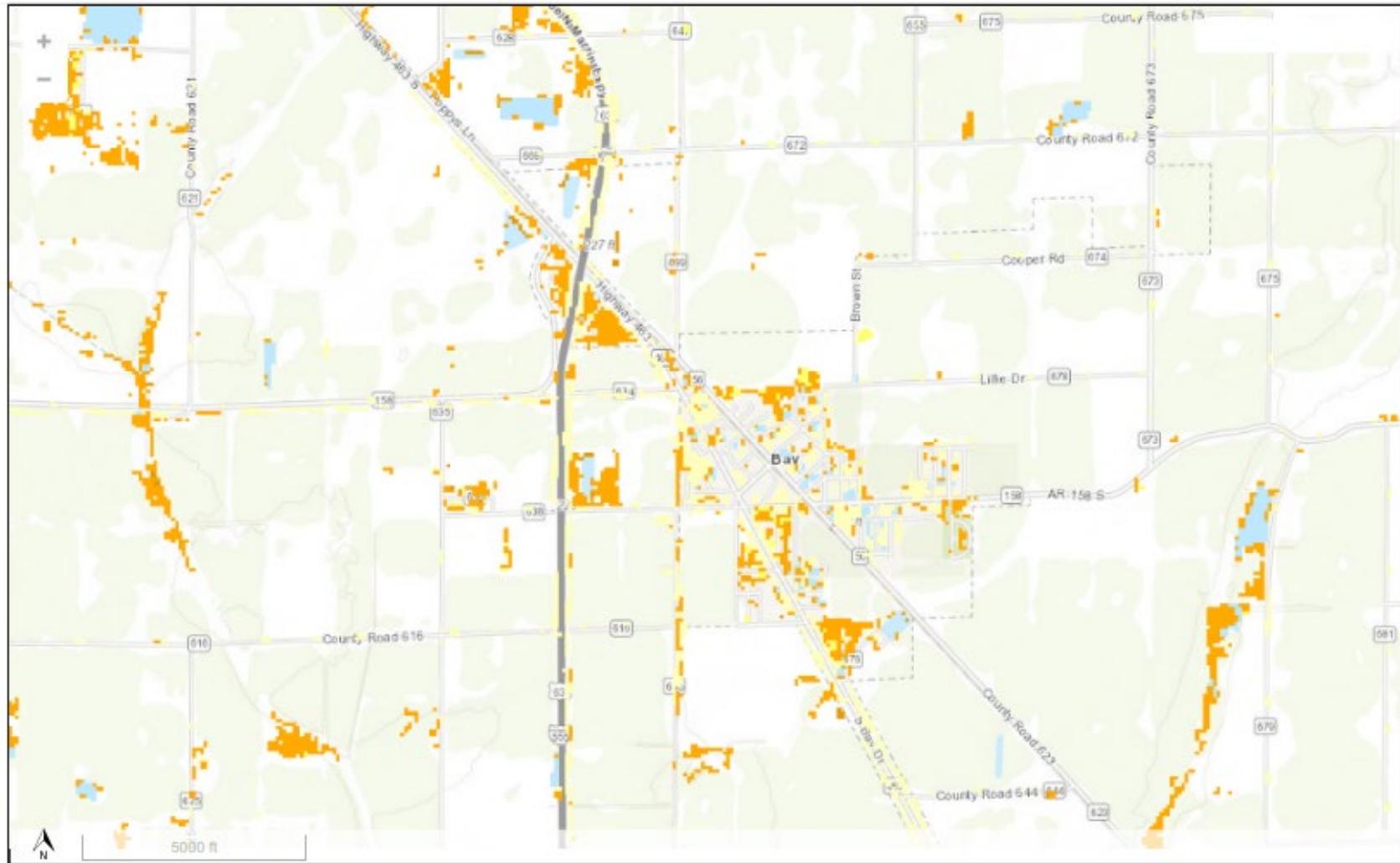
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Bay



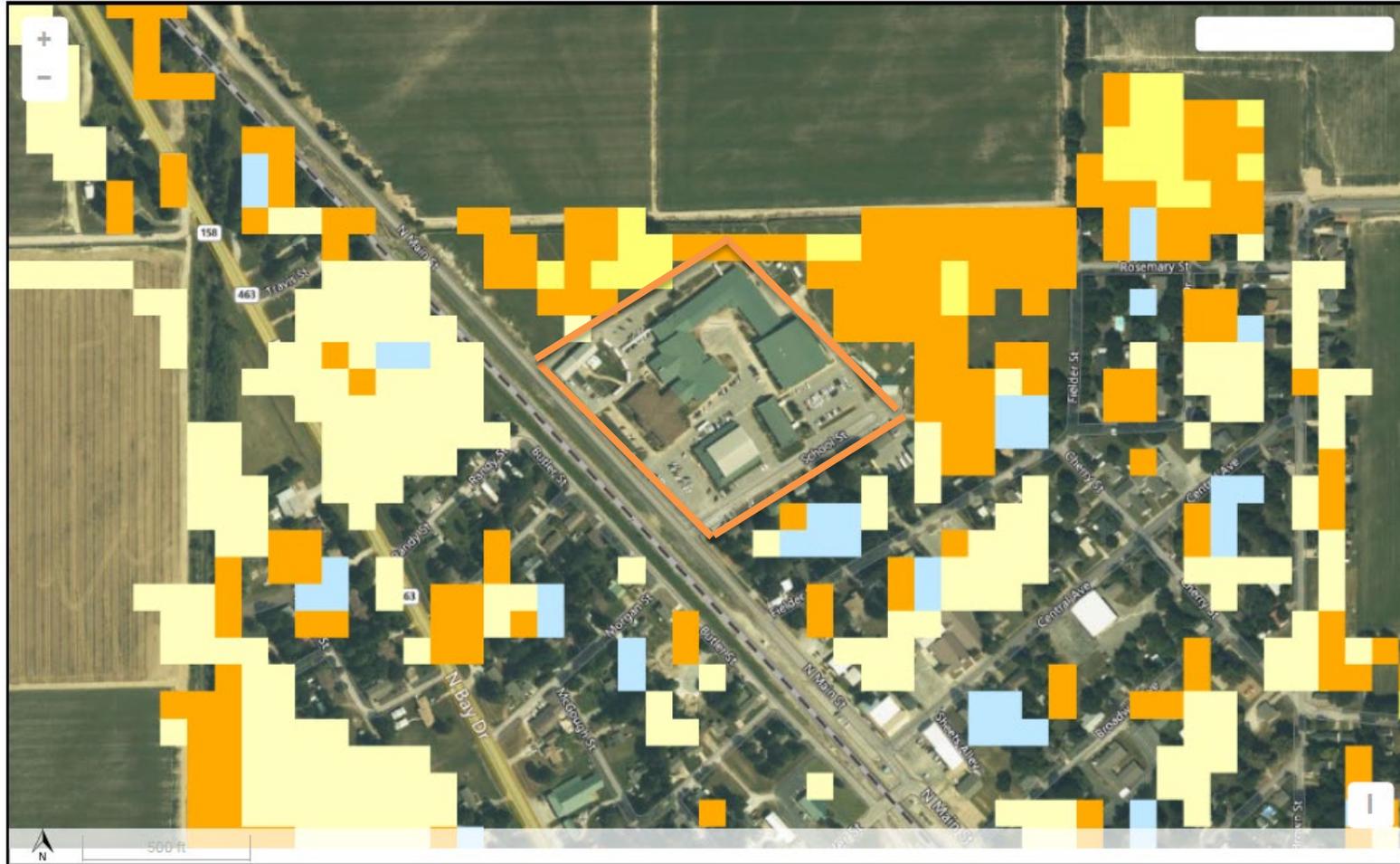
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Bay School District



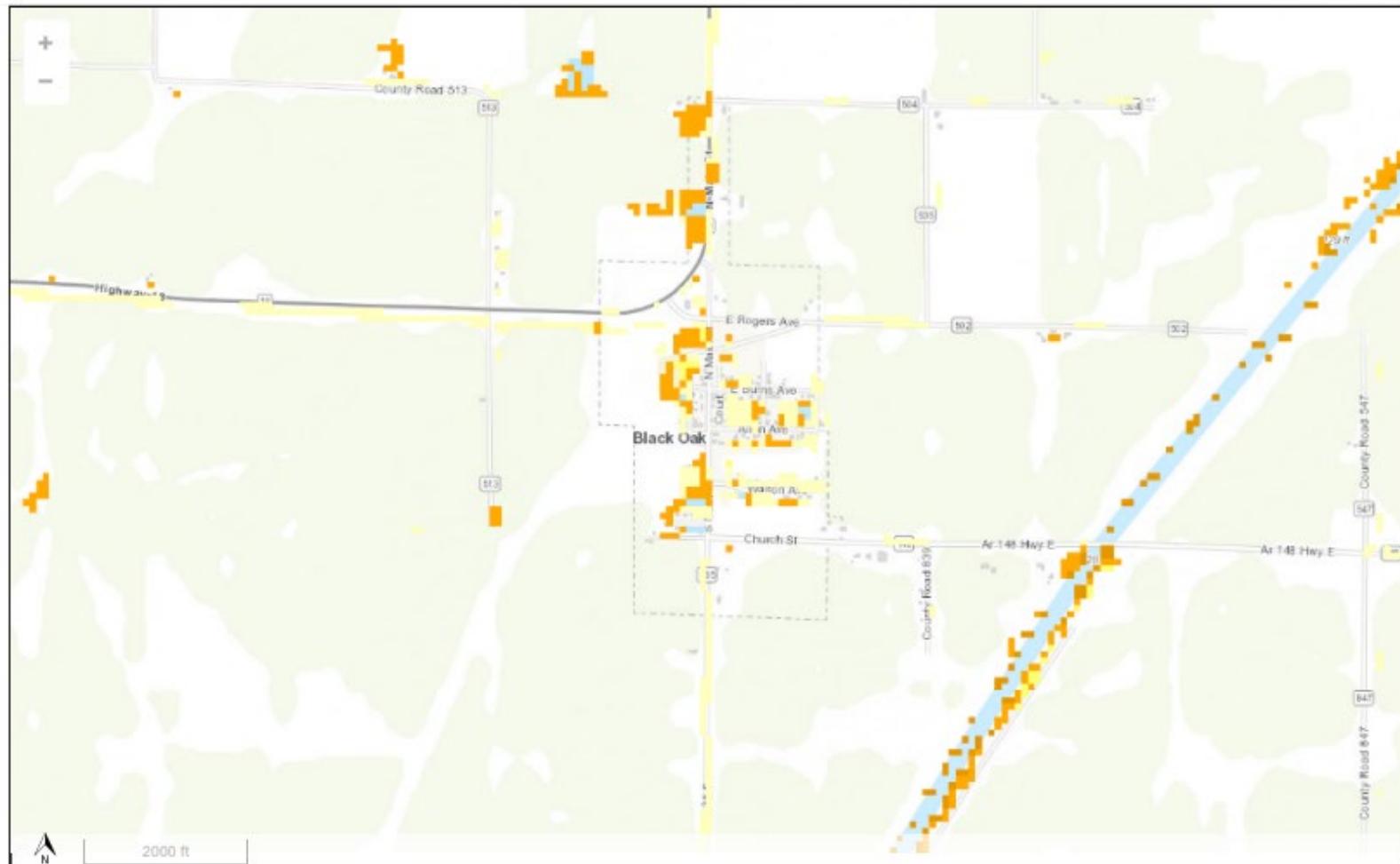
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Black Oak



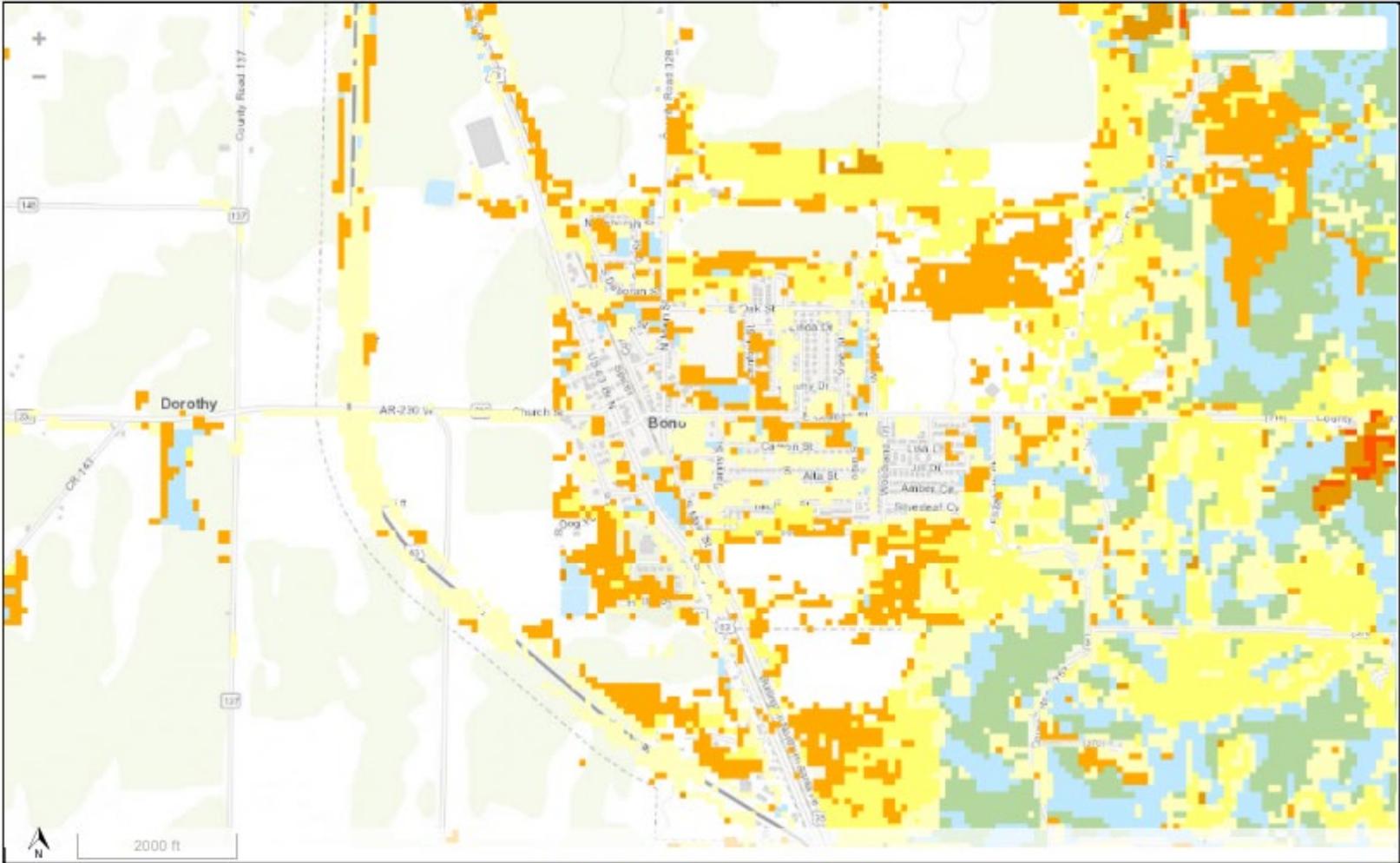
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Bono



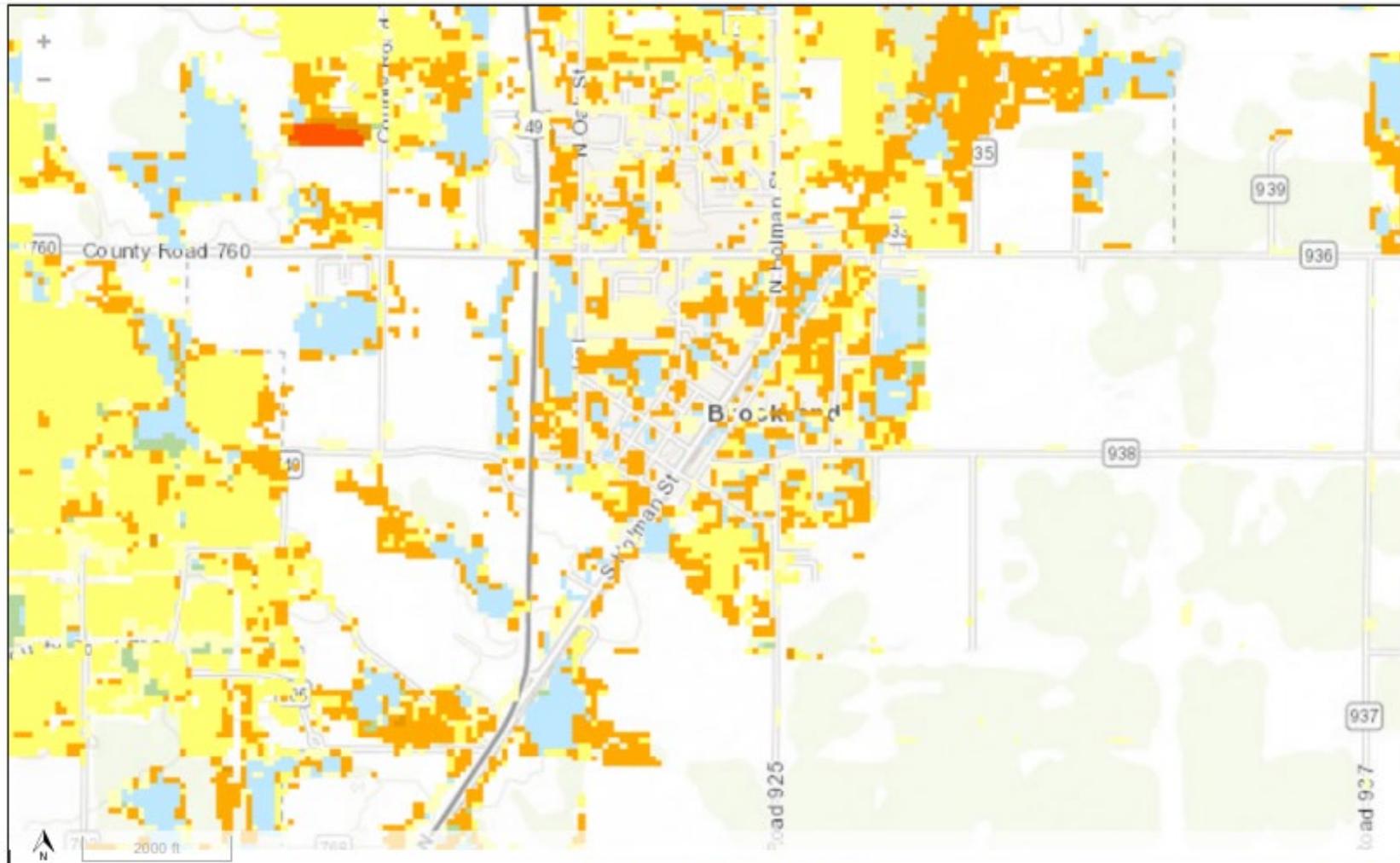
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Brookland



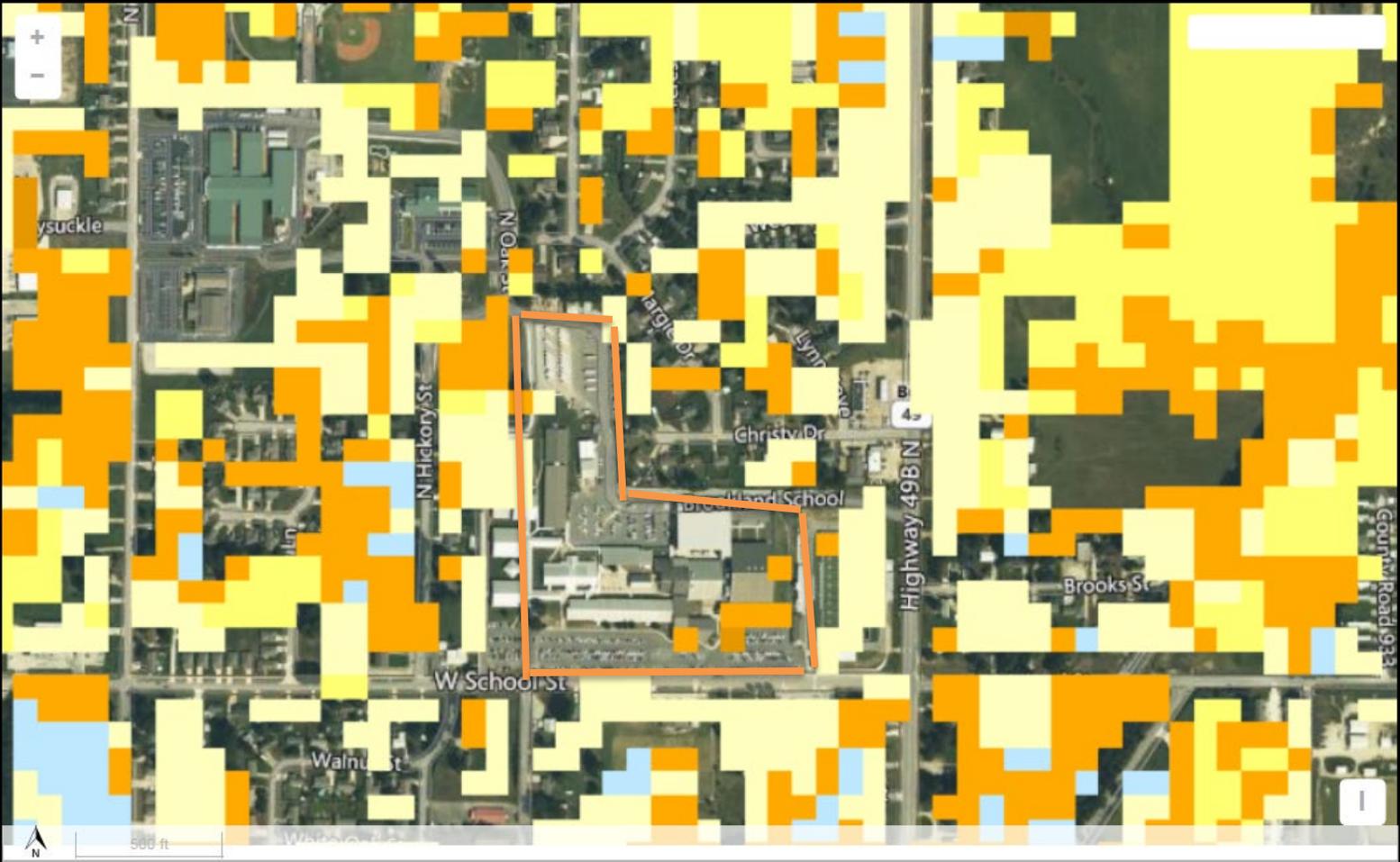
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Brookland School District



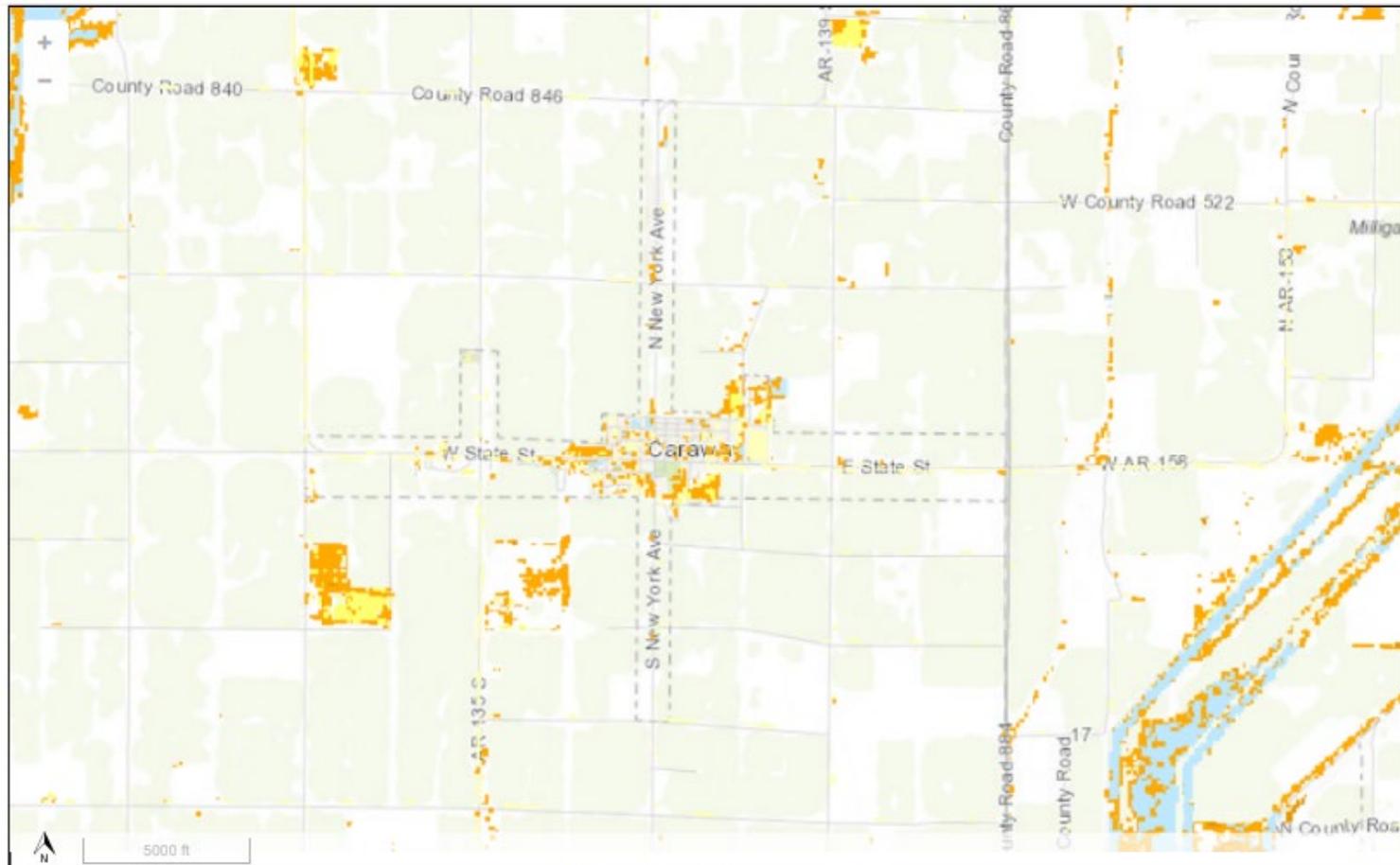
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Caraway



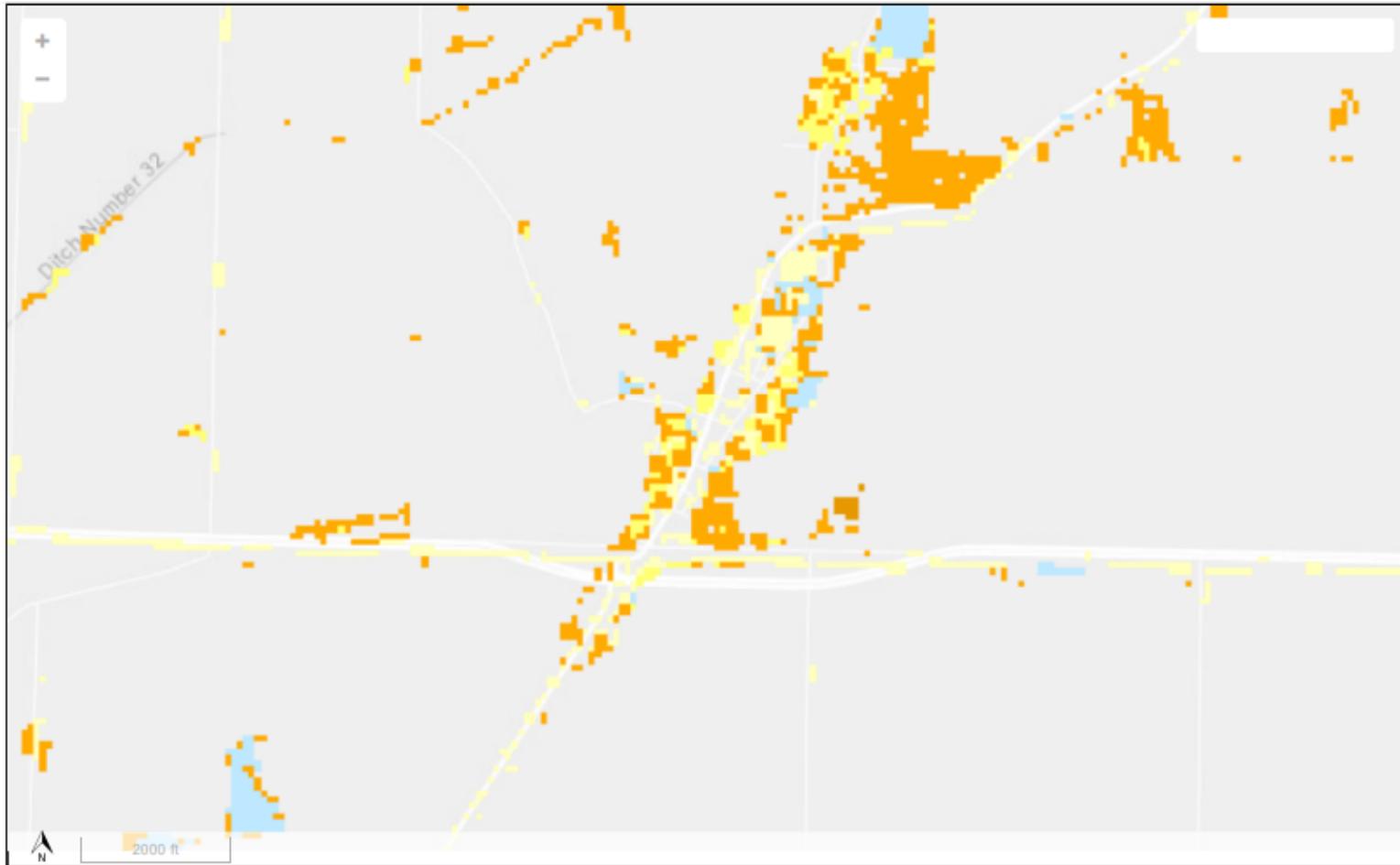
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Cash



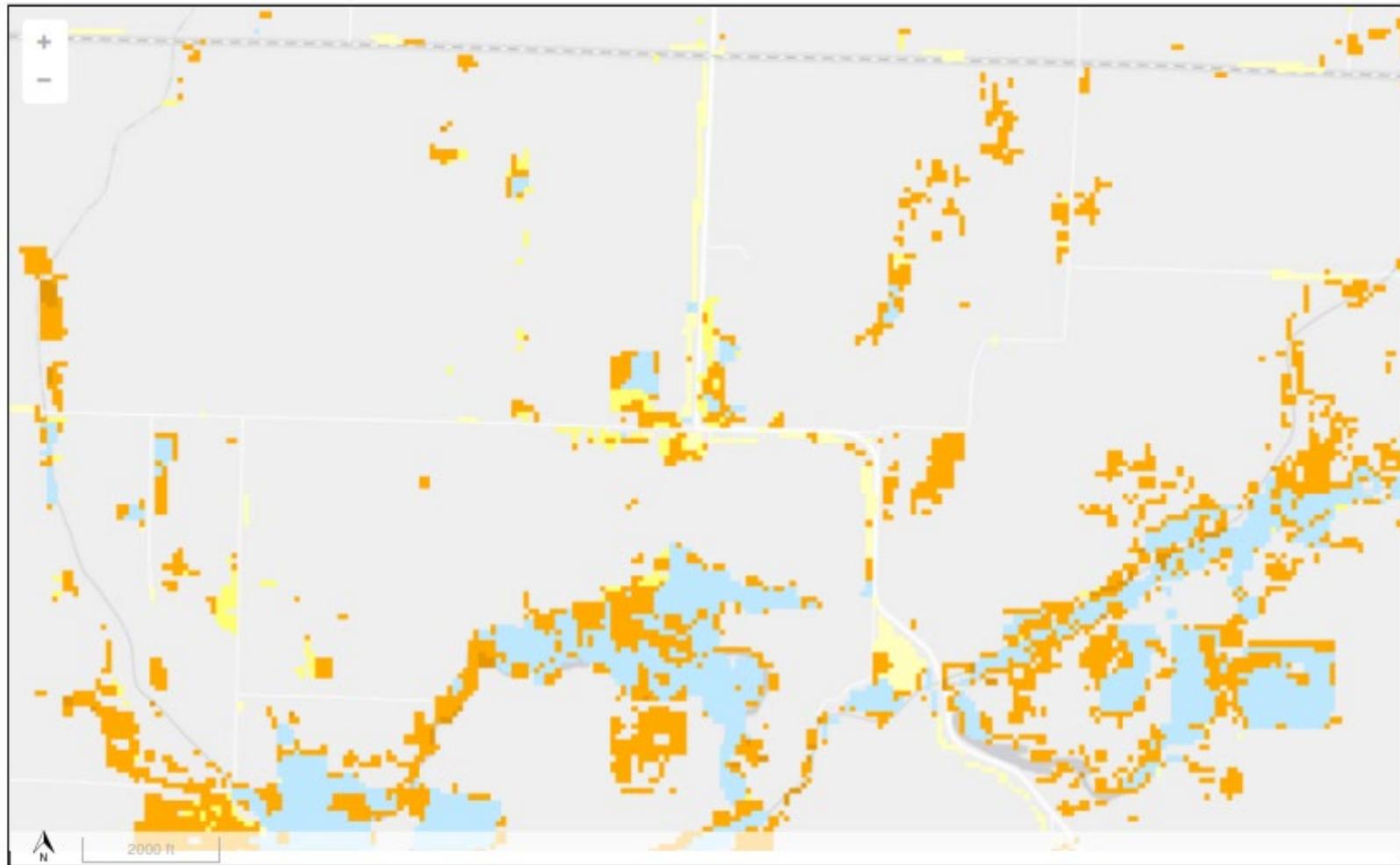
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Egypt



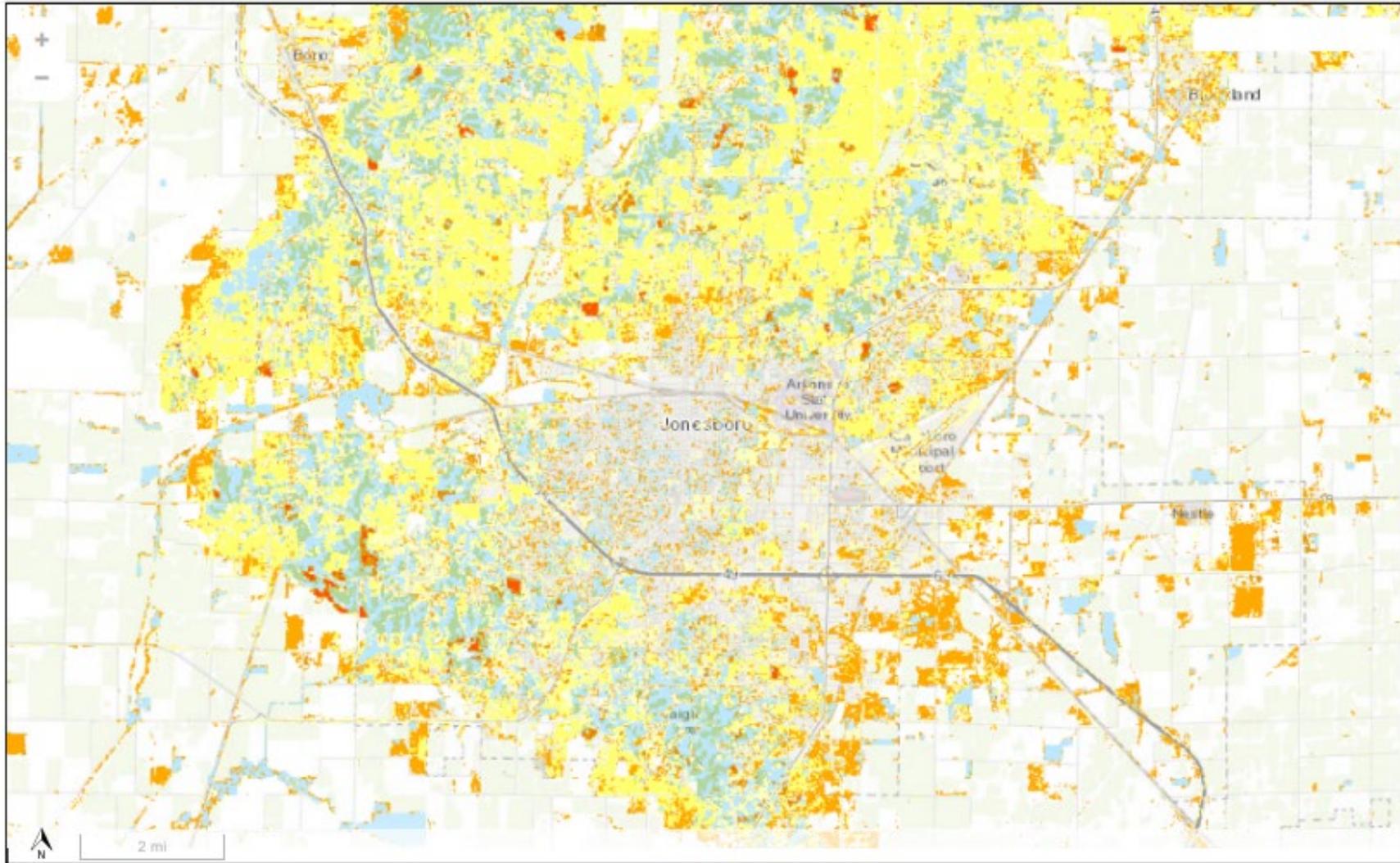
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Jonesboro



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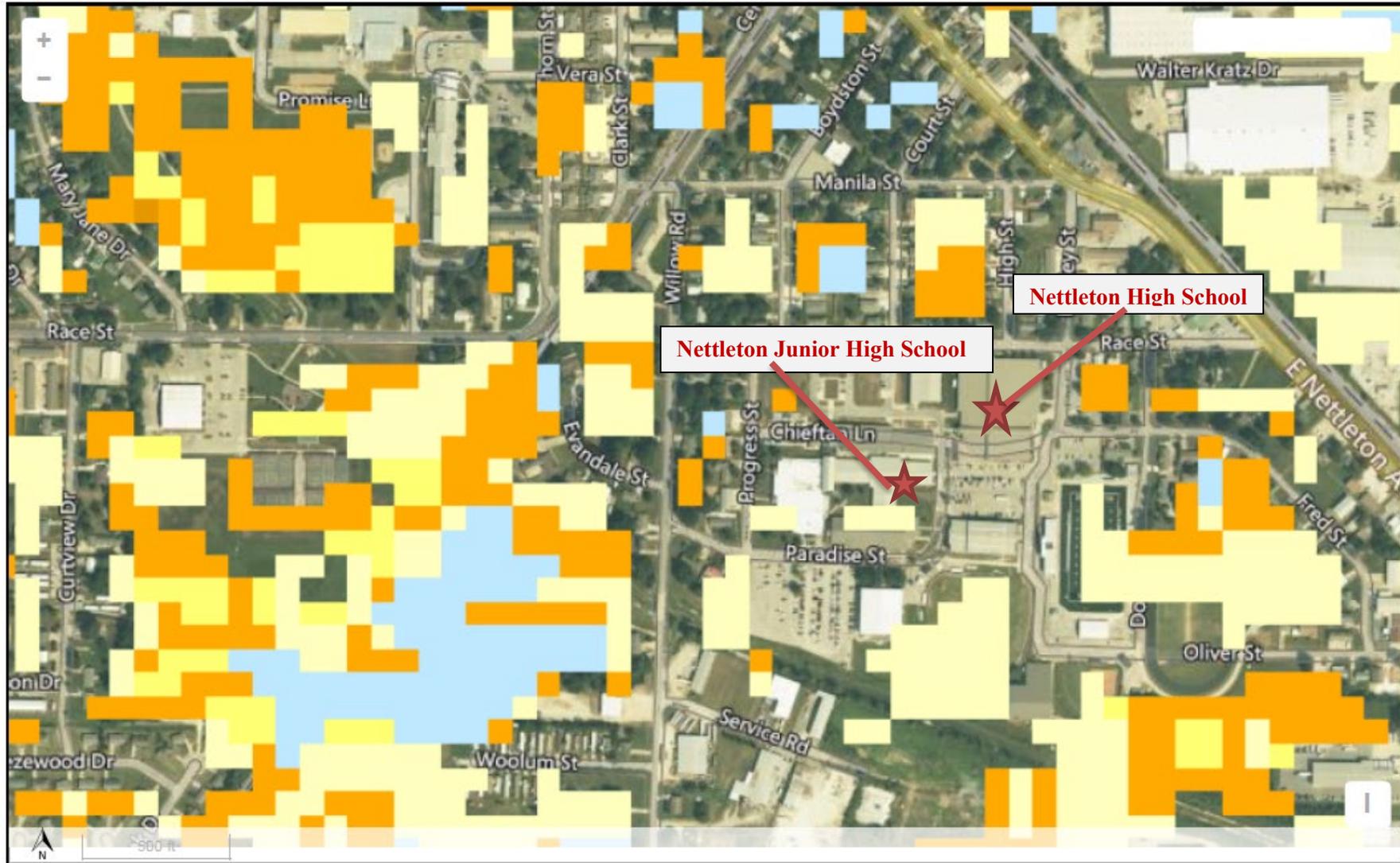
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Nettleton School District



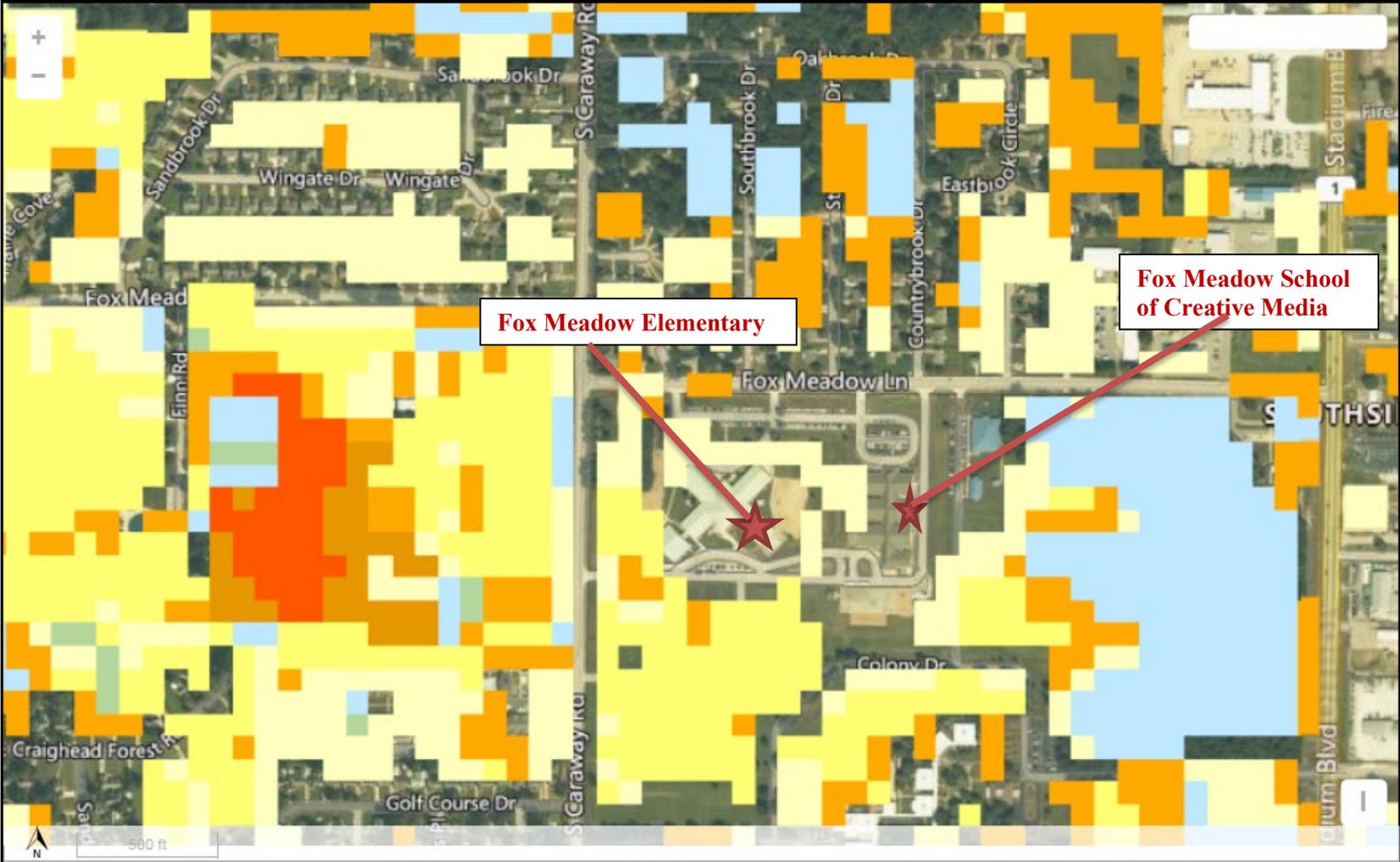
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Nettleton School District



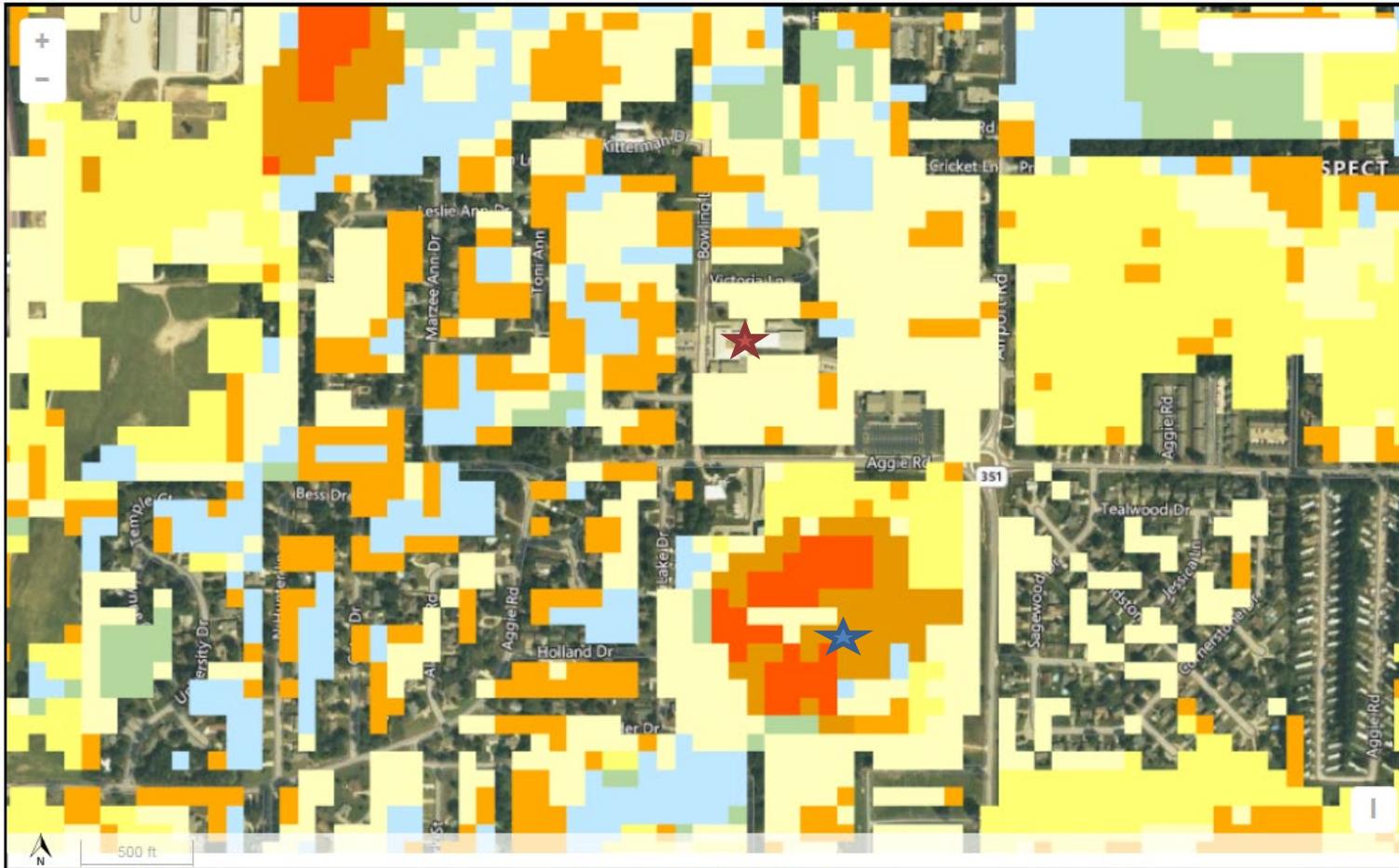
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Nettleton School District



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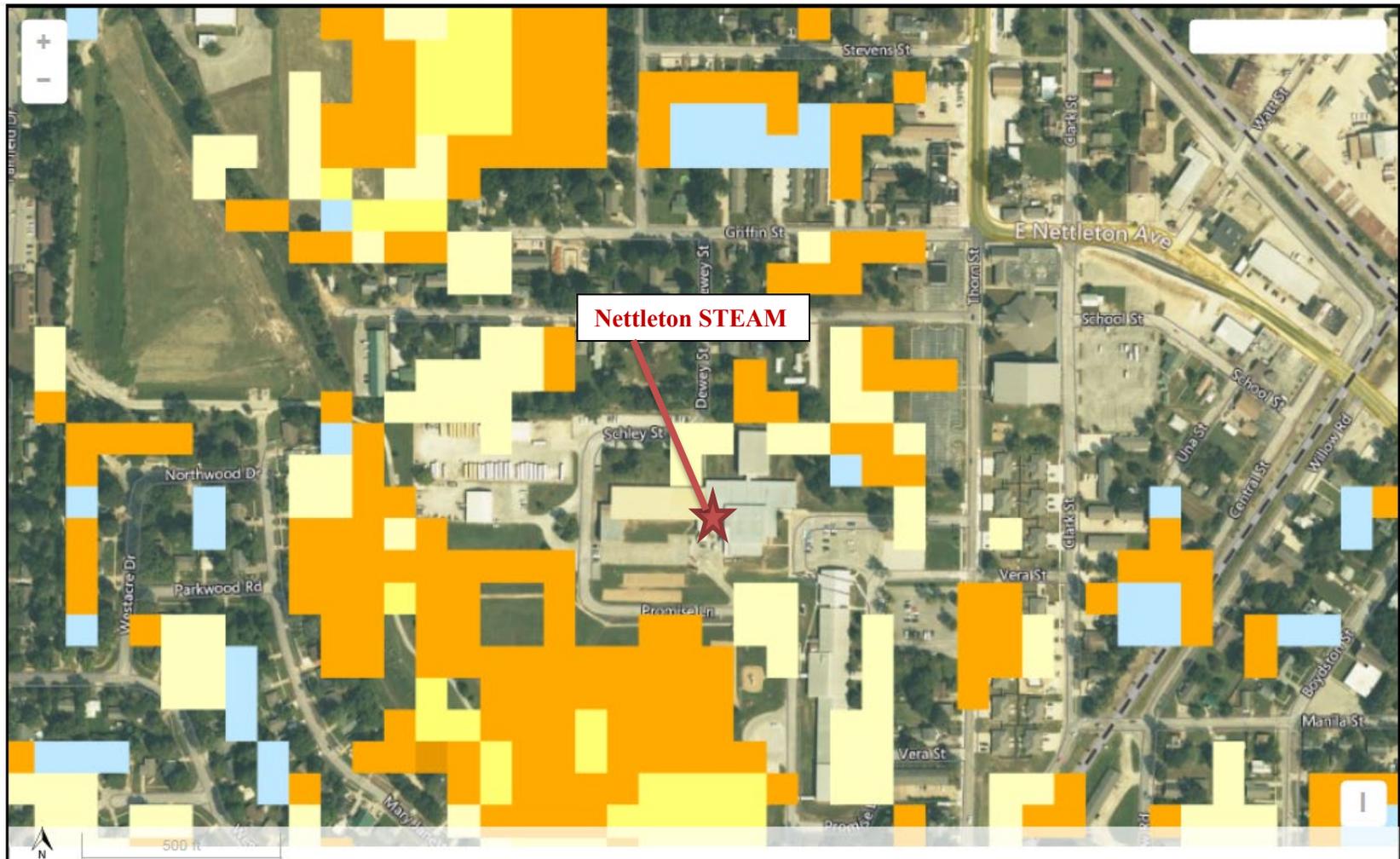
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The University Heights Elementary School is represented by the RED star above. The coordinates to the exact location are 35.84780, 90.65410.

The University Heights School of Medical Arts is represented by the BLUE star above. The coordinates to the exact location are 35.84531, -90.65264.

Nettleton School District



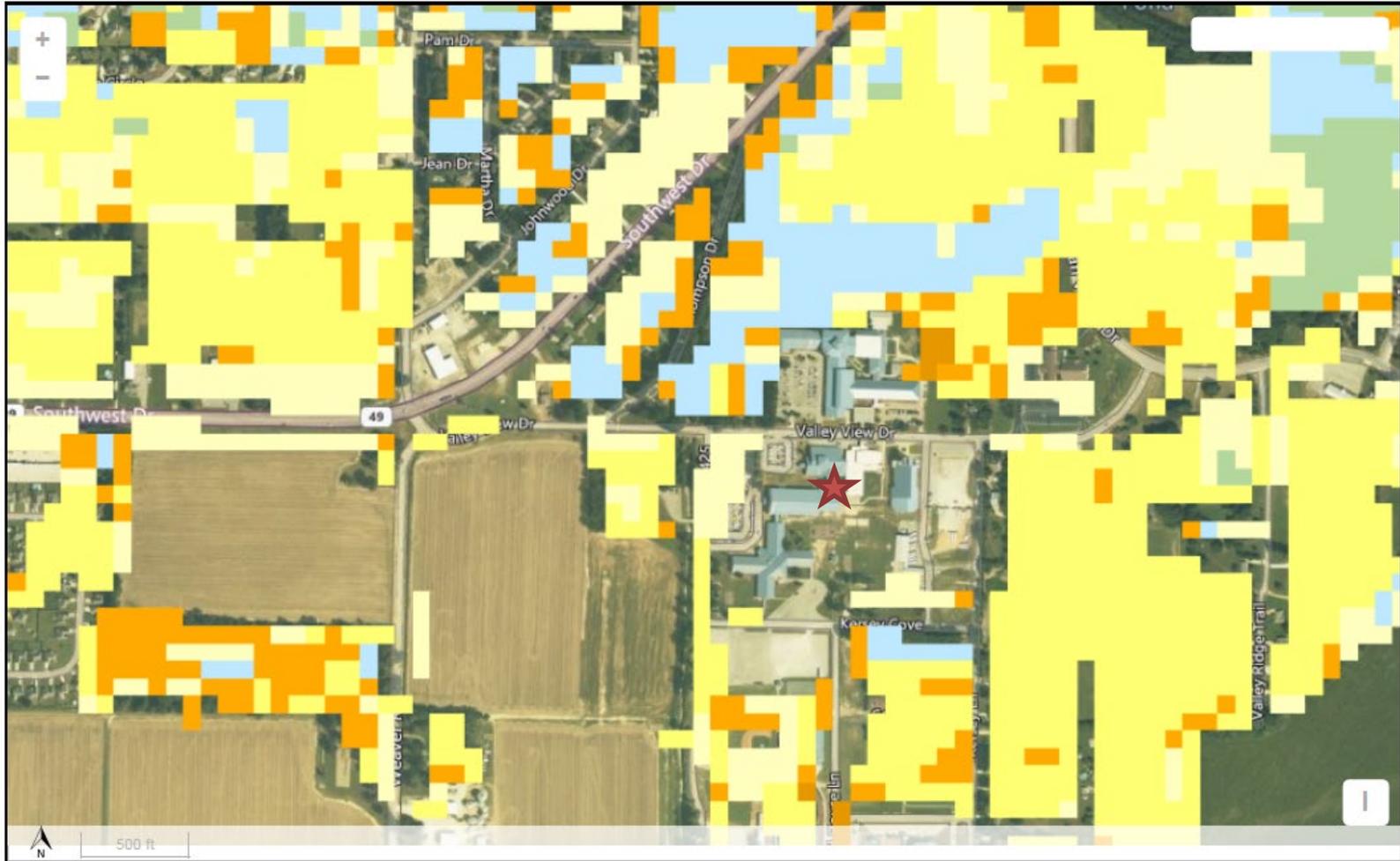
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Valley View School District



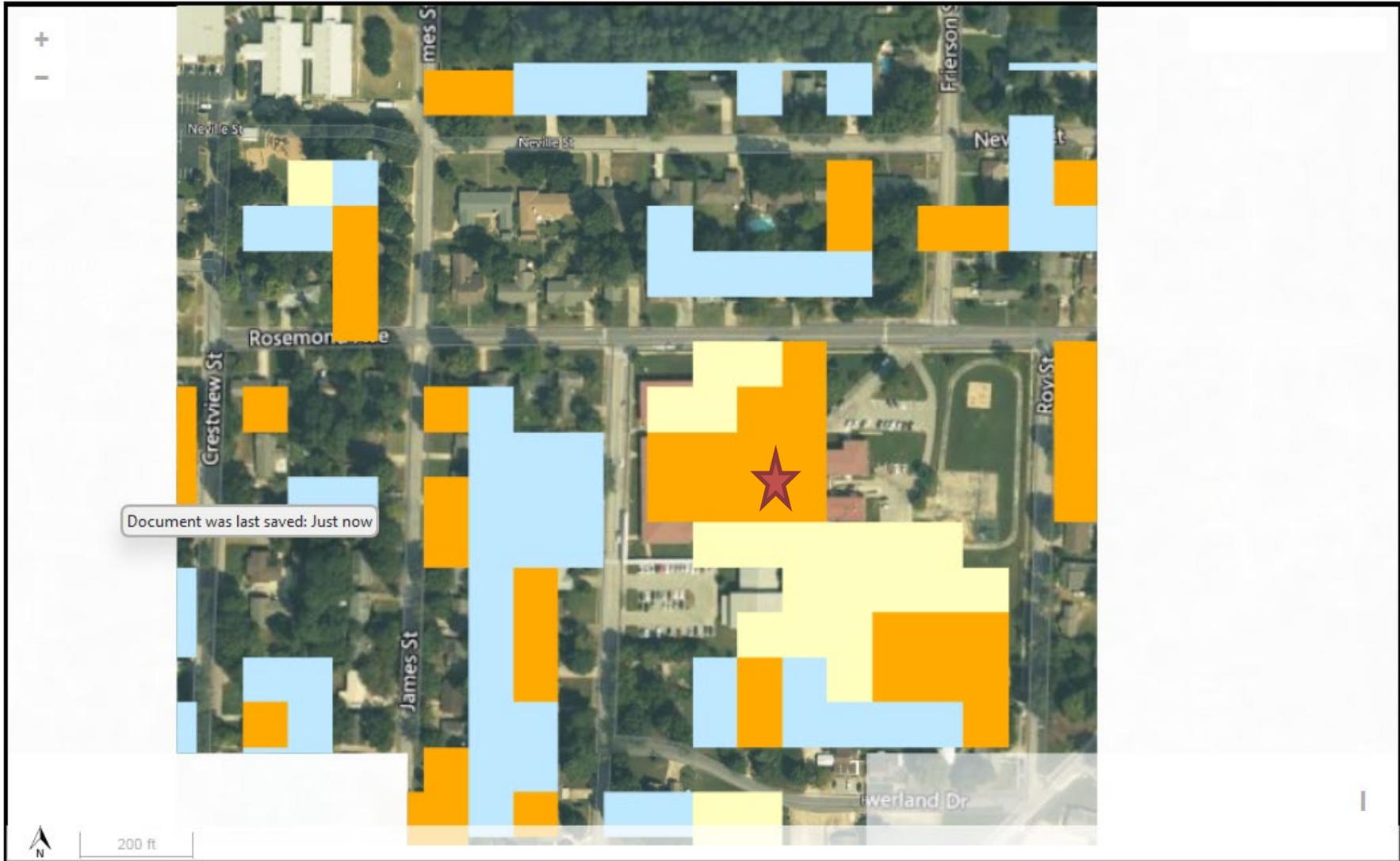
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Jonesboro School District-Health & Wellness



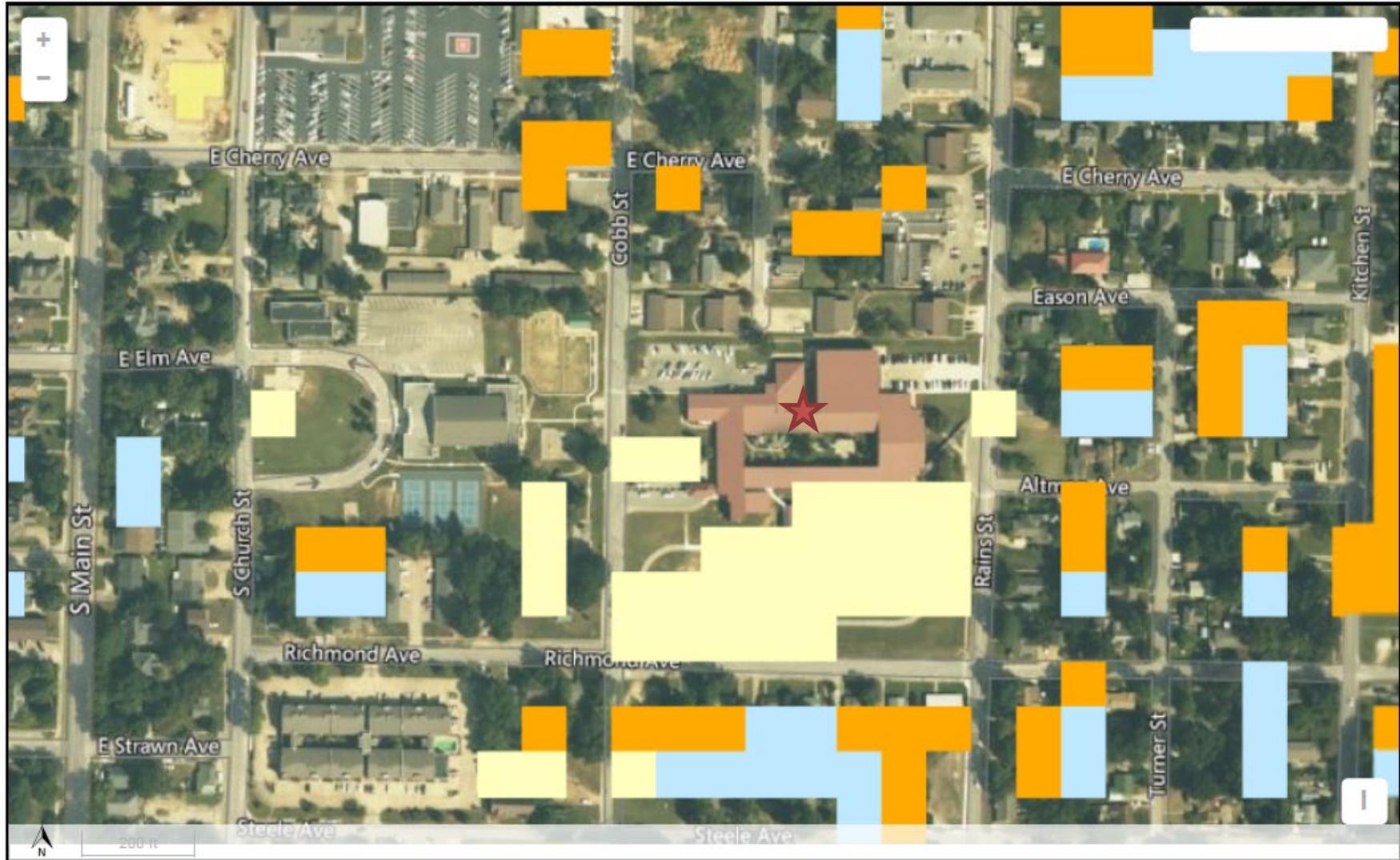
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Jonesboro School District-International Stu.



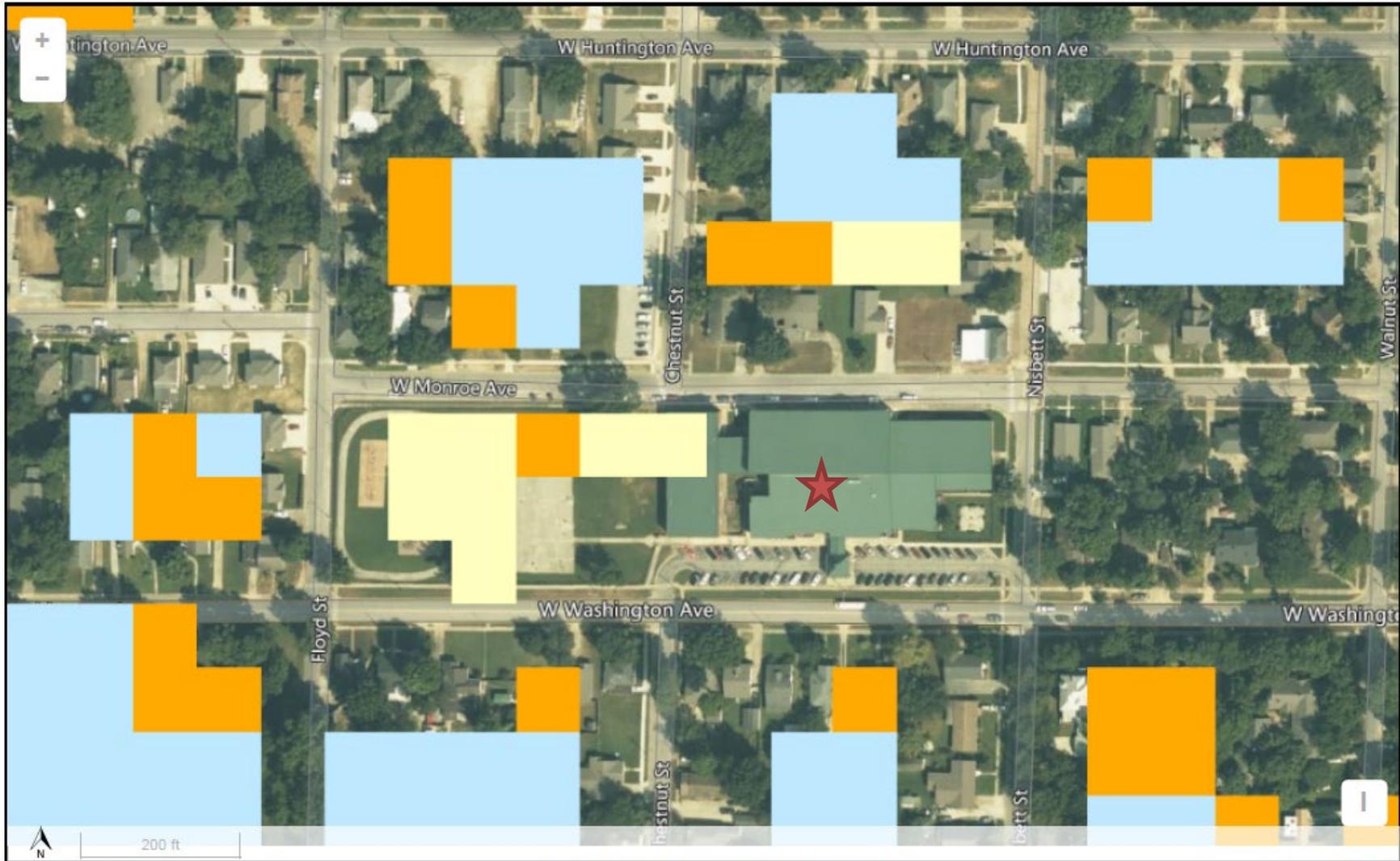
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Jonesboro School District-Microsociety



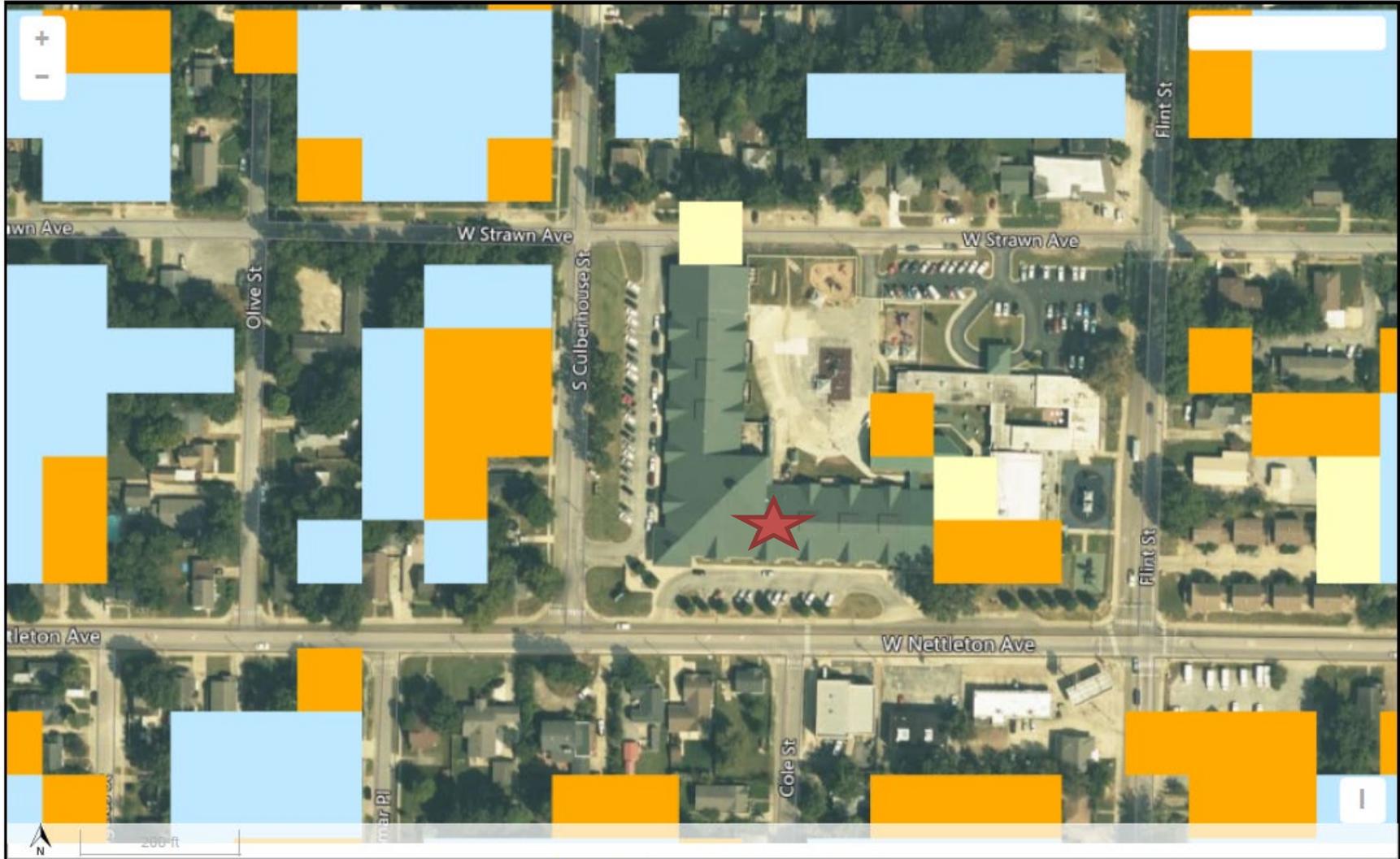
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Jonesboro School District-Kindergarten Center



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Jonesboro School District-Visual & Perf. Arts



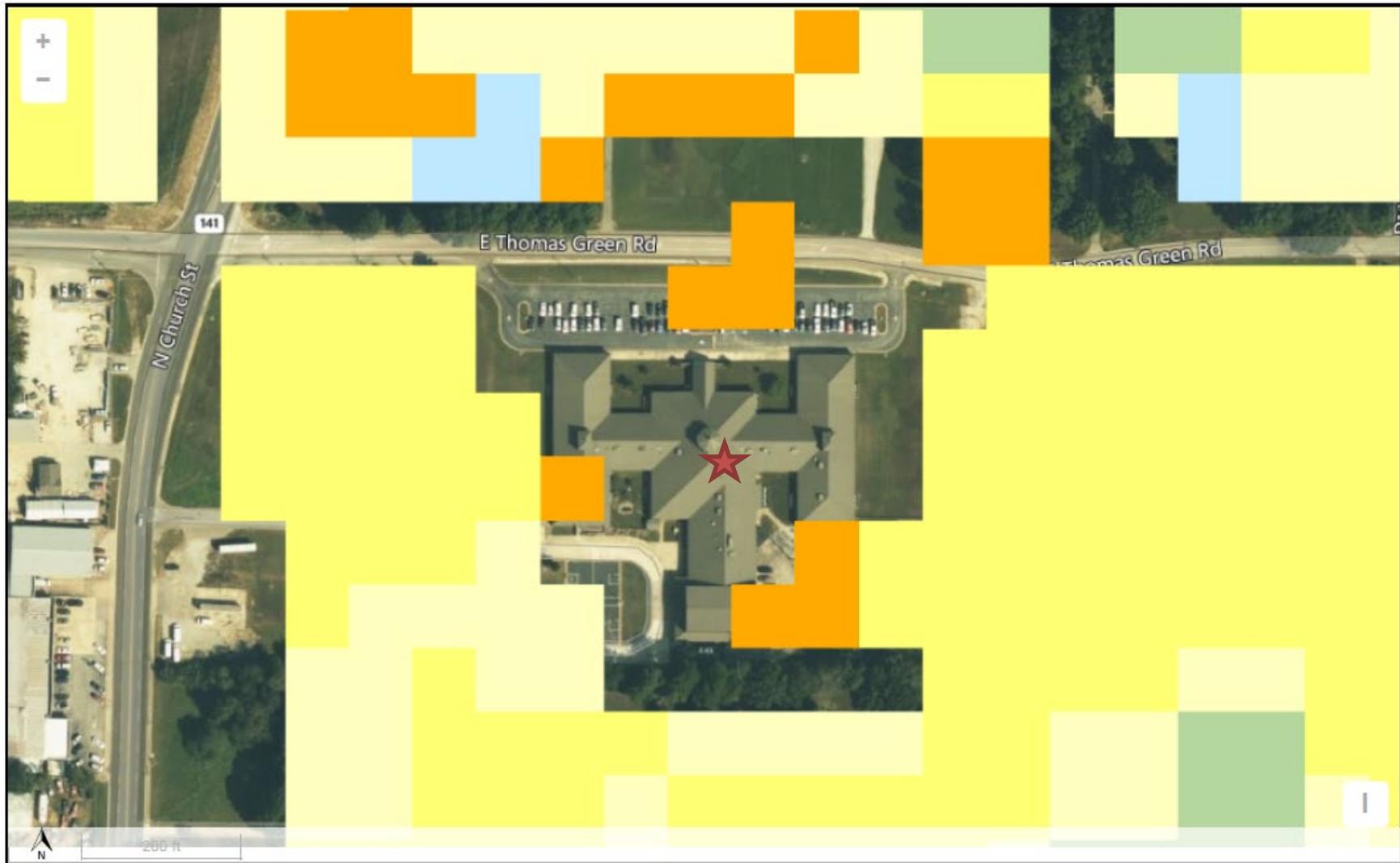
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Jonesboro School District-Math & Science



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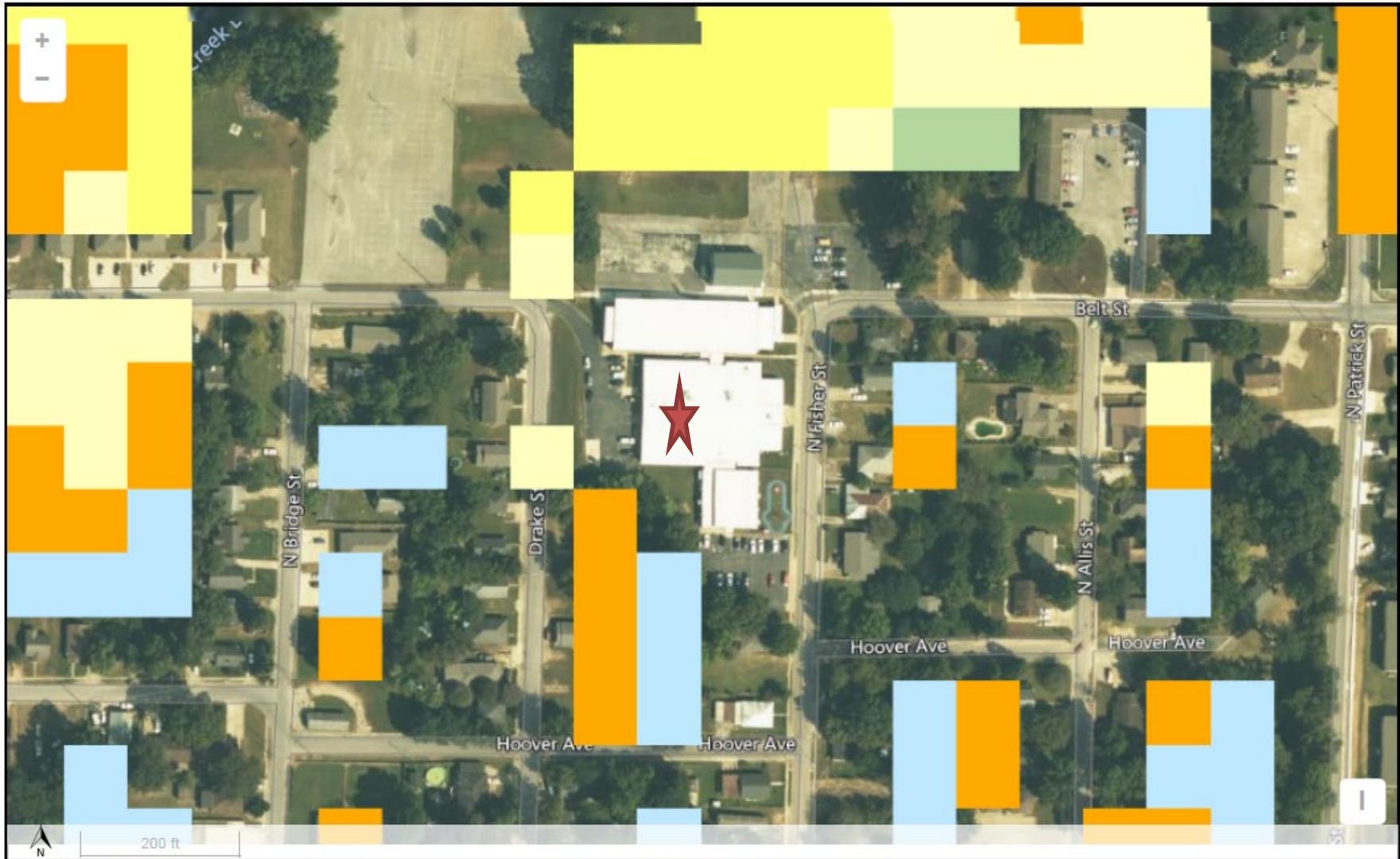
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Jonesboro School District-Succes



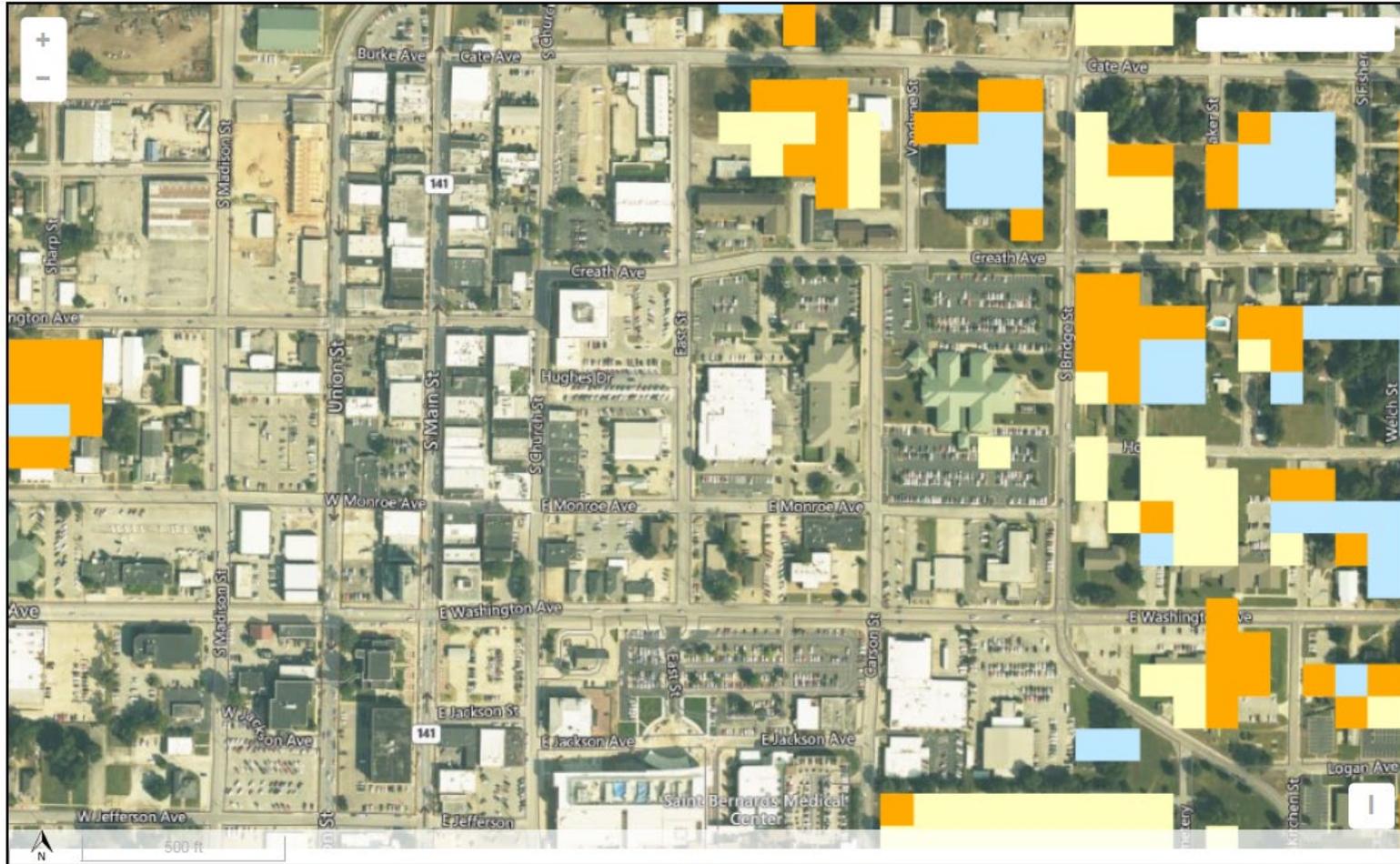
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CWL



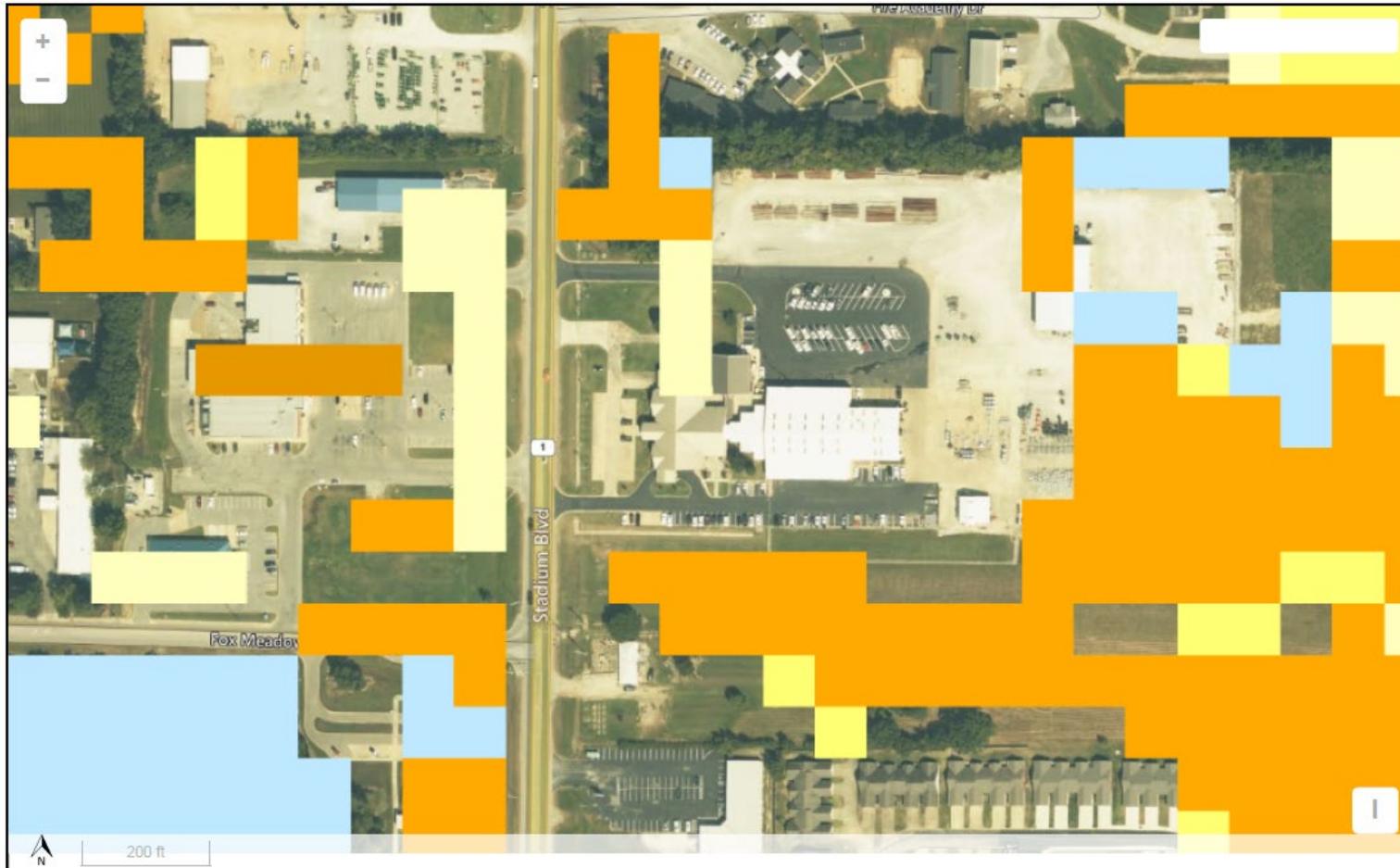
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Craighead Electric



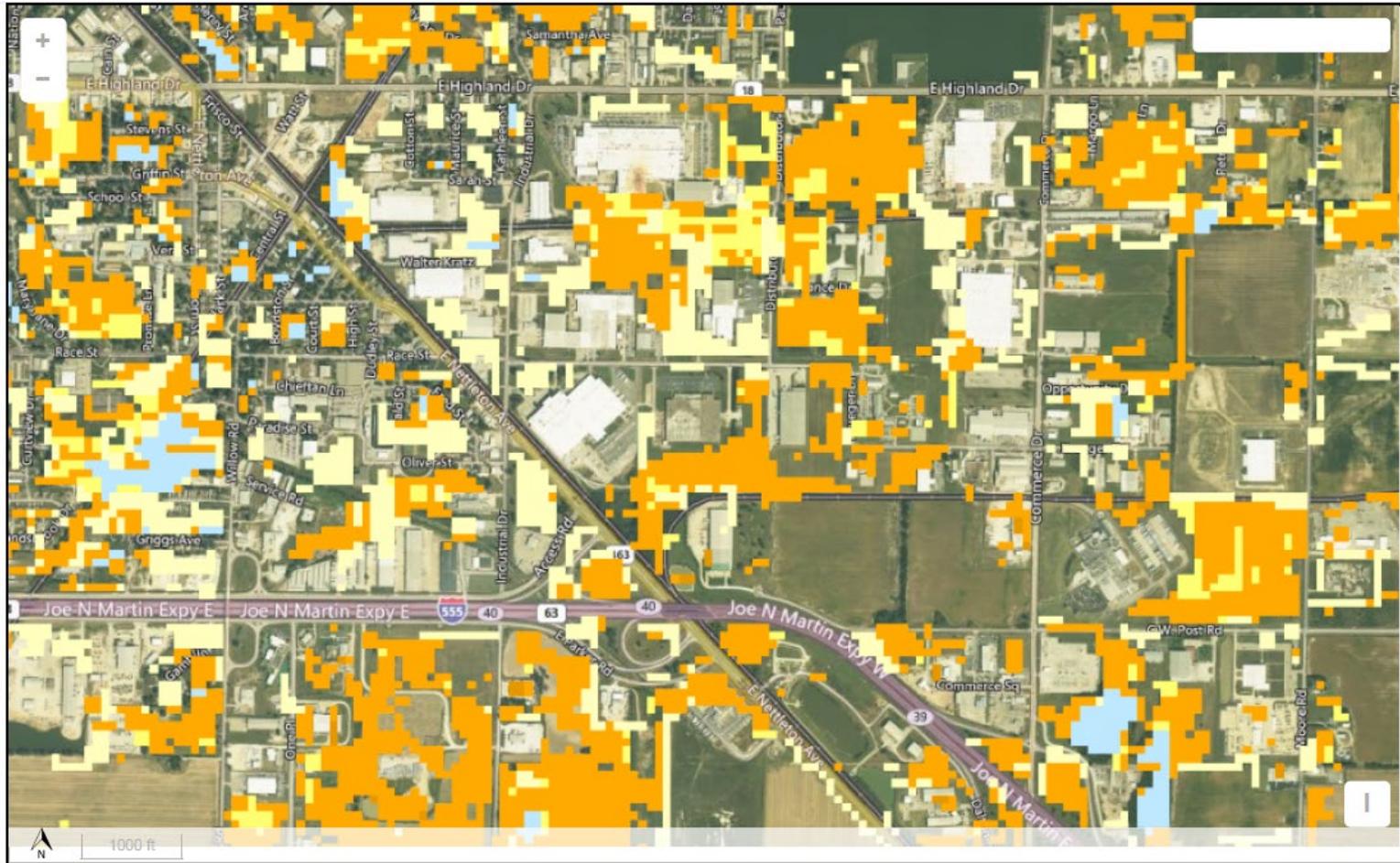
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ASU



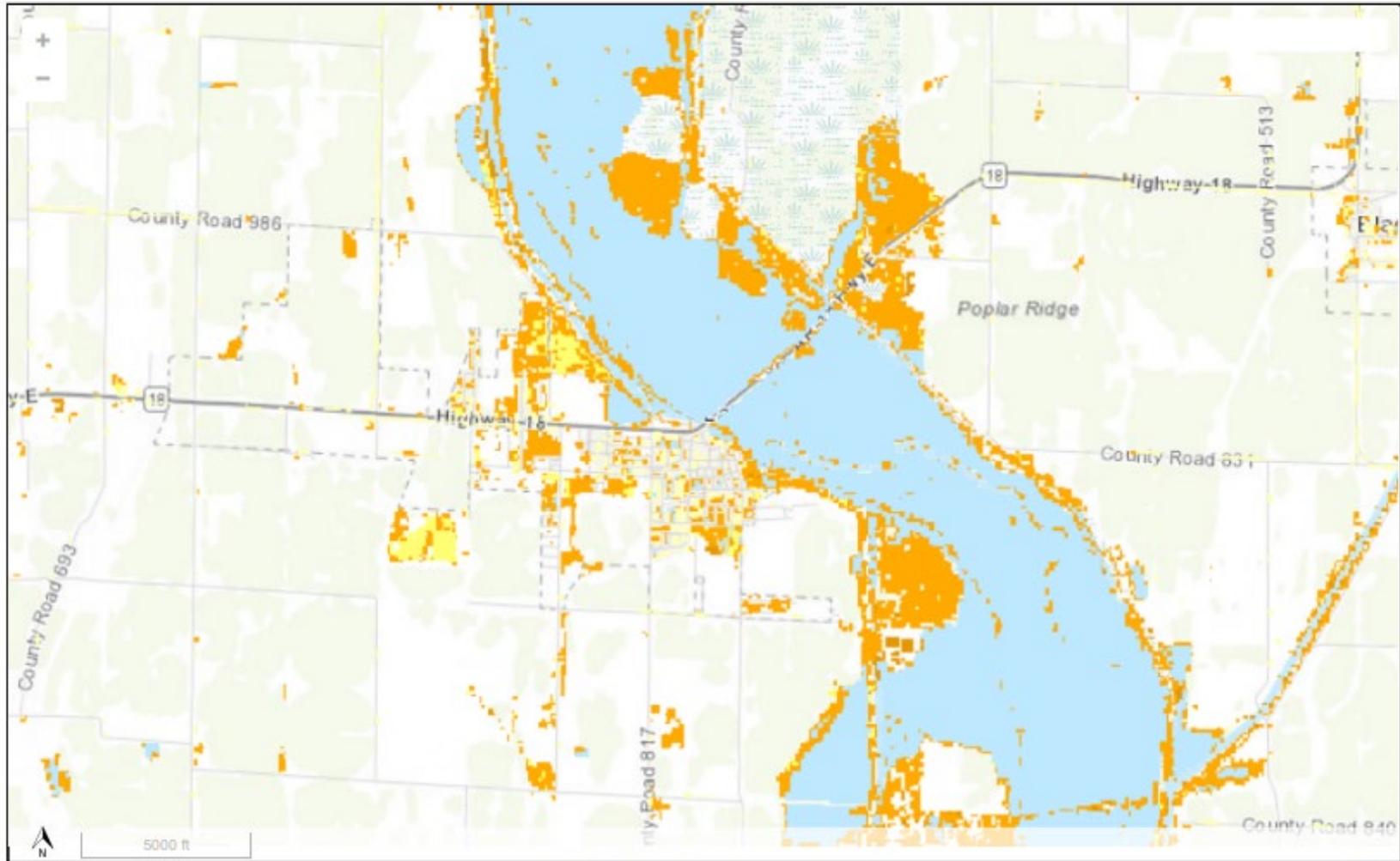
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Lake City



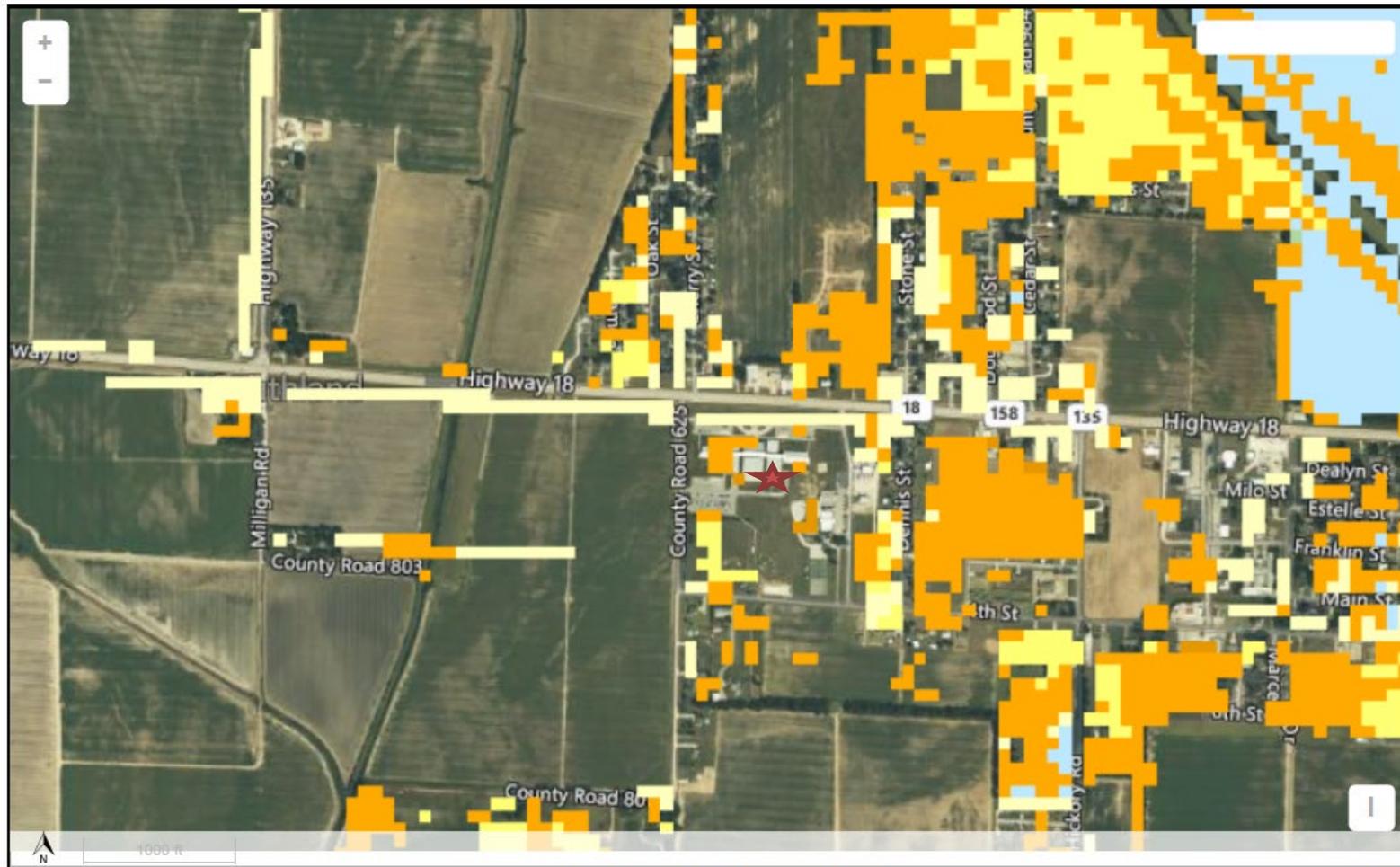
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Riverside School District



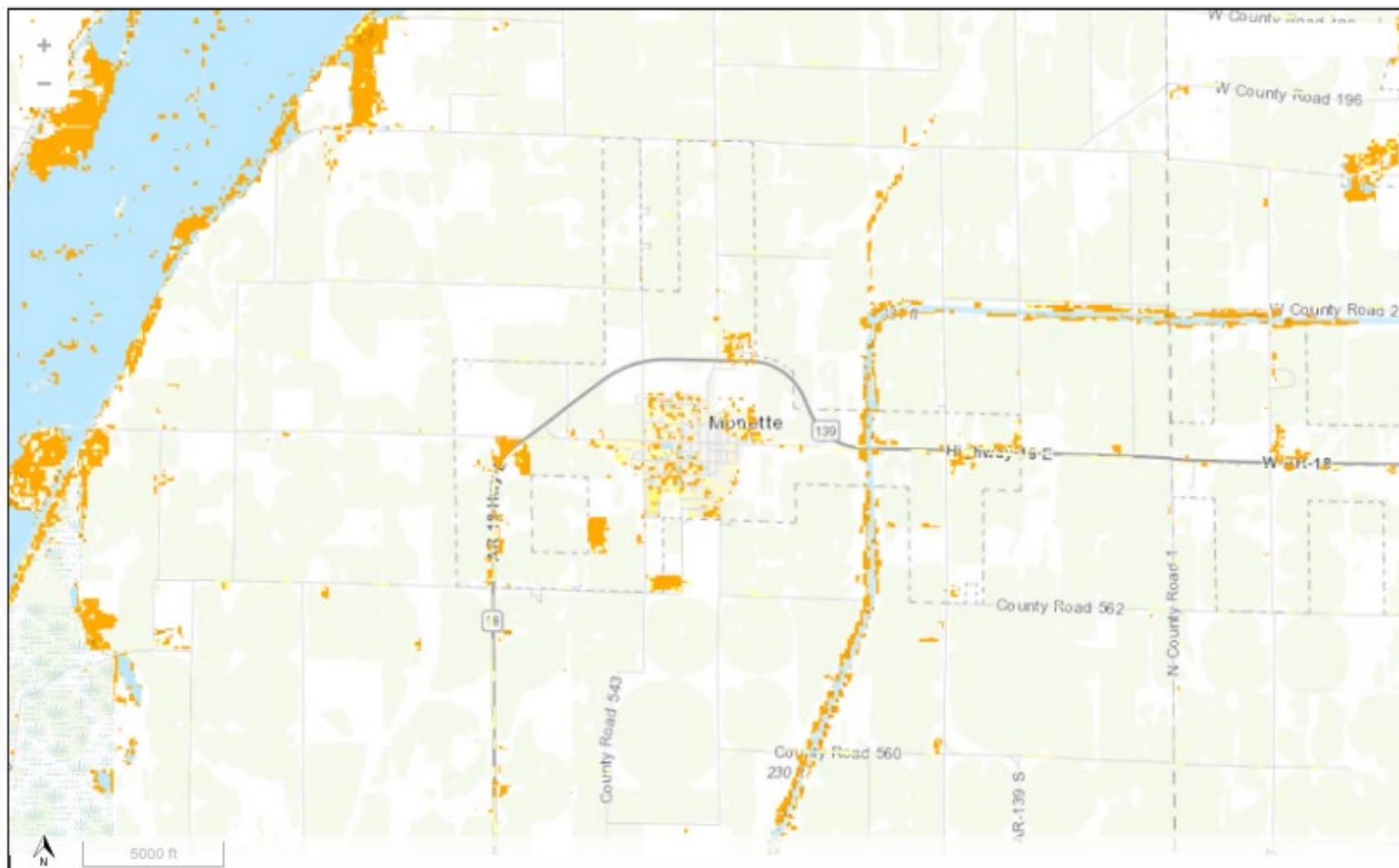
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Monette



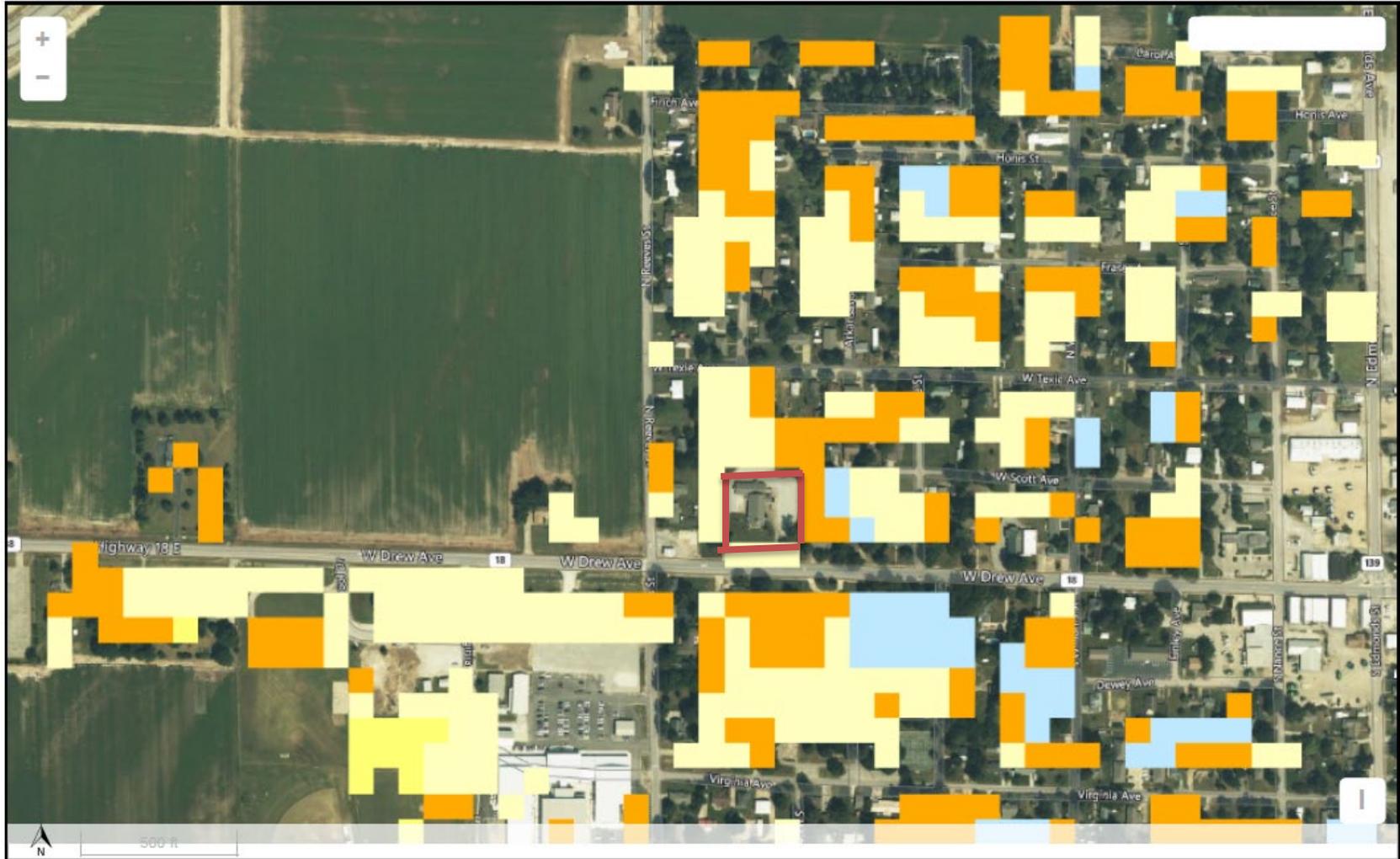
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Buffalo Island School District



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Wildland fires not only consume forest and rangeland vegetation, but impact wildlife habitat, recreation and tourism, water quality and supply and property values. Wildfires can cause extensive damage, both to property and human life.

In Craighead County, most rural residents depend on their local volunteer fire departments to protect their property from loss.

In drought conditions, wildfires can be easily started and are extremely dangerous. Protecting structures in the wildland from fires poses special problems and put additional burdens on local firefighting resources. Weather conditions leading to wildfires can change rapidly. Thus, there are few measures, other than rapid response, that can contain wildfires and limit their threat to property. Local economic impacts from catastrophic wildfires include disruptions to both consumption and production of local goods and services. Immediate effects may include decreased recreation / tourism and timber harvest in the fire region, as well as disruptions from evacuations and transportation delays. Increased use of local goods and services for fire protection also impacts local economies. Other effects include direct property losses (in the form of buildings, crops, livestock, and other capital), damage to human health, and possible changes in the long-term structure of the local economy. There are many secondary effects to wildfire. All vegetation may be destroyed as well as the organic material in the soil may be burned away or may decompose into water repellent substances that prevent water from absorbing into the soil. In effect, normal rainfall after a wildfire may result in unusual erosion or flooding from burned areas; depending on the topography of the burned area, heavy rain can produce destructive debris flows. Wildfires also have an effect on water supplies. The loss of ground-surface cover, such as pine needles and small branches, and the chemical transformation of burned soils make watersheds more susceptible to erosion from rainstorms.

10.5.8.7 Vulnerability and Estimating Potential Loss

Structures located within the unincorporated areas of Craighead County, including cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are equally susceptible to wildfire.

The most vulnerable populations during wildfire are the firefighters. Other vulnerable populations are the children under 5 and elderly over 65. Firefighters are at high risk to heat injuries. Children and elderly are more susceptible to heat exhaustion and smoke inhalation injuries. The most vulnerable structures are manufactured homes, wooden structures, and light construction. These structures will be damaged or destroyed by fire including all furniture and other items contained.

11.5.11 Winter Storm

11.5.9.1 Description of Winter Storm

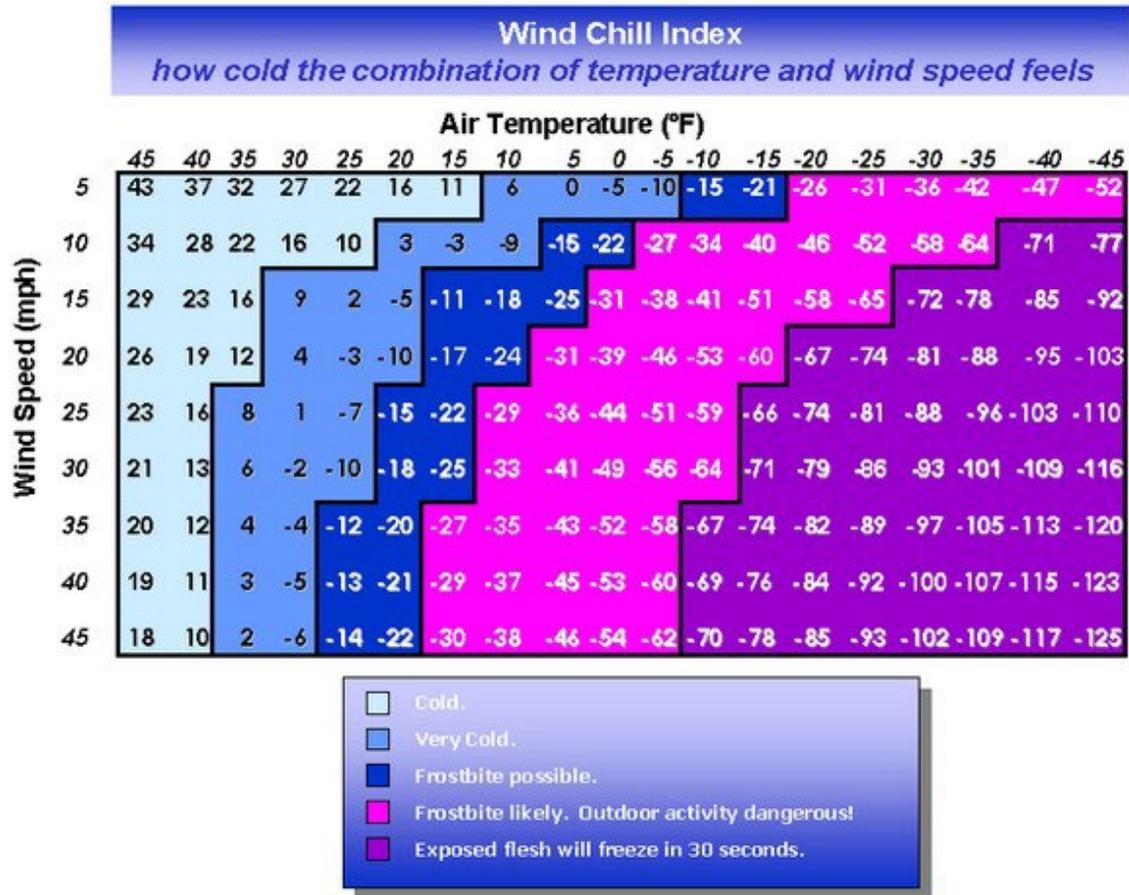
Severe winter storms, which may include heavy snowfall, freezing rain, or a mix of these wintry forms of precipitation. Severe winter weather can down trees, cause widespread power outages, damage property, and cause fatalities and injuries.

11.5.9.2 Location of Winter Storm Events

All areas of Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are equally susceptible to severe winter storm events.

11.5.9.3 Extent, Magnitude or Severity of Winter Storms.

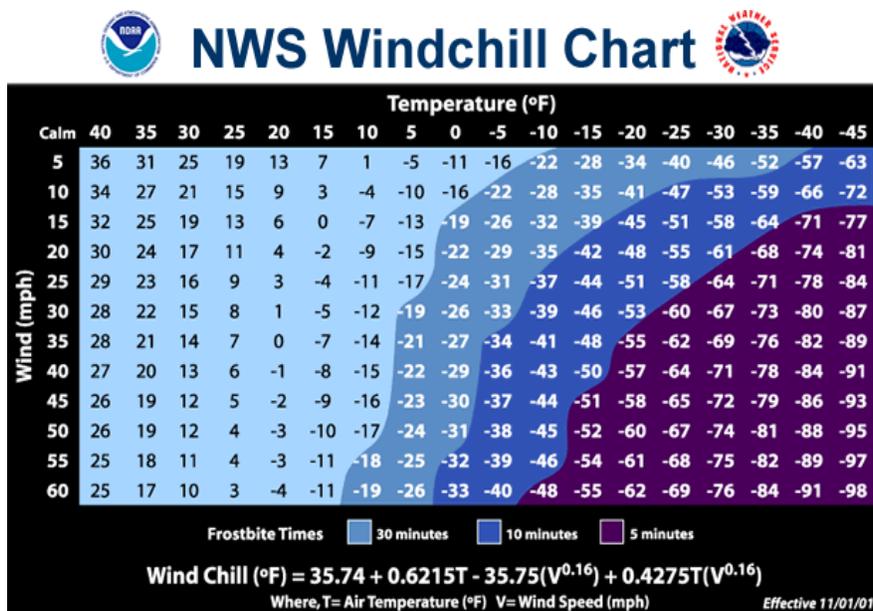
In past occurrences all areas of Craighead County have experienced wind chill temperatures as low as -15 degrees Fahrenheit, can experience ice accumulation up to 1.25", and snow accumulation up to 13".



Copyright 2000, Oklahoma Climatological Survey. Portions from the National Weather Service.

According to National Climatic Data Center (NCDC) and National Weather Service Data, typical snow accumulations in Craighead County during heavy snow and winter storm events ranges from 1 inch to 8 inches. Typical ice storm accumulations range from 1/10 of one inch to 1/2 of an inch. 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.

The Craighead County School board has officials who monitor and provide weather updates via television, radio, and internet in regard to schools opening. If weather becomes hazardous, as determined by the superintendent or other authorized official, then appropriate actions are taken based on students being safely able to attend school. If weather is due to snow or ice, and either is forecasted to become hazardous, by the determination of the school official’s school may be cancelled. If weather becomes hazardous after school has started school officials may dismiss school early if road conditions are safe to do so. 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.



WINTER STORM WATCH: Severe winter conditions, such as heavy snow and/or ice, are possible within the next day or two.

WINTER STORM WARNING: Severe winter conditions have begun or are about to begin in your area. Stay indoors!

BLIZZARD WARNING: Snow and strong winds will combine to produce a blinding snow (near zero visibility), deep drifts, and life-threatening wind chill. Seek refuge immediately!

WINTER WEATHER ADVISORY: Winter weather conditions are expected to cause significant inconveniences and may be hazardous. If caution is exercised, these situations should not become life-threatening. The greatest hazard is often to motorists.

FROST/FREEZE WARNING: Below freezing temperatures are expected and may cause significant damage to plants, crops, or fruit trees. In areas unaccustomed to freezing temperatures, people who have homes without heat need to take added precautions.

11.5.9.4 Previous Occurrences

There have been 20 winter storm events resulting in \$128K in property damages and 4 ice storm events resulting in \$3.901M in property damage from 1950 – 2022.

11.5.9.5 Probability of Future Winter Storms

In any give there are a 21% chance of a winter storm and 0.05% chance of an Ice Storm.

11.5.9.6 Impact of Winter Storms

Craighead County experiences a major winter storm about every other year, with sometimes with two occurring in a single year. Damage from of winter storms is often not reported to public agencies for recording in databases such as SHELDUS, typically because the damage is not widespread and usually amounts to no more than downed tree limbs and utility-lines and closed schools and businesses caused by icy road conditions.

Based on experience, an estimated twenty to thirty structures might be impacted in any given year by severe winter storm events, resulting typically in only minor damage to the structures, mainly due to limbs breaking and falling on roofs.

Winter storms can immobilize an entire County. Six inches of unplowed snow can make roads impassable. Trees can be brought down by the weight of wet snow, snap power lines and damage buildings and houses when they fall. Winter storms can cut off heat, power, and communications for several days or weeks. Death can occur from hypothermia.

Winter storms with freezing rain create a coating of ice which snaps tree branches, down power lines, ruin crops, and makes driving hazardous. Rural areas are most at risk of losing power and becoming problems during a winter storm.

Winter storms can be 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.

Extreme cold often accompanies a winter storm; exposure to the cold can cause frostbite or hypothermia and be life-threatening. Infants and elderly people are most susceptible. Freezing temperatures can cause severe damage to crop and other vegetation. Pipes may freeze and burst in homes or businesses that are poorly insulated or without heat. Structure fires occur more frequently in the winter due to lack of proper safety precautions and present a greater danger because water supplies may freeze and impede firefighting efforts. People die of hypothermia from prolonged

exposure to the cold. Elderly people are most vulnerable to winter storms and account for the largest percentage of hypothermia victims largely due to improperly or unheated homes, but the leading cause of death during winter storms is from automobile or other transportation accidents. Heavy accumulations of ice can 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 extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians. Heavy snow can immobilize an area and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency services. Large amounts of snow can collapse buildings and knock down trees and power lines. 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.

11.5.9.7 Estimating Potential Losses by Jurisdiction to Severe Winter Weather

The methodology for the potential loss estimate was developed by using past hazard events data from the NCDC. The following is the resources used in the loss estimation.

- Arkansas Hazard Mitigation Plan
- National Climatic Data Center (NCDC) Storm Events Database

The National Climatic Data Center provides historical details about past hazard events in the County.

Winter Events	Fatalities	Combined Fatalities, Injuries, and Property	Crop Damage
1950-2020			
Winter Storm, Ice Storm, Heavy Snow	0	\$4,029,000.00	\$0

11.5.9.8 Multi-Jurisdictional Risk Assessment

The unincorporated areas of Craighead County, including cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric are equally affected by winter storms. Winter storms do not seem to be unique to areas of the County; the threat is considered to be Countywide with no significant variation at the County or jurisdiction levels.

All parts of Craighead County are equally susceptible to severe winter storms events. The occurrence of severe winter storms can have a substantial impact on Craighead County's buildings, utility systems, transportation systems, and agriculture. Heavy accumulations of ice or snow commonly result in collapse of structural damage to buildings. Then 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, businesses, as well as weaker nonresidential structures are most vulnerable to this type of structural damage. The abundant wood structures and manufactured houses in the planning area are much more vulnerable than steel, concrete, or masonry structures. Past storms indicate that poultry houses are particularly vulnerable.

Heavy accumulations of ice from ice storms or heavy snow can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communication and power can be disrupted for days or weeks while utility companies repair the damage. Power and communication disruptions are common consequences of ice storms and heavy snow in Craighead County. Winter storms are sometimes accompanied by strong winds. These winds can knock down trees, utility poles and power lines. 20% of the responses received from the Craighead County Natural Hazard Questionnaire stated that the citizens have experienced an ice storm, effects of electrical wires, telephone outages, etc.

Craighead County's transportation systems are vulnerable to severe winter storms. These storms have rarely been hazardous to structural damage in the past, but accumulations of ice and snow can be extremely hazardous to motorist. Motorist in Craighead County are not accustomed to driving on icy roads, causing an increase in traffic accidents. Travel is hampered by ice or heavy snow because Craighead County lacks the necessary snow removal equipment due to the occurrence of severe winter storms.

The entire County is usually affected when a winter storm hits Craighead County. Parts of the County may not be affected as bad as others, but when major roads are affected, it affects the travel flow and the availability of essential services throughout the County.

SECTION 4

Mitigation Strategy

The Craighead County Hazard Mitigation plan includes a mitigation strategy that provides the Craighead 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.

The following capabilities describe what the County, Cities and School District 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.

Cities and jurisdictions of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric 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 wildfire hazard areas and flood prone areas through land use planning, implement retrofit construction plans, brace equipment, and provide emergency preparedness information to area residents through FEMA brochures.

Craighead County, cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric 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.

Craighead County would need to seek outside financial resources for the development of a Countywide flood inundation study. This study would benefit the cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric for future land development. Funds would also be needed for flood inundation studies and conduct inspections, maintenance, and enforcement programs on high-risk dams in the County.

4.1 Mitigation Goals and Objectives for Each Hazard

Based upon the results of the local and State risk assessments, the Craighead 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 Craighead 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 Craighead County due to natural disasters.
- 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.

- Goal 3- Seek grants for mitigation projects through the State and Federal funding.
- Goal 4- Protect existing properties from natural disasters.

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 many methods 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	<p>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.</p> <p>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.</p>
Technical	<p>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, and Arkansas Forestry Service. Arkansas Department of Emergency Management. All of these had their comments and suggestions incorporated.</p>
Administrative	<p>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.</p>
Political	<p>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.</p>
Legal	<p>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.</p>
Economic	<p>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.</p>

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.
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The Craighead County Office of Emergency Management (CCOEM) will be responsible for evaluating actions among competing actions. The Planning Team 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 OEM 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 Craighead County actions are the responsibility of the director of Craighead County Office of Emergency Management or County Judge. The Cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette actions are the responsibility of their mayors. The Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, Arkansas State University, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric will be the responsible of their Board Administration.

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 Craighead County Hazard Mitigation Plan, mitigation actions are categorized into six groups.

- Actions that will keep problems from getting worse (Prevention).
- Actions that address individual buildings (Property protection)
- Actions that will inform the public (Public education and awareness)
- Actions that will protect natural resources (Natural resource protection)
- Actions that will protect emergency services before, during, and immediately after an occurrence (Emergency services protection)
- Actions that will control the hazard (Structural projects)

Mitigation Projects #3 and #10 from the previous plan consist of installing backup generators and constructing a FEMA approved saferoom. Craighead County has begun the process of completing both. Mitigation Action #21 Storm Water Drainage System Upgrade has been completed in some phases by all participating jurisdictions. The mitigation projects and actions in the previous plan that are not listed above have not been completed or deemed no longer relevant to Craighead County. The participating jurisdictions have made many efforts to complete these projects and education programs.

4.4 Mitigation Actions/Projects

Mitigation Actions

Purchase heavy -duty generators to back up and maintain electrical power for critical facilities, schools, and shelters to maintain power and water supply during disasters.

Associated Hazard: Earthquake, Extreme Heat, Flood, Thunderstorm, Tornado, Wildfire, Winter storms.

Type of Action: Emergency Services Protection

Contribution to Mitigation Objective: Continuation of water service, and temperature control

Priority: High

Rationale of Priority: Past disasters

Addresses New or Existing buildings: New and Existing

Cost Benefit: Highly Beneficial, cost varies on size and type of generator.

TimeLine: 5 Years

Projected Resources: Existing County, Local and School Resources and possible grant funds

Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Construct safe rooms within new and existing public buildings, such as schools, libraries, and community centers.

Associated Hazard: Thunderstorm, Tornado **Type of Action:** Structural Project

Contribution to Mitigation Objective: Prevent the loss of life by providing shelter during pre/post disasters.

Priority: High

Rationale of Priority: Prevents the loss of life during storms and also minimizes the effects post hazard events. Ranked high due to past storm events.

Addresses New or Existing buildings: New and Existing

Cost Benefit: Benefits outweighs cost. Possible grants for construction.

TimeLine: 5 Years

Projected Resources: HMGP funding

Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District,

ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Install hail resistant roofing and window coverings, shutters laminated glass in windowpanes with a focus on critical infrastructure.

Associated Hazard: Hail/Thunderstorm, Tornado

Type of Action: Property Protection

Contribution to Mitigation Objective: Seeks to protect critical facilities from hail damages.

Priority: Medium

Rationale for Priority: Past hail events/ thunderstorms Addresses New or Existing buildings:

New and Existing Cost Benefit: Highly Beneficial, minimum cost to owner TimeLine: 5 Years

Projected Resources: Existing County and Local Resources

Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Action adopted: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Protect exceptionally vulnerable populations from the impacts of severe weather events through identifying specific at-risk populations in the event of long-term power outages by establishing accessible heating and cooling centers.

Associated Hazard: Extreme Heat, Winter storms / Ice Storms, Thunderstorm Winds and Tornado

Type of Action: Preparedness

Contribution to Mitigation Objective: Prevent the loss of life by providing shelter during pre/post disasters.

Priority: High

Rationale of Priority: Prevents the loss of life during storms and minimizes the effects post hazard events. Ranked high due to past storm events.

Addresses New or Existing buildings: Existing.

Cost Benefit: Benefits outweighs cost. Possible grants for refurbishment

TimeLine: 2 Years

Projected Resources: HMGP funding

Responsible Party: Emergency Management, County and City Governments Offices

Action adopted by: Craighead County, Cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette.

Use designed failure mode for power line design to allow line to fall or fail in small sections rather than as a complete system to enable faster repairs.

Associated Hazard: Drought, Earthquake, Extreme Heat, Flooding, Thunderstorm, Tornado, Wildland Fire, Winter storms.

Type of Action: Prevention

Contribution to Mitigation Objective: Protect lives by alerting congregations of people of impending disasters.

Priority: High

Rationale of Priority: Past Disasters

Addresses New or Existing buildings: New and Existing
Cost Benefit: If action proves effective in influencing other to obtain radios, benefits will greatly outweigh cost. (NFIP consideration: CRS 610 Flood Warning Program)
TimeLine: 3 years
Projected Resources: Existing County, Local and School District Resources
Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric
Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric
<i>Implement Weather Warning early telephone warning system designed to automatically deliver targeted hazard notifications for the immediate threats within moments of being issued by the National Weather Service (NWS) or other official source throughout the County.</i>
Associated Hazard: Drought, Earthquake, Extreme Heat, Flooding, Thunderstorm, Tornado, Wildland Fire, Winter storms.
Type of Action: Prevention
Contribution to Mitigation Objective: Prevents the loss of lives by alerting citizens by landline or cell phone of approaching storms by physical address.
Priority: High
Rationale of Priority: Past storm events Addresses New or Existing buildings: N/A Cost Benefit: Highly Beneficial, cost to County. TimeLine: 3 Years
Projected Resources: Existing County and Possible Outside Resources
Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric
Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric
<i>Brace equipment (such as mechanical equipment, chillers, and emergency generators) whose failure may disrupt the operation of a critical facility, such as hospitals and schools.</i>
Associated Hazard: Flooding, Tornado, Thunderstorm Winds and Earthquakes
Type of Action: Non-Structural
Contribution to Mitigation Objective: Prevents damage to necessary operating equipment and injury to citizens.
Priority: High
Rationale for Priority: Protection of critical operations equipment
Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District,

Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Apply window film to windows in public schools and public buildings as able to prevent shattering.

Hazard Associated: Earthquake, Thunderstorm winds, Tornados.

Type of Action: Prevention

Contribution to Mitigation Objective: Reduces the risk to injuries due to broken glass.

Priority: Medium

Rationale for Priority: Thunderstorm winds and Tornados have been an issue several times in the past. There are possibilities for future Earthquake events.

Addresses New or Existing buildings: New and existing.

Cost Benefit: Highly beneficial, at little cost.

TimeLine: 3 years

Projected Resources: County funds to develop plan. Possible grant funding.

Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Create a data base within each fire district to track those individuals at high risk of death, such as the small children, elderly, shut-ins, homeless, and those requiring medical attention or medical equipment that require transportation to heating or cooling centers.

Hazard Associated: Drought, Extreme Heat, Winter/Ice Storms

Type of Action: Prevention

Contribution to Mitigation Objective: Reduces the risk to lives due extreme heat or winter/ice storms.
Priority: High
Rationale for Priority: Extreme Heat and Winter/Ice Storms have created problems in the past with the lack of cooling equipment or lack of electricity during winter/ice storms.
Addresses New or Existing buildings: N/A Cost Benefit: Highly beneficial, at little cost.
TimeLine: 1 year
Projected Resources: Little or no funding required.
Responsible Party: Craighead County and County Fire Departments
Action adopted by: Craighead County
<i>Contribution to Mitigation Objective: Prevents strong winds and ice causing trees from falling on power lines creating power outages to homes, critical facilities, and communication systems.</i>
Priority: High
Rationale of Priority: Past disasters
Addresses New or Existing buildings: New and Existing
Cost Benefit: Highly Beneficial, cost to the owner of rights-of-way either County or City
TimeLine: 5 Years
Projected Resources: Existing County and Local Resources
Responsible Party: Local Utility Companies
Action adopted by: City Water & Light, Craighead Electric
<i>Provide emergency preparedness and mitigation information and resource for extreme weather conditions through an active education outreach program with specific plans and procedures for at risk populations.</i>
Hazard Associated: Dam, Drought, Earthquake, Extreme Heat, Flash Flood/Flooding, Thunderstorms (winds, lightning, hail) Tornado, Wildfire, and Winter/Ice Storms
Type of Action: Public Education and Awareness
Contribution to Mitigation Objective: Prevent loss of life and property by preparing at risk population for possible future hazards.
Priority: Medium
Rationale for Priority: Action to inform the public prior to hazard events
Addresses New or Existing buildings: New and existing.
Cost Benefit: Highly beneficial, at little cost.
TimeLine: 1 year
Projected Resources: FEMA brochures and time
Responsible Party: Craighead County Office of Emergency Services
Action adopted by: Craighead County
<i>Use GIS to map hazard areas, at-risk structures and associated hazards to assess high risk area.</i>
Hazard Associated: Earthquake, Flood Flash/Flood and Wildland Fires
Type of Action: Prevention
Contribution to Mitigation Objective: Reduces the risk to lives due to hazard events.
Priority: High
Rationale for Priority: Pinpointing areas that are high risk to earthquake, and flood flash/flood
Addresses New or Existing buildings: New and existing.
Cost Benefit: Highly beneficial, at little cost.
TimeLine: 1 year
Projected Resources: County funds
Responsible Party: Craighead County Office of Emergency Services
Action adopted by: Craighead County

Develop a Countywide drought communication plan and early warning system to facilitate timely communication of relevant information to officials, decision makers, school administration, emergency manager and the general public on how to conserve water and other pertinent information.

Hazard Associated: Drought

Type of Action: Prevention

Contribution to Mitigation Objective: Reduces the risk to lives due to water shortages.

Priority: High

Rationale for Priority: Drought has been an issue several times in the past.

Addresses New or Existing buildings: New and existing.

Cost Benefit: Highly beneficial, at little cost.

TimeLine: 1 year

Projected Resources: County funds to develop plan. Possible grant funding.

Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric

Pass a county ordinance to prioritize or control water use, particularly for emergency situations in order to make more water available for firefighting.

Hazard Associated: Drought

Type of Action: Prevention

Contribution to Mitigation Objective: Reduces the risk due to water shortages.

Priority: Medium

Rationale for Priority: Drought has been an issue several times in the past.

Addresses New or Existing buildings: New and existing.

Cost Benefit: Highly beneficial, at no cost.

TimeLine: 1 year

Projected Resources: County funds to publish Ordinance

Responsible Party: Craighead County Quorum Court

Action adopted by: Craighead County

Establish and or maintain Memorandums of Understanding with adjacent communities designed to source additional sources of water or response to incidents affecting the county.

Hazard Associated: Drought

Type of Action: Prevention

Contribution to Mitigation Objective: Reduces the risk to lives due to water shortages
Priority: Medium
Rationale for Priority: Drought has been an issue several times in the past.
Addresses New or Existing buildings: New and existing
Cost Benefit: Highly beneficial, at little cost.
TimeLine: 1 year
Projected Resources: County funds to develop plan. Possible grant funding.
Responsible Party: Craighead County Quorum Court
Action adopted by: Craighead County
<i>Create a seismic safety committee to provide policy recommendations evaluate and recommend changes in seismic safety standards and give an annual assessment of local and statewide implementation of seismic safety improvements.</i>
Hazard Associated: Earthquake,
Type of Action: Prevention
Contribution to Mitigation Objective: Actions that will keep problems from getting worse.
Priority: High
Rationale for Priority: Earthquake damage is possible Addresses New or Existing buildings: New and existing Cost Benefit: Highly beneficial, at little cost.
TimeLine: 1 year
Projected Resources: Little or no additional funding required
Responsible Party: School Districts
Action adopted by: Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School Districts, ASU, Blessed Sacrament, and Ridgefield Christian.
<i>Find alternate means to assign probability when no events have occurred.</i>
Hazard Associated: Earthquake, Wildfire
Type of Action: Prevention
Contribution to Mitigation Objective: Help planning team and community to understand risk.
Priority: Low
Rationale for Priority: Earthquake, Wildfire understanding probability of event
Addresses New or Existing buildings: New and existing
Cost Benefit: NA
TimeLine: 5 years
Projected Resources: no additional funding required.
Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric
Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District,

ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric
<i>Pass Ordinance requiring all critical facilities to meet requirements of Executive Order 11988 and be built 1 foot above the 500-year flood elevation.</i>
Associated Hazard: Flood Flash/Flood
Type of Action: Prevention
Contribution to Mitigation Objective: Protect Critical Facilities
Priority: High
Rationale for Priority: Past flooding events and prevent loss of life and property.
Addresses New or Existing buildings: New and Existing
Cost Benefit: Highly Beneficial at no cost
Projected Resources: no additional funding required.
Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric
Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric
<i>Acquire properties that are in flood zones that have been deemed Repetitive or Severe Repetitive Loss Properties through grant funding.</i>
Associated Hazard: Flood Flash/Flood
Type of Action: Structural
Contribution to Mitigation Objective: Protects life and property.
Priority: High
Rationale for Priority: Past flooding events and prevent loss of life and property.
Addresses New or Existing buildings: New and Existing
Cost Benefit: Highly Beneficial out ways cost
TimeLine: 3 Years
Projected Resources: Guidance from FEMA Resources/Publications FEMA
Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette.
Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette.

County and Local Road Departments implement retrofit construction plans to increase drainage or absorption capacities with detention and relief drains, extra culverts, and bridge modification where susceptible to flooding.

Associated Hazard: Flood Flash/Flooding

Type of Action: Prevention and Structural

Contribution to Mitigation Objective: Corrects current weaknesses and prevents any future structural damage.

Priority: High

Rationale for Priority: Protection of life

Addresses New or Existing buildings: N/A

Cost Benefit: Highly Beneficial. Benefit will outweigh any cost.

TimeLine: 3 Years

Projected Resources: Existing State, County and Local Resources

Responsible Party: State Highway Department, County and City Road Departments.

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette.

Conduct countywide community NFIP workshops and for newly elected officials and public the National Flood Insurance Program Summary of Coverage FEMA F-679/November 2012.

Associated Hazard: Flood

Type of Action: Public Education and Awareness

Contribution to Mitigation Objective: Education residents on the need of flood insurance

Priority: High

Rationale to Priority: Craighead County is prone to flooding. Addresses New or Existing buildings: New and Existing Cost Benefit: Highly Beneficial at no cost.

TimeLine: 1-2 years

Projected Resources: FEMA F-679 online free brochures

Responsible Party: Craighead County and City Floodplain Management

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette.

Install surge protection, lightning protection devices on all communications infrastructure and critical facilities.

Associated Hazard: Lightning/Thunderstorm

Type of Action: Property Protection

Contribution to Mitigation Objective: Will guard critical communication equipment from lightning strikes.

Priority: High

Rationale of Priority: Past lightning events, and the need for operable communication equipment before, during and after disasters.

Addresses New or Existing buildings: New and Existing

Cost Benefit: Highly Beneficial, cost to owners of communications infrastructure and critical facilities.

TimeLine: 5 Years

Projected Resources: Existing County, Local and School District Resources

Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District,

ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Implement a fuels management team using prescribed burning techniques to reduce hazardous vegetative fuels that threaten public safety and property on public lands and working with landowners on private land, and near essential infrastructure.

Hazard Associated: Wildland Fire

Type of Action: Prevention

Contribution to Mitigation Objective: Eliminates the fuel for wildland fires.

Priority: low

Rationale for Priority: Proven to save lives and lessen property damage. Has experienced past wildfire events.

Addresses New or Existing buildings: New and Existing

Cost Benefit: Highly beneficial, controlled burn would be under the direction of United States Forest Service and Arkansas Forest Service.

TimeLine: 5 years

Projected Resources: Craighead County Fire Departments

Responsible Party: USFS or State Forestry to oversee, Fire Departments; Craighead County Fire Departments assisting.

Action adopted by: Craighead County

Provide public questionnaires and information concerning hazard mitigation for public engagement through various online media.

Hazard Associated: Dam, Drought, Earthquake, Extreme Heat, Flash Flood/Flooding, Thunderstorms (winds, lightning, hail) Tornado, Wildfire, and Winter/Ice Storms

Type of Action: Public Outreach

Contribution to Mitigation Objective: Education and Research

Priority: High

Rationale for Priority: Proven to save lives and lessen property damage and gather public understanding.

Addresses New or Existing buildings: New and Existing

Cost Benefit: Highly beneficial, low to no costs.

TimeLine: 2 years

Projected Resources: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Responsible Party (Dam) : Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Responsible Party (Drought, Earthquake, Extreme Heat, Flash Flood/Flooding, Thunderstorms (winds, lightning, hail) Tornado, Wildfire, and Winter/Ice Storms) : Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay

School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Action for Dam Hazard adopted by: Craighead County and Jonesboro

Action for Drought, Earthquake, Extreme Heat, Flash Flood/Flooding, Thunderstorms (winds, lightning, hail) Tornado, Wildfire, and Winter/Ice Storms: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU.

Disclosing the location of high-risk areas to buyers. Offering GIS hazard mapping online for residents and design professionals.

Hazard Associated: Event, Earthquakes, and Flooding. Type of Action: Prevention

Contribution to Mitigation Objective: Eliminates the fuel for wildland fires.

Priority: Medium

Rationale for Priority: Proven to save lives and lessen property damage. Has experienced past wildfire events. Addresses New or Existing buildings: New and Existing

Cost Benefit: Highly beneficial, controlled burn would be under the direction of United States Forest Service and Arkansas Forest Service.

TimeLine: 5 Years

Projected Resources: Grant funding. Responsible Party: Craighead County

Responsible Party: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

Conduct research regarding repetitive and severe repetitive loss properties within Craighead County and the cities of Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette.

Associated Hazard: Flood

Type of Action: Public Education and Awareness

Contribution to Mitigation Objective: Education residents on the need of flood insurance

Priority: High

Rationale to Priority: Craighead County is prone to flooding. Addresses New or Existing buildings: New and Existing Cost Benefit: Highly Beneficial at no cost.

TimeLine: 1-2 years

Projected Resources: FEMA F-679 online free brochures

Responsible Party: Craighead County and City Floodplain Management

Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette.

Create a defensible space by removing all dead plants and excess vegetation.

Associated Hazard: Wildfire

Type of Action: Property Protection
Contribution to Mitigation Objective: Reduces the risk of wildfire due to land use.
Priority: High
Rationale to Priority: Craighead County
Addresses New or Existing buildings: New and Existing Cost Benefit: Highly Beneficial at minimal cost.
TimeLine: 1-2 years
Projected Resources: Craighead County's, Bay's, Black Oak's, Bono's, Brookland's, Caraway's, Cash's, Egypt's, Jonesboro's, Lake City's, and Monette's City and County employees.
Responsible Party: Craighead County Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette.
Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, and Monette.
<i>Dam failure is often preventable, but due to the structural nature of their construction and limited inspection resources, inspections happen too infrequently. Installing a series of seismic monitoring instruments at strategic locations along a dam can detect small, often unnoticed or detected, shifts in the dam's substructure that are the primary cause in premature collapse or failure. These instruments serve not only as early warning devices, but as the means to ensuring a dam's maintenance and repair schedule is kept.</i>
Associated Hazard: Dam Failure
Type of Action: Structural and Infrastructure Projects
Contribution to Mitigation Objective: Reduces the risk of dam failure.
Priority: High
Rationale to Priority: Craighead County, Jonesboro
Addresses New or Existing buildings: Existing & Existing
Cost Benefit: Highly Beneficial at High Cost
TimeLine: 120 Months
Projected Resources: Local budgets, PDM, HMGP
Responsible Party: Craighead County and Jonesboro
Action adopted by: Craighead County and Jonesboro
<i>Updating inundation mapping for use in developing emergency action plans.</i>
Associated Hazard: Dam Failure
Type of Action: Local Plans and Regulations
Contribution to Mitigation Objective: Reduces the risk of dam failure.
Priority: High
Rationale to Priority: Craighead County, Jonesboro
Addresses New or Existing buildings: Existing & Existing
Cost Benefit: Highly Beneficial at High Cost
TimeLine: 1-2 years.
Projected Resources: Local budgets
Responsible Party: Craighead County and Jonesboro
Action adopted by: Craighead County and Jonesboro
<i>Rationale for Priority: Prior wildfire events Addresses New or Existing buildings: Existing Cost Benefit: Highly beneficial at no cost.</i>
TimeLine: 2 Years
Projected Resources: Publish notice in paper at minimum expense.

Responsible Party: Craighead County Quorum Court, City Councils, Jurisdiction Boards
Action adopted by: Craighead County, Bay, Black Oak, Bono, Brookland, Caraway, Cash, Egypt, Jonesboro, Lake City, Monette, and Bay School District, Brookland School District, Buffalo Island Central School District, Jonesboro School District, Nettleton School District, Riverside School District, Valley View School District, Westside Consolidated School District, ASU, Blessed Sacrament, Ridgefield Christian, City Water and Light, and Craighead Electric.

SECTION 5

Acronyms

ADA	Average Daily Attendance
ADEM	Arkansas Department of Emergency Management
BCA	Benefit-Cost Analysis

CRS	Community Rating System
DMA 2000	Disaster Mitigation Act of 2000
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
GIS	Geographic Information System
HMC	Hazard Mitigation Committee
HMGP	Hazard Mitigation Grant Program
IBC	Internal Building Code
IFR	Interim Final Rule
LEPC	Local Emergency Planning Committee
MOU	Memorandum of Understanding
NFIP	National Flood Insurance Program
PDM	Pre-Disaster Mitigation Program
PGA	Peak Ground Acceleration
SHMO	State Hazard Mitigation Officer
STAPCRAI GH EAD	Social, Technical, Administrative, Political, Legal, Economic
UCC	Uniform Construction Code
WUI	Wildland Urban Interface
BMPs	Best Management Practices
CCOEM	Craighead County Office of Emergency Management
CFR	Code of Regulations

SECTION 6

Plan Adoption

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

6.1 Resolutions

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