



P.O. BOX 850 | COWETA, OKLAHOMA 74429 | PH. (918) 486-2189 | FAX (918) 486-5366 | www.cityofcoweta-ok.gov

AGENDA - REGULAR MEETING
COWETA CITY COUNCIL
COWETA CITY HALL, 310 S. BROADWAY
MONDAY, MARCH 7, 2022 6:00 P.M.

MEETING PROCEDURE: Comments on all scheduled agenda items will be heard immediately following the presentation by staff or the petitioner. Please wait until you are recognized by the Mayor and keep your comments as brief as possible. Individuals addressing the City Council must identify themselves by name prior to making any comments. The City Council will act on an agenda item after comments from staff and the City Council have been heard.

- I. CALL TO ORDER
- II. PLEDGE OF ALLEGIANCE

- III. ROLL CALL
 - EVETTE YOUNG _____
 - HAROLD CHANCE _____
 - NAOMI HOGUE _____
 - LOGAN BROWN _____
 - RANDY WOODWARD _____

- IV. GENERAL CITY COUNCIL COMMENTS
(During the General City Council Comments section of the agenda, the City Council shall make no decision or take any action except as to request the City Manager to schedule the matter for Council discussion at a later date.)

- V. PROCLAMATIONS/PRESENTATIONS

- 1. PRESENTATION OF PUBLIC SAFETY AWARDS
PRESENTATION OF CRIMINAL INVESTIGATION AWARDS TO THE FOLLOWING INDIVIDUALS BY CHIEF BELL:

STEPHANIE STEPHENS - DISTRICT 27 AGENT

VICKY LYONS - DISTRICT 27 AGENT

JOHN OWENS - DISTRICT 27 AGENT

- VI. CONSENT
(All matters under the "Consent Calendar" are considered by the City Council to be routine and will be enacted by one motion. Any Councilmember may, however, remove an item from consent by request.)

- 1. MINUTES OF THE REGULAR MEETING
APPROVAL OF THE MINUTES OF THE COWETA CITY COUNCIL REGULAR MEETING HELD ON FEBRUARY 7, 2022. (JULIE CASTEEN, ASSISTANT CITY MANAGER)

Documents:

[220207 MINUTES OF THE CITY COUNCIL.PDF](#)

2. MUTUAL AID AGREEMENT

APPROVAL OF A MUTUAL AID AGREEMENT WITH WAGONER COUNTY REGARDING BUILDING INSPECTION SERVICES. (MARK SEIBOLD, COMMUNITY DEVELOPMENT DIRECTOR)

Documents:

[220307 STAFF REPORT MUTUAL AID AGREEMENT.PDF](#)
[220307 MUTUAL AID AGREEMENT.PDF](#)

VII. OLD BUSINESS

1. CZ 22-02 SUP

DISCUSSION AND POSSIBLE ACTION ON APPROVAL OF AN APPLICATION TO ESTABLISH A SPECIFIC USE PERMIT (SUP) CZ 22-02 SUP FOR AN EDUCATIONAL TECHNICAL TRAINING SCHOOL ON PROPERTY ZONED AGRICULTURE (AG) LOCATED IN SECTION 17, TOWNSHIP 17 NORTH, RANGE 16 EAST OF THE INDIAN BASE AND MERIDIAN, WAGONER COUTY, STATE OF OKLAHOMA AT 31350 EAST STATE HIGHWAY 51, COWETA, OKLAHOMA. (MARK SEIBOLD, COMMUNITY DEVELOPMENT DIRECTOR)

Documents:

[220307 STAFF REPORT CZ 22-02 SUP.PDF](#)
[CZ 22-02 SUP LOCATION MAP.PDF](#)
[CZ 22-02 SUP ZONING MAP.PDF](#)
[C1.0.PDF](#)

2. ORDINANCE 856 PUD-02 AMENDMENT

DISCUSSION AND POSSIBLE ON THE ADOPTION OF ORDINANCE 856, AN ORDINANCE OF THE CITY OF COWETA, OKLAHOMA AMENDING PUD-02, AMENDING ORDINANCE 796 PERTAINING TO PUD-02, AMENDING THE OFFICIAL ZONING MAP OF THE CITY OF COWETA FOR A TRACT OF LAND LOCATED IN SECTION THIRTY-FIVE (35), TOWNSHIP EIGHTEEN (18) NORTH, RANGE FIFTEEN (15) EAST OF THE INDIAN BASE AND MERIDIAN WAGONER COUNTY, OKLAHOMA, PROVIDING FOR REPEALER, SEVERABILITY AND DECLARING AN EMERGENCY. (MARK SEIBOLD, COMMUNITY DEVELOPMENT DIRECTOR)

Documents:

[220307 STAFF REPORT ORDINANCE 856.PDF](#)
[220307 ORDINANCE 856 AMENDING PUD-02.PDF](#)
[CZ 21-08 PUD-02 AMENDMENT AERIAL VIEW MAP WITH FLOODPLAN.PDF](#)
[CZ 21-08 PUD-02 AMENDMENT LOCATION MAP.PDF](#)
[CZ 21-08 PUD-02 AMENDMENT ZONING MAP.PDF](#)

3. DECLARATION OF AN EMERGENCY ORDINANCE 856

DISCUSSION AND POSSIBLE ACTION TO DECLARE AN EMERGENCY REGARDING ORDINANCE NO. 856 MAKING IT EFFECTIVE IMMEDIATELY UPON PASSAGE AND APPROVAL.

4. ORDINANCE 855 - CZ 22-01

DISCUSSION AND POSSIBLE ACTION ON THE ADOPTION OF ORDINANCE 855, AN ORDINANCE OF THE CITY OF COWETA, OKLAHOMA RELATED TO THE REZONING OF PROPERTY FROM AGRICULTURE (AG) TO RESIDENTIAL SINGLE-FAMILY (RS-2) LOCATED IN THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER (SW/4 NW/4) OF SECTION 1, TOWNSHIP 17 NORTH, RANGE 15 EAST OF THE INDIAN BASE AND MERIDIAN, WAGONER COUNTY, STATE OF OKLAHOMA, AMENDING THE OFFICIAL ZONING MAP OF THE CITY OF COWETA, PROVIDING FOR REPEALER, SEVERABILITY, AND DECLARING AN EMERGENCY. (MARK SEIBOLD, COMMUNITY DEVELOPMENT DIRECTOR)

Documents:

[220307 STAFF REPORT ORDINANCE 855.PDF](#)
[220307 ORDINANCE 855 REZONING FOR CZ 22-01.PDF](#)

5. DECLARATION OF AN EMERGENCY ORDINANCE 855

DISCUSSION AND POSSIBLE ACTION TO DECLARE AN EMERGENCY REGARDING ORDINANCE NO. 855 MAKING IT EFFECTIVE IMMEDIATELY UPON PASSAGE AND APPROVAL.

6. ORDINANCE 854 AMENDING PART 7 CHAPTER 5

DISCUSSION AND POSSIBLE ACTION ON THE ADOPTION OF ORDINANCE 854, AN ORDINANCE OF THE CITY OF COWETA, OKLAHOMA, ADOPTING NEW LAW BY AMENDING PART 7, FINANCE AND TAXATION, CHAPTER 5, USE TAX, OF THE CODE OF ORDINANCES OF THE CITY OF COWETA, OKLAHOMA, SPECIFICALLY AMENDING SECTION 5-503 BY INCREASING THE RATE OF TAX TO FOUR PERCENT (4%) OF THE PURCHASE PRICE ON STORAGE, USE OR OTHER CONSUMPTION OF TANGIBLE, PERSONAL PROPERTY IN THE CITY OF COWETA, OKLAHOMA, AMENDING SECTION 5-504, PURPOSE OF REVENUES, TO PROVIDE THAT THE ONE-PERCENT INCREASE (1%) IN THE USE TAX SHALL BE UTILIZED SOLELY FOR PURPOSES SET FORTH IN SECTION 7 OF THE CITY OF COWETA, OKLAHOMA SPECIAL SALES TAX ORDINANCE NO. 850, REPEALING ALL PRIOR ORDINANCES TO THE CONTRARY, PROVIDING FOR SEVERABILITY AND DECLARING AN EMERGENCY. (ROGER KOLMAN, CITY MANAGER)

Documents:

[220307 STAFF REPORT ORDINANCE 854.PDF](#)

[220307 ORDINANCE 854 AMENDING THE USE TAX ORDINANCES.PDF](#)

7. DECLARATION OF AN EMERGENCY ORDINANCE 854

DISCUSSION AND POSSIBLE ACTION TO DECLARE AN EMERGENCY REGARDING ORDINANCE NO. 854 MAKING IT EFFECTIVE IMMEDIATELY UPON PASSAGE AND APPROVAL.

8. GRANT AGREEMENT

DISCUSSION AND POSSIBLE ACTION ON THE APPROVAL OF A GRANT AGREEMENT WITH THE OKLAHOMA DEPARTMENT OF COMMERCE PERTAINING TO THE 2022 TARGETED OPPORTUNITIES PROGRAM. (ROGER KOLMAN, CITY MANAGER)

Documents:

[220307 STAFF REPORT TARGETED OPPORTUNITIES PROGRAM.PDF](#)

[PART I-SUMMARY AND SIGNATURES.PDF](#)

[PART II-TERMS AND CONDITIONS.PDF](#)

[PART III- SCOPE OF WORK.PDF](#)

[PART IV-CERTIFICATION REGARDING LOBBYING.PDF](#)

9. PROJECT AGREEMENT

DISCUSSION AND POSSIBLE ACTION ON THE APPROVAL OF A PROJECT MAINTENANCE, FINANCING, AND RIGHT-OF-WAY AGREEMENT WITH THE OKLAHOMA DEPARTMENT OF TRANSPORTATION PERTAINING TO CERTAIN SIDEWALK IMPROVEMENTS TO BE CONSTRUCTED BETWEEN HIGHWAY 72 AND 305TH EAST AVENUE ALONG E. PECAN STREET. (ROGER KOLMAN, CITY MANAGER)

Documents:

[220307 STAFF REPORT PROJECT AGREEMENT.PDF](#)

[220307 PROJECT AGREEMENT - ODOT.PDF](#)

10. RESOLUTION 2022-05 - FIRE ENGINE LEASE PURCHASE AGREEMENT

DISCUSSION AND POSSIBLE ACTION ON THE ADOPTION OF RESOLUTION 2022-05, A

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA, APPROVING AN EQUIPMENT LEASE PURCHASE AGREEMENT WITH RCB BANK FOR FIRE EQUIPMENT; ESTABLISHING THE CITY'S REASONABLE EXPECTATION WITH RESPECT TO THE ISSUANCE OF NON-TAXABLE OBLIGATIONS BY THE CITY IN CALENDAR YEAR 2022, AND DESIGNATING THE LEASE-PURCHASE AGREEMENT AS A NON-QUALIFIED TAXABLE OBLIGATION; AND AUTHORIZING THE CITY MANAGER TO EXECUTE ALL DOCUMENTS RELATED TO THE ACQUISITION AND/OR LEASE PURCHASE OF SUCH EQUIPMENT. (JULIE CASTEEN, ASSISTANT CITY MANAGER)

Documents:

[220307 STAFF REPORT RESOLUTION 2022-05.PDF](#)
[220307 RESOLUTION 2022-05.PDF](#)
[220307 LEASE PURCHASE AGREEMENT.PDF](#)
[2022-03-08-CITY OF COWETA AM SCHED.PDF](#)
[FY22 ENGINE FINANCING QUOTES.PDF](#)

11. RESOLUTION 2022-08 REGARDING BUDGET AMENDMENTS FY 21-22
DISCUSSION AND POSSIBLE ACTION ON THE ADOPTION OF RESOLUTION 2022-08, A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA ADOPTING AMENDMENTS TO THE ANNUAL REVENUES AND APPROPRIATIONS FOR THE BUDGET OF THE CITY OF COWETA, OKLAHOMA, FOR FISCAL YEAR ENDING JUNE 30, 2022. (JULIE CASTEEN, ASSISTANT CITY MANAGER)

Documents:

[220307 STAFF REPORT RESOLUTION 2022-08.PDF](#)
[220307 RESOLUTION 2022-08.PDF](#)
[220307-EXHIBIT A RESO 2022-08 SUPPLEMENTALS.PDF](#)

12. RESOLUTION 2022-09 HAZARD MITIGATION PLAN
DISCUSSION AND POSSIBLE ACTION ON THE ADOPTION OF RESOLUTION 2022-09, A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA ADOPTING THE 2021 WAGONER COUNTY, OKLAHOMA HAZARD MITIGATION PLAN UPDATE. (MIKE BELL, POLICE CHIEF)

Documents:

[220307 STAFF REPORT HAZARD MITIGATION.PDF](#)
[220307 RESOLUTION 2022-09.PDF](#)
[2-APA-WAGONERCO-OK-SIGNED.PDF](#)
[WAGONER COUNTY HAZARD MITIGATION PLAN UPDATE FEB 2022.PDF](#)

13. RESOLUTION 2022-06
DISCUSSION AND POSSIBLE ACTION ON THE ADOPTION OF RESOLUTION 2022-06 A RESOLUTION OF THE CITY OF COWETA, OKLAHOMA (THE "CITY") APPROVING THE INCURRENCE OF INDEBTEDNESS BY THE COWETA PUBLIC WORKS AUTHORITY (THE "AUTHORITY") ISSUING ITS SALES TAX REVENUE NOTE, SERIES 2022 (THE "NOTE"); PROVIDING THAT THE ORGANIZATIONAL DOCUMENT CREATING THE AUTHORITY IS SUBJECT TO THE PROVISIONS OF THE NOTE INDENTURE, AUTHORIZING THE ISSUANCE OF SAID NOTE; WAIVING COMPETITIVE BIDDING WITH RESPECT TO THE SALE OF SAID NOTE AND APPROVING THE PROCEEDINGS OF THE AUTHORITY PERTAINING TO THE SALE OF SAID NOTE; APPROVING AND AUTHORIZING A SALES TAX AGREEMENT BY AND BETWEEN THE CITY AND THE AUTHORITY PERTAINING TO THE YEAR-TO-YEAR PLEDGE OF CERTAIN SALES AND USE TAX REVENUE; AND CONTAINING OTHER PROVISIONS RELATING THERETO. (ROGER KOLMAN, CITY MANAGER)

Documents:

[220307 STAFF REPORT SALES TAX REVENUE NOTE.PDF](#)

VIII. NEW BUSINESS

(Business which was not foreseen prior to the posting of the agenda.)

IX. ADJOURNMENT

IF YOU REQUIRE A SPECIAL ACCOMMODATION PURSUANT TO THE AMERICANS WITH DISABILITIES ACT, PLEASE NOTIFY CITY HALL BY 9:00 A.M. ON THE DATE OF THE MEETING.

**MINUTES OF THE COWETA CITY COUNCIL REGULAR MEETING
FEBRUARY 7, 2022 6:00 P.M.**

The members of the Coweta City Council met in regular session on Monday, February 7, 2022 at 6:00 p.m. in the Coweta City Hall, 310 S Broadway, Coweta, Oklahoma.

COUNCILMEMBERS PRESENT: Evette Young, Harold Chance, Naomi Hogue, Logan Brown, Randy Woodward.

COUNCILMEMBERS ABSENT: None.

I. CALL TO ORDER

The meeting was called to order by Mayor Young.

II. Pledge of Allegiance given

III. ROLL CALL

Roll call taken. Councilmembers were present as shown above.

IV. GENERAL CITY COUNCIL COMMENTS

The mayor reminded everyone to vote on February 8.

V. CONSENT

Motion by Harold Chance, second by Randy Woodward to approve the consent calendar items:

1. Declaration of a surplus for one storm siren and authorized the City Manager to dispose of accordingly.
2. Minutes of the Coweta City Council Regular Meeting held on January 3, 2022.
3. Quarterly Review of Coweta's 911 System for the quarter ending December 3, 2021.
4. Budget calendar for Fiscal Year ending June 30, 2023.

Aye: Harold Chance
Randy Woodward
Evette Young
Naomi Hogue
Logan Brown

VI. Proclamations/Presentations

1. Public Safety Awards

Police Chief Mike Bell and District 27 District Attorney Jack Thorp honored the following individuals for actions related to working an armed robbery at Kum & Go in November, 2021:

**MINUTES OF THE COWETA CITY COUNCIL REGULAR MEETING
FEBRUARY 7, 2022 6:00 P.M.**

- Coweta Police Officer Nathan Jones – Life Saving Award
- Coweta Police Detective Charles McCollough – Merit Award
- District 27 Agent John Owens – Criminal Investigation (not present)
- District 27 Agent Travis Saulsberry – Criminal Investigation
- District 27 Agent Eric Helms – Criminal Investigation
- District 27 Agent Colby Wright – Criminal Investigation (not present)
- OSBI Investigator Glenda Dagget – Criminal Investigation

2. Business Partner Award

Chief Bell and Animal Control Officer Phyllis Baucom presented the 2021 Business Partner Appreciation Award to Med Pharm in appreciation of its ongoing support of the Coweta Animal Shelter.

VII. Old Business

1. Purchase of Fire Gear

Fire Chief Jerry Burtner presented a request to purchase new bunker gear.

Motion by Randy Woodward, second by Harold Chance to approve the purchase of 14 sets of new bunker gear from Northern Safety and Industrial in an amount not to exceed \$27,500.00.

Aye: Randy Woodward
Harold Chance
Naomi Hogue
Logan Brown
Evette Young

2. Fair Housing Month – Resolution 2022-01

Assistant City Manager Julie Casteen discussed the need to adopt a resolution related to Fair Housing Month in connection with Grant 18229 CDBG.

Motion by Harold Chance, second by Randy Woodward to adopt Resolution 2022-01, a resolution of the City Council of the City of Coweta, Oklahoma proclaiming April as Fair Housing Month.

Aye: Harold Chance
Randy Woodward
Evette Young
Naomi Hogue
Logan Brown

**MINUTES OF THE COWETA CITY COUNCIL REGULAR MEETING
FEBRUARY 7, 2022 6:00 P.M.**

3. CDBG Section 3 Plan – Resolution 2022-02

Julie Casteen discussed the need to adopt a Section 3 Plan related to Grant 18229 CDBG.

Motion by Harold Chance, second by Randy Woodward to adopt Resolution 2022-02, a resolution of the City Council of the City of Coweta, Oklahoma adopting the Community Development Block Grant Section 3 Plan as required by the Housing and Urban Development Act of 1968.

Aye: Harold Chance
Randy Woodward
Evette Young
Naomi Hogue
Logan Brown

4. Resolution 2022-03 Acceptance of Easement

City Manager Roger Kolman presented a proposed utility easement that is necessary to allow the City to provide sewer service to the future campus of the Indian Capital Technology Center.

Motion by Harold Chance, second by Randy Woodward to adopt Resolution 2022-03, a resolution of the City Council of the City of Coweta, Oklahoma accepting the dedication of a public utility easement located within Section 17, Township 17 North, Range 16 East of the Indian Base and Meridian, Wagoner County, State of Oklahoma.

Aye: Harold Chance
Randy Woodward
Evette Young
Naomi Hogue
Logan Brown

VIII. NEW BUSINESS

There was no new business.

IX. ADJOURNMENT

Mayor Young adjourned the meeting at 6:16 p.m.

Evette Young, Mayor

Julie Casteen, City Clerk



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Memorandum

To: Honorable Mayor, Members of the City Council/Board of Trustees
From: Mark Seibold, Community Development Director
Re: Mutual Aid Agreement – Wagoner County Building Inspections
Date: 02/24/22

BACKGROUND

The City of Coweta Community Development Department is in the process of hiring a new building inspector. To maintain the continuity of business for our builders and developers, we have reached an agreement with Wagoner County to share resources for building inspections where one Entity or another may need assistance. Building Inspectors carry statewide certifications that provide them the authority to approve, deny, or seek administrative remedies for construction activities that are not built according to Code. This highly specialized job role is difficult to find qualified candidates that are not already employed by a municipality. For these reasons this Mutual Aid Agreement serves as a bridge between Inspectors until such time as we can successfully onboard a qualified candidate.

STAFF RECOMMENDATION

Staff recommends approval of the Mutual Aid Agreement

ATTACHMENTS

Signed Agreement with Wagoner County

MUTUAL AID AGREEMENT BETWEEN WAGONER COUNTY AND THE CITY OF COWETA FOR BUILDING INSPECTION SERVICES

The City of Coweta ("City"), a municipal corporation and the Board of County Commissioners of Wagoner County, ("County"), both being political subdivisions and agencies as defined by the applicable laws of the State of Oklahoma hereby enter into this Agreement whereby the Parties agree to the following:

RECITALS:

Whereas, both parties are in the business of providing protection to public property and the citizens within their respective jurisdictions to ensure that structures are safe, sanitary and fit for occupation and use; and

Whereas, it is mutually beneficial for the parties to assist each other in the provision of public services in order to adequately protect the public; and

Whereas, it is mutually beneficial and advantageous to each party to be able to share its manpower and expertise in times of need.

Whereas, it is understood that Wagoner County and the City of Coweta for purposes of this Agreement may be referred to as Entity or Party being mutually exchangeable.

Now therefore, Wagoner County and City of Coweta, each in consideration of the terms, covenants, and conditions herein set forth, and other good and valuable consideration, the receipt and sufficiency of which is acknowledged by each party, hereby agree as set forth below.

AGREEMENTS:

1. PURPOSE

The above recitals are incorporated herein by reference as if set out fully. The purpose of this Agreement is to facilitate, enhance and formalize cooperation and efforts between the parties in providing building, infrastructure and stormwater inspection services to public property and the citizens within their respective jurisdictions to ensure that structures are safe, sanitary and fit for occupation and use.

2. DURATION

This Agreement shall be effective as of March 1, 2022. This Agreement shall discontinue automatically on December 31, 2022, unless extended in writing by the parties or earlier terminated by either party, provided, however that written notification be delivered ten (10) days before the date upon which the party declares this Agreement is terminated.

3. REQUESTS FOR ASSISTANCE PROCEDURES

Either Entity is entitled to request assistance from the other Party, and the Party receiving the request shall be obligated to respond thereto, provided however, if in the opinion of the receiving Party's Authorized Representative, it is impossible to fulfill the request on the basis of other conditions within the responding Party's jurisdiction, or because of improperly working equipment, lack of manpower, or any other condition determined to be, in the sole judgment of the Authorized Representative, too dangerous or

hazardous to its personnel and/or the inhabitants of its own jurisdiction, the responding Party shall not be obligated to provide the assistance contemplated herein. Upon determining that the responding Party cannot assist the requesting Entity, the responding Party shall immediately notify the requesting Entity in the mode that is the quickest and most efficient under the circumstances at that time.

Upon the responding Party assisting the requesting Entity, both parties understand and agree that the requesting Entity shall remain in full command of the management of the inspections with the exception that the Authorized Representative from the responding Party shall remain in charge of its own manpower and equipment.

The requesting Entity may provide a written outline of inspection requests, estimated time and distance to accomplish inspections and preserve written records of activities, status, determination of inspection process, and completion or permits as necessary. A complete log of time and activity may be kept at the requesting Entity for the purposes of fair and agreeable cooperation.

4. EMPLOYMENT STATUS

County's personnel shall remain employees of Wagoner County. Wagoner County shall continue to provide salaries, insurance and other benefits to its personnel/employees in its regular manner. City's personnel shall remain employees of the City of Coweta. City shall continue to provide salaries, insurance and other benefits to its personnel/employees in its regular manner. No separate administrative structure is required nor separate funding required, therefore no joint board is required to be created. No joint employment is created. No separate organization shall be created hereunder, nor shall any real or personal property be transferred between the parties, nor shall there be any joint financing, therefore no provisions for disposal of real or personal property upon termination is necessary.

5. PROPERTY

Each Entity shall pay their own expenses and assume the risk of damage to their own equipment, including injury to their own employees and including damages or injury to third parties and/or property. Neither Entity shall demand or receive compensation from the other for the assistance provided.

6. LIABILITIES

Liability for the conduct of County personnel shall remain the responsibility of the Wagoner County. Liability for the conduct of City personnel shall remain the responsibility of the City of Coweta. The rights, duties, and obligations under or arising from this Agreement shall not be assigned by any of the parties hereto without express written consent of the other parties to the Agreement.

Each Entity shall provide their own liability insurance and worker's compensation insurance and retirement benefits and other accidental insurance coverage deemed appropriate to protect their respective personnel and/or equipment.

7. SETTLEMENT OF DISAGREEMENTS

In the event of any disagreement(s) as to the administration of this Agreement, the County Engineer of Wagoner County and the City Manager of Coweta on behalf of their respective jurisdictions and as administrators of this Agreement shall resolve the disagreement(s).

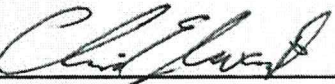
8. AUTHORIZATION TO EXECUTE

By executing this Agreement, the signors of this Agreement affirm that they are authorized by their respective Boards or Councils to execute the same and that they have, in fact, obtained all necessary approvals and authorizations therefore to execute and enter into this Agreement for their respective Boards or Councils.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed on the dates hereinafter set forth.

Wagoner County

City of Coweta

By: 
[Entity Representative]

By: _____
City Manager

Date: 2/22/22

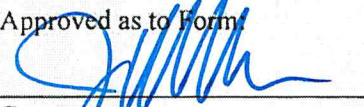
Date: _____

Attest:

County Clerk

Attest:

City Clerk

Approved as to Form:

County Attorney

Approved as to Form:

City Attorney



Wagoner County Ratified:

Coweta City Council Ratified:

By: _____
[Entity Representative]

By: _____
Mayor

County Clerk

City Clerk



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Memorandum

To: Honorable Mayor and City Council
From: Mark Seibold, Community Development Director
Location: 31350 East State Highway 51
Zoning: Agriculture (AG)
Re: Case Number: CZ 22-02 SUP
Date: 03-07-2022

BACKGROUND

Applicant

The applicant, Indian Capital Technology Center, CZ 22-02 SUP to establish a Specific Use Permit for an Educational Technical Training School at the new Indian Capital Technology Center Campus.

Case Facts

- The location of the request is 31350 East State Highway 51 in in Section 17, Township 17 North, Range 16 East.
- The property is zoned Agriculture (AG).
- The property legal description: The Northwest Quarter (NW4) of the Southeast Quarter (SE4), lying South of Highway No. 51 all in Section 17, Township 17 North, Range 16 East of the Indian Base and Meridian, Wagoner County, State of Oklahoma, said tract being more particularly described as follows:

Commencing at the Northwest Corner of the Southeast Quarter (SE4) of Section 17, said point being a found mag nail, thence S1°40'55"E on the West line of said SE1/4 a distance of 156.89 feet, to a point on the South Right of Way line of State Highway 51, said point being a set ½" iron pin with cap #7232, said point also being the POINT OF BEGINNING; thence continuing S1°40'55"E on the West line of said SE1/4, a distance of 1,161.86 feet to a set ½" iron pin with cap #7232, thence N88°34'31"E a distance of 1,320.62 feet to a set ½" iron pin with cap #7232, thence N1°40'37"W a distance of 1,216.95 feet to a point on the South Right of Way line of State Highway 51, thence S86°11'11"W on the South Right of Way line of Highway 51 a distance of 1,321.63 feet returning to the POINT OF BEGINNING, said tract contains 38.94 acres described.

Pertinent Code

SECTION 2601 PURPOSES;

- The specific use permit review is to determine if the use is appropriate in this specific location, compatible with the surrounding area, and that the use and layout will meet the requirements of the code for that specific use, including parking and other zoning code issues.

SECTION 340 USES PERMITTED BY SPECIFIC USE PERMIT;

The following uses may be permitted as Specific Use Permit by the Planning Commission and City Council in accordance with the provisions contained in Chapter 26.

- (a) Public school or school offering general education courses the same as ordinarily given in the public schools and having no rooms regularly used for housing and/or shopping.

Staff finds that this request, if approved and implemented, would be compatible with the use for the Educational Technical Training School at the new Indian Capital Technology Center Campus contemplated by the Comprehensive Plan.

A public hearing was held on the 22nd of February by the Coweta Planning Commission. The Planning Commission found that this request is in compliance with the Coweta Comprehensive Plan. At the Tuesday, February 22, 2022, Planning Commission meeting there was no one in opposition to the request regarding the proposed Specific Use Permit, CZ 22-02 SUP, to establish a Specific Use Permit for an Educational Technical Training School at the new Indian Capital Technology Center Campus.

STAFF RECOMMENDATION

Staff and the Planning Commission recommends approval of the request to establish a Specific Use Permit, CZ 22-02 SUP, for an Educational Technical Training School at the new Indian Capital Technology Center Campus.

ATTACHMENTS

1. Aerial View Map. 2. Location Map. 3. Zoning Map. 4. Public Hearing Notice.

CZ 22-02 SPECIFIC USE PERMIT



SUBJECT PROPERTY

State Highway 51

16E17N17

16E17N16

Terrawood

321st East

146th

Saddle Creek Estates

326th East

305th East

16E17N18

Eastside School

Cocke Addition

149th

150th

16E17N19

16E17N20

151st

Happy Hollow

16E17N21

CZ 22-02 SPECIFIC USE PERMIT



SUBJECT PROPERTY

State Highway 51

321st East

146th

RS-1

329th E

326th East

16E17N17

AG

AG

16E17N18

16E17N16

AG

CG

Legend

2022 Coweta_Zoning_Jan2022

ZONE_TYPE

- AG Agriculture
- CG General Commercial
- Residential Two Family
- RM-1 Residential Multi-Family
- RS-0 Residential Single Family
- RS-1 Residential Single Family
- RS-3 Residential Single Family

151st

RS-0

AG

16E17N21

AG

16E17N19

16E17N20

AG

AG

CG

CG

RD

RS-3

RS-3

RS-3

RS-3

RS-3

RS-3

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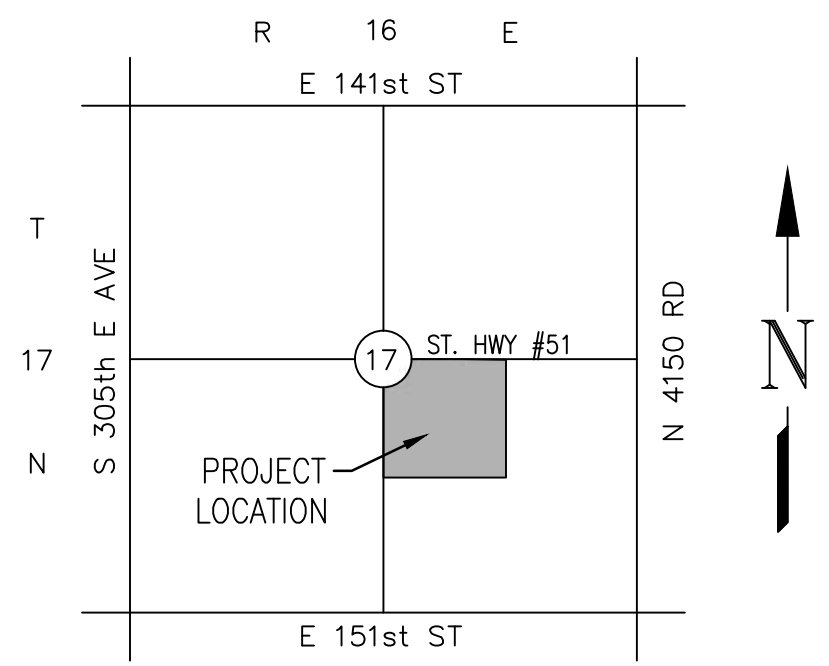
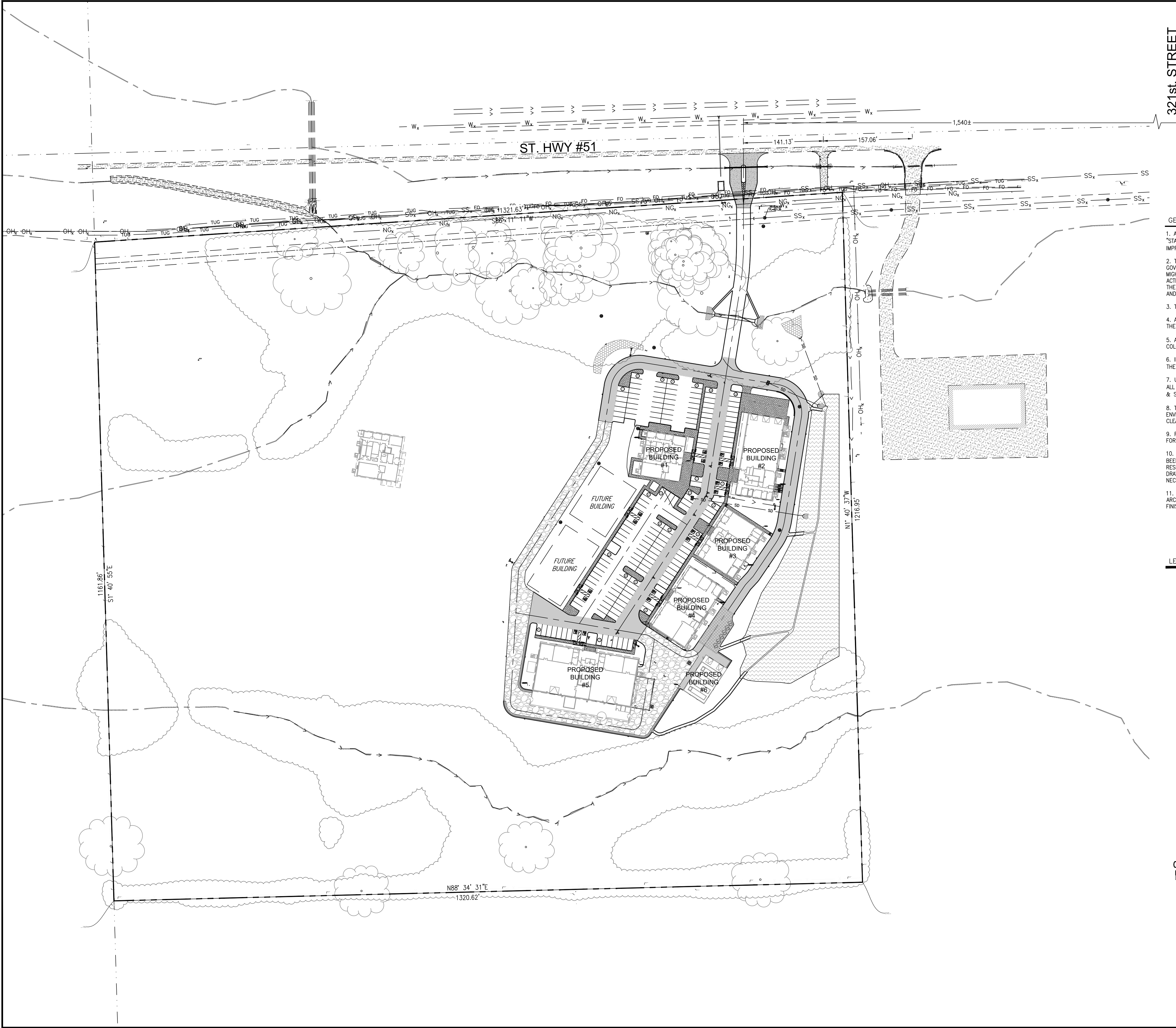
RS-3

RS-3

RS-3

RS-3

RS-3



- GENERAL CONSTRUCTION NOTES
1. ALL WORK PERFORMED AND MATERIALS SUPPLIED SHALL CONFORM TO THE CITY OF COWETA "STANDARDS AND SPECIFICATIONS" AND THE "SPECIFICATIONS FOR THE CONSTRUCTION OF PUBLIC IMPROVEMENTS".
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL UTILITY COMPANIES AND GOVERNMENTAL AGENCIES WHO MIGHT HAVE UTILITY LINES ON OR ABOUT THE PREMISES, OR WHO MIGHT BE AFFECTED BY THE CONSTRUCTION. THE CONTRACTOR SHALL ALSO COORDINATE HIS ACTIVITIES WITH THE UTILITY COMPANIES TO ENSURE COMPLIANCE WITH THE PROJECT SCHEDULE. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO LOCATE AND PROTECT EXISTING UTILITY LINES, AND SHALL REPAIR ANY DAMAGES.
 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN CONSTRUCTION STAKING.
 4. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
 5. ALL PAVEMENT STRIPING SHALL BE APPLIED IN TWO COATS, FOUR (4) INCHES WIDE, WHITE COLOR UNLESS SHOWN OTHERWISE ON THE PLANS.
 6. IN DRIVE AND PARKING AREAS WHERE NEW CONCRETE PAVING IS TO ABUT EXISTING PAVING, THE CONTRACTOR SHALL CONSTRUCT A 10" THICKENED EDGE IN THE CONCRETE.
 7. UNLESS OTHERWISE DIRECTED THE CONTRACTOR SHALL PROVIDE A MEDIUM BROOM FINISH ON ALL CONCRETE WALKS, RAMPS, STAIRS AND PAVED SURFACES (REFER TO ARCHITECTURAL PLANS & SPECS. FOR SIDEWALK FINISH AROUND BUILDING)
 8. THE CONTRACTOR MUST FILE A "NOTICE OF INTENT" WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY AND THE CITY OF COWETA, PRIOR TO COMMENCING EARTHWORK, CLEARING OR DEMOLITION OPERATIONS.
 9. REFER TO ARCHITECTURAL PLANS AND SPECS. FOR CONSTRUCTION INFORMATION AND DETAILS FOR BUILDING ERECTION.
 10. ANY AND ALL QUANTITIES SHOWN ARE FOR REFERENCE ONLY AND HAVE BEEN CALCULATED FOR MUNICIPAL OR OWNER PLANNING PURPOSES ONLY. THE CONTRACTOR(S) IS RESPONSIBLE TO VERIFY ALL QUANTITIES AND CONSTRUCT THE PROJECT AS SHOWN ON THE DRAWINGS AND SPECIFICATIONS. PRICE BID SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO CONSTRUCT AND FURNISH A FULLY FUNCTIONAL AND COMPLETE SITE.
 11. THE CONTRACTOR SHALL COORDINATE WITH THE ARCHITECTURAL AND LANDSCAPE ARCHITECTURAL PLANS FOR SITE AMENITIES, LANDSCAPE AREAS, PAVERS AND SPECIAL SIDEWALK FINISHED.

LEGEND	
	CURB & GUTTER
	PAVING LIGHT DUTY
	CONCRETE ENTRANCE (PER ODOT)
	PAVING HEAVY DUTY
	REINFORCED DUMPSTER PAD
	CONCRETE SIDEWALK
	GRAVEL DRIVE
	PROPERTY LINE
	CONCRETE WHEEL STOP

UTILITY WARNING:
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM RECORD DOCUMENTS OR FIELD LOCATIONS BY THE OPERATOR. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

UTILITY ELEVATIONS AND SIZES MAY HAVE BEEN MEASURED UNDER ADVERSE FIELD CONDITIONS. UPON EXPOSING THE UTILITY, ELEVATIONS AND LINE SIZES SHOULD BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHOULD VERIFY CRITICAL ELEVATIONS USING THE BENCHMARK PROVIDED BY THE SURVEYOR OR ENGINEER. ANY DISCREPANCIES SHOULD BE IMMEDIATELY BROUGHT TO THE ENGINEER'S AND SURVEYOR'S ATTENTION.

Project No.	1915
Date	12.17.2021
Sheet Contents	OVERALL SITE PLAN
Scale	1" = 80'
Sheet No.	C1.0
100% CONSTRUCTION DOCUMENTS	

Indian Capital Technology Center Campus
31350 E. State Highway 51
Coweta, Oklahoma 74429

BWR
DESIGN GROUP
BWR DESIGN GROUP, LLC
PO BOX 31732
EDMOND, OK 73003
405-761-5517
CA 7227, EXP. 06/30/2022

BRYAN W. RICHARDS, P.E.
Expires: 11/30/2022

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Tel: 405.231.1600 Fax: 405.231.1601 WWW.MASSARCH.COM
SALVADORIA CERTIFICATE OF AUTHORITY No. 01231



POST OFFICE BOX 850 • COWETA, OKLAHOMA 74429 • PH. (918) 486-2189 • FAX (918) 486-5366 • www.cityofcoweta-ok.gov

Memorandum

To: Honorable Chairman, Members of the Planning Commission
From: Mark Seibold, Community Development Director
Re: CZ 21-08 PUD-02 Amendment
Date: 03-07-2022

BACKGROUND

Applicant

The applicant, Tanner Consultant, LLC, (Timber Ridge Development) is seeking;

- 1) An amendment to Planned Unit Development (“PUD”) No. PUD-02, with uses allowed in the Residential Single Family, RM-1 Residential Multi-Family and CG General Commercial Districts, and an application has been submitted concurrent with this Planned Unit Development Amendment.

Case Facts

- The property is approximately 64.84 acres +/- in Coweta, Oklahoma.
- The property is located north and west of the intersection of East 121st Street South and State Highway 51, in Section 35, Township 18 North, Range 15 East of the Indian Base and Meridian, Wagoner County, State of Oklahoma.
- Timber Ridge PUD-02 was originally approved by Coweta City Council as a Planned Unit Development (PUD) on August 4, 1986. PUD-02 was designed as a mixed-use development allowing a wide range of uses from commercial, industrial, high-tech office park, garden apartments, and single family residential. A Preliminary Site Plan dated 01/30/1986 was associated with the original PUD and served as the basis for the development plan and development standards, which became part of the approved PUD. The PUD was amended by Ordinance 796 approved on the 8th Day of January 2018.
- The development under the proposed amendment Timber Ridge PUD-02 will comply with the City of Coweta Zoning Code. The multi-family and commercial developments will require approvals through a Site Plan and a building permitting process, according to the City of Coweta standards.
- A public hearing was held on Monday November 29th by the Coweta Planning Commission. At that meeting a number of residents were present to state their concerns and interests regarding the proposed PUD-02 Amendment in opposition to the request. **The applicant has clarified language from the prior planning Commission presentation to;**
 - A) Limit the height of buildings to 45ft or 4 stories,
 - B) Limit the number of multi-family units,

- C) Limit access to adjacent neighborhoods from public streets providing emergency access only gates according to the City of Coweta Standards,
- D) Provide additional landscaping along boundaries adjacent to existing residential development and preserve existing trees wherever possible.

Pertinent Code

SECTION 1620 USES PERMITTED GENERALLY

- The types of residential dwelling units, and the types of non-residential uses allowed to be established in these districts increase with increasing site size, based upon the premise that increased site size will allow proper design including functional interrelations, buffer treatments, separating uses with potentially incompatible characteristics of use, design of access pattern:, and relationship of uses within such planned unit developments with uses in adjacent districts. It is the intent of this Ordinance that such design and planning features be incorporated properly into any PUD district hereafter created, and that the Planning Commission and City Council may consider the existence and appropriateness of such features before any amendment to the zoning map is adopted to create such a district.

Staff finds that this request is in compliance with the objectives of the City of Coweta Comprehensive Plan, Proposed Land Use 2020-2030 Map. If an existing zoning district or rezoning request is neither the land use shown for the area by the Comprehensive Plan nor a use which prevents achievements of the planned use, then it must be determined whether the proposed land use, if implemented, would be compatible with the surrounding area in the manner contemplated by the Comprehensive Plan.

A public hearing was held on the 22nd of February by the Coweta Planning Commission. At the Tuesday February 22, 2022, Planning Commission meeting a number of residents were present to state their concerns and interests regarding the proposed PUD-02 Amendment in opposition to the request. The Planning Commission recommended approval of the rezone request PUD-02 Amendment, by a vote of 3-0.

STAFF RECOMMENDATION

Staff recommends approval of the rezone request, approving PUD-02 Amendment, recommended by the Planning Commission. Attached is the revised PUD-02 Major Amendment with the recommended changes.

ATTACHMENTS

- | | | |
|--------------------------|---------------------------|------------------------------|
| 1. Public Hearing Notice | 2. Location Map | 3. Aerial View Map |
| 4. Zoning Map | 5. PUD-02 Major Amendment | 6. Ordinance No. 796 Amended |

CITY OF COWETA, OKLAHOMA

ORDINANCE NO. 856

AN ORDINANCE OF THE CITY OF COWETA, OKLAHOMA AMENDING A PLANNED UNIT DEVELOPMENT OVERLAY (PUD-02), AMENDING ORDINANCE 796 PERTAINING TO PUD-02, AMENDING THE OFFICIAL ZONING MAP OF THE CITY OF COWETA FOR A TRACT OF LAND LOCATED IN THE CITY OF COWETA, WAGONER COUNTY, OKLAHOMA, AS MORE PARTICULARLY DESCRIBED HEREIN, PROVIDING FOR REPEALER, SEVERABILITY, AND DECLARING AN EMERGENCY.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA, THAT:

SECTION 1. ZONING CLASSIFICATION.

The following described property is hereby rezoned from Commercial General (CG), Residential Multi-Family (RM-1), and Residential Single Family (RS-3) to Planned Unit Development designation as further described in Exhibit A attached hereto, to wit:

TRACT 1 ALL OF THE EAST HALF (E/2) OF SECTION THIRTY-FIVE (35), TOWNSHIP EIGHTEEN (18) NORTH, RANGE FIFTEEN (15) EAST LYING SOUTH AND WEST OF THE M.K. & T. RAILROAD RIGHT-OF-WAY;

LESS AND EXCEPT THE 63.8 ACRES KNOWN AS “TIMBER RIDGE ESTATES”, AN ADDITION TO THE CITY OF COWETA, WAGONER COUNTY, OKLAHOMA;

AND LESS AND EXCEPT THE 30.10 ACRES KNOWN AS “TIMBER RIDGE PLAZA”, AN ADDITION TO THE CITY OF COWETA, WAGONER COUNTY, OKLAHOMA;

AND LESS AND EXCEPT THE 4.78 ACRES KNOWN AS “STEEPLECHASE APARTMENTS”, AN ADDITION TO THE CITY OF COWETA, WAGONER COUNTY, OKLAHOMA;

AND LESS AND EXCEPT THAT TRACT OF LAND DESCRIBED IN SPECIAL WARRANTY DEED DATED THE 26TH DAY OF MARCH, 2020, AND FILED OF RECORD WITH THE WAGONER COUNTY CLERK APRIL 02, 2020 IN BOOK 2569 ON PAGES 0358, 0359, AND 0360, SAID TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A TRACT OF LAND LOCATED IN THE SOUTHEAST QUARTER (SE/4) OF SECTION THIRTY-FIVE (35) IN TOWNSHIP EIGHTEEN (18) NORTH

AND RANGE FIFTEEN (15) EAST OF THE INDIAN BASE AND MERIDIAN (I.B.&M.), ACCORDING TO THE U.S. GOVERNMENT SURVEY, THEREOF, WAGONER COUNTY, STATE OF OKLAHOMA; BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SE CORNER OF THE SE/4 OF SEC. 35, T-18-N, R-15-E, I.B.&M.; THENCE S 88°44'55" W ALONG THE SOUTH LINE OF SAID SE/4 A DISTANCE OF 245.69 FEET; THENCE N 01°07'16" W ALONG THE BOUNDARY OF STEEPLECHASE APARTMENTS, ACCORDING TO THE RECORDED PLAT NO. PLC4-336 A DISTANCE OF 443.00 FEET TO THE POINT OF BEGINNING; THENCE S 88°44'55" W ALONG THE BOUNDARY OF SAID STEEPLECHASE APARTMENTS A DISTANCE OF 470.00 FEET TO THE BOUNDARY OF TIMBER RIDGE PLAZA, ACCORDING TO THE RECORDED PLAT NO. PLC4-310; THENCE N 01°07'16" W ALONG THE BOUNDARY OF SAID TIMBER RIDGE PLAZA A DISTANCE OF 324.58 FEET; THENCE N 88°44'55" E A DISTANCE OF 405.24 FEET; THENCE S 29°47'54" E ALONG A LINE BEING PARALLEL AND 60.00 FEET WEST OF THE PRESENT RAILROAD RIGHT-OF-WAY A DISTANCE OF 369.50 FEET; THENCE S 88°44'55" W A DISTANCE OF 112.55 FEET TO THE POINT OF BEGINNING, AND CONTAINING 3.680 ACRES, MORE OR LESS.

SECTION 2. MAP AMENDMENT.

The Official Zoning Map of the City of Coweta be hereby amended to reflect the actions taken in Section One.

SECTION 3. REPEALER. All ordinances, or parts of ordinances, in conflict with this ordinance are hereby repealed to the extent of the conflict only.

SECTION 4. SEVERABILITY. If any part or parts of this ordinance are deemed unconstitutional, invalid, or ineffective, the remaining portions shall not be affected but shall remain in full force and effect.

SECTION 5. DECLARING AN EMERGENCY. That for the immediate preservation of the peace, health, and safety of the City of Coweta, Oklahoma, and for the inhabitants thereof, an emergency is hereby declared to exist by reason whereof this ordinance shall become operative and go into effect immediately upon its passage and approval.

PASSED AND APPROVED this 7th day of March 2022.

Evette Young, Mayor

ATTEST:

Julie Casteen, City Clerk

APPROVED:

Ronald D. Cates, City Attorney

Timber Ridge

PUD No. PUD-02 Amendment

64.84 acres North and West of the Intersection of
East 121st Street South and State Highway 51

Coweta, Oklahoma

Owner

Roland Investments Ltd.
P.O. Box 660
Coweta, OK 74429
Phone: (918) 671-7010

Applicant/Consultant

Tanner Consulting, LLC
Attn.: Erik Enyart
5323 South Lewis Avenue
Tulsa, OK 74105
Phone: (918) 745-9929
eenyart@tannerbaitshop.com

January 6, 2022

TABLE OF CONTENTS

I. PROPERTY DESCRIPTION	3
II. DEVELOPMENT CONCEPT	4
III. PROJECT HISTORY AND SCOPE.....	5
IV. AMENDED DEVELOPMENT STANDARDS	7

I. PROPERTY DESCRIPTION

Timber Ridge within PUD No. PUD-02 is a 64.84-acre multiple use development located north and west of the intersection of East 121st Street South and State Highway 51, in the City of Coweta, Oklahoma, and is more particularly described within the following statement:

ALL OF THE EAST HALF (E/2) OF SECTION THIRTY-FIVE (35), TOWNSHIP EIGHTEEN (18) NORTH, RANGE FIFTEEN (15) EAST LYING SOUTH AND WEST OF THE M.K. & T. RAILROAD RIGHT-OF-WAY;

LESS AND EXCEPT THE 63.8 ACRES KNOWN AS "TIMBER RIDGE ESTATES", AN ADDITION TO THE CITY OF COWETA, WAGONER COUNTY, OKLAHOMA;

AND LESS AND EXCEPT THE 30.10 ACRES KNOWN AS "TIMBER RIDGE PLAZA", AN ADDITION TO THE CITY OF COWETA, WAGONER COUNTY, OKLAHOMA;

AND LESS AND EXCEPT THE 4.78 ACRES KNOWN AS "STEEPLECHASE APARTMENTS", AN ADDITION TO THE CITY OF COWETA, WAGONER COUNTY, OKLAHOMA;

AND LESS AND EXCEPT THAT TRACT OF LAND DESCRIBED IN SPECIAL WARRANTY DEED DATED THE 26TH DAY OF MARCH, 2020, AND FILED OF RECORD WITH THE WAGONER COUNTY CLERK APRIL 02, 2020 IN BOOK 2569 ON PAGES 0358, 0359, AND 0360, SAID TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A TRACT OF LAND LOCATED IN THE SOUTHEAST QUARTER (SE/4) OF SECTION THIRTY-FIVE (35) IN TOWNSHIP EIGHTEEN (18) NORTH AND RANGE FIFTEEN (15) EAST OF THE INDIAN BASE AND MERIDIAN (I.B.&M.), ACCORDING TO THE U.S. GOVERNMENT SURVEY, THEREOF, WAGONER COUNTY, STATE OF OKLAHOMA; BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SE CORNER OF THE SE/4 OF SEC. 35, T-18-N, R-15-E, I.B.&M.; THENCE S 88°44'55" W ALONG THE SOUTH LINE OF SAID SE/4 A DISTANCE OF 245.69 FEET; THENCE N 01°07'16" W ALONG THE BOUNDARY OF STEEPLECHASE APARTMENTS, ACCORDING TO THE RECORDED PLAT NO. PLC4-336 A DISTANCE OF 443.00 FEET TO THE POINT OF BEGINNING; THENCE S 88°44'55" W ALONG THE BOUNDARY OF SAID STEEPLECHASE APARTMENTS A DISTANCE OF 470.00 FEET TO THE BOUNDARY OF TIMBER RIDGE PLAZA, ACCORDING TO THE RECORDED PLAT NO. PLC4-310; THENCE N 01°07'16" W ALONG THE BOUNDARY OF SAID TIMBER RIDGE PLAZA A DISTANCE OF 324.58 FEET; THENCE N 88°44'55" E A DISTANCE OF 405.24 FEET; THENCE S 29°47'54" E ALONG A LINE BEING PARALLEL AND 60.00 FEET WEST OF THE PRESENT RAILROAD RIGHT-OF-WAY A DISTANCE OF 369.50 FEET; THENCE S 88°44'55" W A DISTANCE OF 112.55 FEET TO THE POINT OF BEGINNING, AND CONTAINING 3.680 ACRES, MORE OR LESS.

The above-described property will hereinafter be referred to as the "Site" or "Subject Property."

II. DEVELOPMENT CONCEPT

Timber Ridge was originally approved by the Coweta City Council as Planned Unit Development (PUD) No. PUD-02 on August 4, 1986, per Coweta Ordinance # 796. Timber Ridge was originally designed as a mixed-use development allowing a wide range of uses from commercial, industrial high-tech office park, garden apartments, and single-family residential. A Preliminary Site Plan dated 1/30/86 was associated with the original PUD and served as the basis for City Staff-written development plan and development standards, which became part of the approved PUD. While the original PUD was intended to be flexible in terms of uses permitted and associated residential densities and nonresidential intensities, the development standards prohibit a number of prospective developments and do not match current conditions or the Zoning Code's provisions pertaining to PUDs. Since the original 1986 PUD, conditions have changed due to earlier development phases, no new railroad crossings to access State Highway 51, and changes in market expectations, among other things.

By this PUD Amendment, the Owner proposes to unlock the full potential of the site and to update and bring clarity to the PUD, which is presently an ad hoc collection of various records assembled through time.

III. PROJECT HISTORY AND SCOPE

Timber Ridge was originally approved by the Coweta City Council as Planned Unit Development (PUD) No. PUD-02 on August 4, 1986, per Coweta Ordinance # 796. Adopted January 8, 2018, Ord. # 796 was approved, now for then, since the original ordinance approving the PUD, if it existed, “cannot be found.”

Within PUD-02, “Timber Ridge Plaza” was platted July 18, 1996, “Steeplechase Apartments” was platted September 25, 1998, and Coweta Trails senior living was sold in March, 2020 and opened in August, 2021. To serve the latest development, S. 273rd E. Ave. has been extended north of 121st St. S. and curves to the northwest to parallel the railroad tracks.

The current zoning map maintained by INCOG reflects the site is zoned RS-3 and with supplemental zoning PUD-02. However, contemporary City staff reports reflect that either approximately 10 acres of CG zoning preexisted the 1986 PUD, or otherwise rezoning case CZ-86-3 should have rezoned, within the original tract, “the southeast 9.0168 [acres] CG” in accordance with what the Owner believed had been approved at the time the property was annexed. As a legal description for the CG district was not included in the record, this may explain why the zoning map does not reflect CG zoning.

Ord. 796 did not delineate underlying zoning districts, but rather approved all of the original PUD area to PUD-02 “with CG Commercial General and RM-1 Residential Multiple Family Mixed-Use Zoning designation PUD-02.” To recognize the comingling of uses in the original PUD and in the PUD approval Ord. 796, together with the Owner’s original intent to maintain use flexibility and present intent to allow true mixed-use development, this PUD Amendment will allow the overlaying of nonresidential intensities and residential densities as allowed by the Coweta Zoning Code over the remaining land within PUD-02.

Zoning Code Section 1660 Intensity of Use suggests PUDs should not exceed the intensities supported by the Comprehensive Plan. This PUD Amendment proposes to maximize the potential of the site for nonresidential development. Nonresidential intensity and residential densities will be naturally limited by practical restrictions including minimum building setbacks, required off-street parking, and the amount of land available. Further, all intensities are designed to conform to the Zoning Code and the allowances conferred by the existing approved PUD-02.

Unless specifically modified herein, the approved permitted uses and development standards of the original PUD-02 shall remain in full force and effect. Exhibit A “Conceptual Site Plan” has been added to this PUD. A Preliminary Site Plan dated 1/30/86 was associated with the original PUD and served as the basis for City Staff-written development plan and development standards, which became part of the approved PUD. A copy is attached to this document for reference. The intent of Exhibit A is to reflect a more likely scope of uses and locations for same as anticipated for the site, and it does not replace the original Preliminary Site Plan.

As used in this document, unless the context clearly qualifies otherwise, “Owner” shall mean Roland Investments, Ltd. and “City” shall mean the City of Coweta, Oklahoma.

IV. AMENDED DEVELOPMENT STANDARDS

The following are the amended development standards:

NON-RESIDENTIAL DEVELOPMENT STANDARDS:

Gross Land Area:	2,824,359 SF	64.838 AC
Net Land Area:	2,824,359 SF	64.838AC
Permitted Uses: Uses permitted as a matter of right in the CG General Commercial district plus Commercial High-Tech Office Park a/k/a high-tech, industrial-commercial use as presently permitted within PUD-02.		
Maximum Floor Area Ratio:	No Limitation; Governed by Setbacks and Minimum Off-street Parking	
Maximum Building Floor Area:	No Limitation; Governed by Setbacks and Minimum Off-street Parking	
Maximum Building Height:	45 FT or 4 Stories	
Minimum Lot Width:	No Limitation	
Minimum Street Frontage:	30 FT *	
Minimum Building Setbacks:		
From Arterial Street Right-of-Way:	50 FT **	
From Non-Arterial Street Right-of-Way:	25 FT **	
From Residential Boundaries:	50 FT ***	
From All Other PUD Perimeter Boundaries:	17.5 FT ***	
From All Other Boundaries:	0 FT	
Minimum Off-Street Parking Multitenant:	1 space per 225 SF Building Floor Area	
Minimum Off-Street Parking All Other Uses:	Per Zoning Code for use / occupancy ****	
Maximum Off-Street Parking:	No Limitation	
Minimum Loading Requirements:	Per Zoning Code for use / occupancy ****	
Other Bulk and Area Requirements:	As required within CG District	

* Any interior lot having no street frontage shall be provided access to a public street by access easement(s) approved by the City of Coweta during platting review, and all private access drives shall meet all City of Coweta requirements.

** Where no parking is located between the building and the street, the setback is reduced to 15 feet.

*** Buildings greater than 45 feet in height shall be set back 45 feet plus 1 foot for each 1 foot of building height exceeding 45 feet.

**** Minimum parking ratios and design specifications may be modified by the Coweta Planning Commission upon approval of a voluntary Detailed Site Plan.

RESIDENTIAL DEVELOPMENT STANDARDS:

Gross Land Area:	2,824,359 SF	64.838 AC
Net Land Area:	2,824,359 SF	64.838 AC
Permitted Uses: Uses permitted as a matter of right in the RM-1 district, including only single-family detached dwellings, townhouses, duplexes, zero lot line dwellings, and multifamily and elderly residential care facilities; neighborhood community playfields and parks including clubhouses, pools, and similar neighborhood amenities; and uses customarily accessory to uses permitted herein.		
Minimum Lot Width:		
Single-family detached:	50 FT	
Townhouse:	35 FT	
Duplex:	70 FT	
Zero lot line:	50 FT	
Multifamily and Elderly Residential Care Facilities:	75 FT	
Minimum Lot Frontage:	30 FT	
Minimum Lot Area and Land Area:		
Single-family detached:	5,000 SF	
Townhouse:	3,800 SF	
Duplex:	7,000 SF	
Zero lot line:	5,000 SF	
Multifamily and Elderly Residential Care Facilities:	1,742.4 SF per DU	
Maximum Dwelling Units per Acre:	Multifamily: 25 DUs/AC; Other Res.: 8 DUs/AC	
Maximum Building Height Multifamily:	45 FT or 4 Stories	
Maximum Building Height Other Residential:	45 FT or 4 Stories	
Minimum Yard Setbacks Detached Single-Family: *		
Front Yard:	20 FT	
Rear Yard:	15 FT	
Side Yard (Interior):	5 FT	
Side Yard Abutting a Street:	10 FT	
Any Yard Within 35 Feet of Arterial Street:	35 FT from Arterial Street Right-of-Way	
Minimum Yard Setbacks Townhouse: *		
Front Yard:	20 FT	
Rear Yard:	15 FT	
Side Yard (Interior):	0 FT	
Side Yard Abutting a Street:	10 FT	
Any Yard Within 35 Feet of Arterial Street:	35 FT from Arterial Street Right-of-Way	

Minimum Yard Setbacks Duplex: *	
Front Yard:	20 FT
Rear Yard:	15 FT
Side Yard (Interior):	5 FT
Side Yard Abutting a Street:	15 FT
Any Yard Within 35 Feet of Arterial Street:	35 FT from Arterial Street Right-of-Way
Minimum Yard Setbacks Zero Lot Line: *	
Front Yard:	20 FT
Rear Yard:	15 FT
Side Yard (Interior):	0 FT & 10 FT
Side Yard Abutting a Street:	10 FT
Any Yard Within 35 Feet of Arterial Street:	35 FT from Arterial Street Right-of-Way
Minimum Yard Setbacks Multifamily and Elderly Residential Care Facilities: *	
Front Yard Abutting Arterial Street:	35 FT
Front Yard Abutting Non-Arterial Street:	15 FT
Any Other Yard Abutting Arterial Street:	15 FT
Any Other Yard Abutting Non-Arterial Street:	10 FT
Rear Yard:	17.5 FT
Side Yard <u>Not</u> Abutting a Street:	10 FT
Minimum Off-Street Parking:	As required by Zoning Code for dwelling type
Minimum Loading Requirements:	None required
Other Bulk and Area Requirements:	As required within the RM-1 District

* *All street setbacks are measured from the planned ultimate right-of-way line as follows: Measured from the centerline of the abutting street, add the provided setbacks to 1/2 of the right-of-way designated on the Coweta Major Street and Highway Plan. If not designated, add to 1/2 of the ultimate frontage/collector street right-of-way, or 25 FT for all other streets within or adjoining the PUD.*

ACCESS AND CIRCULATION: Initial plans for access, traffic circulation and parking areas are depicted on Exhibit A. As shown, a frontage/collector street will parallel the Railroad tracks to the west. The first part of the frontage/collector road has already been constructed in 2021 to serve the Coweta Trails senior living development, as a 3-lane with center turn lane, 36'-wide roadway (between curb faces) within a 60'-wide right-of-way. The frontage/collector road is not designated on any major street plan map, including the Coweta Major Street and Highway Plan map (Figure 5), the Regional Transportation plan map Figure 02 of Comprehensive Plan 2020 - 2030, or the Tulsa Metropolitan Area Major Street and Highway Plan map. Further, it is not specifically mentioned in Transportation Chapter 19 of the Coweta Comprehensive Plan 2020 - 2030. Since traffic volumes and queueing requirements diminish with distance from the intersection, and as there is no possibility of eastbound turning movements due to the railroad, it is anticipated the frontage/collector road will be continued north with 30' paving and 50' right-of-way geometries.

While the frontage/collector street shall be public, other streets within the development will have the option to be private, gated streets, per this PUD. Any private streets shall be maintained by a mandatory property owners' association. Whether public or private, streets shall be constructed to meet the minimum standards of the City of Coweta for public streets; provided, however, the City of Coweta may approve alternative street design standards including, but not limited to, alternative designs for the frontage/collector street.

Any divided, boulevard streets separated by private landscaped islands may have one-way lanes meeting right-of-way width requirements in aggregate and shall otherwise be constructed to meet the minimum standards determined by the City of Coweta. Any gates serving private streets or drives shall be designed according to the Fire Code adopted by the City of Coweta and be approved by the Coweta Fire Marshal.

For nonresidential and multifamily development, off-street parking and loading requirements, including minimum parking ratios and design specifications, may be modified by the Coweta Planning Commission upon approval of a voluntary Detailed Site Plan.

The frontage/collector street may be extended to individual development tracts, provided that secondary access must be provided to each tract as required by the Coweta Fire Marshal.

Upon site plan review, emergency-access-only gates ('crash gates') shall be installed at existing stub streets if required by the City of Coweta and allowed by the Fire Marshal.

Due to the desire to preserve natural grades and treed areas to the extent possible, residential and nonresidential street grades, including collector and local, minor streets, shall be permitted up to 11%.

PLATTING AND SITE PLAN REQUIREMENTS: No building permit shall be issued for any development tract until a subdivision plat for said tract has been submitted to and approved by both the Coweta Planning Commission and the Council of the City of Coweta, and duly filed of record. The required subdivision plat shall include covenants of record implementing the development standards of the approved PUD and the City of Coweta shall be a beneficiary thereof. The plat will also serve as the site plan for all detached or attached single-family or duplex residential lots contained within the plat.

Site development tracts may be split and conveyed in accordance with the Minor Subdivision (or 'Lot-Split') provisions of the City of Coweta Subdivision Regulations, provided that not more than three (3) split tracts may result from the Minor Subdivision process at any one time, the remainder deed or splits are not counted against the 3 allowable splits. Upon conveyance of a split tract created by the Minor Subdivision process, the split tract shall be subject to the platting requirement prior to issuance of a building permit. Upon platting such tract, it shall no longer count against the Minor Subdivision maximum of 3 lots at any one time. The remainder tract shall not be included in the maximum tract count, regardless of size, until the final remainder tract is platted and developed. This provision shall not extend to any tract after the platting of such tract. All lots are required to be platted.

Prior to the issuance of a building permit for any development tract within the PUD, a site plan shall be submitted to and approved by the City of Coweta as being in conformance with the PUD development standards. Notwithstanding the above, the tract owner may voluntarily submit a site plan for review and approval by the City of Coweta Planning Commission, which shall thereupon have the authority to grant minor modifications to PUD development standards as specifically outlined herein.

Site development tracts shall be developed in accordance with the appropriate nonresidential or residential development standards, except in cases of a vertically-mixed use development, which shall be constructed according to the development standards for nonresidential developments. If the use of residential development standards or any specific such standard is desired, or in the event of any discrepancies, these may be resolved upon Planning Commission approval of a voluntary Detailed Site Plan.

Nonresidential development adjoining existing residential shall install and maintain a landscaped buffer at least 17.5 feet in width along the shared boundary, which buffer shall contain at least one (1) landscape tree per each 1,500 square feet of zoning setback area as provided herein. The site developer shall make all efforts to preserve existing trees and only remove and replace with the required landscape buffer trees if necessary.

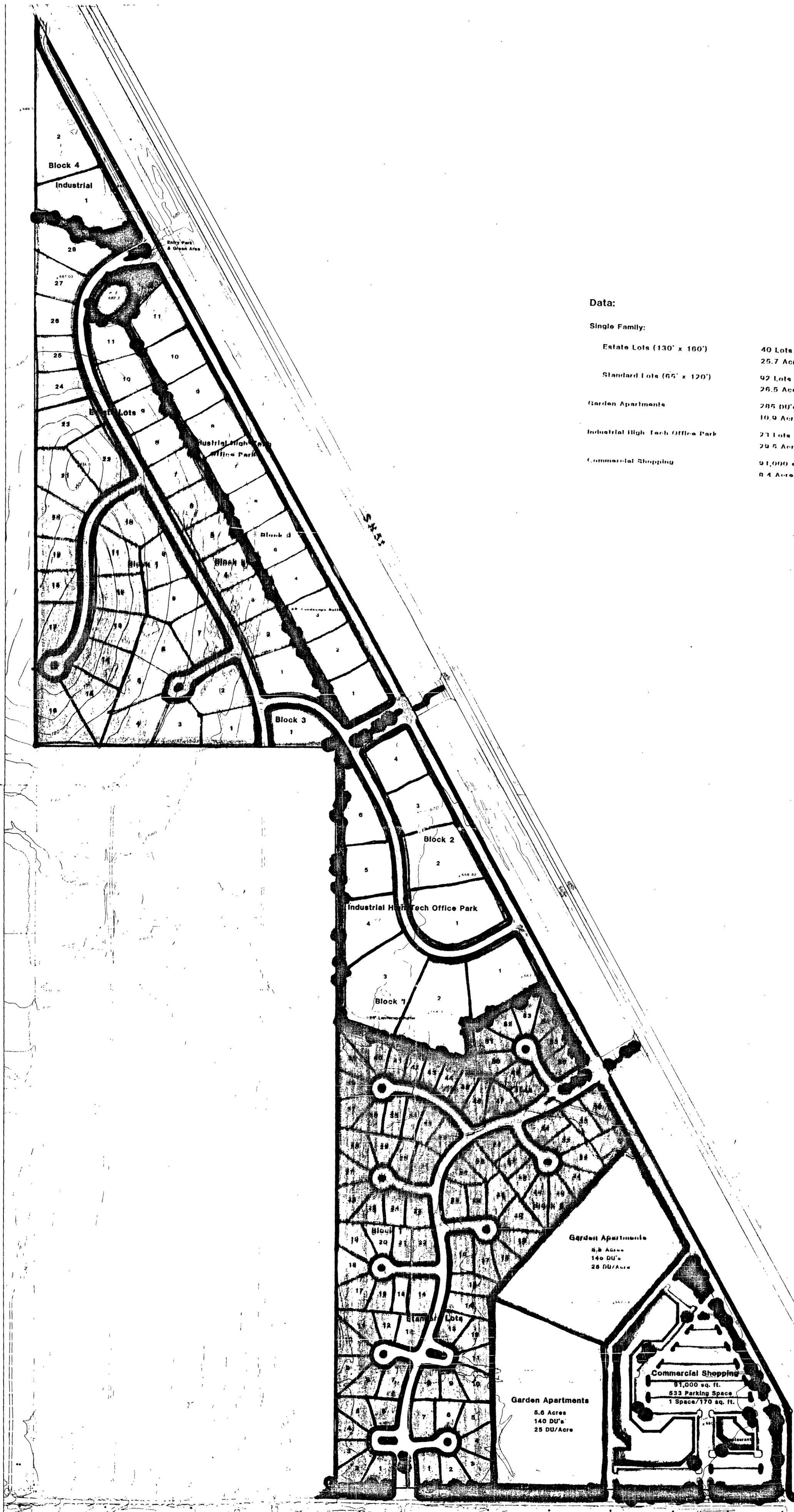
MIXED-USE DEVELOPMENT: Buildings containing both residential and nonresidential principal uses shall be developed according to the nonresidential development standards, except any lot containing a dwelling unit shall maintain a minimum of 30 feet of frontage on a public or private street or dedicated right-of-way. Such vertically mixed-use buildings shall be provided and maintain in aggregate parking in number as calculated separately by use type and category. Should nonresidential building floor area be restricted within the PUD, neither structured parking nor the floor area of any residential use component of a mixed-use building shall be counted against the maximum.

ARCHITECTURAL REVIEW: An Architectural Review Committee (ARC) will be formed. The ARC will review site, landscape, drainage, and architectural and building plans and the selection of architectural building materials. The approval of the ARC of such plan shall be required prior to the submission to the City of an application for the issuance of a building permit. The architectural review requirement is to be established as a private restriction set forth within a recorded instrument and is an important factor in achieving a quality development as originally intended.

The building elevations for dwelling units, offices, and businesses will be designed to express individuality within a development area while simultaneously maintaining the overall character of the community. Attention to all aspects of the building designs will be given to create the individuality desired. Examples of building elements to be studied include roofs, walls, openings, foundations, chimney materials, plazas, and decks. Even though building appearances will vary throughout the development, continuity will be provided through the utilization of additional architectural and non-architectural elements such as lighting, signage, paving, hardscape, and landscape plan material.

The ARC will be designated by Roland Investments, Ltd., its successors or assigns, as the ARC as described herein.

SCHEDULE OF DEVELOPMENT: While the original PUD-02 has included three (3) previous developments thus far, development of the remaining PUD site is expected to commence as market conditions permit. All development will be coordinated with the City of Coweta in order to provide adequate traffic circulation and utility service.



Data:

Single Family:

Estate Lots (130' x 160')	40 Lots
	25.7 Acres
Standard Lots (65' x 120')	92 Lots
	26.5 Acres
Garden Apartments	285 DU's
	10.9 Acres
Industrial High Tech Office Park	23 Lots
	29.5 Acres
Commercial Shopping	91,000 sq. ft.
	8.4 Acres

Preliminary Site Plan for:

Timber Ridge

Coweta, Oklahoma

15E18N27

PLANNED UNIT DEVELOPMENT (PUD) PUD-02 AMENDMENT

15E18N25



111th

112th

113th

114th

114th

114th

115th

115th

272nd East

113th

271st East

116th Street

SUBJECT PROPERTY

112th

113th

113th

112th

282nd E

282nd E

281st E

115th

15E18N34

117th

257th East

15E18N35

118th

120th

266th

116th

267th

268th East

269th East

120th

270th East

118th

120th

122nd

122nd

273rd East

Highway 51

272nd East

274th

278th East

15E18N36

119th

121st

15E17N3

15E17N2

15E17N1

281st East

15E18N27

PLANNED UNIT DEVELOPMENT (PUD) PUD-02 AMENDMENT

Wynstone Phase

15E18N25



111th
261st East
Cross Creek 113th
114th
114th
264th East
Cross Creek II
115th
15E18N35

113th
PUD-C 07
Coweta Crossing North 20
PUD-R 0702/PUD-C 12-02
Coweta Crossing South 45

274th East
275th East
112th
280th East
113th
Woods @ Oak Grove II
Woods @ Oak Grove I

282nd E
281st E
115th
Celebration at the Woods I

15E18N34
117th

257th East
118th
Perry Green Acres
120th
259th East

116th
PUD-02
118th
Timber Ridge Estates
Timber Ridge Plaza
120th
267th East
268th
267th
Steepchase Apartments

SUBJECT PROPERTY

15E18N36
PUD-R 0701
PUD-R 13-02
Park View East
272nd East
State Highway 51

274th
119th
Creek Hollow II
Creek Hollow I
PUD-C 20-01

15E17N3

257th East

15E17N2

Timber Ridge Crossing I
122nd
Timber Ridge Crossing II
Country Fair Plaza

15E17N1

281st East

121st

15E18N27

AG

PLANNED UNIT DEVELOPMENT (PUD) PUD-02 AMENDMENT

Wynstone Phase
RS-3

15E18N25

Coweta Senior Villas

RM-1

112th

Cross Creek

113th

114th

114th

115th

Cross Creek II

115th

15E18N35

AG

116th

RS-3

SUBJECT PROPERTY

274th East

113th

Coweta Crossing North20

271st East

CG

Coweta Crossing South45

Woods @ Oak Grove I

275th East

113th

Woods @ Oak Grove II

112th

280th East

113th

Celebration at the Woods I

281st E

282nd E

115th

RS-2

15E18N36

Legend

ZONE_TYPE

- AG Agriculture
- C-4 Wagoner County Zoning
- CG General Commercial
- IH Heavy Industrial
- IL Light Industrial
- RM-1 Residential Multi-Family
- RMH Residential Manufactured Home
- RS-2.5 Wagoner County Zoning
- RS-0 Wagoner County Zoning
- RS-1 Residential Single Family
- RS-2 Residential Single Family
- RS-22.5 Wagoner County Zoning
- RS-3 Residential Single Family

15E18N34

AG

in Acres

RS-0

118th

20th

259th East

AG

RS-0

Timberidge Estates

RS-1

Timber Ridge Plaza

118th

266th

267th

120th

269th East

Steeplechase Apartments

Park View East

RS-1

272nd East

AG

CG

CG

CG

CG

CG

CG

Creek Hollow II

119th

Creek Hollow I

121st

15E17N1

15E17N3

AG

15E17N2

AG

C-4

AG

RS-1

AG

CG

CG

CG

CG

CG

CG

CG

CG

CG

CG

CG

CG

Timber Ridge Crossing I

122nd

RS-3

Kountry Fair Plaza

281st East

AG



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Memorandum

To: Honorable Mayor and City Council
From: Mark Seibold, Community Development Director
Re: Case Number: CZ 22-01
Date: 03-07-2022

BACKGROUND

Applicant

Abundant Rain Ministries, Inc., is seeking to amend the zoning map. The request is to rezone from the (AG) Agriculture to (RS-2) Residential Single-Family district. This rezoning will allow for the development and construction of Spradlin Estates, Phase II, a Residential Single-Family Subdivision.

Case Facts

- The property is located in Section 1, Township 17 North, Range 15 East at South 273rd East Avenue and East 125th Place South.
- The property is currently zoned Agriculture (AG).
- The property is adjacent to the existing Spradlin Estates subdivision.
- The property legal description: A tract of land situated in the SW1/4 NW1/4 of Section 1, Township 17 North, Range 15 East of the Indian Base and Meridian, Wagoner County, State of Oklahoma, more particularly described as follows: commencing at the SW corner of the SW1/4 NW1/4 of said Section 1, thence due north along the west line thereof a distance of 250.00 feet; thence N89°45'53"E parallel to the south line of the NW1/4 a distance of 496.75 feet to the point of beginning; thence S7°21'15"E a distance of 251.94 feet; thence N89°45'53"E a distance of 505.79 feet; thence N12°00'16"W a distance of 74.91 feet; thence N29°58'52"W a distance of 125.00 feet; thence N40°20'49"W a distance of 89.09 feet; thence S89°45'53"W a distance of 402.32 feet to the Point of Beginning. Containing 2.70 acres, more or less.

Pertinent Code

SECTION 2210 POLICY ON ZONING MAP AMENDMENTS:

- It is the policy of the City of Coweta that in the consideration of proposed amendments to this Code that:
Amendments will be adopted to recognize changes in the Comprehensive Plan, to correct error, or to recognize changed or changing conditions in a particular area or in the jurisdictional area generally.
- A rezoning request must determine whether the proposed land use, if implemented, would be compatible with the surrounding area in the manner contemplated by the Comprehensive Plan.

Staff finds that this request is in compliance with the objectives of the City of Coweta Comprehensive Plan, Proposed Land Use 2020-2030 Map. If implemented, it would be compatible with the surrounding area in the manner contemplated by the Comprehensive Plan.

STAFF COMMENTS

A public hearing was held on the 22nd of February by the Coweta Planning Commission. The Planning Commission found that this request is in compliance with the Coweta Comprehensive Plan. At the Tuesday February 22, 2022, Planning Commission meeting there was no one present in opposition to the request. The Planning Commission made a recommendation for approval to the Coweta City Council for the rezone request for CZ 22-01 (3-0).

ATTACHMENTS

1. Public Hearing Notice 2. Aerial View Map 3. Zoning Map 4. Location Map 4. DRAFT Ordinance No. 855

CITY OF COWETA, OKLAHOMA

ORDINANCE NO. 855

AN ORDINANCE OF THE CITY OF COWETA, OKLAHOMA REZONING A TRACT OF LAND LOCATED IN SECTION 1, TOWNSHIP 17 NORTH, RANGE 15 EAST OF THE INDIAN BASE AND MERIDIAN, CITY OF COWETA, OKLAHOMA, FROM GENERAL AGRICULTURE (AG) CLASSIFICATION TO RESIDENTIAL SINGLE-FAMILY (RS-2) CLASSIFICATION, AMENDING THE OFFICIAL ZONING MAP OF THE CITY OF COWETA, OKLAHOMA, PROVIDING FOR REPEALER, SEVERABILITY, AND DECLARING AN EMERGENCY

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA, THAT:

SECTION 1. ZONING CLASSIFICATION.

The following described property is hereby rezoned from Agriculture (AG) classification to Residential Single-Family (RS-2):

TRACT 1 A TRACT OF LAND SITUATED IN THE SW1/4 NW1/4 OF SECTION 1, TOWNSHIP 17 NORTH, RANGE 15 EAST OF THE INDIAN BASE AND MERIDIAN, WAGONER COUNTY, STATE OF OKLAHOMA, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST QUARTER CORNER OF THE SW1/4 NW1/4 OF SAID SECTION 1, THENCE DUE NORTH ALONG THE WEST LINE THEREOF A DISTANCE OF 250.00 FEET; THENCE N89°45'53"E PARALLEL TO THE SOUTH LINE OF THE NW1/4 A DISTANCE OF 496.75 FEET TO THE POINT OF BEGINNING; THENCE S7°21'15"E A DISTANCE OF 251.94 FEET; THENCE N89°45'53"E A DISTANCE OF 505.79 FEET; THENCE N12°00'16"W A DISTANCE OF 74.91 FEET; THENCE N29°58'52"W A DISTANCE OF 125.00 FEET; THENCE N40°20'49"W A DISTANCE OF 89.09 FEET; THENCE S89°45'53"W A DISTANCE OF 402.32 FEET TO THE POINT OF BEGINNING. CONTAINING 2.70 ACRES, MORE OR LESS.

SECTION 2. REPEALER. All ordinances, or parts of ordinances, in conflict with this ordinance are hereby repealed to the extent of the conflict only.

SECTION 3. SEVERABILITY. If any part or parts of this ordinance are deemed unconstitutional, invalid, or ineffective, the remaining portions shall not be affected but shall remain in full force and effect.

SECTION 4. DECLARING AN EMERGENCY. That for the immediate preservation of the peace, health, and safety of the City of Coweta, Oklahoma, and for the inhabitants thereof,

an emergency is hereby declared to exist by reason whereof this ordinance shall become operative and go into effect immediately upon its passage and approval.

PASSED AND APPROVED this 7th day of March 2022.

Evette Young, Mayor

ATTEST:

Julie Casteen, City Clerk

APPROVED:

Ronald D. Cates, City Attorney

E 125th P I S

Bridle Trail Estates

Bridle Trail Estates SE

**CZ 22-01 REZONE FROM AG AGRICULTURE TO RS-2 RESIDENTIAL
SINGLE FAMILY ABUNDANT RAIN MINISTRIES, INC., PROPERTY**

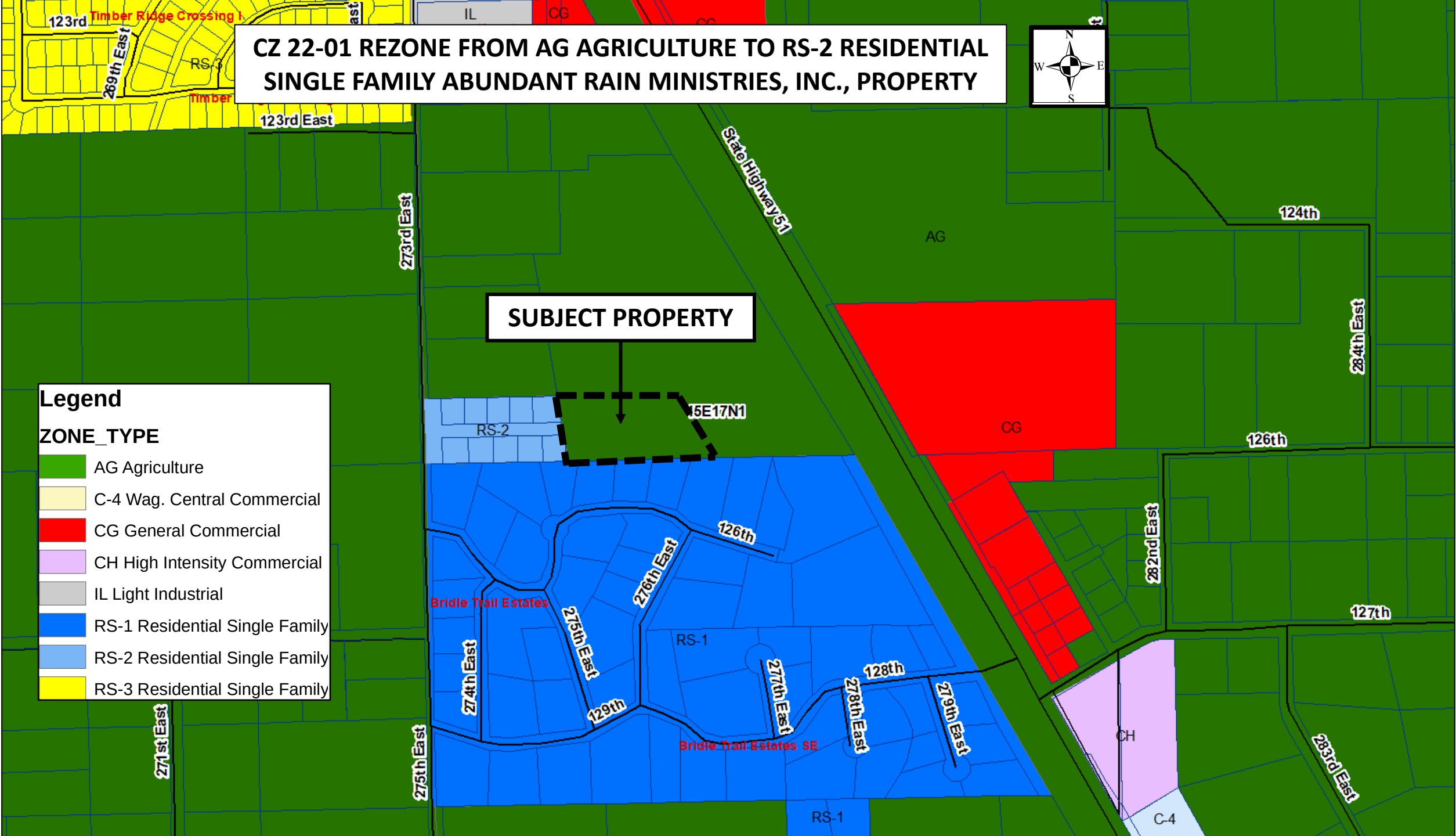


Legend

ZONE_TYPE

- AG Agriculture
- C-4 Wag. Central Commercial
- CG General Commercial
- CH High Intensity Commercial
- IL Light Industrial
- RS-1 Residential Single Family
- RS-2 Residential Single Family
- RS-3 Residential Single Family

SUBJECT PROPERTY





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Mé morandum

To: Honorable Mayor and Members of the City Council
From: Roger Kolman, City Manager
Re: Amendment of Use Tax Ordinance
Date: 3/07/22

BACKGROUND

The accompanying Ordinance 854 is a follow-on ordinance related to the approval of Ordinance 850 by the voters of Coweta on February 8, 2022. Ordinance 854 amends the existing ordinances related to the city's Use Tax, increasing that tax to 4% to match the sales tax, and dedicates the additional 1% use tax to the same uses approved by Ordinance 850.

STAFF RECOMMENDATION

Staff recommends adoption of Ordinance 854.

ATTACHMENTS

Ordinance 854

CITY OF COWETA, OKLAHOMA

ORDINANCE NO. 854

AN ORDINANCE OF THE CITY OF COWETA, OKLAHOMA, ADOPTING NEW LAW BY AMENDING PART 7, FINANCE AND TAXATION, CHAPTER 5, USE TAX, OF THE CODE OF ORDINANCES OF THE CITY OF COWETA, OKLAHOMA, SPECIFICALLY AMENDING SECTION 5-503 BY INCREASING THE RATE OF TAX TO FOUR PERCENT (4%) OF THE PURCHASE PRICE ON STORAGE, USE OR OTHER CONSUMPTION OF TANGIBLE, PERSONAL PROPERTY IN THE CITY OF COWETA, OKLAHOMA, AMENDING SECTION 5-504, PURPOSE OF REVENUES, TO PROVIDE THAT THE ONE-PERCENT INCREASE (1%) IN THE USE TAX SHALL BE UTILIZED SOLELY FOR PURPOSES SET FORTH IN SECTION 7 OF THE CITY OF COWETA, OKLAHOMA SPECIAL SALES TAX ORDINANCE NO. 850, REPEALING ALL PRIOR ORDINANCES TO THE CONTRARY, PROVIDING FOR SEVERABILITY AND DECLARING AN EMERGENCY

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA, THAT:

SECTION 1. INCREASED RATE. Section 7-503, Excise Tax On Storage, Use, or Other Consumption of Tangible Personal Property Levied, of the Code of Ordinances of the City of Coweta, Oklahoma, is hereby amended by increasing the rate of the tax from three percent (3%) to four percent (4%). All other provisions in Section 7-503 shall otherwise remain.

SECTION 2. LIMITATION OF REVENUE USAGE. Section 7-504, Purpose of Revenues, of the Code of Ordinances of the City of Coweta, Oklahoma is hereby amended to provide that the revenues generated by and received from the one percent increase (1%) in the Use Tax provided for herein shall be utilized solely for the purposes as forth in SECTION 7, PURPOSE, of Ordinance 850, adopted by the City Council of the City of Coweta, Oklahoma on the 6th day of December, 2021, and approved by the qualified electors of the City of Coweta, Oklahoma on the 8th day of February, 2022, incorporation thereof being made herein by this reference thereto.

SECTION 3. REPEALER. All ordinances or parts of ordinances, in conflict with this ordinance are hereby repealed to the extent of the conflict only.

SECTION 4. SEVERABILITY. If any part or parts of this ordinance are deemed unconstitutional, invalid, or ineffective, the remaining portions shall not be affected but shall remain in full force and effect.

SECTION 5. DECLARING AN EMERGENCY. That for the immediate preservation of the peace, health and safety of the City of Coweta, Oklahoma, and for the inhabitants thereof, an emergency is hereby declared to exist by reason whereof this ordinance shall become operative and go into effect immediately upon its passage and approval.

PASSED AND APPROVED this 7th day of March 2022.

Evette Young, Mayor

ATTEST:

Julie Casteen, City Clerk

APPROVED:

Ronald D. Cates, City Attorney



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Mé morandum

To: Honorable Mayor and Members of the City Council
From: Roger Kolman, City Manager
Re: Targeted Opportunities Program grant
Date: 3/07/22

BACKGROUND

The City of Coweta has been awarded a \$24,000.00 Targeted Opportunities Program grant through the Oklahoma Department of Commerce. This purpose of this grant is to engage a site development consultant to ascertain the potential for utilizing a piece of property owned by the Wagoner County Economic Development Authority as a light industrial park. The property, if viable as a light industrial park, would be used to entice business enterprises to locate to Coweta, creating sustainable jobs for the residents of the city and surrounding county.

STAFF RECOMMENDATION

Staff recommends approval of the Targeted Opportunities Subaward Agreement.

ATTACHMENTS

TOP Subaward Agreement

CONTRACT – TARGETED OPPORTUNITIES PROGRAM (TOP)
SUBAWARD AGREEMENT
PART I
SUMMARY AND SIGNATURES

Contracting Agency: Oklahoma Department of Commerce

Subrecipient: City of Coweta

Contract Title: Targeted Opportunities Award (“TOP”) Subaward Agreement

Federal Award Identification Number (FAIN): ED22AUS3070005

Contract Amount obligated to Subrecipient: \$24,000

Awarding Agency: United States Department of Commerce, Economic Development Administration.

Authority for Award: ARPA Statewide Planning, under EDA’s Economic Adjustment Assistance (EAA) program, as authorized by sections 209 and 703 of the Public Works and Economic Development act of 1965, as amended, 42 U.S.C §§3149 and 3233.

Federal Award Date: October 18, 2021

Project Title: Oklahoma’s Economic Recovery through Industry Cluster Development

Project Funding Period: October 14, 2021, through January 15, 2023

Federal Award Period: October 14, 2021, through January 15, 2023

Submit Grant Questions to Nicole Boyles via email: Nicole.Boyles@okcommerce.gov

Submit Requisitions to:

Danae Nelson
Oklahoma Department of Commerce
900 N. Stiles Ave.
Oklahoma City, OK 73104-3234
Danae.Nelson@okcommerce.gov
Phone: (405) 815-6552

Issue Payment to:

City of Coweta
Finance Department
PO Box 850
Coweta, OK 74429
rkolman@cityofcoweta-ok.gov
(918) 486-2189

Agreement Components:

Part I: Summary and Signatures
Part II: General Terms and Conditions
Part III: 2022 Targeted Opportunities Program (TOP) Scope of Work-
Required Scope of Work for Site and Infrastructure Evaluations
Part IV: Certification Regarding Lobbying: Certification for Contracts,
Grants, Loans and Cooperative Agreements.

SIGNATURES – EXECUTION OF CONTRACT AGREEMENT

The rights and obligations of the parties to this contract are subject to and governed by Part II – General Terms and Conditions.

By signing this agreement, Subrecipient reaffirms and states as follows:

- i. All data in the application and documents submitted with the application are true and correct as of the date the application was submitted and remain true and correct as of the date of this award;
- ii. The application was, as of the date of submission and the date of this Award, duly authorized as required by local law of the governing body of the Subrecipient; and
- iii. Subrecipient has read, understood and will comply with all terms of this award; and
- iv. The signatory to this document has actual legal authority to bind Subrecipient to the terms of this agreement.
- v. The undersigned further certifies that the Subrecipient understands and will otherwise conform with the requirements set forth in Part IV of this agreement.

EXECUTED BY:

CITY OF COWETA

EXECUTED BY:

OKLAHOMA DEPARTMENT OF COMMERCE

Evette Young
Mayor

Date

B. Joshua McGoldrick
General Counsel/ Chief of Staff

Date

PART II GENERAL TERMS AND CONDITIONS

I. AVAILABILITY OF FUNDS

Payments pursuant to this contract are to be made only from monies made available to the Oklahoma Department of Commerce (ODOC) by the United States Department of Commerce, Economic Development Administration (EDA) from the EDA's Economic Adjustment Assistance Program as authorized by sections 209 and 703 of the Public Works and Economic Development Act of 1965, as amended, 42 U.S.C. §3149 and 3233.

II. MODIFICATION AMENDMENT

- A. This contract is subject to such modification as may be required by federal or State law or regulations. Any such modification may be done unilaterally by ODOC.
- B. A waiver of any provision of this contract must be in writing and must be signed by the Director of ODOC or designee.

III. ODOC

- A. ODOC will provide funding for the project up to the total amount listed in Part I: Total Project Funding. The purpose of this grant is to facilitate rapid expansion of targeted industry clusters in Oklahoma and increase the number of shovel-ready site locations to market to emerging industry clusters.
- B. ODOC shall perform monitoring to assess the Subrecipient's financial and program compliance and progress but said monitoring and evaluation shall not relieve the Subrecipient of any obligation or duty under this contract.

IV. SUBRECIPIENT

- A. The Subrecipient agrees to perform those duties, obligations and representations contained in its application and to be bound by the provisions of its application, all amendments thereto and all correspondence relating thereto, which were submitted to and accepted by ODOC in contemplation of this contract, said application being incorporated herein and made apart hereof by reference. Any conflict between said application, amendments and correspondence and the provisions of this contract shall be controlled by this contract. Failure to abide by the terms of this agreement could result in cancellation of the agreement by ODOC, denial of payments pursuant to this agreement and/or return of payments received pursuant to this agreement to ODOC.
- B. The Subrecipient agrees to perform the duties and obligations set forth in the 2022 Targeted Opportunities Program (TOP) Required Scope of Work for Site and Infrastructure Evaluations ("Scope of Work") hereby incorporated into this agreement. All funding received pursuant to this agreement

shall be used in furtherance of the Scope of Work and may only be used to retain a consultant to conduct assessments of community sites and infrastructure as set forth in the Scope of Work.

- C. ODOC shall provide Subrecipient with a list of approved consultants they may choose for participation in the program.
- D. The funds awarded pursuant to this agreement is the maximum amount of funding to be provided by Commerce and any obligations in excess of the funding awarded pursuant to this agreement shall be the responsibility of the Subrecipient. Funding awarded pursuant to this agreement which exceeds the costs incurred by the Subrecipient in retaining a consultant shall not be awarded to the Consultant and shall be retained by ODOC.
- E. None of the work and services covered by this contract may be subcontracted without prior written approval of ODOC.
- F. Work under the scope of work must begin pursuant to this agreement no earlier than the date this contract is executed and completed on or before January 15, 2023 for Subrecipient to receive payment pursuant to this agreement.
- G. In no event will any subcontract or subcontractor of the Subrecipient incur obligation on the part of ODOC.

V. [2 CFR 200.332](#)

Pursuant to 2 CFR 200.332 – All pass through entities must:

- A. Ensure that every subaward is clearly identified to the subrecipient as a subaward and includes the following information at the time of the subaward and if any of these data elements change, include the changes in subsequent subaward modification. When some of this information is not available, the pass-through entity must provide the best information available to describe the Federal award and subaward. Required information includes:

(1) Federal Award Identification.

- (a) Subrecipient name (which must match the name associated with its unique entity identifier);
- (b) Subrecipient's unique entity identifier;
- (c) Federal Award Identification Number (FAIN);
- (d) Federal Award Date (see §200.39 Federal award date) of award to the recipient by the Federal agency;
- (e) Subaward Period of Performance Start and End Date;

- (f) Amount of Federal Funds Obligated by this action by the pass-through entity to the subrecipient;
- (g) Total Amount of Federal Funds Obligated to the subrecipient by the pass-through entity including the current obligation;
- (h) Total Amount of the Federal Award committed to the subrecipient by the pass-through entity;
- (i) Federal award project description, as required to be responsive to the Federal Funding Accountability and Transparency Act (FFATA);
- (j) Name of Federal awarding agency, pass-through entity, and contact information for awarding official of the Pass-through entity;
- (k) CFDA Number and Name; the pass-through entity must identify the dollar amount made available under each Federal award and the CFDA number at time of disbursement;
- (l) The rest of Section 200.331 is herein incorporated by reference.

VI. EMPLOYEE BENEFITS

The Subrecipient has full responsibility for payment of Workers' Compensation insurance, unemployment insurance, social security, State and federal income tax and any other deductions required by law for its employees.

VII. CERTIFICATIONS BY SUBRECIPIENT

- A. The Subrecipient expressly agrees to be solely responsible to ensure that the use of monies received under this contract complies with all federal, State and local statutes, regulations and other legal authority, all as modified from time to time, that affect the use of said monies.
- B. The Subrecipient specifically certifies and assures that it will comply with the applicable terms of the Financial Assistance Award and included Specific Award Conditions between the ODOC and the U.S. Department of Commerce Economic Development Administration. Said Financial Assistance Award and the included Specific Award Conditions is incorporated herein by reference.

VIII. HOLD HARMLESS CLAUSE

- A. The Subrecipient shall, within limitations placed on such entities by State law, save harmless the State of Oklahoma, its agents, officers and employees from all claims and actions and all expenses defending same that are brought as a result of any injury or damage sustained by any person or property in consequence of any act or omission by the Subrecipient. The Subrecipient shall, within limitations

placed on such entities by State law, save harmless the State of Oklahoma, its agents, officers and employees from any claim or amount recovered as a result of infringement of patent, trademark or copyright or from any claim or amounts arising or recovered under Workers' Compensation Law or any other law. In any agreement with any subcontractor or any agent for the Subrecipient, the Subrecipient will specify that such subcontractors or agents shall hold harmless the State of Oklahoma, its agents, officers and employees for all the herein before-described expenses, claims, actions or amounts recovered.

- B. In the event the Contract or chooses to use volunteer labor to assist in the project activities, the Subrecipient shall bear any and all liability for any injury or harm caused by the volunteer labor or any harm or injury to the volunteer labor.

IX. POLITICAL ACTIVITY

- A. All employees of the Subrecipient shall observe the limitations on political activities to which they may be subject under the Hatch Act (5 USC §§1501, et seq., 18 USC §595 and any amendments thereto).
- B. No portion of the contract funds may be used for any political activity or to further the election or defeat of any candidate for public office.
- C. No portion of the contract funds may be used for lobbying activities.

X. NO-CONFLICT COVENANT

The Subrecipient covenants that no officers or employees of any governing board of the Subrecipient have any interest, direct or indirect, and that none shall acquire any such interest during their tenure or for one year thereafter that would conflict with the full and complete execution of this contract. The Subrecipient further covenants that in the performance of this contract no person having any such interest will be employed. The Subrecipient covenants that no employee of ODOC has any interest, direct or indirect, nor has any employee of ODOC received anything of value in connection with this contract.

XI. PUBLICATIONS AND OTHER MATERIALS

- A. No material produced in whole or in part under this contract shall be subject to copyright in the United States or any other country. ODOC shall have unrestricted authority to publish, disclose, distribute and otherwise use, in whole or in part, any reports, data or other materials prepared under this contract.

B. Any publication or other material produced as a result of this contract shall include in a prominent location near the beginning the following statement:

This (type of material) was financed in whole or in part by funds from the U.S. Department of Commerce, Economic Development Administration, as administered by the Oklahoma Department of Commerce.

C. Subrecipient shall remit a copy of any reports or materials produced pursuant to the Scope of Work to ODOC upon receipt of the report from the subcontractor.

XII. CONTRACT ADMINISTRATION

- A. The Subrecipient shall comply with 2 CFR, Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards except as directed otherwise in writing by ODOC, as they relate to the application, acceptance and use of federal funds.
- B. Subrecipient shall also comply with the terms of the Financial Assistance Award and the Specific Award Conditions in the agreement between ODOC and the U.S. Department of Commerce, Economic Development Administration which are incorporated to the terms of this agreement.
- C. Oklahoma Department of Commerce fully adopts 24 CFR 200.317-327 in full. Units of General Local Government as “sub-recipients” are to follow 2 CFR Part 200.318-326.

XIII. COMPENSATION TO SUBRECIPIENT

- A. Funds made available pursuant to this contract shall be used only for expenses incurred during the period funded as specified in Part I for the purposes and activities approved and agreed to by ODOC. No ODOC funds may be used for expenses incurred prior to the contract start date. No ODOC funds may be used for expenses incurred after the contract end date.
- B. Subrecipient shall be paid for allowable costs on a reimbursement basis. To receive payment, Subrecipient must submit all invoices to payment to ODOC through the contact information in part I of this agreement. Invoices requesting reimbursement for allowable costs must be received by ODOC no later than January 15, 2023. Invoices requesting payment which provide sufficient documentation of allowable costs shall be paid by ODOC within forty-five (45) days of approval.
- C. Subrecipients must follow all state purchasing procedures and comply with state law and relevant rules in seeking reimbursement for allowable costs pursuant to this agreement.

XIV. RECORDS, REPORTS, DOCUMENTATION

- A. The Subrecipient shall maintain records and accounts, including property, personnel and financial records that properly document and account for all project funds.

- B. The Subrecipient shall retain all books, documents, papers, records and other materials involving all activities and transactions related to this contract for at least three (3) years from the date of submission of final reports to ODOC or until all audit findings have been resolved. All records and accounts shall be made available on demand to the Oklahoma State Auditor and Inspector, ODOC, The U.S. Department of Commerce, as well as any agents or designees of the aforementioned agencies for inspection and use in carrying out its responsibilities for administration of funds.
- C. **Subrecipient shall submit project progress reports to ODOC on a semi-annual basis for periods ending on March 31, 2022 and September 30, 2022. These reports must be received by ODOC on or before April 15, 2022 and October 14, 2022, respectively. Subrecipient shall utilize forms to be provided by ODOC for completions of these reports. ODOC shall provide these required forms to the Subrecipient approximately thirty (30) days before the reports are due to ODOC.**
- D. The Subrecipient has not paid, given, donated or agreed to pay, give or donate to any officer or employee of the State of Oklahoma any money or other thing of value, either directly or indirectly, in the procuring of this contract.

XV. CLOSING OUT OF CONTRACT

- A. The closing out of this contract shall be in compliance with applicable EDA guidance.
- B. ODOC may unilaterally modify this contract to subtract the total amount of funds not obligated by the Subrecipient as of the final date of the period funded.
- C. The Subrecipient cannot close out the contract until the project is completed and all monitoring issues have been resolved and approved by ODOC.

XVI. AUDIT, DISALLOWED COSTS

- A. The Subrecipient shall comply with ODOC's Audit Policies and Audit Procedures, which are incorporated herein and made apart hereof.
- B. The Subrecipient shall provide ODOC with timely copies of reports on any audits that include funds received from ODOC.
- C. In the event an audit results in the determination that the Subrecipient has expended contract funds on unallowable costs, the Subrecipient shall reimburse ODOC in full for all such costs.

XVII. PROGRAM INCOME

The Subrecipient shall account to ODOC for all Program Income, if any, resulting from this agreement, as provided in 24 CFR 570.489(e) and any amendments thereto. Disposition of Program Income will be determined by ODOC.

XVIII. INTERPRETATION, REMEDIES

- A. In the event the terms or provisions of this contract are breached by either party or in the event a dispute shall arise between the parties regarding the meaning, requirements or interpretation of the terms and provisions of this contract, then such breach or dispute shall be resolved pursuant to the terms of this contract and the administrative procedures available through ODOC rules promulgated pursuant to the Oklahoma Administrative Procedures Act, 75 O.S. §§250, et seq.
- B. Neither forbearance nor payment by ODOC shall be construed to constitute waiver of any remedies for any default or breach by the Subrecipient that exists then or occurs later.
- C. This contract shall be construed and interpreted pursuant to Oklahoma law.

XIX. TERMINATION OR SUSPENSION

- A. This contract may be terminated or suspended in whole or in part at any time by written agreement of the parties.
- B. This contract may be terminated or suspended by ODOC, in whole or in part, for cause, after notice and an opportunity for Subrecipient to present reasons why such action should not be taken. Procedures for such a process shall be in accordance with the General Rules or Practice and Procedure of the Department. Grounds constituting cause include but are not limited to:
 - (1) The Subrecipient fails to begin performance under this agreement on a timely basis;
 - (2) The Subrecipient fails to comply with provisions of this contract or with any applicable laws, regulations, guidelines or procedures, including ODOC policies and issuances, or is unduly dilatory in executing its commitments under this contract;
 - (3) Purposes for the funds have not been or will not be fulfilled or would be illegal to carry out;
 - (4) The Subrecipient has submitted incorrect or incomplete documentation pertaining to this contract.
- C. In the event of termination or suspension, the Subrecipient shall be entitled to payment for otherwise valid and allowable obligations incurred in good faith prior to notice of such action and to reimbursement for reasonable and necessary expenses. The Subrecipient shall reduce to the minimum possible obligations, prepaid expenses and other costs.

- D. The Subrecipient shall not be relieved of liability to ODOC for damages sustained by ODOC by virtue of any breach of this agreement by the Subrecipient. ODOC may withhold payments due under this agreement pending resolution of the damages.

XX. SEVERABILITY CLAUSE

If any provision under this contract or its application to any person or circumstance is held invalid by any court of competent jurisdiction, such invalidity does not affect any other provision of this contract or its application that can be given effect without the invalid provision or application.



Required Scope of Work for Site and Infrastructure Evaluations

Phase 1 - Community and Site Assessment - Each community is vetted for readiness to recruit target industries to include gap identification.

Task 1: Project Mobilization and Development of Project Team and Stakeholders.

Task 2: Alignment Meeting with Oklahoma Department of Commerce and Local Project Team.

Task 3: Community Rollout Meetings for project introduction and awareness for community leadership.

Task 4: Two Levels of Desktop Analysis and Evaluations to include:

- Community and site asset mapping and readiness assessment for economic development recruitment of jobs and investment.

Task 5: Boots-on-the-Ground Community and Site Evaluation to include:

- In-person Site Visits and assessment
- Readiness level
- Infrastructure Gaps
- Industry Prioritization

Phase 2 - Leverage the Gap Assessment – The evaluations continue for each community and should include competitive capability assessment, identification of needed site improvements, feasibility of mitigation, funding “ask” package, and industry attraction strategy (including potential program redirection)

Task 1: Site Improvement Cost Benefit and Feasibility Analysis:

- Work with communities to develop time and cost estimates for site gaps.
- Utilize a cost/benefit analysis to identify feasible next steps to site development.
- Build a quantifiable funding request package based on identified gaps and cost analysis to solicit additional funding from state and federal sources for site improvements that have been vetted via this process.

Task 2: Develop Industry Attraction Strategy per Community Site - Develop Target Industry Attraction Plan to include:

- Target industry audience/markets
- Guide for economic development project managers and sales teams
- Target industry technical sales message and materials.

Part IV

**Certification Regarding Lobbying
Certification for Contracts, Grants, Loans,
And Cooperative Agreements**

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an Officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, sub grants and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.



POST OFFICE BOX 850 • COWETA, OKLAHOMA 74429 • PH. (918) 486-2189 • FAX (918) 486-5366 • www.cityofcoweta-ok.gov

Mémorandum

To: Honorable Mayor and Members of the City Council
From: Roger Kolman, City Manager
Re: Project Agreement
Date: 3/07/22

BACKGROUND

The accompanying project maintenance, financing, and right-of-way agreement with the Oklahoma Department of Transportation pertains to the sidewalk project along Pecan Street between Highway 72 and 305th E Avenue. The agreement sets out the responsibilities of city and ODOT pertaining to this project, the laws and grant requirements that must be followed for the project, and the initial budget.

This project is partially funded (80%) by a TAP Grant awarded to Coweta in 2020 and the balance will be paid from local funds. To date, the city, with the help of ODOT selected a consulting engineer for the project following a series of interviews with pre-qualified firms.

While the consulting engineer will begin work almost immediately, the physical construction on this project may be several years away based upon past experience with similar projects.

STAFF RECOMMENDATION

Staff recommends approval of the project agreement with ODOT for the Pecan St. sidewalk project.

ATTACHMENTS

Project Maintenance, Financing, and Right-of-Way Agreement

**STATE OF OKLAHOMA
DEPARTMENT OF TRANSPORTATION
PROJECT MAINTENANCE, FINANCING, AND RIGHT-OF-WAY AGREEMENT**

**COWETA: SIDEWALK ON PECAN ST FROM BROADWAY (HWY72) TO 305TH AVE XING
UPRR**

Project No.: J3-5446(004)IG

State Job No.: 35446(04)(05)(06)(07)

This Agreement, made the day and year last written below, by and between the City of **COWETA**, hereinafter referred to as the Sponsor, and the Department of Transportation of the State of Oklahoma, hereinafter referred to as the Department, for the following intents and purposes and subject to the following terms and conditions, to wit:

WITNESSETH

WHEREAS, The Sponsor requested that certain street improvements be approved by the Oklahoma Transportation Commission, as were previously programmed by the Sponsor and described as follows:

Project Type	Div.	County	JP No	Project No.	Work Type	Description
ENHANCEMENT	08	WAGONER	3544604)	J3-5446(004)IG	ENHANCEMENT	COWETA: SIDEWALK ON PECAN ST FROM BROADWAY (HWY72) TO 305TH AVE XING UPRR

WHEREAS, the Department is charged under the laws of the State of Oklahoma with construction and maintenance of State Highways; and,

WHEREAS, the Department is, by terms of agreements with the Federal Highway Administration, responsible for the management and construction of certain federally funded projects within the corporate limits of cities within the State of Oklahoma; and,

WHEREAS, the Sponsor has been identified as the beneficiary and sub-recipient of such federally funded project; and,

WHEREAS, receipt of the benefits of this project will require that the Sponsor assume certain financial responsibilities; and,

WHEREAS, the Sponsor is a municipal corporation created and existing under the constitution and laws of the State of Oklahoma; and

WHEREAS, the laws and constitution of the State of Oklahoma impose financial restrictions on the Sponsor and its ability to ensure financial obligations; and,

WHEREAS, the Parties hereto recognize those financial limitations and agree that the financial obligations assumed by the Sponsor, by the terms of this Agreement, are enforceable only to the extent as may be allowed by law or as may be determined by a court of competent jurisdiction; and,

WHEREAS, it is understood that, by virtue of the Article 10, Section 26 of the Oklahoma Constitution, the payment of Sponsor funds in the future will be limited to appropriations and available funds in the then current Sponsor fiscal year.

NOW, THEREFORE: the Department and the Sponsor, in consideration of the mutual covenants and stipulations as set forth herein, do mutually promise and agree as follows:

SECTION 1: PROJECT AGREEMENT

1.1 If applicable, the Department will recommend approval of the project by the Federal Highway Administration.

1.2 The Sponsor agrees to comply with Title VI of the Civil Rights Act of 1964, 78 Stat. § 252, 42 U.S.C. § 2000d et seq., and all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, Part 21 - "Nondiscrimination in federally assisted programs of the Department of Transportation - effectuation of Title VI of the Civil Rights Act 1964".

1.3 The DEPARTMENT and SPONSOR mutually recognize that each party is a governmental entity subject to the provisions of the Governmental Tort Claims Act (51 O.S. § 151 et seq.). The DEPARTMENT and SPONSOR hereby mutually agree that each is and may be held severally liable for any and all claims, demands, and suits in law or equity, of any nature whatsoever, paying for damages or otherwise, arising from any negligent act or omission of any of their respective employees, agents or contractors which may occur during the prosecution or performance of this Agreement to the extent provided in the Governmental Tort Claims Act. Each party agrees to severally bear all costs of investigation and defense of claims arising under the Governmental Tort Claims Act and any judgments which may be rendered in such cause to the limits provided by law. Nothing in this section shall be interpreted or construed to waive any legal defense which may be available to a party or any exemption, limitation or exception which may be provided by the Governmental Tort Claims Act.

1.4 The Sponsor understands that should it fail to fulfill its responsibilities under this Agreement, such a failure will disqualify the Sponsor from future Federal-aid funding participation on any proposed project. Federal-aid funds are to be withheld until such a time as an engineering staff, satisfactory to the Department has been properly established and functioning, the deficiencies in regulations have been corrected or the improvements to be constructed under this Agreement are brought to a satisfactory condition of maintenance.

SECTION 2: ENGINEERING RESPONSIBILITIES

2.1 The Sponsor shall provide professional engineering services for the development of the Plans, Specifications and Estimates (PS&E) for this project. Design engineering for this project will be performed under the supervision of the Sponsor. Sponsor warrants to the Department that they will review the plans and will certify that the plans are acceptable to the Sponsor and are in full compliance with current standards and specifications.

2.2 Progress payments will be made to the consultant by the DEPARTMENT upon receipt of a properly executed claim form, approved by the SPONSOR, accompanied by suitable evidence of the completion of the work claimed, as detailed in the engineering contract.

2.3 The SPONSOR agrees to hold the Federal Government and the DEPARTMENT harmless from, and shall process and defend at its own expense, all claims, demands, or suits, whether at law or equity brought against the SPONSOR, the DEPARTMENT, or Federal Government, arising from the SPONSOR's execution, performance, or failure to perform any of the provisions of this Agreement, or arising by reason of the participation of the DEPARTMENT or Federal Government in the project, provided nothing herein shall require the SPONSOR to reimburse the DEPARTMENT or Federal Government for damages arising out of bodily injury to persons or damage to property caused by or resulting from the sole negligence of the Federal Government or the DEPARTMENT.

2.4 When any alleged act, omission, negligence, or misconduct may be subject to the limitations, exemptions, or defenses which may be raised under the Governmental Tort Claims Act, 51 O.S. Sec. 151, et seq., all such limitations, exemptions, and defenses shall be available to and may be asserted by the SPONSOR. No liability shall attach to the DEPARTMENT or Federal Government except as expressly provided herein.

2.5 The Sponsor agrees to the location of the subject project and agrees to adopt the final plans for said project as the official plans of the Sponsor for the streets,

boulevards, arterial highways and/or other improvements contained therein; and further, the Sponsor affirmatively states that it has or shall fully and completely examine the plans and shall hereby warrant to the Department, the Sponsor's complete satisfaction with these plans and the fitness of the plans to construct aforesaid project.

2.6 The Sponsor certifies that the project design plans shall comply, and the project when completed will comply, with the requirements of the Americans with Disabilities Act (ADA) of 1990 (42 U.S.C. §§ 12101 – 12213), 49 CFR Parts 27, 37 and 38 and 28 CFR parts 35 and 36. The Sponsor shall be exclusively responsible for integrated ADA compliance planning for all Sponsor streets, sidewalks and other facilities provided for public administration, use and accommodation, which is required of recipients and sub-recipients by 49 CFR § 27.11. State highways continued through corporate limits of the Sponsor shall be included in the Sponsor's comprehensive compliance plans.

2.7 To the extent permitted by law, all data prepared under this Agreement shall be made available to the Department without restriction or limitation on their further use, with exception of any documents or information that would be considered attorney/client privileged by the Sponsor.

2.8 The Department will conduct the environmental studies and prepare the National Environmental Protection Act documents as required for federally funded projects.

2.9 The Department will forward the environmental documents to FHWA for approval if applicable.

SECTION 3: LAND ACQUISITION AND UTILITY RELOCATION

3.1 The Sponsor warrants to the Department that, they have or will acquire all land, property, or rights-of-way needed for complete implementation of said project, free and clear of all obstructions and encumbrances and in full accordance with the Department's guidelines for Right-of-Way Acquisition on Federal-Aid Projects, the Uniform Relocation Act, the National Environmental Protection Act and all other applicable local, state and federal regulations.

3.2 The Sponsor shall be responsible for ensuring all proper tax documentation is filed and issued to recipients of funds paid on behalf of the Sponsor for Right-of-Way acquisition for this project.

3.3 The Sponsor warrants to the Department that it is knowledgeable of and will comply with the provisions of 42 U.S.C.A., Section 4601-4655 and 23 U.S.C.A., Section 323 (as

amended) and 49 C.F.R. Part 24 in the acquisition of all right-of-way and the relocation of any displacees.

3.4 The Sponsor shall remove, at its own expense, or cause the removal of, all encroachments on existing streets as shown on said plans, including all buildings, porches, fences, gasoline pumps, islands, and tanks, and any other such private installations and shall further remove or remediate any existing environmental contamination of soil and water from any source, known or unknown.

3.5 If the acquisition of right-of-way for this project causes the displacement of any person, business or non-profit organization, the Sponsor warrants it will provide and be responsible for the Relocation Assistance Program and all costs associated with the Relocation Assistance Program. The Department, upon request, will provide a list of service providers who have been prequalified to administer the Relocation Assistance Program. The Sponsor agrees to employ a service provider from the prequalified list provided by the Department. Prior to any relocation assistance payments to the Sponsor, all files with parcels requiring relocation assistance shall be submitted to the Department for audit and compliance review. The Sponsor shall notify the Department within seven (7) days of the date of an offer to acquire being provided to a property owner(s) on any parcel which will require relocation assistance. Written notifications regarding service providers, in-house personnel, appeals, offers to acquire or other related correspondence shall be properly addressed and remitted as follows:

Oklahoma Department of Transportation
Operations Division
200 N.E. 21st Street
Oklahoma City, Oklahoma 73105-3204

3.6 The Sponsor warrants that any procurement, using federal funds, of property, goods or professional and personal services required for this project will be acquired by the Sponsor in compliance with the federal procurement Regulations at 40 USC 1101-1104 (Brooks Act) and the Regulations for Administration of Engineering and Design Related Service Contracts at 23 C.F.R. Part 172, as well as provisions of State purchasing laws applicable to the Sponsor.

3.7 The Sponsor will certify to the Department prior to establishing a letting date that all existing utility facilities (if any) have been properly adjusted in full accordance with the Department's Right-of-Way and Utilities Division policies and procedures to accommodate the construction of said project; and will be solely responsible for payment of any and all contractor expenses, claims, suits and/or judgments directly resultant from any actual utility relocation delays.

3.8 The Sponsor shall have the authority pursuant to 69 O.S. § 1001 and 69 O.S. § 1004 to sell any lands, or interest therein, which were acquired for highway purposes as long as such sale is conducted in accordance with the above cited statutes.

3.9 The Sponsor agrees that if any property acquired utilizing Federal funding is disposed of or is no longer used in the public interest the Sponsor shall reimburse the Department at the current fair market value.

3.10 The Sponsor agrees to;

- Transmit copies of the instruments, including all deeds and easements, to the Department prior to the advertisement of bids for construction.
- Comply with the provisions of 42 U.S.C.A. § 4601-4655 and 23 U.S.C.A. § 323 (as amended) and, further comply with 49 C.F.R. Part 24 in the acquisition of all necessary right-of-way and relocation of all displaces.
- Convey title to the State of Oklahoma on all tracts of land acquired in the name of the Sponsor if the project is located on the State Highway System.

SECTION 4: FUNDING SUMMARY

4.1 The Department and the Sponsor agree that the project will be financed at a **not-to-exceed**, INCOG TAP total estimated cost of **\$684,558** as described below:

FUNDING SOURCE =>			INCOG TAP		Sponsor	
STATE JOB PIECE NO.	DESCRIPTION	TOTAL ESTIMATED COST	SHARE (%)	AMOUNT	SHARE (%)	AMOUNT
35446(05)	Design -	\$91,760	80	\$73,408	20	\$18,352
	Right-of-Way -	\$0		\$0		\$0
	Utilities -	\$0		\$0		\$0
35446(06)	Rail PE	\$15,000	80	\$12,000	20	\$3,000
35446(07)	Rail Construction	\$80,000	80	\$64,000	20	\$16,000
35446(04)	Construction - (With 6% Inspection)	\$668,938	80	\$535,150	20	\$133,788
Total		\$855,698	Total=>	\$684,558	Total=>	\$171,140

4.2 Furthermore, the Department and the Sponsor agree that actual costs incurred by project phases **JP 35446(04,05,06,07)** may exceed initial estimates. Costs between these project phases will be administratively adjusted based on actual cost of each phase, within the total cost of this Agreement, without formal supplemental Agreement, in so far as the total project agreement is not exceeded.

4.3 It is understood by the Sponsor and the Department that the funding participation stipulated herein may be altered due to bid prices, actual construction supervision costs and non-participating costs incurred during construction. The Sponsor will be responsible for payment of any estimated local funding prior to advertising the project for bid. Upon final acceptance of this project, the total project cost will be determined, and the final amount of local funds (if any) will be determined by the Department's Comptroller per the terms of this Agreement. A refund will then be made by the Department to the Sponsor or additional funding will be requested. The Sponsor agrees to make arrangements for payment of any Department invoice within 45 days of receipt.

SECTION 5: CONSTRUCTION RESPONSIBILITIES

5.1 The Sponsor agrees to comply with all applicable laws and regulations necessary to meet the Oklahoma Department of Environmental Quality (ODEQ) requirements for pollution prevention including discharges from storm water runoff during the planning and design of this project. Further, the Sponsor agrees and stipulates as stated in the ODEQ's *General Permit OKR10*, dated September 13, 2017 or latest revision, to secure a storm water permit with the ODEQ for utility relocations, when required. It is also agreed that the storm water management plan for the project previously described in the document includes project plans and specifications, required schedules for accomplishing the temporary and permanent erosion control work, the sitespecific storm water pollution prevention plan and the appropriate location map contained in the utility relocation plans.

5.2 The Sponsor's responsibility for environmental cleanup will be a continuing responsibility to remediate any and all known and unknown environmental damage throughout the duration of this agreement with the Department in compliance with State and federal regulations.

5.3 The roadway improvements and all devices specified herein shall not be altered, removed, or cease to be operative without mutual written consent of the Department and the Sponsor.

5.4 Upon approval of this agreement and the plans, specifications, and estimates by the Sponsor, the Department, and the Federal Highway Administration (if applicable),

the Department will advertise and let the construction contract for this project in the usual and customary legal manner. It is agreed that the projects herein contemplated are proposed to be financed as previously described, and that this Agreement, all plans, specifications, estimate of costs, acceptance of work, payments, and procedure in general hereunder are subject in all things at all times to all local, state and federal laws, regulations, orders, approvals as may be applicable hereto.

5.5 The Department shall provide a copy of the executed construction contract to the Sponsor, upon receipt of a written request.

5.6 The Department will notify the Sponsor of pre-bid dates, bid opening dates, and Transportation Commission award dates in writing upon receipt of a written request.

5.7 The Sponsor agrees that prior to the Department's advertising of the project for bids (as to that part of the project lying within the present corporate limits) it will:

- Grant to the Department and its contractors, the right-of-entry to all existing streets, alleys, and Sponsor owned property when required, and other rights-of-way shown on said plans.
- Remove at its own expense, or cause the removal of, all encroachments on existing streets as shown on said plans, including all signs, buildings, porches, awnings, porticos, fences, gasoline pumps and islands, and any other such private installations.
- Prohibit parking on that portion of the project within the corporate limits of the Sponsor, except as may be indicated in the plans or hereafter approved by agreement with the Department. The Sponsor further agrees not to install, or permit to be installed, any signs, signals or markings not in conformance with the standards approved by the Federal Highway Administration and Manual on Uniform Traffic Control Devices (MUTCD).
- Comply with the Department's standards for construction of driveway entrances from private property to the highway, in accordance with the Department's manual entitled "Policy on Driveway Regulation for Oklahoma Highways", Rev. 5/96, 69 O.S. (2001) § 1210.
- Maintain all right-of-way acquired for the construction of this project, as shown on said plans, in a manner consistent with applicable statutes, codes, ordinances and regulations of the Department and the State of Oklahoma.

- Have the authority pursuant to 69 O.S. 2001 § 1001 and 69 O.S. 2001 § 1004 to sell any lands, or interest therein, which were acquired for highway purposes as long as such sale is conducted in accordance with the above cited statutes. Prior written approval by the Chief, Right-of-Way Division for the Department shall be required before any sale is made.

5.8 The Sponsor further agrees and warrants to the Department that, subsequent to the construction of said project, the Sponsor will:

- 1) Erect, maintain and operate traffic control devices, including signals, signs and pavement markings only in accordance with 47 O.S. 2011 §§ 15-104- 15-106, and subject to agreement of the Department:
 - a) In the event that any traffic signal installed hereunder is no longer needed for the purposes designated herein, then the traffic signal installed hereunder shall not be moved by the Sponsor to any other point other than that which is approved by the Department prior to such removal.
 - b) In the event there is no mutually agreed location for the reinstallation, the Sponsor will assume complete ownership of the equipment following removal, if the installation is ten (10) years old or older. If the installation is less than ten (10) years old and:
 - 1) In the event the Sponsor desires total ownership of the equipment, the Sponsor shall reimburse the Department the original federal funding percentage share for the original equipment cost only, amortized for a ten(10) year service life, interest ignored, and assuming straight line depreciation.
 - 2) In the event the Sponsor does not desire total ownership of the equipment, the Sponsor shall sell the equipment at public auction to the highest bidder. The Sponsor shall reimburse the Department the original federal funding percentage share of the proceeds of such sale.
- 2) Subject to agreement with the Department, regulate and control traffic on said project, including but not limited to, the speed of vehicles, parking, stopping and turns only in accordance with 47 O.S. 2011 §§ 15-104- 15-106, and to make no changes in the provisions thereof without the approval of the Department. It shall be the responsibility of the Sponsor to notify the Department of any changes necessary to ensure safety to the traveling public.

- 3) Maintain all drainage systems and facilities constructed, installed, modified or repaired in conjunction with this project or as may be otherwise necessary to ensure proper drainage for road surfaces constructed under the terms of this agreement.
- 4) Maintain all curbs and driveways abutting road surfaces constructed under the terms of this Agreement and all sidewalks adjacent thereto.
- 5) Maintain all right-of-way areas adjacent to road surfaces, including erosion control and periodic mowing of vegetation, in a manner consistent with applicable codes, ordinances and regulations.
- 6) For any portion of the project encompassed under this Agreement that is part of the State Highway System, the Sponsor shall maintain all that part of said project within the corporate limits of the Sponsor between the gutter lines and the right-of-way lines, and if no gutter exists, between the shoulder lines and the right-of-way lines, including storm sewers, all underground facilities, curbs and mowing, all in accordance with 69 O.S. Supp. 1994 §901 and all other applicable law.
- 7) On limited access highways where county roads or city streets extend over or under the highway or public roads are constructed on state rights-of-way but there is no immediate ingress and egress from the highway, responsibility shall be as follows:
 - a. The public roads as defined in OAC 730:35-1-2 shall be maintained by the city or county and shall be included in their roadway mileage inventory.
 - b. Where county roads or city streets extend over the highway, the roadway, approaches and bridge surfaces, including the deck, shall be maintained by the city or county. The approach guardrail, bridge structure, and highest clearance posting on the structure shall be maintained by the Department.
 - c. Where county roads or city streets extend under the highway, the roadway approaches and advance signing shall be maintained by the city or county. The Department shall maintain the approach guardrail, bridge structure and surface, and the height clearance posting on the structure.

5.9 The Sponsor further agrees and warrants to the Department concerning any sign and highway facility lighting included as part of this project:

- 1) The Sponsor will, upon notice from the Department Engineer, provide at its own expense all required electrical energy necessary for all preliminary and operational tests of the highway lighting facilities.
- 2) Upon completion of the construction of said project, the Sponsor will be responsible for the maintenance and cost of operation of these highway lighting facilities, including all appurtenances thereto and including the sign lighting facilities.
- 3) It is specifically understood and agreed that the highway lighting and sign lighting facilities specified hereunder shall be continuously operated during the hours of darkness, between sunset and sunrise, and shall not be altered, removed or be allowed to cease operation without the mutual written consent of the Department and the Sponsor.
- 4) The Sponsor agrees to provide, on a periodic schedule, an inspection, cleaning and re-lamping maintenance program to assure the maximum efficiency of the highway lighting facilities.
- 5) In the event that the highway lighting facilities installed hereunder are no longer needed for the purposes designated herein, then the highway lighting facilities installed hereunder shall not be moved by the Sponsor to any point other than which is approved by the Department prior to such removal.
- 6) In the event there is no mutually agreed location for reinstallation, the Sponsor will assume complete ownership of the equipment following removal if the installation is twenty (20) years old or older. If the installation is less than twenty years old and:
 - a) In the event the Sponsor desires total ownership of the equipment, the Sponsor shall reimburse the Department the original federal funding percentage share of the original equipment costs only, amortized for a twenty (20) year service life, interest ignored, and assuming straight line depreciation.
 - b) In the event the Sponsor does not desire total ownership of the equipment, the Sponsor shall sell the equipment at public auction to the highest bidder. The Sponsor shall reimburse the Department the original federal funding percentage share of the proceeds of such sale.

5.10 The Department will appoint competent supervision and inspection of the construction work performed by the construction contractor and will provide such engineering, inspection and testing services as may be required to ensure that the construction of the project is accomplished in accordance with the approved Plans, Specifications and Estimates. The Department reserves the right to make such changes in said plans as may be necessary for the proper construction of said project.

- 1) The Sponsor agrees to provide such competent supervision as the Sponsor deems necessary during times that the work is in progress to ensure the completion of the project to the Sponsor's satisfaction and the Sponsor's representatives and the Department's representatives will cooperate fully to the end of obtaining work strictly in accordance with the plans and specifications.
- 2) The Sponsor will make ample provisions annually for the proper maintenance of said project, including the provision of competent personnel and adequate equipment, specifically, to provide all required maintenance of the project during the critical period immediately following construction and to keep the facility in good and safe condition for the benefit of the traveling public.
- 3) The Sponsor warrants to the Department that it will periodically review the adequacy of the aforesaid project to ensure the safety of the traveling public and should the Sponsor determine that further modifications or improvements be required, the Sponsor shall take such actions as are necessary to make such modifications or improvement. When operation modifications are required which in the opinion of the Department exceed the capability of the Sponsor's staff, the Sponsor agrees to retain, at the sole expense of the Sponsor, competent personnel for the purpose of bringing the improvement up to the proper standard of operation.
- 4) The Sponsor warrants and agrees that upon completion of the aforesaid project, the Sponsor assumes any and all financial obligations for the operation, use, and maintenance of the aforesaid project.

SECTION 6: NON-DISCRIMINATION CLAUSE

1. During the performance of this agreement, the Sponsor, for itself, its assignees and successors in interest, agrees as follows:

1) **Compliance with Regulations:**

The Sponsor shall comply with the regulations relative to nondiscrimination in federally-assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time

(hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this agreement.

2) **Nondiscrimination:**

The Sponsor, with regard to the work performed by it during the agreement, shall not discriminate on the grounds of race, color, sex, age, national origin, disability/handicap, or income status, in the selection and retention of contractors or subcontractors, including procurements of materials and leases of equipment. The Sponsor shall not participate either directly or indirectly, in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in appendix B of the Regulations.

3) **Solicitations for Subcontracts, Including Procurement of Materials and Equipment:**

In all solicitations, either by competitive bidding or negotiation, made by the Sponsor for work to be performed under a contract or subcontract, including procurements of materials or leases of equipment, each potential contractor or subcontractor or supplier shall be notified by the Sponsor of the Sponsor's obligations under this agreement and the Regulations relative to nondiscrimination on the grounds of race, color, sex, age, national origin, disability/handicap, or income status.

4) **Information and Reports:**

The Sponsor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by the State Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a Sponsor is in the exclusive possession of another who fails or refuses to furnish this information, the Sponsor shall so certify to the State Department of Transportation, or the Federal Highway Administration, as appropriate, and shall set forth what efforts it has made to obtain the information.

5) **Sanctions for Noncompliance:**

In the event of the Sponsor's noncompliance with the nondiscrimination provisions of this agreement, the State Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including but not limited to:

- a. Withholding of payments to the Sponsor under the agreement until the Sponsor complies and/or
- b. Cancellation, termination, or suspension of the agreement in whole or in part.

6) **Incorporation of Provisions:**

The Sponsor shall include the provisions of sub paragraphs 1) through 5) in every contract or subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Sponsor shall take such action with respect to any contract or subcontract or procurement as the State Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions, including sanctions for noncompliance provided, however, that in the event a Sponsor becomes involved in, or is threatened with, litigation by a subcontractor or supplier as a result of such direction, the Sponsor may request the State Department of Transportation to enter into such litigation to protect the interests of the State; and, in addition, the Sponsor may request the United States to enter into such litigation to protect the interests of the United States.

SECTION 7: TERMINATION

7.1 This Agreement may be terminated by any of the following conditions:

- a) By mutual agreement and consent, in writing of both parties.
- b) By the Department by written notice to the Sponsor as a consequence of failure by the Sponsor to perform the services set forth herein in a satisfactory manner.
- c) By either party, upon the failure of the other party to fulfill its obligations as set forth herein.
- d) By the Department for reasons of its own and not subject to the mutual consent of the Sponsor upon five (5) days written notice to the Sponsor.
- e) By satisfactory completion of all services and obligations described herein.

7.2 The termination of this Agreement shall extinguish all rights, duties, obligations and liabilities of the Department and the Sponsor under this agreement. If the potential termination of this Agreement is due to the failure of either the Department or the Sponsor to fulfill their obligation as set forth herein, the non-breaching party will notify the party alleged to be in breach that possible breach of agreement has

occurred. The party alleged to be in breach should make a good faith effort to remedy that breach as outlined by non-breaching party within a period mutually agreed by each party.

SECTION 8: GOVERNING LAW AND VENUE

- 8.1 Any claims, disputes or litigation relating to the solicitation, execution, interpretation, performance, or enforcement of this Agreement shall be governed by the laws of the State of Oklahoma and the applicable rules, regulations, policies and procedures of the Oklahoma Transportation Commission. Venue for any action, claim, dispute or litigation, mediation or arbitration shall be in Oklahoma County, Oklahoma.

SECTION 9: DISPUTE RESOLUTION

- 9.1 The parties hereto have entered into this agreement in the State of Oklahoma and the laws of the State of Oklahoma shall apply. The parties agree to bargain in good faith in direct negotiation to achieve resolutions of any dispute and, if such efforts are unsuccessful, to retain a neutral mediation service to mediate the dispute prior to the filing of any court action. Mediation shall be conducted in the Oklahoma City area and the costs of such mediation shall be borne equally by the parties. If mediation is not successful, venue for any action brought to enforce the terms of this agreement shall be in Oklahoma County, State of Oklahoma. Each party shall bear any cost and attorney fees incurred by the party in such litigation.

SECTION 10: PRIOR UNDERSTANDINGS

- 10.1 This agreement incorporates and reduces to writing all prior understandings, promises, agreements, commitments, covenants or conditions and constitutes the full and complete understanding and contractual relationship of the parties.

SECTION 11: AMENDMENTS OR MODIFICATIONS OF AGREEMENT

- 11.1 No changes, revisions, amendments or alterations in the manner, scope of type of work or compensation to be paid by the DEPARTMENT shall be effective unless reduced to writing and executed by the parties with the same formalities as are observed in the execution of this Agreement.

SECTION 12: RECORDS

12.1 The Sponsor is to maintain all books, documents, papers, accounting records and other evidence pertaining to costs incurred and to make such materials available at its respective offices at all reasonable times, during the agreement period and for three (3) years from the date of final payment under the agreement for inspection by the DEPARTMENT and the State Auditor and Inspector, and copies thereof shall be furnished to the DEPARTMENT, if requested.

SECTION 13: HEADINGS

13.1 Article headings used in this Agreement are inserted for convenience of reference only and shall not be deemed a part of this agreement for any purpose.

SECTION 14: BINDING EFFECTS

14.1 This Agreement shall be binding upon and inure to the benefit of the ODOT and the Sponsor and shall be binding upon their successors and assigns subject to the limitations of Oklahoma law.

SECTION 15: SEVERABILITY

15.1 If any provision, clause or paragraph of this Agreement or any document incorporated by reference shall be determined invalid by a court of competent jurisdiction, such determination shall not affect the other provisions, clauses or paragraphs of this Agreement which are not affected by the determination. The provisions, clauses or paragraphs of this Agreement and any documents incorporated by reference are declared severable.

SECTION 16: EFFECTIVE DATE

16.1 This Agreement shall become effective on the date of execution by the Department's Director or his designee.

IN WITNESS WHEREOF, the Director of the Department of Transportation, pursuant to authority vested in him by the State Transportation Commission, has hereunto subscribed his name as Director of the Department of Transportation and the Sponsor has executed same pursuant to authority prescribed by law for the Sponsor.

The Sponsor, _____ on this ____ of _____, 20____, and the Department on the ____ day of _____, 20____.

THE CITY OF COWETA

APPROVED AS TO FORM
AND LEGALITY

By _____
City Attorney

By _____
Mayor

By _____
Attest: City Clerk

(SEAL): Approved –
THE CITY OF COWETA

STATE OF OKLAHOMA
DEPARTMENT OF TRANSPORTATION

Recommended for Approval

Local Government Division Manager

Director of Capital Programs

APPROVED AS TO FORM
AND LEGALITY

APPROVED

General Counsel

Deputy Director



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Memorandum

To: Honorable Mayor and City Council

From: Julie Casteen, Assistant City Manager

Re: Fire Engine Lease Purchase Agreement with RCB Bank

Date: March 7, 2022

BACKGROUND

The FY21-FY22 Approved Budget includes the replacement of a fire truck financed through a lease purchase agreement. The purchase of the engine was approved on September 21, 2021. The engine is nearing delivery, so financing proposals were solicited from several financial institutions.

The most favorable terms were quoted by RCB Bank. The recommended lease term is 4 years with a 2.1% interest rate. Four annual payments of \$107,169.86 bring the total acquisition cost to \$428,679.44. Payments will be made from the Capital Improvement Fund. A summary of the financing quotes is attached for your review.

STAFF RECOMMENDATION

Staff recommends that the City Council adopt Resolution 2022-05 authorizing the execution of the Lease Purchase Agreement with RCB Bank.

ATTACHMENTS:

Lease Purchase Agreement
Financing quotes
Resolution 2022-05

**CITY OF COWETA, OKLAHOMA
RESOLUTION 2022-05**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA, APPROVING AN EQUIPMENT LEASE PURCHASE AGREEMENT WITH RCB BANK FOR FIRE EQUIPMENT; ESTABLISHING THE CITY'S REASONABLE EXPECTATION WITH RESPECT TO THE ISSUANCE OF NON-TAXABLE OBLIGATIONS BY THE CITY IN CALENDAR YEAR 2022, AND DESIGNATING THE LEASE-PURCHASE AGREEMENT AS A NON-QUALIFIED TAXABLE OBLIGATION; AND AUTHORIZING THE CITY MANAGER TO EXECUTE ALL DOCUMENTS RELATED TO THE ACQUISITION AND/OR LEASE PURCHASE OF SUCH EQUIPMENT.

WHEREAS, a true and very real need exists for the acquisition of a Fire Engine to provide fire protection by replacing aging and worn fire equipment that has been in service for approximately twenty years; and

WHEREAS, the Coweta City Council approved the purchase of a new Fire Engine, an HME Custom Silver Fox SFO 96" side mount pumper, on September 13, 2021; and

WHEREAS, the FY21-FY22 Approved Budget provides for the lease-purchase of the Fire Engine; and

WHEREAS, staff has received financing proposals from RCB Bank, BancFirst, Community Partners Leasing and Government Capital for financing arrangements in the form of lease-purchase agreements stating different interest rates; and

WHEREAS, staff has determined that the financing option most advantageous to the City is that proposed by RCB Bank for a lease term of four (4) years at 2.1% interest rate, and a \$275 documentation fee; and

WHEREAS, the City of Coweta desires to finance the Fire Engine by entering into an Equipment Lease Purchase Agreement with RCB Bank as Lessor and City of Coweta as Lessee (the "Agreement") according to the terms set forth in the quote from RCB Bank dated January 21, 2022; and

WHEREAS, the City of Coweta City Council has taken all necessary and appropriate steps under applicable laws to arrange for the acquisition and financing of the needed equipment.

NOW THEREFORE BE IT RESOLVED BY THE COWETA CITY COUNCIL:

§ 1. The terms of said Agreement are in the best interests of the City of Coweta for the acquisition of the equipment.

§ 2. The Coweta City Council shall and hereby does approve the Lease Purchase Agreement for the financing of the equipment.

§ 3. The Coweta City Council shall and hereby does direct its counsel to review the Agreement and make such modifications to said Agreement only as necessary to assure compliance with the State of Oklahoma Constitution and statutory law and local ordinances, prior to the execution of the Agreement in substantially the form attached hereto and incorporated herein by reference.

§ 4. The Coweta City Council shall and hereby does designate and authorize City Manager Roger Kolman to execute and deliver, and City Clerk Julie Casteen to attest, respectively, the Agreement and any related documents necessary to the consummation of the transactions contemplated by the Agreement.

§ 5. The Coweta City Council reasonably anticipates that it and its subordinate or related entities shall issue or effect the issuance of tax-exempt obligations in excess of ten million (\$10,000,000.00) during the 2022 calendar year and hereby designates the Agreement as a “non-bank qualified taxable obligation” with respect to the financial institution interest deduction provisions contained in the Internal Revenue Code of 1986, as amended.

PASSED AND APPROVED BY THE CITY COUNCIL FOR THE CITY OF COWETA, OKLAHOMA, and signed by the Mayor this 7th Day of March 2022.

ATTEST:

Evette Young, Mayor

Julie Casteen, City Clerk

APPROVED:

Ronald D. Cates, City Attorney

**CITY OF COWETA, OKLAHOMA
LEASE PURCHASE AGREEMENT FOR EQUIPMENT**

LEASE # 10206407

THIS AGREEMENT IS MADE ON THIS 8TH DAY OF MARCH 2022, BY AND BETWEEN CITY OF COWETA, OKLAHOMA, DESIGNATED THROUGHOUT THIS AGREEMENT AS THE LESSEE, AND RCB BANK, DESIGNATED THROUGHOUT THIS AGREEMENT AS THE LESSOR.

I. EQUIPMENT

SUBJECT TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT, THE LESSOR LEASES TO THE LESSEE THE FOLLOWING DESCRIBED EQUIPMENT, ALL OF WHICH SHALL BE DESIGNATED THROUGHOUT THIS INSTRUMENT AS THE "EQUIPMENT":

<u>MAKE</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT PRICE</u>	<u>LEASE PURCHASE PRICE</u>
2021 HME Custom Silver Fox SFO 96"	side mount pumper	1		\$407,000.00	\$428,679.44
VIN#44KFT4280NWZ23850					

*equipment listed includes all attachments, accessions, and additions now and hereafter acquired.

*Total lease amount includes fee of \$275

TOTAL LEASE AMOUNT \$407,275.00

II. PAYMENT OF LEASE PURCHASE INSTALLMENTS

IN CONSIDERATION OF THE AGREEMENT BY THE LESSOR TO LEASE PURCHASE THE EQUIPMENT, THE LESSEE PROMISES TO PAY THE LESSOR, FOR THE EQUIPMENT, THE SUM OF \$107,169.86 PER YEAR, DURING THE TERM OF THIS AGREEMENT OR ANY RENEWAL OF THE AGREEMENT, IN THE ALTERNATIVE, THE LESSEE PROMISES TO PAY TO THE LESSOR LEASE PAYMENTS AS SET FORTH IN THE LEASE SCHEDULE WHICH IS ATTACHED TO THIS INSTRUMENT AND WHICH IS INCORPORATED BY REFERENCE. NO PAYMENT SHALL BE MADE BY THE LESSEE UNDER THE TERMS OF THIS AGREEMENT UNLESS THE EQUIPMENT SHALL HAVE BEEN DELIVERED TO THE REQUISITIONING AGENCY AND IS AT ALL TIMES, EXCEPT WHEN MADE NECESSARY BY AN EMERGENCY, RETAINED BY THE AGENCY.

III. LEASE TERM

THIS LEASE SHALL COMMENCE ON THE DATE THE EQUIPMENT IS ACCEPTED BY THE LESSEE AND SHALL AUTOMATICALLY TERMINATE, UNLESS RENEWED IN ACCORDANCE WITH THE TERMS SET FORTH BELOW, AT THE END OF THE FISCAL YEAR OF THE CITY OF COWETA, OKLAHOMA DURING WHICH THE LEASE IS COMMENCED.

IV. OPTION TO RENEW

THE LESSEE IS HEREBY GRANTED 3 SUCCESSIVE OPTIONS TO RENEW THIS LEASE FOR ADDITIONAL TERMS NOT TO EXCEED ONE FISCAL YEAR EACH, PLUS ONE FINAL OPTION TO RENEW THIS LEASE FOR A PERIOD OF 12 MONTHS, ALL UPON THE SAME TERMS AND CONDITIONS, PROVIDED THAT SUCH OPTIONS MAY BE EXERCISED, AS A MATTER OF RIGHT, SOLELY AND EXCLUSIVELY BY THE LESSEE. THE EXERCISE OF ANY SUCH OPTION SHALL BE ACCOMPLISHED BY THE ISSUANCE OF A PURCHASE ORDER UPON OR WITHIN TEN (10) DAYS AFTER THE EXPIRATION OF TERMS OF THIS LEASE OR ANY RENEWAL THEN IN EFFECT.

V. TITLE TO EQUIPMENT

UPON ACCEPTANCE OF THE EQUIPMENT BY LESSEE, TITLE TO THE EQUIPMENT SHALL VEST IN LESSEE SUBJECT TO LESSOR'S RIGHTS UNDER THIS AGREEMENT. TITLE SHALL VEST IN LESSEE, AND LESSEE SHALL IMMEDIATELY SURRENDER POSSESSION OF THE EQUIPMENT TO LESSOR UPON (A) ANY TERMINATION OF THIS AGREEMENT OTHER THAN TERMINATION PURSUANT TO PARAGRAPH VI OR (B) THE OCCURRENCE OF AN EVENT OF DEFAULT PROVIDED SUCH DEFAULT HAS NOT BEEN CURED BY LESSEE WITHIN THE APPLICABLE CURE PERIOD SET FORTH HEREIN. IN THE EVENT OF A MONETARY DEFAULT, LESSEE SHALL HAVE FIVE (5) DAYS FROM THE DUE DATE OF PAYMENT AS DESCRIBED UNDER THIS AGREEMENT OR ANY RENEWAL OF THIS AGREEMENT TO CURE SAID DEFAULT. IN THE EVENT OF A NON-MONETARY DEFAULT, LESSEE SHALL HAVE TEN (10) DAYS FROM RECEIPT OF A WRITTEN NOTICE FROM LESSOR OF THE DEFAULT TO CURE SAID DEFAULT. LESSEE SHALL EXECUTE AND DELIVER ANY SUCH INSTRUMENTS AS LESSOR MAY REQUEST TO TRANSFER LEGAL TITLE TO AND OWNERSHIP OF THE EQUIPMENT TO LESSOR UPON TERMINATION OF LESSEE'S INTEREST IN THE EQUIPMENT.

VI. OPTION TO PURCHASE

IN THE EVENT THE LESSEE SHALL HAVE EXERCISED ALL OF ITS OPTIONS FOR RENEWAL OF THIS LEASE AS PROVIDED IN PARAGRAPH IV, ABOVE, UPON TENDER OF THE LAST LEASE PAYMENT DUE UNDER THE LAST RENEWAL TERM, THE LESSEE SHALL ACQUIRE TITLE TO AND OWNERSHIP OF THE EQUIPMENT. IN THE

ALTERNATIVE, THE LESSEE, AT ITS SOLE AND EXCLUSIVE OPTION, MAY PURCHASE THE EQUIPMENT AT ANY TIME DURING THE TERM OF THIS LEASE OR DURING ANY RENEWAL TERM AS PROVIDED BY PARAGRAPH IV, ABOVE, GIVING WRITTEN NOTICE TO THE LESSOR OR LESSEE'S INTENT TO PURCHASE ACCOMPANIED BY A SINGLE, FINAL PAYMENT OF THE BALANCE SHOWN DUE ON THE LEASE SCHEDULE ATTACHED HERETO AS OF THE NEXT LEASE PAYMENT DUE DATE FOR THE EQUIPMENT. (IF THE PURCHASE PRICE IS TO BE REDUCED BY A PERCENTAGE OF THE LEASE PAYMENTS MADE PRIOR TO THE EXERCISE OF THE PURCHASE OPTION, DESCRIBED FULLY, IN THE SPACE PROVIDED, THE MANNER IN WHICH SUCH REDUCTION SHALL BE COMPUTED. IF ADDITIONAL SPACE IS NECESSARY, ATTACH A WRITTEN SCHEDULE OF PURCHASE OPTION PRICES WHICH SHALL BE INCORPORATED IN THE TERMS OF THIS AGREEMENT BY REFERENCE). IN THE EVENT THE LESSEE SHALL EXERCISE ANY OPTION TO PURCHASE THE EQUIPMENT, THE LESSOR ASSIGNS TO THE LESSEE ALL RIGHTS AND CLAIMS WHICH THE LESSOR MAY HAVE OR ACQUIRE ARISING UNDER THE ANTITRUST LAWS OF THE UNITED STATES OR OF ANY STATE REGARDING THE EQUIPMENT PURCHASED UNDER THE TERMS OF THIS AGREEMENT.

VII. DELIVERY AND RETURN OF EQUIPMENT

THE LESSEE SHALL BEAR ALL COSTS OF SHIPPING AND DELIVERING THE EQUIPMENT TO THE LESSEE. INSTALLATION COSTS, IF ANY SHALL BE BORNE BY THE LESSEE. THE EQUIPMENT SHALL BE DELIVERED TO OR INSTALLED AT THE LOCATION DESIGNATED BY THE LESSEE.

VIII. REPAIRS AND MAINTENANCE

THE LESSEE SHALL MAINTAIN THE EQUIPMENT IN GOOD WORKING ORDER AND SHALL MAKE ALL NECESSARY ROUTINE ADJUSTMENTS AND REPAIRS, AS A RESULT OF FAIR WEAR AND TEAR, ALL AT THE EXPENSE OF THE LESSEE. THE LESSOR AND THE LESSEE MAY PROVIDE FOR THE MAINTENANCE AND REPAIR OF THE EQUIPMENT BY SEPARATE WRITTEN AGREEMENT, AND, IN THE EVENT THEY MAKE SUCH AGREEMENT, ITS TERMS SHALL SUPERSEDE AND REPLACE THE PROVISIONS OF THIS PARAGRAPH OF THIS LEASE.

IX. TAXES

THE LESSOR SHALL FORTHWITH PAY ALL TAXES WHICH MAY BE IMPOSED UPON IT WITH RESPECT TO THE EQUIPMENT.

X. INSURANCE

THE LESSEE SHALL ENSURE THAT FIRE AND EXTENDED COVERAGE CASUALTY INSURANCE COVERING THE EQUIPMENT FROM THE TIME THE EQUIPMENT IS DELIVERED UNTIL THIS LEASE IS TERMINATED IS OBTAINED AND MAINTAINED. THIS INSURANCE SHALL BE IN A FORM ACCEPTABLE TO THE LESSOR AND SHALL INSURE THE FULL VALUE OF THE EQUIPMENT AGAINST THE RISK LOSS OR DAMAGE. THE LESSEE SHALL PROVIDE THE LESSOR WITH WRITTEN NOTICE AT LEAST TEN (10) DAYS PRIOR TO ANY CHANGE IN THE INSURANCE REQUIRED UNDER THE TERMS OF THIS PARAGRAPH. WITH WRITTEN CONSENT OF LESSOR, LESSEE MAY SATISFY THE INSURANCE REQUIREMENTS OF THIS PARAGRAPH X. BY SELF-INSURANCE.

XI. PATENTS

IN THE EVENT ANY SUIT IS INSTITUTED AGAINST THE LESSEE WHICH IS BASED UPON ANY CLAIM THAT ANY OF THE EQUIPMENT IS IMPLICATED IN AN INFRINGEMENT OF ANY PROVISION OF UNITED STATES PATENT LAW, THE LESSOR SHALL, AT ITS OWN EXPENSE, DEFEND SUCH SUIT AGAINST THE LESSEE; PROVIDED, LESSEE PROVIDES THE LESSOR WITH PROMPT NOTICE OF THE INSTITUTION OF SUCH SUIT AND PERMITS THE LESSOR TO FULLY PARTICIPATE IN THE DEFENSE. THE LESSEE SHALL ALSO RETAIN THE RIGHT TO PARTICIPATE IN SUCH DEFENSE AND SHALL, IN ANY EVENT, PROVIDE THE LESSOR WITH ALL AVAILABLE INFORMATION, ASSISTANCE AND AUTHORITY TO ENABLE THE LESSOR TO CONDUCT THE DEFENSE. NO COMPROMISE OR SETTLEMENT OF SUCH SUIT RESULTING IN A JUDGMENT AGAINST THE LESSEE SHALL OBLIGATE OR BIND THE LESSOR UNLESS THE LESSOR SHALL HAVE ACCEPTED SUCH COMPROMISE OR SETTLEMENT. THE LESSOR SHALL HAVE THE RIGHT TO ENTER INTO NEGOTIATIONS FOR AND EFFECT A COMPROMISE OR SETTLEMENT OF SUCH PATENT ACTION, BUT NO SUCH COMPROMISE OR SETTLEMENT SHALL BE BINDING UPON LESSEE UNLESS APPROVED BY LESSEE. SUBJECT ONLY TO THE TERMS OF THIS PARAGRAPH, THE LESSOR SHALL HOLD THE LESSEE HARMLESS FROM ANY LIABILITY ARISING FROM ANY PATENT SUIT SUCH AS IS DESCRIBED ABOVE. IN THE EVENT ANY OF THE EQUIPMENT SHALL BE HELD, IN ANY SUIT, TO CONSTITUTE AN INFRINGEMENT OF PATENT LAW, AND ITS USE SHALL BE ENJOINED, THEN THE LESSOR SHALL, AT ITS SOLE OPTION AND THE LESSOR'S EXPENSE:

1. OBTAIN FOR THE LESSEE THE RIGHT TO CONTINUE TO USE THE EQUIPMENT;
2. REPLACE OR MODIFY THE EQUIPMENT IN A MANNER ACCEPTABLE TO THE LESSEE SO THAT THE EQUIPMENT NO LONGER INFRINGES ANY PROVISION OF PATENT LAW.

XII. FUNDING

NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT, THE PARTIES ACKNOWLEDGE AND AGREE THAT FUNDS TO BE PAID BY THE LESSEE UNDER THE TERMS OF THIS LEASE WILL BE AVAILABLE ONLY AS

APPROPRIATED ON A FISCAL YEAR-TO-FISCAL YEAR BASIS BY PROPERLY CONSTITUTED LEGAL AUTHORITY. IN THE EVENT THAT THE LESSEE DETERMINES THAT SUFFICIENT FUNDS HAVE NOT BEEN APPROPRIATED TO MAKE THE PAYMENTS REQUIRED UNDER THE TERMS OF THE AGREEMENT, THE OBLIGATIONS OF THE LESSEE UNDER THIS AGREEMENT SHALL TERMINATE. IN SUCH EVENT, THE LESSEE SHALL GIVE PROMPT WRITTEN NOTICE OF TERMINATION TO THE LESSOR.

XIII. ASSIGNMENT

THE LESSOR MAY, WITH THE PRIOR WRITTEN APPROVAL OF THE LESSEE, ASSIGN ITS RIGHT TO RECEIVE PAYMENT OF LEASE DUE UNDER THE TERMS OF THIS AGREEMENT. HOWEVER, ANY SUCH ASSIGNMENT SHALL NOT RELIEVE THE LESSOR OF ITS RESPONSIBILITIES TO PERFORM THE DUTIES AND OBLIGATIONS IMPOSED UPON IT BY THIS AGREEMENT.

XIV. ROAD MACHINERY AND EQUIPMENT

IF THE TERMS OF THIS AGREEMENT ARE IN REGARDS TO ROAD MACHINERY OR EQUIPMENT, THE LESSEE ASSUMES ALL RISK AND LIABILITY FOR AND SHALL HOLD THE LESSOR HARMLESS FROM ALL DAMAGES TO PROPERTY AND INJURIES AND DEATH TO PERSONS ARISING OUT OF THE USE, POSSESSION, OR TRANSPORTATION OF SAID ROAD MACHINERY OR EQUIPMENT.

XV. ENTIRE AGREEMENT OF THE PARTIES AND SEVERABILITY

EXCEPT AS OTHERWISE PROVIDED IN THE ABOVE TERMS AND CONDITIONS, THIS LEASE, TOGETHER WITH APPLICABLE PURCHASE ORDERS AND THE INVITATION TO BID, CONSTITUTE THE ENTIRE AGREEMENT OF THE PARTIES. THIS AGREEMENT MAY NOT BE MODIFIED OR TERMINATED EXCEPT AS PROVIDED IN THE ABOVE TERMS AND CONDITIONS OR BY WRITTEN AGREEMENT OF THE LESSOR AND THE LESSEE. IF ANY PROVISION OF THIS AGREEMENT SHALL BE DETERMINED TO BE INVALID, IT SHALL BE CONSIDERED AS DELETED FROM THIS AGREEMENT AND NO REMAINING PROVISION OF THE AGREEMENT SHALL BE DEEMED INVALID.

XVI. CHOICE OF LAW

THIS LEASE SHALL BE GOVERNED IN ALL RESPECTS BY THE LAWS OF THE STATE OF OKLAHOMA. IN THE EVENT ANY LITIGATION SHALL OCCUR CONCERNING THE TERMS AND CONDITIONS OF THIS LEASE OR RIGHTS AND DUTIES OF THE PARTIES, THE PARTIES AGREE THAT ANY SUCH SUIT SHALL BE MAINTAINED IN THE DISTRICT COURT AND FOR ROGERS, STATE OF OKLAHOMA.

FOR LESSEE:

CITY OF COWETA

ROGER G. KOLMAN, CITY MANAGER

ATTEST:

JULIE CASTEN, CITY CLERK

FOR LESSOR:

RCB BANK

BRYANT VAIL, VICE PRESIDENT

EXAMPLE

EXHIBIT A TO LEASE PURCHASE AGREEMENT FOR EQUIPMENT

**Dated between RCB BANK as Lessor
and as Lessee**

**OPINION OF COUNSEL
(On Counsel's Letterhead)**

**RCB Bank
PO Box 189
Claremore, OK 74018**

As counsel for the ("Lessee"), I have examined duly executed originals of the Equipment Lease-Purchase Agreement (the "Agreement") dated by and between Lessee and RCB BANK ("Lessor"), the proceedings taken by Lessee to authorize and execute the Agreement together with other related documents, and the Constitution of the State of Oklahoma the ("State") as presently enacted and construed. Based upon said examination and upon such other examination as I have deemed necessary or appropriate, it is my opinion that:

Lessee was duly organized and is valid existing under the Constitution and laws of the State as a political subdivision of the State.

The Agreement has been duly authorized, executed and delivered by Lessee, pursuant to Constitutional, statutory and/or home rule provisions which authorized this transaction and Lessee's Resolution, attached as Exhibit C to the Agreement.

The Agreement is a legal, valid and binding obligation of Lessee, enforceable in accordance with its terms. In the event Lessor obtains a judgment against Lessee in money damages, as a result of an event of default under the Agreement, Lessee will be obligated to pay such judgment.

Lessee has complied with applicable public bidding requirements.

To the best of our knowledge, no litigation is pending or threatened in any court or other tribunal, state or Federal, in any way affecting the validity of the Agreement.

The signatures of the officers of Lessee which appear on the Agreement are true and genuine; we know said officers and know them to hold the offices set forth below their names.

Lessee is a political subdivision within the meaning of Section 103 of the Internal Revenue Code and the related regulations and rulings.

Signature: _____
Printed Name: _____
Address: _____
Telephone: _____
Date: _____

EXHIBIT B TO LEASE PURCHASE AGREEMENT FOR EQUIPMENT

**Dated March 8, 2022 Between RCB BANK
as Lessor and City of Coweta as Lessee.**

CERTIFICATE OF CLERK OR SECRETARY OF LESSEE

I, the undersigned, do hereby certify that I am the duly elected or appointed and acting Clerk of the City of Coweta and I do hereby certify (i) that the officer of Lessee who executed the foregoing Agreement on behalf of Lessee and whose genuine signature appears thereon, is the duly qualified and acting officer of Lessee as stated beneath his or her signature and has been authorized to execute the foregoing Agreement on behalf of Lessee, and (ii) that the budget year of Lessee is from

July 1 to June 30

Dated: March 8, 2022

CITY OF COWETA

By: _____
Julie Casteen, City Clerk

EXHIBIT C TO LEASE PURCHASE AGREEMENT FOR EQUIPMENT

**Dated March 8, 2022 Between RCB BANK as Lessor
and City of Coweta as Lessee.**

RESOLUTION OF GOVERNING BODY

At a duly called meeting of the governing body of the City of Coweta (the "Lessee") held on March 8, 2022, the following resolution was introduced and adopted:

RESOLVED, whereas the governing body of Lessee has determined that a true and very real need exists for the acquisition of 2021 HME Custom Silver Fox SFO 96" side mount pumper (the "Equipment"), Lessee desires to finance the Equipment by entering into an Equipment Lease-Purchase Agreement with RCB BANK as Lessor and City of Coweta as Lessee (the "Agreement") according to the terms set forth in the Lease Purchase Agreement for Equipment (2021 HME Custom Silver Fox SFO 96" side mount pumper) Lease 10206407, presented at the board meeting; and the Equipment will be used by Lessee for the purpose of:

Fire protection

RESOLVED, whereas the governing body of Lessee has taken the necessary steps, including any legal bidding requirements, under applicable law to arrange for the acquisition of such equipment,

RESOLVED, whereas the governing body hereby directs its legal counsel to review the Agreement and negotiate appropriate modifications to said Agreement so as to assure compliance with state law and local statutory law, prior to execution of the Agreement by those persons so authorized by the governing body for such purpose,

BE IT RESOLVED, by the governing body of Lessee that:

The terms of said Agreement are in the best interests of Lessee for the acquisition of such Equipment and the governing body of Lessee designates and confirms the following persons to execute and deliver, and to or attest, respectively, the Agreement and any related documents necessary to the consummation of the transactions contemplated by the Agreement.

Name and Title of Persons to Execute and Attest Agreement:

Roger G. Kolman, City Manager

Julie Casteen, City Clerk

The undersigned further certifies that the above resolution has not been repealed or amended and remains in full force and effect and further certifies that the above and foregoing Agreement is the same as presented at said meeting of the governing body of Lessee.

Secretary/Clerk of Lessee

Attachments: Related Board Minutes

EXHIBIT E TO EQUIPMENT LEASE-PURCHASE AGREEMENT

**Dated March 8, 2022 between RCB BANK as Lessor
and City of Coweta as Lessee**

ACCEPTANCE CERTIFICATE

**RCB Bank
PO Box 189
Claremore, OK 74018**

Re: Equipment Lease-Purchase Agreement, dated **March 8, 2022** (the "Agreement") between **RCB BANK** ("Lessor") and **the City of Coweta** ("Lessee")

Ladies and Gentlemen:

In accordance with the Agreement, the undersigned Lessee hereby certifies and represents to, and agrees with, Lessor as follows:

- (1) All of the Equipment (as defined in the Agreement) has been delivered, installed and accepted on the date hereof.
- (2) Lessee has conducted such inspection and/or testing of the Equipment as it deems necessary and appropriate and hereby acknowledges that it accepts the Equipment for all purposes.
- (3) Lessee is currently maintaining the required insurance coverage.
- (4) No event or condition that constitutes, or with notice or lapse of time, or both, would constitute as Event of Default (as defined in the Agreement) exists at the date hereof.

Acceptance Date: _____

Equipment Description:

2021 HME Custom Silver Fox SFO 96" side mount pumper, VIN#44KFT4280NWZ23850

City of Coweta

By: _____
Roger G. Kolman, City Manager

ATTEST:

Julie Casteen, City Clerk

EXHIBIT F TO EQUIPMENT LEASE-PURCHASE AGREEMENT

**Dated March 8, 2022 between RCB BANK as Lessor
and the City of Coweta as Lessee**

STATEMENT OF ESSENTIAL USE

Please state below, or on the letterhead stationary of City of Coweta counsel, a brief statement about why the equipment listed in Exhibit "A" has been acquired. This statement should address the following questions:

1. What is the essential function(s) to be performed by the equipment? How long do you expect it will be used?
2. Does it replace equipment that performed this (these) same function(s)? If so, how many years was the previous equipment in use?
3. Was this equipment chosen through competitive bidding, or by another method?
4. Which internal fund will be used to make the lease payments?

In answer to the above, the following is submitted:

City of Coweta

By: _____
Roger G. Kolman

ATTEST:

Julie Casteen, City Clerk

Nominal Annual Rate: 2.100%
Equip. cost \$407,000.00 + Doc Fee \$275.00 = Total \$407,275.00

TValue Amortization Schedule

	Date	Payment	Interest	Principal	Balance
Loan 03/08/2022					407,275.00
2022 Totals		0.00	0.00	0.00	
1	02/15/2023	107,169.86	8,172.65	98,997.21	308,277.79
2023 Totals		107,169.86	8,172.65	98,997.21	
2	02/15/2024	107,169.86	6,563.75	100,606.11	207,671.68
2024 Totals		107,169.86	6,563.75	100,606.11	
3	02/15/2025	107,169.86	4,433.79	102,736.07	104,935.61
2025 Totals		107,169.86	4,433.79	102,736.07	
4	02/15/2026	107,169.86	2,234.25	104,935.61	0.00
2026 Totals		107,169.86	2,234.25	104,935.61	
Grand Totals		428,679.44	21,404.44	407,275.00	

FINANCE CHARGE	Amount Financed	Total of Payments
The dollar amount the credit will cost you.	The amount of credit provided to you or on	The amount you will have paid after you have made all payments as scheduled.
\$21,404.44	\$407,275.00	\$428,679.44

Roger G. Kolman, City Manager

Rates Quotes - FY22 Fire Engine 1/21/2022

Vehicle/Equipment Cost \$ 407,000

Term 4 Years

Financial Institution	Quoted Rate	Issuance Cost	Annual Payment	Total Payments
RCB	2.10%	\$275.00	\$ 107,169.86	\$ 428,679.44
Community Partners	2.41%	\$0.00	\$ 107,953.42	\$ 431,813.68
FNB	2.75%	\$250.00	\$ 109,010.83	\$ 436,043.32
Government Capital	3.99%	\$0.00	\$ 112,098.02	\$ 448,392.08



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Memorandum

To: Honorable Mayor and City Council

From: Julie Casteen, Assistant City Manager

Re: Supplemental Appropriations for General Fund and Capital Improvements Fund

Date: March 7, 2022

BACKGROUND

The City has received funds that require appropriation including:

- \$1,000 donation from Aloha Olden in honor of Betty White to be used for the Animal Shelter.
- \$75 donation from Christy Flooring and Construction to be used for the Animal Shelter.
- \$1,737 from OMAG for an insurance claim reimbursement related to damage on Brush Truck 3.

In addition, the City must recognize federal funds related to design costs for a sidewalk TAP project on Pecan Street from Broadway to 305th E Avenue. The total design estimate is \$91,760.00, with an 80% federal match of \$73,408.00. The City's portion of the design work is \$18,352.00. Construction costs will be appropriated at a future date.

STAFF RECOMMENDATION

Staff recommends approval of supplemental appropriations per Resolution 2022-08.

Attachments:

Resolution 2022-08

**CITY OF COWETA, OKLAHOMA
RESOLUTION 2022-08**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA, ADOPTING AMENDMENTS TO THE ANNUAL APPROPRIATIONS FOR THE BUDGET OF THE CITY OF COWETA, OKLAHOMA, FOR FISCAL YEAR ENDING JUNE 30, 2022.

WHEREAS, the City of Coweta has received monies not anticipated that have not been appropriated in the budget for fiscal year 2021-2022; and

WHEREAS, the City of Coweta has need for unexpected expenditures that were not appropriated in the adopted budget for fiscal year 2021-2022; and

WHEREAS, the City of Coweta, Oklahoma is required to make supplemental appropriations for revenue sources and expenditures not appropriated in the budget.

NOW THEREFORE BE IT RESOLVED BY THE COWETA CITY COUNCIL that the following supplemental appropriations be made:

SEE ATTACHED EXHIBIT A

PASSED BY THE CITY COUNCIL FOR THE CITY OF COWETA, OKLAHOMA, and signed by the Mayor this 7th Day of March 2022.

Evette Young, Mayor

Attest:

Approved as to form:

Julie Casteen, City Clerk

Ronald D. Cates, City Attorney

**RESOLUTION 2022-08
EXHIBIT A**

FUND	ACCOUNT #	DESCRIPTION	AMOUNT	REASON FOR EXPENDITURE	FUNDING SOURCE	FUND BALANCE AMOUNT	REVENUE AMOUNT	REVENUE ACCOUNT
General Fund	01-5314.008	Veterinary Services	\$1,000	Donation from Aloha Olden	Miscellaneous Revenue	\$0	\$1,000	01.04.03.80
General Fund	01-5314.008	Veterinary Services	\$75	Donation from Christy Flooring & Construction	Miscellaneous Revenue	\$0	\$75	01.04.03.80
General Fund	01-5225.009	Vehicle/Equipment Maintenance Supplies	\$1,737	Brush Truck damage repairs	Insurance Claim Reimbursement	\$0	\$1,737	01.04.03.39
Total General Fund			<u>\$2,812</u>			<u>\$0</u>	<u>\$2,812</u>	
Capital Imp. Fund	12-5411-015	Infrastructure	\$91,760	Sidewalk TAP Project Pecan, Broadway to 305th	Fund Balance/Federal Grant	\$18,352	\$73,408	12-04.03.20
Total Capital Improvement Fund			<u>\$91,760</u>			<u>\$18,352</u>	<u>\$73,408</u>	
TOTAL ALL GOVERNMENTAL FUNDS			<u>\$94,572</u>			<u>\$18,352</u>	<u>\$76,220</u>	

DATE APPROVED BY CITY COUNCIL: _____



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Memorandum

To: Honorable Mayor and City Council

From: Chief M. Bell, Chief of Police

Re: Review and accept the Wagoner County Mitigation Plan

Date: March 4, 2022

BACKGROUND

During the past two years, the City of Coweta; Coweta Public Schools; Okay Public Schools; Porter Public Schools; Town of Okay; Town of Porter; Town of Red Bird; Town of Tallahassee; City of Wagoner; Wagoner Schools; and Wagoner County Emergency Management under the direction of the Wagoner County Local Emergency Planning Commission (LEPC) has reviewed and updated the Wagoner County Hazardous Mitigation Plan.

This plan was reviewed by the LEPC and sent to the State of Oklahoma office of Emergency Management for approval and implementation. The State of Oklahoma has approved the plan as it is written. This plan must now be approved as written by each of the above entities so it can then be forwarded to Federal Emergency Management Agency (FEMA) for Federal approval.

BENEFITS

The benefit of approving this plan, is that each party will be able to apply for State and Federal grants which will allow us to implement hazardous mitigations described in the plan.

STAFF RECOMMENDATION

Staff recommends approval of the attached Hazardous Mitigation plan and allow the City Manager to sign all required documents.

ATTACHMENTS

Addendum #1 Wagoner County Hazardous Mitigation plan.

RESOLUTION NO. 2022-09

**A RESOLUTION OF CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA
ADOPTING THE 2021 WAGONER COUNTY, OKLAHOMA HAZARD
MITIGATION PLAN UPDATE.**

WHEREAS, the 2021 Wagoner County Hazard Mitigation Plan Update (‘Plan’) has been prepared in accordance with the Disaster Mitigation Act of 2000, and

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

WHEREAS, the City Council has reviewed the Plan and affirms that the Plan will be updated no less than every five years.

THEREFORE, BE IT RESOLVED by the City Council of the City of Coweta, Oklahoma that:

Section 1. The City of Coweta adopts the 2021 Wagoner County Hazard Mitigation Plan Update as this jurisdiction’s FEMA Natural Hazard Mitigation Plan.

This Resolution is approved in open meeting by the City Council of the City of Coweta, Oklahoma on this 7th day of March 2022.

Evette Young, Mayor

ATTEST:

Julie Casteen, City Clerk

APPROVED:

Ronald D. Cates, City Attorney



FEMA

January 20, 2022

Matthew Rollins, State Hazard Mitigation Officer
Oklahoma Department of Emergency Management
P.O. Box 53365
Oklahoma City, OK 73152-3365

RE: Approvable Pending Adoption of the Wagoner County, Oklahoma Multi-Jurisdiction
Hazard Mitigation Plan
Funding Source: HMGP; FEMA-4438-DR-OK; 0007

Dear Mr. Rollins:

This office has concluded its review of the referenced plan, in conformance with the Final Rule on Mitigation Planning (44 CFR § 201.6). Formal approval of this plan is contingent upon the adoption by the participants on Enclosure A, as well as the receipt of the final draft of the plan containing all plan components.

Adopting resolutions must be submitted to this agency for review and approval no later than one year from the date of this letter. Failure to submit these resolutions in a timely manner could lead to a required update of the plan prior to FEMA approval.

Once this final requirement has been met, a letter of official approval will be generated. The Local Hazard Mitigation Planning Tool, with the reviewer's comments has been enclosed to further assist the jurisdictions in complying with planning requirements.

Sincerely,

A handwritten signature in black ink, appearing to read "Ronald C. Wanhanen".

Ronald C. Wanhanen
Chief, Risk Analysis Branch

Enclosure

cc: Shona Gibson, R6-MT-HM

Enclosure A

Attached is the list of participating local governments included in the January 20, 2022 review of the referenced Hazard Mitigation plan.

Community Name
1) City of Coweta
2) Coweta Public School District
3) Okay Public School District
4) Porter Public School District
5) Town of Okay
6) Town of Porter
7) Town of Red Bird
8) Town of Tullahassee
9) Wagoner County
10) Wagoner Public School District

Adoption Submittal (Final)

Following the issuance this of Approvable Pending Adoption letter, all participants are provided one year to adopt the plan and submit it through the State to FEMA. For multi-jurisdictional plans, multiple adoptions should be submitted as a complete package as outlined below.

The State must submit the plan files via:

Floodmaps File eXchange (FFX): <https://www.floodmaps.fema.gov/ffx/>

Risk Management Directorate (RMD) SharePoint:

<https://rmd.msc.fema.gov/Regions/VI/Mitigation%20Planning/Forms/AllItems.aspx>

Note: You will be requested to register if you have not already done so.

All plans containing Protected Critical Infrastructure Information (PCII) must be submitted through the Floodmaps File Exchange (FFX) to ensure secure file submissions.

1. Final draft of the plan in MS Word or pdf format containing:
 - a. The final plan formatted as a single document.
 - b. Documentation demonstrating adoption by the participating jurisdictions seeking approval. (i.e. copies of signed resolutions, official meeting minutes, etc....) Note: Adoption resolutions can be separate files. Additional adoptions are not required to provide a copy of the plan.
 - c. Remove strikethroughs, highlights and all Track Changes must be accepted in the final plan.
2. Send an email addressed to r6-mtd-planning@fema.dhs.gov as notification that the electronic file has been submitted. Please DO NOT send plans to the email inbox as it has very strict size limitations which will lock the inbox and not allow additional emails to be received. The email must include the following information:
 - a. Include the follow when applicable: (Note: A submittal letter is no longer required.)
 - i. Subject line [Approval Review for Name of Plan, State]
 - ii. FEMA funding source, grant or disaster number, and project number (when applicable)
 - iii. list of adopting jurisdictions
 - iv. Plan File name (file name must include date submitted)
3. Submittals which do not conform to the above requirements will be returned to the State for resubmission



Wagoner County Hazard Mitigation Plan 2021

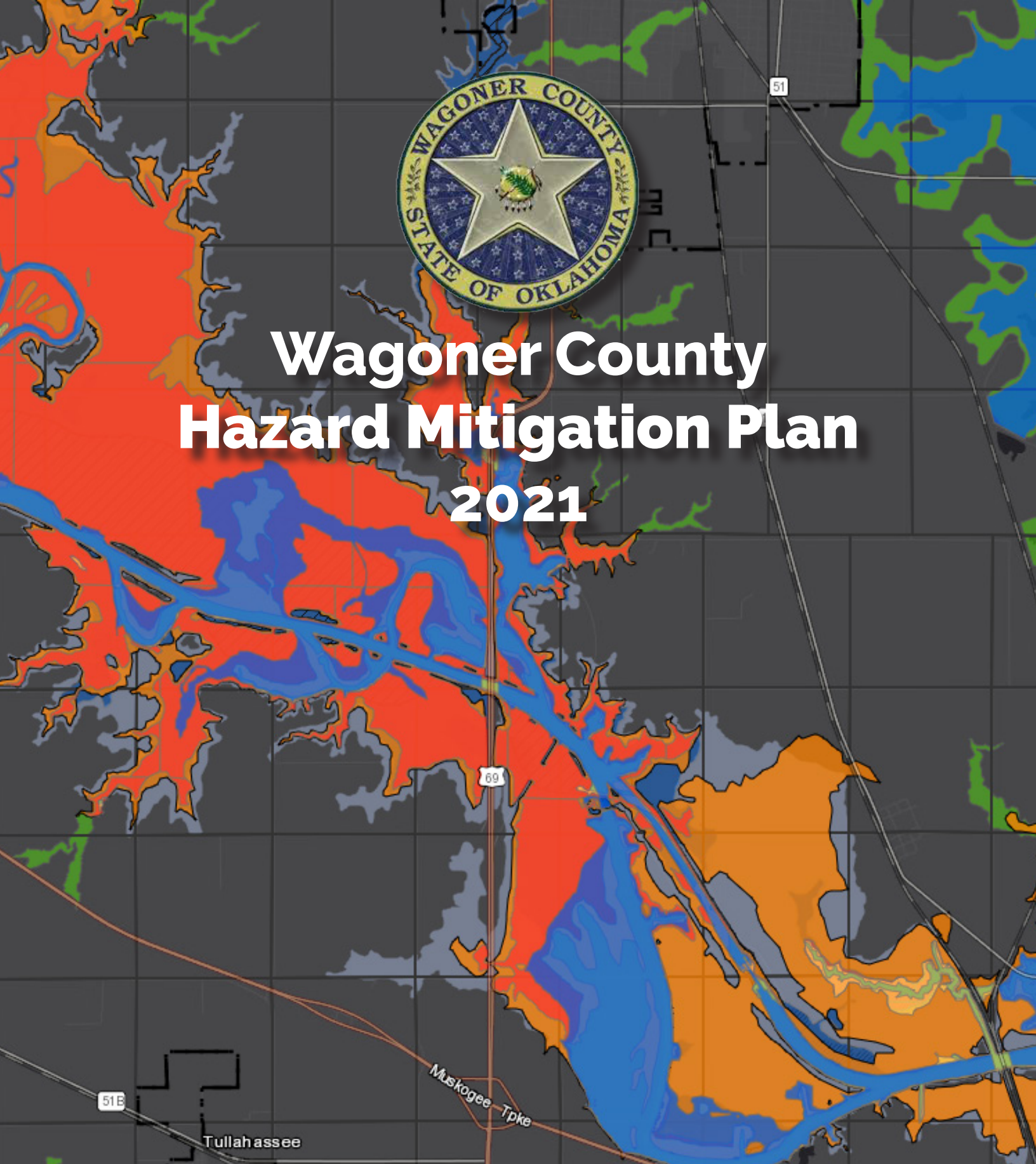


Table of Contents

Chapter 1: Introduction	Page No.
1.1 Introduction	1-1
1.2 Community Description	1-3
1.3 Community Assets	1-5
 Chapter 2: The Planning Process	
2.1 Organize to Prepare the Plan	2-1
2.2 Involve the Public	2-2
2.3 Coordinate with other Agencies and Organizations	2-3
2.4 Assess the Hazard	2-4
2.5 Assess the Problem	2-4
2.6 Set Goals	2-4
2.7 Review Possible Activities	2-4
2.8 Draft an Action Plan	2-5
2.9 Adopt the Plan	2-5
2.10 Plan Maintenance	2-5
 Chapter 3: Capability Assessment	
3.1 Planning and Regulatory Capabilities	3-1
3.2 Administrative and Technical Capabilities	3-6
3.3 Financial Capabilities	3-8
3.4 Education and Outreach Capabilities	3-10
3.5 School District Capability Assessment	3-11
 Chapter 4: Risk Assessment	
4.1 Overview	4-1
4.2 Flooding	4-9
4.3 Severe Winter Storm	4-34
4.4 Tornado and High Wind	4-43
4.5 Dam and Levee Incidents	4-53
4.6 Hail	4-89
4.7 Fire	4-95
4.8 Hazardous Materials	4-114
4.9 Extreme Heat	4-121
4.10 Lightning	4-126
4.11 Drought	4-130
4.12 Earthquake	4-135
 Chapter 5: Mitigation Strategy	
5.1 Mitigation Goals	5-1
5.2 Actions	5-3
5.3 Implementation	5-6
5.4 Hazard Mitigation Actions	5-8

Chapter 6: Plan Maintenance and Adoption

6.1 Monitoring the Plan	6-1
6.2 Evaluating the Plan	6-2
6.3 Updating the Plan	6-2
6.4 Public Involvement	6-2
6.5 Incorporating the Multi-Hazard Mitigation Plan	6-3
Appendix A: Critical Facilities List	
Appendix B: Previous Mitigation Items	

Chapter 1 Introduction

1.1 Introduction

This document is the Multi-Hazard Mitigation Plan Update for Wagoner County and participating jurisdictions. This plan update is developed in accordance with and fulfills the requirements of Title 44 Code of Federal Regulations (CFR) §201.6 for FEMA approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs.

This plan will assess the capabilities and vulnerabilities of three different types of jurisdictions. Due to their differences, each type of jurisdiction will have different responses to the assess natural hazards. This Plan is an update to the *2009 Wagoner County, Oklahoma Hazard Mitigation Plan*.

1.1.1 Purpose and Scope

Mitigation is most effective when it is based on a comprehensive, long-term approach that is developed before disaster occurs. This Plan assesses the participating communities, appraises their current mitigation capabilities, and examines their risks to natural and manmade hazards. Based on those findings, stakeholder guidance, and public input, the Plan creates a mitigation strategy with achievable actions and identified means to execute those actions. To enhance the County's ability to execute its mitigation strategy, the Plan also will identify external funding opportunities for eligible action items.

The scope of the Wagoner County Hazard Mitigation Plan is countywide. Not all communities with the boundaries of Wagoner County are participants in this plan. A list of participating jurisdictions is provided below.¹

- | | |
|------------------------|----------------------------------|
| • Wagoner County | • The Town of Tullahassee |
| • The City of Coweta | • Coweta Public School District |
| • The Town of Okay | • Okay Public School District |
| • The Town of Porter | • Porter Public School District |
| • The Town of Red Bird | • Wagoner Public School District |

This plan will assess the capabilities and vulnerabilities of three different types of jurisdictions. Due to their differences, each type of jurisdiction will have different responses to the assess natural hazards. The following definitions are provided to consistently discuss the jurisdictions.

Participating Jurisdictions/Planning Area refers to Wagoner County, the City of Coweta, the Towns of Okay, Porter, Red Bird, and Tullahassee, and the Public School Districts of Coweta, Okay, Porter, and Wagoner

Participating Communities refers to the City of Coweta, the Town of Okay, the Town of Porter, the Town of Red Bird, and the Town of Tullahassee.

¹ The City of Wagoner has drafted an individual hazard mitigation plan. Since it is the county seat, however, the city will be included in the community description, but only identified critical facilities and lifelines within it will be assessed for hazard exposure.

Participating School Districts refers to Coweta Public School District, Porter Public School District, and Okay Public School District

1.1.2 Goal

The 2021 Update uses the 2009 Wagoner County, Oklahoma Hazard Mitigation Plan's goal, which is also shared by all the participating communities.

Wagoner County's core goal is to create a disaster-resistant community and improve the safety and well-being of the citizens of Wagoner County by reducing deaths, injuries, property damage, and environmental and other losses from natural and technological hazards in a manner that advances community goals, quality of life, and results in a more livable, viable, and sustainable community.

This plan will summarize the planning area's communities, hazards, and mitigation strategies to create a more resilient community to protect its quality of life.

1.1.3 Approach

To meet this goal, this plan follows an assets-based approach. In an assets-based approach, a community identifies assets which are most critical to community functioning. In addition to critical structures and services, assets include people. During this identification process, communities also examine the capabilities that they have available to protect their assets and the effect of natural hazards on these assets. This analysis allows communities to understand the entire scope of vulnerability of their most important assets, rather than examining how each capability or hazard affects an asset individually.

The FEMA local mitigation planning handbook calls for communities to focus and prioritize a community's most significant vulnerabilities. An assets-based approach prioritizes key assets' vulnerabilities, helping communities best identify how to allocate resources to mitigate their biggest threats. This approach will help Wagoner County align its risk reduction with other community objectives, which meets another FEMA guidance objective.² In addition, this approach positions Wagoner County to utilize partnerships and larger, system-wide solutions to mitigate the risk to some of these assets, which FEMA encourages in its guidance and its pre-disaster mitigation programs.³

1.1.4 Plan Organization

The plan and planning process build from the community and hazard assessments to create a specific and actionable mitigation strategy. The surveys, assessments, research, and analysis are organized into the following 6 chapters.

Chapter 1: Introduction

Chapter 2: The Planning Process

Chapter 3: Capability Assessment

Chapter 4: Hazard Identification and Risk Assessment

Chapter 5: Mitigation Strategy and Action Plan

Chapter 6: Implementation and Maintenance

² https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-planning-handbook_03-2013.pdf

³ See BRIC program, for instance: <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>

1.2 Community Description

Wagoner County is in the northeastern portion of Oklahoma. It is bordered by Tulsa County to the west, Rogers and Mayes Counties to the north, Cherokee County to the east, and Muskogee and Okmulgee Counties to the South.

The County is largely rural. An urban area near the western border is a part of Broken Arrow (not participating in this plan). There is a less urban portion of Tulsa in the northwest corner of the County, and a small portion of Bixby (neither jurisdiction participating in this plan) in the southwest corner of the county. Both the Cities of Wagoner (the county seat) and Coweta represent more urbanized areas, while the other towns (Red Bird, Porter, Tullahassee, and Okay) have lower building density and are smaller in scale. Of the participating communities, only Red Bird was reported as unincorporated.⁴ The figure below maps all communities throughout Wagoner County. As stated previously, the City of Wagoner is not a participant in this plan, nor are the sections of Catoosa, Tulsa, Broken Arrow, and Bixby located in Wagoner County.

Figure 1-1 Countywide Map



⁴ https://www.ok.gov/wagonercounty/About_Wagoner_County/Cities_and_Towns/index.html

As of the preparation of this plan update, however, the City of Wagoner had drafted an individual hazard mitigation plan. Since it is the County seat, it will be included in the community description when applicable and appropriate for the purposes of the entire county and its residents.

1.2.1 Governance

All 77 counties in Oklahoma counties have a three-member board of county commissioners as their chief administrative body. Commissioners are elected from each of three county election districts, with each district being approximately equal in population in accordance with the decennial U.S. Census. The board elects its chairman annually.

The City of Wagoner has an aldermanic form of local government with 8 councilors representing 4 wards and a mayor.⁵ Coweta has a council-manager form of government with the council representatives being elected from each of 4 wards and one at-large member. The council elects a mayor and vice mayor from its members.⁶ Okay is governed by a three-person council as well as a mayor and vice mayor. Porter has a three-member board of trustees as well as a mayor and vice mayor.⁷ Red Bird, founded prior to Oklahoma statehood as an all-black town, is governed as a statutory township by a three-member board. One of the three trustees serves as the mayor.⁸ The Town of Tullahassee, also a historic African American community, has a mayor and manager as well as a council.

The independent public-school districts participating in the 2021 Plan Update are governed by boards of education whose members are elected from the school districts. Each board of education elects its own chairperson or president.

1.2.2 Geography

Wagoner County is considered part of the Ozark Highlands, an area of wooded hills, small prairies, pasturelands, and many streams.⁹ Wagoner County encompasses some of Oklahoma's most significant waterways. The Arkansas River flows from the west and forms a long segment of the southern border. The Verdigris River flows south through the center of the County. Fort Gibson Lake, part of the Neosho River, forms part of the eastern border of the County.

1.2.3 Climate

Wagoner County has hot, humid summers and mild to cold winters. While the average annual temperature is a mild 60°F, high temperatures over 90°F are regularly recorded in summer months, and subfreezing temperatures do occur in winter months. In addition, the County's average humidity is 70%. The county averaged approximately 45.5 inches of precipitation annually from 1981-2010, with most of the precipitation occurring between April and June.¹⁰

1.2.4 History

Wagoner County was founded in 1907 when the state of Oklahoma was established.¹¹ Two of the

⁵ (<http://www.wagonerok.org/Government/City-Council/Ward-Information>)

⁶ <http://www.cityofcoweta-ok.gov/206/City-Council>

⁷ <https://townofporterok.com/mayor-and-council>

⁹ <https://www.okhistory.org/publications/enc/entry.php?entry=OZ002>

¹⁰ <http://climate.ok.gov/index.php>

¹¹ <https://www.okhistory.org/publications/enc/entry.php?entry=WA003>

participating communities, Red Bird and Tullahassee, were established prior to statehood as all African American communities. A pathway system, originally called the Osage Trace, played an important part in the transportation into and through the area during the 19th and early 20th century. Agriculture has and continues to play a central role in the County's economy and community. Rapid growth in the western part of the county is driven by its proximity to Tulsa metropolitan area.

1.3 Community Assets

Community Assets are defined broadly to include anything that is important to the character and function of a community and can be described very generally in the following four categories: People, Economy, Built Environment, Natural Environment.

Although all assets may be affected by hazards, some assets are more vulnerable because of their physical characteristics or socioeconomic uses. This section describes key community assets across Wagoner County.

1.3.1 People

All Wagoner County residents are exposed to at least one of the hazards identified in this plan. It was important for this plan update to focus on areas within the County that may not be as quick to recover. Understanding who is being affected by disaster is important when preparing for future events. Social and economic characteristics may limit an individual's ability to understand their risk, respond to and recover from disasters. The planning team has identified six characteristics of populations that are more at risk: poverty, speaking a language other than English at home, younger than 5 years old, older than 65 years old, did not graduate from high school, and having a disability.

Wagoner County has been a growing county, with its population reported as 47,883 people in the 2000 census and 73,085 in the 2010 census. Towns with smaller populations are more likely to have their census numbers impacted by sampling error.

FEMA's grants allow for an increased federal match if a community's population is less than 3,000 and their per capita income is less than 80% of the federal per capita income. Based on the 2019 ACS 5-year estimate, 80% of the federal per capita income is about \$28,537.¹² Using that criteria and the other ACS estimates for Wagoner County, these towns would qualify for increased federal share:

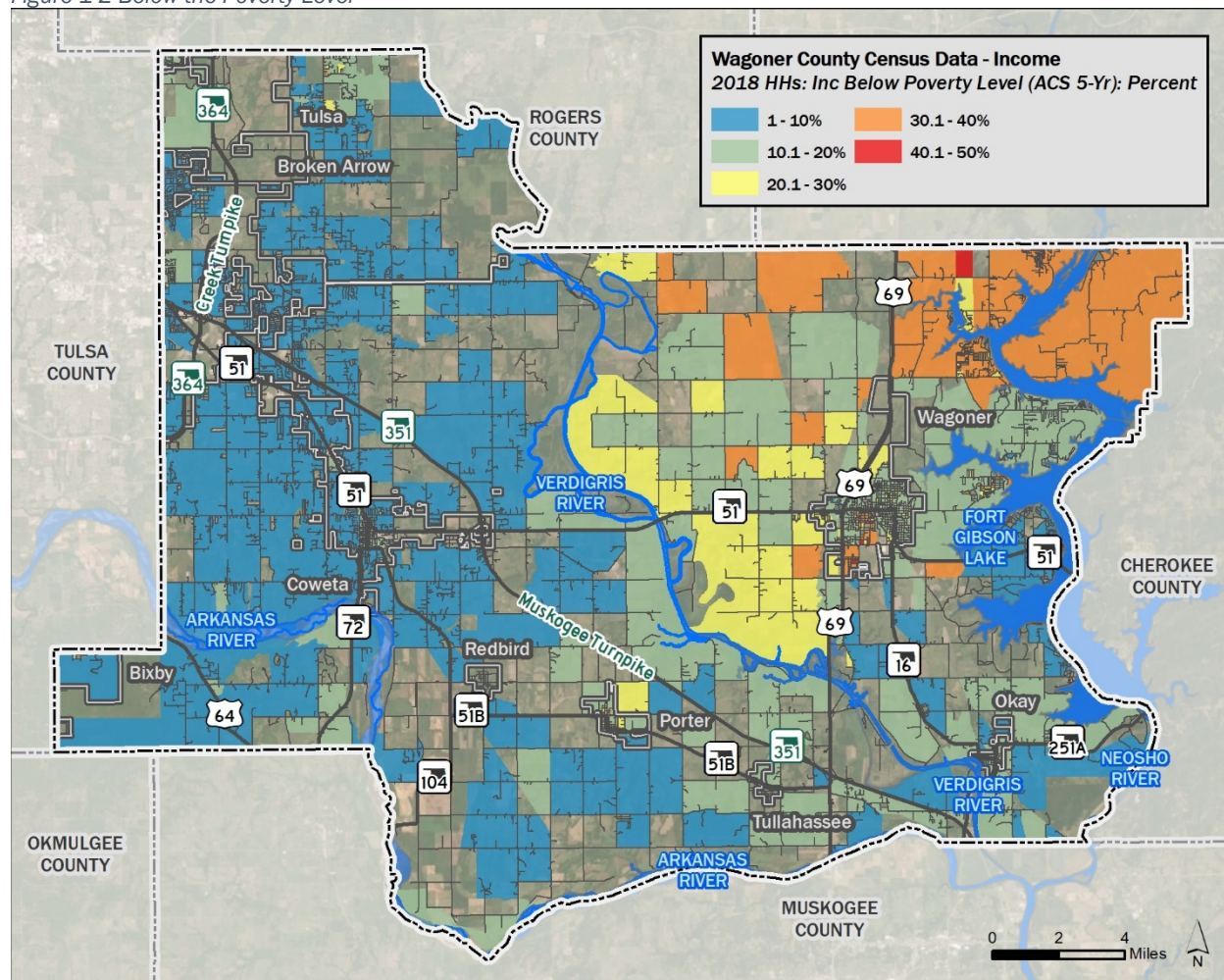
- Red Bird (population: 94, per-capita: \$16,566)
- Porter (population: 692, per-capita \$22,030),
- Tullahassee (population: 157, per-capita: \$21,153)
- Okay (population: 493, per-capita: \$18,744)

Wagoner County's 2019 population estimate was 77,850 and its per-capita income \$28,286, while the City of Coweta had a population of 9,637 with a median income of \$23,152. The following maps use data from ESRI's enriched data Narratives use the 2019 ACS 5 year estimates.

¹²

<https://data.census.gov/cedsci/table?q=ACSDT1Y2019.B19301&tid=ACSDT1Y2019.B19301&hidePreview=true>

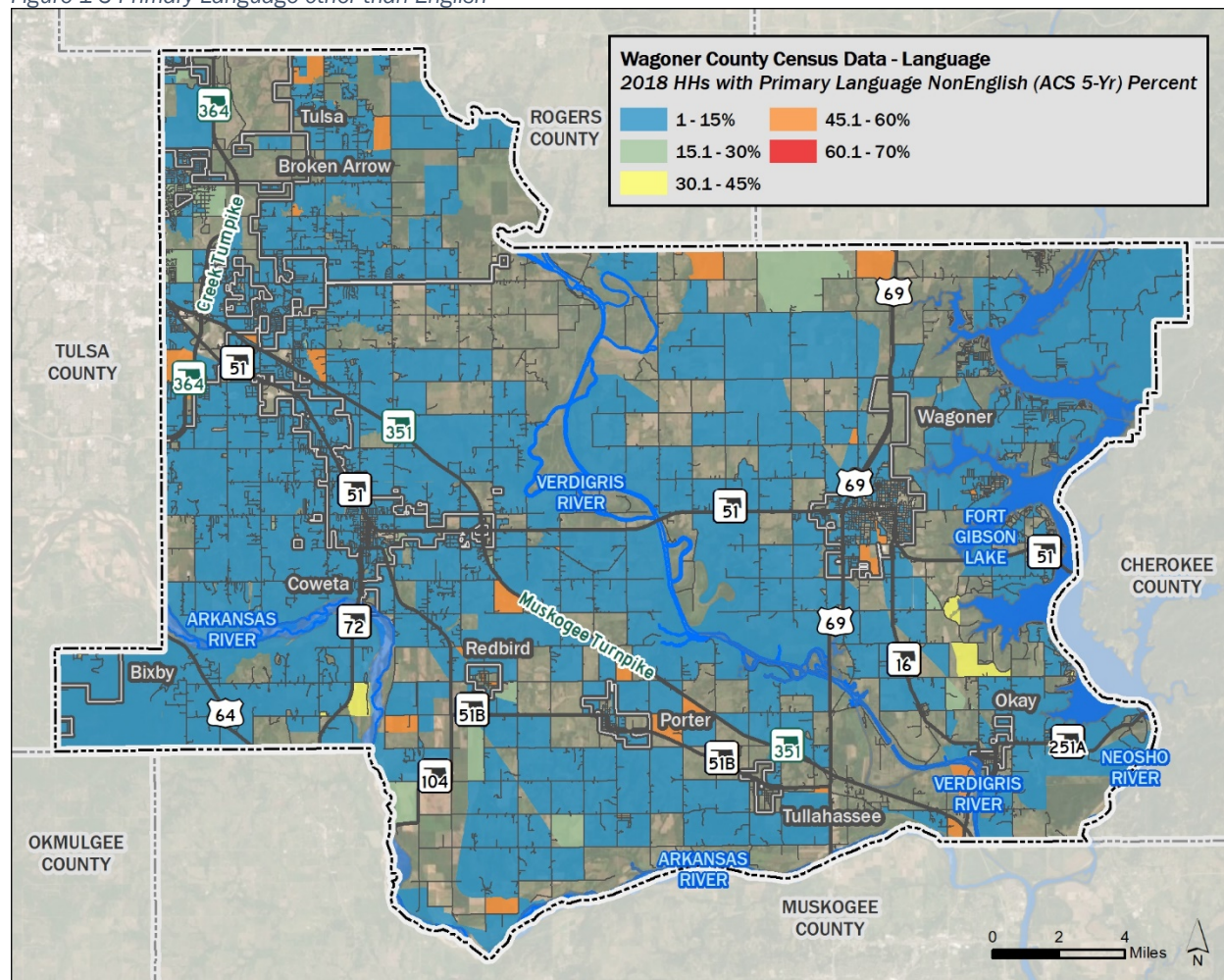
Figure 1-2 Below the Poverty Level



Poverty levels can impact a community's ability to mitigate disaster risk. People and families living in poverty have less resources to prepare for and respond to a disaster. Communities with higher rates of poverty may not have the tax base to fund large mitigation projects.

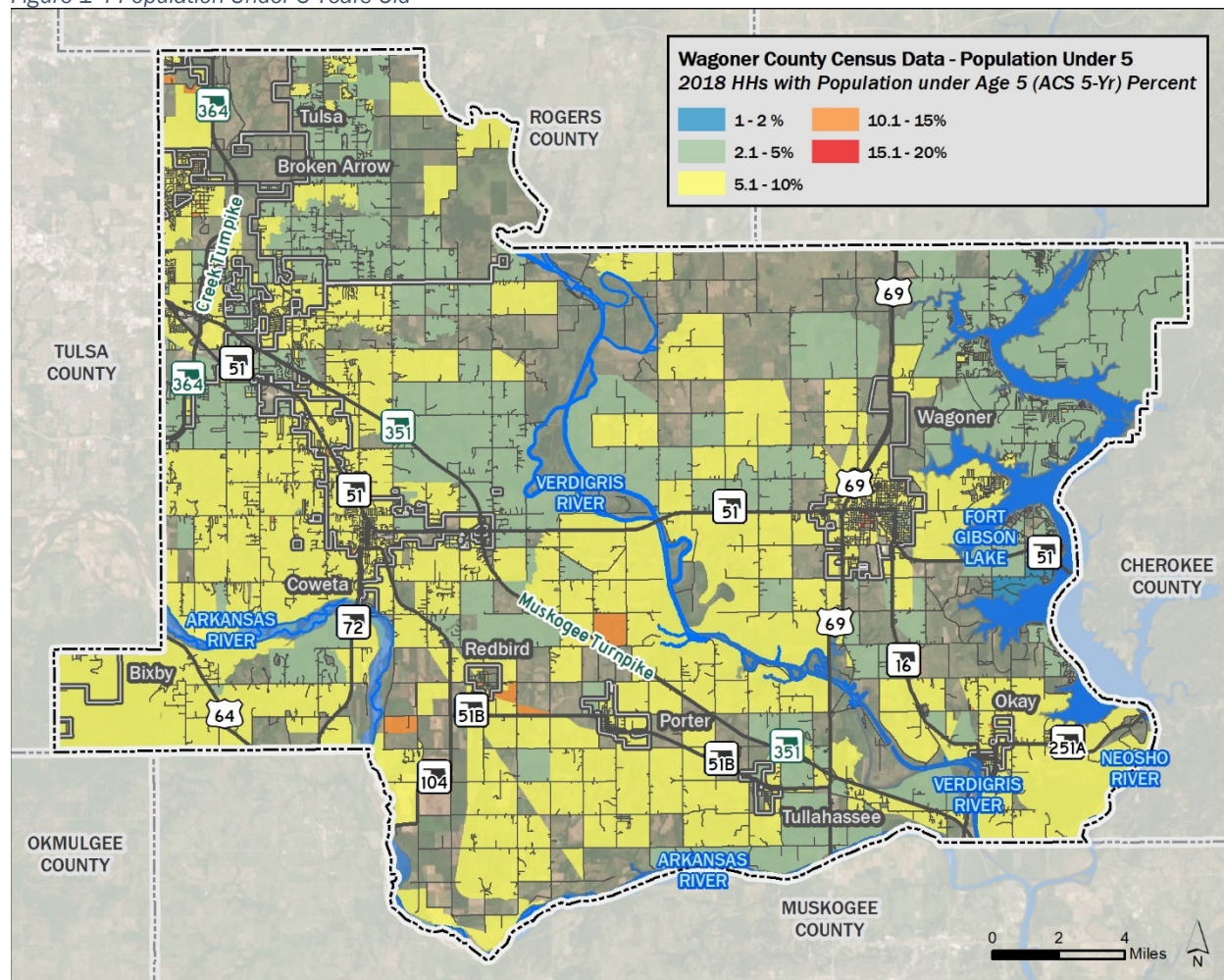
The poverty rate for Wagoner County was estimated at 10.6% in the 2018 U.S. Census, which is below the mean of 15.2% for the entire state. Poverty rates are highest in the east of the county, especially the northeast. The City of Wagoner and the Town of Okay had over twice the County's poverty rate, at 22.6% and 26.4% respectively. Porter's poverty rate was also noticeable higher than the County's at 16.8%.

Figure 1-3 Primary Language other than English



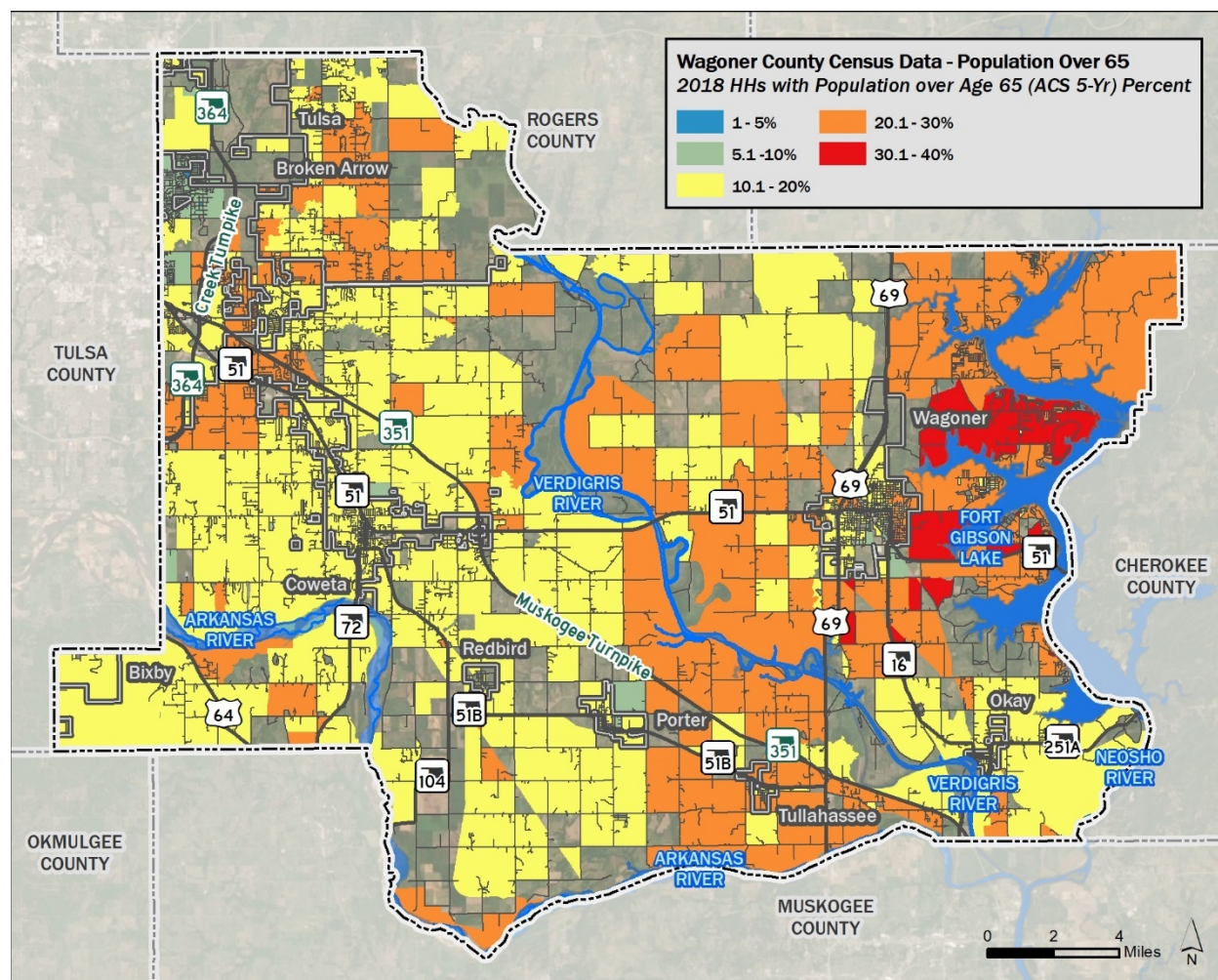
English is the main language spoken at home throughout the County, while Spanish is the second most-spoken language in the home. Except for the City of Wagoner, English was the primary language spoken at home for most of the communities in Wagoner County.

Figure 1-4 Population Under 5 Years Old



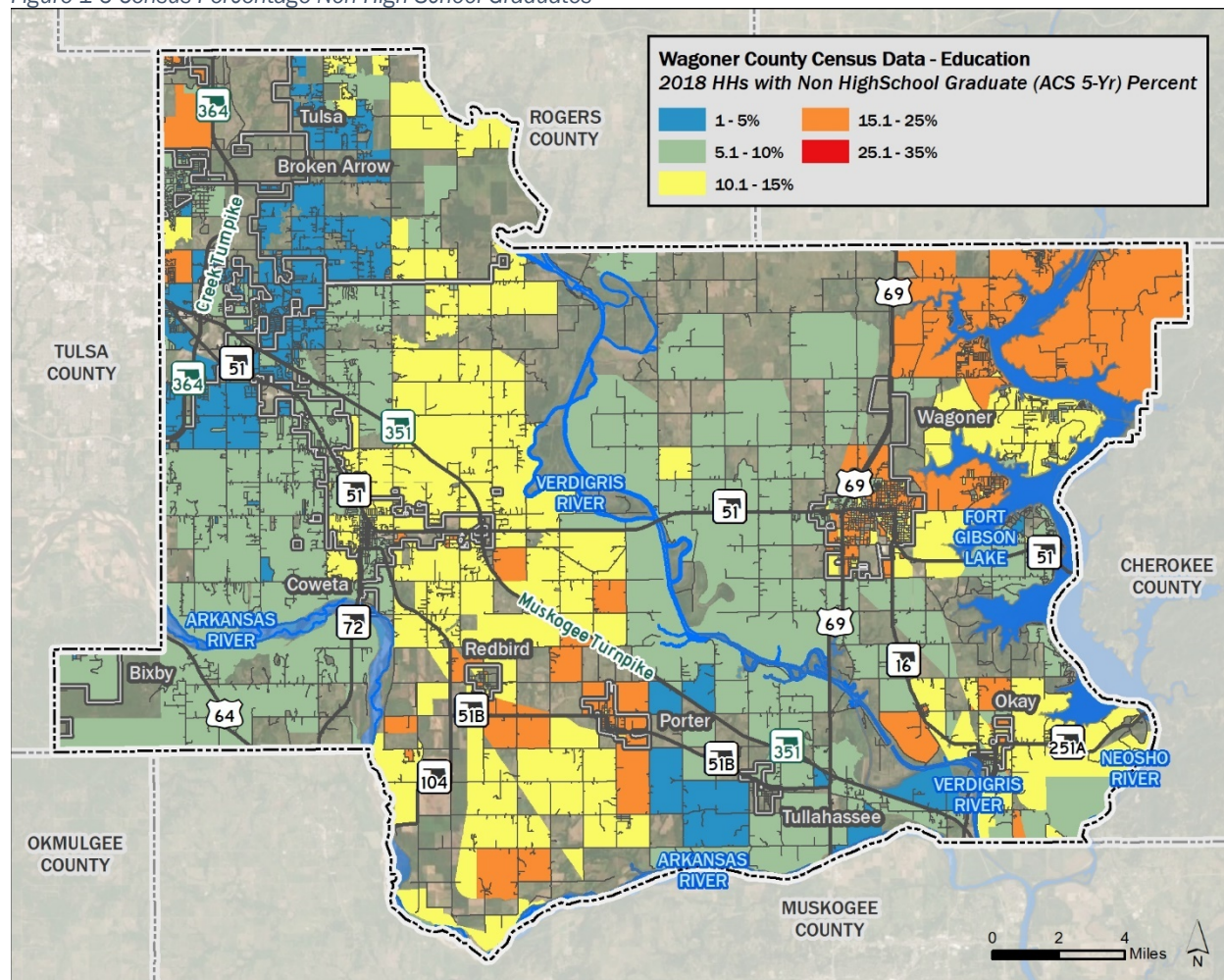
The portion of the population under 5 years old is relatively consistent throughout the County. The average portion of children under 5 years old in the County is approximately 6.2%. Young children have vulnerabilities to some hazards due to their psychological makeup, such as extreme temperatures or hazardous materials. In addition, they rely on caretakers to fulfill all their needs. Young children's higher levels of need, compounded by a lack of awareness to hazards, increase a family or community's vulnerability to hazards.

Figure 1-5 Census Percentage over 65



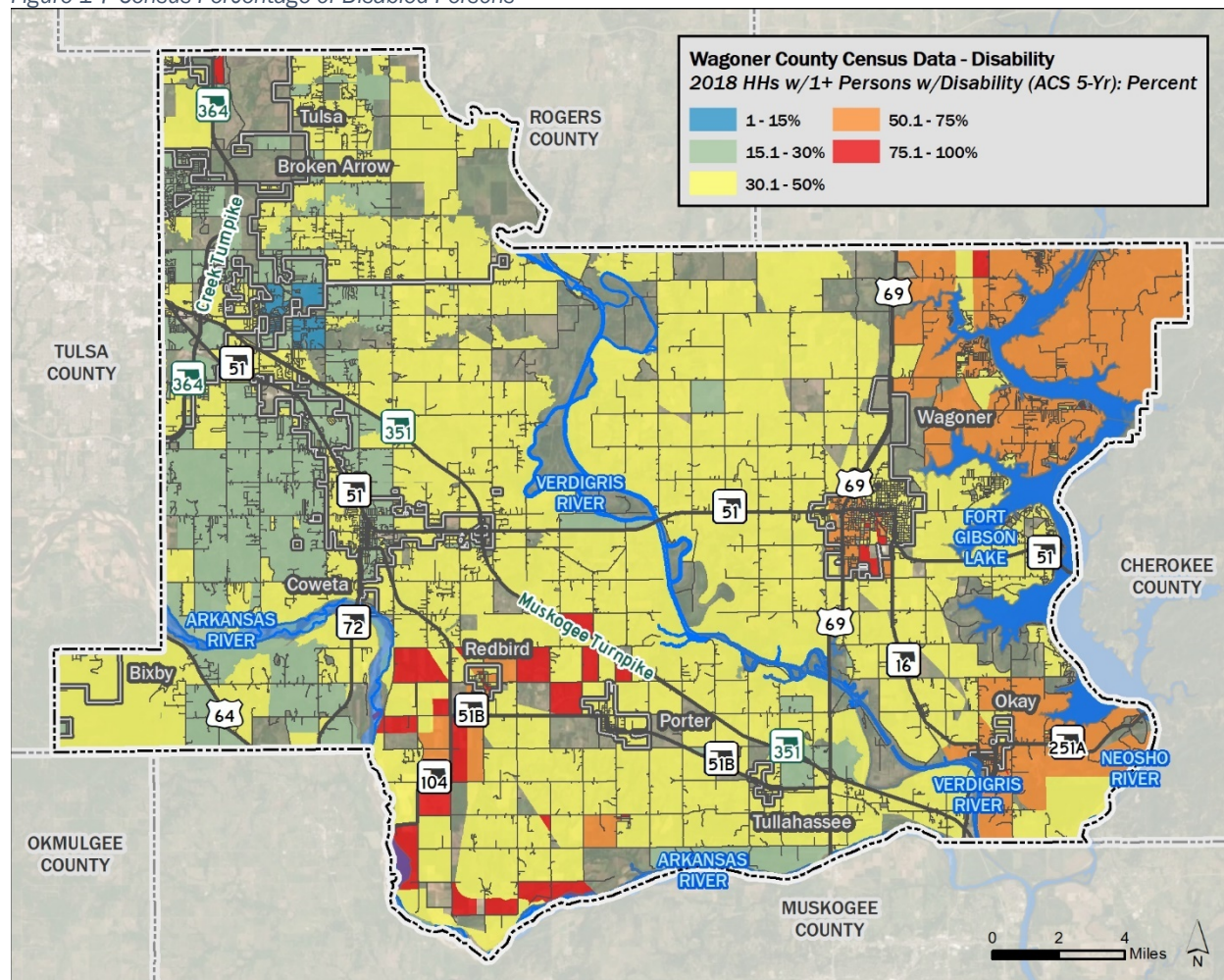
People over age 65 are also vulnerable to hazards. They are more directly susceptible to extreme temperatures and may be less able to evacuate during or after extreme events. They are also more likely to be retired and on a fixed income, which could limit their ability to recover financially from home, vehicle, or other property damages.

Figure 1-6 Census Percentage Non-High School Graduates



The concentration of individuals with less than a high-school education attainment level is highest in the northeast. This population may have less income potential and more likely to be near or under the federal poverty line. As a result, their housing may be more at risk of hazard damages. This population may be less able to use education materials.

Figure 1-7 Census Percentage of Disabled Persons



The census estimates the percentage of the population living with a disability through self-reported survey's. This definition includes hearing, vision, ambulatory, cognitive, self-care, and independent living difficulties.¹³ Individuals with different disabilities may need secondary methods of receiving warnings, assistance during isolation, a constant flow electricity to power life-sustaining apparati, or help evacuating. The ESRI enhanced data estimated some areas of higher concentration in the south central portion of the county and the northeast corner of the county. In communities, Red Bird had a rate (33%) almost twice as high as the County overall (16.6%). Porter and Okay also reported higher rates of 26.7% and 28.2%.

1.3.2 School Districts

Figure 1-8.

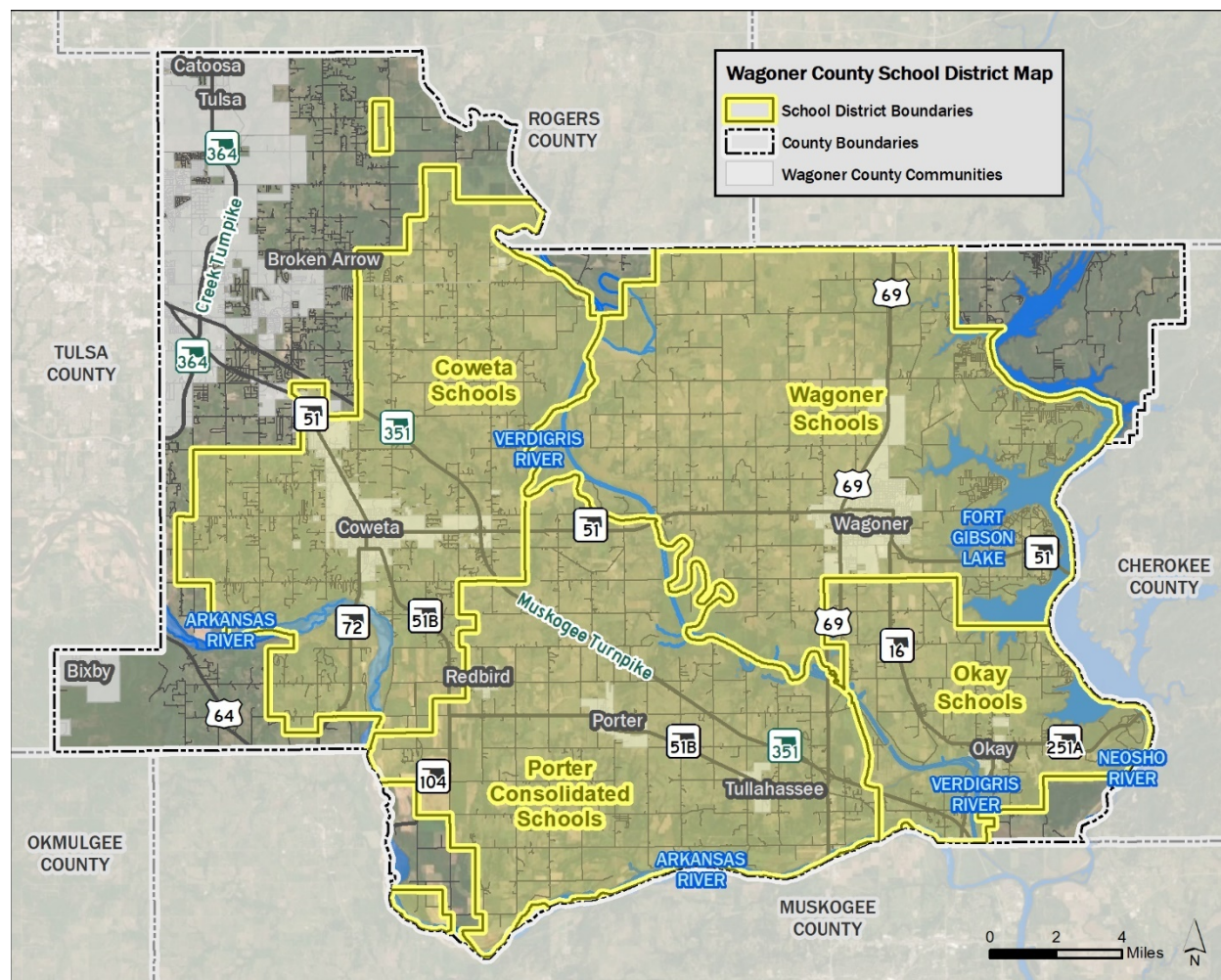
¹³ American Community Survey and Puerto Rico Community Survey 2019 Subject Definitions ([census.gov](https://www.census.gov)) pg 61

Table 1-1 School District Enrollment

	Enrollment (2019)	Campuses	Superintendent
Coweta Public Schools	3,329	8	Jeff Holmes
Porter Consolidated	532	2	Charles McMahan
Okay Public Schools	371	2	Pete Hiseley
Wagoner Public Schools	2,340	5	Randy Harris

Data from Oklahoma School Report Cards 2019-2020

Figure 1-8 Wagoner County School Districts



1.3.3 Economy

Mitigating threats to the economy is critical to enhance the resiliency of Wagoner County. Wagoner County has specific economic drivers that are important to understand when planning to reduce the impacts of hazards and disasters to the local economy. The County's major industries are retail stores and franchises, like Walmart, critical-service occupations, like hospitals and schools, and

manufacturing and energy, like Unarco and Exterran.¹⁴ In addition, an extensive waterway system and several ports play a major economic role in the County. The 2018 County Business Patterns estimated 963 businesses within the County, with a total employment of 8,421 and total annual payroll of \$324,613,000.¹⁵

1.3.4 Built Environment

The built environment includes existing structures, infrastructure systems, and cultural resources.

Existing Structures

Structures represent an important vulnerability to natural hazards. A combination of GIS data from a 2018 Microsoft Building Footprint and the Wagoner County Assessor data was used to estimate the value of structures exposed to natural hazards, and Table 1-2 provides the total structure and parcel estimates for the County.

Table 1-2 Wagoner County Structures and Parcels

Number of Structures	Number of Parcels	Improvement Value of Parcels
37,206	48,470	\$4,660,655,104

Infrastructure

Infrastructure systems are critical for life safety and economic viability, including transportation, power, communication, and water and wastewater systems. Infrastructure systems include transportation, power, communication, water, and wastewater systems. Communities in Wagoner on infrastructure to function. For example, hospitals need electricity, water, and sewer to continue helping patients. The continued operations of infrastructure systems during and following a disaster are key factors in the severity of impacts and the speed of recovery. Many of these infrastructure assets will be analyzed for hazard exposure as lifelines in Chapter 4.

Transportation: Wagoner County and its communities and school districts are served by a combination of regional, national, and local roadways. U.S. 69 runs north/south through the County and the City of Wagoner. State Highway-51 (SH-51) runs from Tulsa to the northwest and then east/west through the center of the County, connecting Coweta and Wagoner. The Muskogee Turnpike (SH-351) runs northeast/southwest through most of the county, connecting Tulsa and the City of Muskogee south of the county. The turnpike is a critical regional roadway that is limited access and tolled. In addition to allowing for daily activities and business operations, these transportation corridors provide evacuation routes during disasters, as well as access to emergency services.

A Burlington North Santa Fe (BNSF) leased railroad runs parallel to the Muskogee Turnpike. This railroad passes through Coweta, Red Bird, Porter, and Tullahassee. Two Union Pacific rail lines intersect in Wagoner and run mostly north/south.

The Verdigris River in Wagoner County is part of the McCellan-Kerr Arkansas River Navigation System. This waterway is a very important shipping way, with ports just north and south of the

¹⁴ https://tulsaworld.com/communities/wagoner/news/coming-soon-the-opening-of-dmi-companies-facility-in-wagoner/article_2c4d86ea-53ff-5737-ab74-10f96ad108b2.html

¹⁵ <https://www.census.gov/programs-surveys/cbp.html>

county. Millions of tons of food, materials, fuel, and other goods are shipped along the waterway every year.¹⁶ Oakley's Port 33, located in the northern part of the County, receives products for agriculture and industry. The Port can dock up to 90 barges and process 4 per-day. In addition to Port 33, the Port of Muskogee is located on Wagoner's southern border and the Port of Catoosa is located just northwest of the County. These are also major ports, supplying agricultural, industrial, and commercial goods.

Utilities: Utility services are provided primarily by OG&E Electrical services, AEP – Public Service Company of Oklahoma, and Grand River Dam Authority. Oklahoma Natural Gas Company is the largest gas provider as of the 2009 Plan. Several Rural Water Districts operate within the County.

The City of Wagoner has its own Public Works department that provides access to water, wastewater, and electric utilities for citizens.¹⁷ Coweta Public Works provides wastewater and water access, as well as solid waste collection.¹⁸ Red Bird purchases natural gas and water to sell to residents. Porter provides water services to their residents by purchasing from the City of Muskogee. Tullahassee buys water from Porter to distribute and sell to residents. The Town of Okay purchases water from the City of Muskogee and has its own wastewater treatment plant.

Historically, the City of Wagoner's Emergency Medical Services (EMS) provides basic and advanced level patient care and transport for the eastern half of Wagoner County, while Coweta provides EMS services for the western portion. Other agencies assist as needed.¹⁹

Cultural Resources

Wagoner County is home to cultural resources, especially related to historical structures. Several churches and businesses each of the incorporated areas are listed as historical facilities. The towns of Red Bird and Tullahassee are some of the oldest all-black towns. These and other cultural resources are important to the life and history of the community. When mitigating historic properties, additional steps may be necessary to comply with state and federal regulations, as well as to protect the resources.

1.3.5 Future Development and Trends

Wagoner County's population grew rapidly from 2000 to 2010. The County has continued to grow over the last decade, but growth has slowed. The County and several of the communities operate zoning maps and boards to help guide future growth. It is likely that proximity to the Cities of Broken Arrow and Tulsa will continue to drive growth in the western portion of the county. Open space or agricultural land will be in high demand for development as single-family neighborhoods in these areas. Coweta and Wagoner will similarly attract development. The Muskogee Turnpike and other major transportation corridors will continue to attract commercial growth. Turnpike related growth will be located near on/off ramps. Chapter 3 will provide additional information on regulatory elements that help guide future developments and how those elements can incorporate hazard mitigation.

The City of Wagoner's Comprehensive Plan noted that the southwest and northwest quadrants of the city have more undeveloped residential lots. However, floodplains are more prevalent in these

¹⁶ https://www.odot.org/waterway/pdfs/ODOT_WW_FACT_SHEET.pdf

¹⁷ <http://www.wagonerok.org/Departments/Wagoner-Public-Works-Authority/Utility-Office>

¹⁸ <https://www.cityofcoweta-ok.gov/170/Public-Works-Authority>

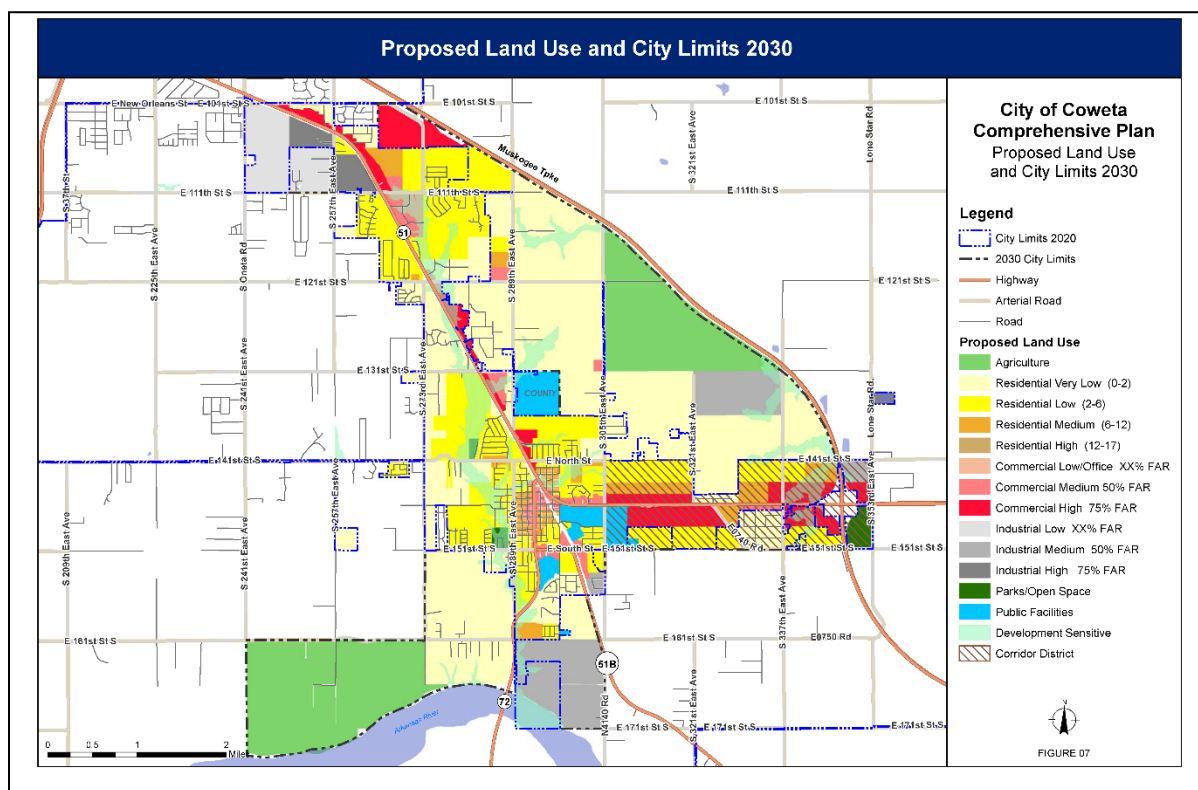
¹⁹ https://tulsaworld.com/communities/wagoner/news/uncertainty-expressed-over-fire-protection-ambulance-service/article_95f22a73-0321-58a4-a825-b97524a35347.html

quadrants and reduce the amount of developable land. The Comprehensive Plan identified 4 commercial corridors where development and redevelopment will continue. The City of Wagoner has a variety of zoning in place to help shape future land uses.

The *City of Coweta Comprehensive Plan 2020-2030* lays out proposed land use designations for 2020, 2025, and for 2030. These maps show a possible expansion of City boundaries northeast to the Muskogee Turnpike and south to the Arkansas River. Many of these areas' land uses were designated as Residential Very Low (density). Commercial land uses were primarily anticipated along Highways 51 and 72. The land use plan also anticipates a sizable land parcel designated "Public Facility" (County) and an expansion of industrial land use designations near the wastewater treatment plant.

Coweta anticipates a new Muskogee Turnpike Interchange near 273rd East Avenue. This interchange could drive both commercial and residential growth and intensities in Coweta, especially near the turnpike. The plan reported the interchange would be intended to create arterial access from the turnpike to SH 51. Figure 1-9 is an image that shows these designations, taken from the Coweta Comprehensive Plan.

Figure 1-9 Coweta Comprehensive Plan 2030 Proposed Land Use



Development since 2009

Aerials from 2009 and 2020 were compared to roughly estimate development patterns throughout the County. The western part of the planning area has attracted significant growth in residential developments, especially near the turnpike. Highland Creek, a large single-family residential neighborhood, was constructed between Broken Arrow and Coweta in unincorporated Wagoner County. This neighborhood included over 200 properties by 2021 with space to accommodate nearly

double that in the future. It connects to two arterials. Similar neighborhoods were developed northwest of the Muskogee Turnpike near Broken Arrow and 91st ST. South. Hundreds of homes were added in unincorporated areas here.

In Coweta, the Cedar Creek Village on 141st S. has added a little shy of 100 residences, with room for more to the west of town. Detention ponds are evident on aerial images. This neighborhood has two points of access along 141st South. There is no other access to external roads. An area east of this development currently has a rezoning application at the time of this writing.

The southwest corner of Coweta has experienced several new residential subdivisions between E 146th St South and E 11st St. South. Over 100 residences have been added in these developments, with space remaining for more homes, and one of the developments has stubbed streets that could expand its street grid and develop more land. One of these developments connects to both E. 146th St to the north and E. 151st St. to the south. The other two only connect to E. 151st St.

A country club was constructed in the central portion of the County, near Ben Lumpkin Rd. Additional homes were constructed in a neighborhood southwest of the country club. Single homes have been added throughout the county.

It is expected that there will be continued growth of residential neighborhoods due to the nearby metropolitan area. Agricultural land in this area will continue to be converted to single family residential neighborhoods if the metro region grows. Areas near Coweta, Wagoner, and the City of Muskogee to the south may experience similar pressures. Commercial corridors along highways will also develop as residential populations grow.

In all of these development cases, developing agricultural or open space near cities in towns often requires the expansion of infrastructure services. These can represent large capital costs to municipalities and operators, and it can expose the systems to more hazard risks. In addition, some of the recent development in the unincorporated areas near Coweta (Commissioner District 3) have flood issues due to design of the development or their proximity to floodplains. None of the other participating jurisdictions have had development that has increased their risk to flooding.

1.3.6 Natural Environment

The natural environment has been a critical component of Wagoner County's historic growth, economic development, and community. Residents and visitors take advantage of open space and water bodies for recreation. Fort Gibson Lake is an important economic driver for the City of Wagoner and the eastern portion of the county by providing recreational opportunities for regional residents. Agriculture, which important throughout the County, depends on a well-functioning environment as well.

Chapter 2 The Planning Process

A combination of guidance from FEMA's Local Mitigation Plan Review Guide, the Local Mitigation Planning Handbook, and the Community Rating System (CRS), was used to create this plan's ten-step planning process. The 2021 Wagoner County Hazard Mitigation Planning Process began in November 2020 during the COVID-19 pandemic. To reduce the risk of exposure, a greater emphasis was placed on remote meeting, data collection, and collaboration than on in-person meetings.

2.1 Organize to Prepare the Plan

The Wagoner County Planning Committee guided the planning process by providing feedback on community resources, critical facilities, past hazard events, mitigation goals, and priority action items. Wagoner County has an active Local Emergency Planning Committee (LEPC) which was used as the basis for this mitigation planning process. The Committee was composed of emergency management professionals, elected officials, local government staff, and representatives from related agencies. All meetings were publicly posted, per Open Meetings Act requirements.

Representatives from all participating jurisdictions, including the County, provided input throughout the planning process. These representatives assisted the planning team during the capability and hazard assessments and contributed to the action items and maintenance of the plan. The representatives on the planning committee from each participating jurisdiction participated in at least two planning meetings either in person or virtually.

Other local officials and stakeholders were invited to participate in the planning process. Many actively participated, serving as members along with the jurisdiction representatives. Stakeholders were contacted by email or phone to serve in the committee. These stakeholders discussed existing studies, reports and technical information and their needs, goals and plans for the area. Due to the pandemic, most of these participants were contacted through telephone interviews and email. All participating jurisdictions and stakeholders were invited to review the draft Plan Update and provide feedback on it prior to approval and adoption.

Participating Jurisdiction Representatives on Planning Committee

Name	Jurisdiction	Title
Heath Underwood	Wagoner County	Emergency Manager
Roger Kolman	City of Coweta	City Manager
Brad Matthews	Town of Okay	Mayor
Sharon Payne	Town of Porter	Mayor
Darryl Moore	Town of Red Bird	Mayor
Cymone Davis	Town of Tullahassee	City Manager
Jeff Holmes	Coweta Public Schools	Superintendent
Mark Hayes	Okay Public Schools	Principal
Charles McMahan	Porter Public Schools	Superintendent
Randy Harris	Wagoner Public Schools	Superintendent

Wagoner County Planning Committee Stakeholders

Adam Springsted	Town of Porter, Fire Chief
Allison Whitsitt	Oklahoma Emergency Management, Northeast Area Coordinator
Andria Smith	Northeastern State University, Emergency Manager
Bill Giles	Rural Water District 5, Business Manager
Bill Smiley	U.S. Army Corps of Engineers, Chief Emergency Management and Homeland Security, Tulsa District
BJ Smith	Town of Tullahassee, Fire Chief
Bob Haley	City of Wagoner, Chief of Police
Bradah Littlefield	KIHF Creek Nation
Brandon Wren	Wagoner County, Assistant Emergency Manager
Brian Hathaway	Rural Water District 7, Manager
Denette Hughes	Rural Water District 5, Office Manager
Edna Davis	Town of Red Bird, Council Member
Elyce Holloway	Oklahoma Department of Health Emergency Preparedness and Response, Region Planner
Emily Shuart	OG&E, Director of Regulatory Services
Frank Phillips	PSO, External Affairs
James Evers	PSO, Manager Governmental and Environmental Affairs
Jamie Ott	City of Broken Arrow, Emergency Management Director
Jason Howard	Stone Bluff Fire Company, Fire Chief
Jimmy Cagle	City of Wagoner, Fire Department Assistant Chief
John Rogers	Rural Water District 6, Manager
Keisha Currin	Town of Tullahassee, Mayor
Madelyn Brandon	State Fire Marshall Office Fire Information Council, State Program Manager
Mark Hayes	Okay Public Schools, Principal
Mike Bell	City of Coweta, Chief of Police
Nick Jackson	City of Porter, Assistant Fire Chief
Nicole McGavock	National Weather Service (Tulsa), Service Hydrologist
Payden Metzger	Okay Fire Department, Chief
Rachel Cooper	Wagoner County, Engineer and Floodplain Administrator
Rick Greene	Coweta Public Schools, Facilities Director
Rick Lang	Rural Water District 4, Operations Manager
Tim Thompson	OG&E, Community Relations Manager
Trace Kinyon	Rural Water District 9, Director
Tyler Evans	City of Muskogee, Emergency Manger

2.2 Involve the Public

The Wagoner County Planning Committee reached out to the public via an online survey. The public were given an opportunity to comment on their perception of the hazards identified by the planning team and the severity of those hazards. The public also was given the opportunity to comment

generally on hazards, capabilities, or other aspects of the planning process through a write-in process on this survey. In addition to the survey, all meetings held through the LEPC were made available to the public, making a total of four meetings for possible public involvement (see meetings 1-3, 5 in the following sections). Comments from these meetings were incorporated into the capability assessment (Chapter 3), the Risk Assessment (Chapter 4), and the Mitigation Strategy (Chapter 5).

Draft action items and the draft plan also were made available for review prior to submittal to the Oklahoma Department of Emergency Management and Homeland Security (ODEMHS) for review. Social media was used to notify the public the plan was available for review at the Wagoner County Emergency Management office.

2.3 Coordinate with Other Agencies and Organizations

The planning committee contacted neighboring communities, tribes, local, state, and federal agencies, businesses and other private and non-profit organizations, by email, letter, or phone. These stakeholders were personally interviewed to review their existing studies, reports and technical information and their needs, goals, and plans for the area. As noted in section 2.3, stakeholders invited to participate included representatives from the Oklahoma Department of Emergency Management and Homeland Security, Cherokee Nation, Oklahoma State University, OG&E, PSO, Lake Region Electrical Co-operative, United States Army Corps of Engineers, Oklahoma Water Resources Board, American Red Cross, the Disaster Resilience Network, emergency managers from neighboring areas, the City of Muskogee, and Rural Water Districts throughout Wagoner County. (A list of the stakeholders that represented these groups can be found in section 2-1).

Some stakeholders participated in the major group meetings (summarized in the table below). During these meetings, stakeholders provided insight and expertise to review the Mitigation Plan update, assess the identified hazards and resulting problems associated with each hazard, develop appropriate mitigation measures, and draft an action plan. Due to the global pandemic, however, most of the stakeholders were contacted through telephone interviews and email. Stakeholders were also invited to review and provide feedback on the draft Plan Update prior to its approval and adoption.

Table 2-1 Meeting Schedule and Description

Meeting Number	Month-Year	Overview Description
Meeting 1	Nov-2020	Discussed previous plan, outlined the hazard mitigation process, and provided an overview of all the hazards
Meeting 2	Feb-2021	Discussed flood vulnerabilities in Wagoner County with the developed web viewer, especially in the light of the 2019 flood event
Meeting 3	Mar-2021	Verified assessment for all hazards identified in the plan. Also discussed possible hazard mitigation solutions for the identified natural hazards and criteria for an action plan.
Meeting 4	Apr-2021	Discussed planning process and opportunities for major utility providers in Wagoner County

Meeting 5

Apr-2021

Reviewed action items from 2009 plan, considered observations and recommendations from the risk assessment, and prioritized action items for the 2021 plan

2.4 Assess the Hazard

Hazards and hazard data were selected based on the 2009 Wagoner County Hazard Mitigation Plan, the State of Oklahoma Hazard Mitigation Plan, and deliberation of the planning committee. Chapter 4 describes the hazard selection process and assesses each hazard's risks to the planning area. Data from several sources was used to assess the hazards, including the Simple Planning Tool for Oklahoma Climate Hazards, the U.S. Geological Survey, the National Oceanic and Atmospheric Administration, the National Weather Service, among other federal and state sources. The US Army Corps of Engineers, Tulsa District provided shape files and Emergency Action Plans for each of the High Hazard dams (under their authority) profiled in this plan. The Southern Wildfire Risk Assessment Portal was used when assessing risk to wildfire. These sources were used throughout Chapter 4.¹ In addition to these sources, hazards were assessed, prioritized, and verified with key members in the County at meetings 2 and 3 (see step 3, above).

2.5 Assess the Problem

The hazard data was analyzed considering its impact on public safety, health, buildings, transportation, infrastructure, critical facilities, the natural environment, endangered species, and the economy.

Each hazard's previous occurrences, location, and extent were considered in the assessment. Communities' specific vulnerabilities were also considered. Hazard risks were discussed at a public meeting, where members of the Planning Committee contributed to the analysis.

Building footprints were used to estimate potential losses from flood and wildfire hazard areas identified in Chapter 4, and a standalone web viewer developed by Meshek & Associates, LLC. Building footprint polygons within Wagoner County were selected from computer-generated building footprints covering all 50 US states.² Building footprint polygons that intersected spatially with flood and wildfire hazard areas were identified. This was used to estimate the number of buildings at risk to those hazards. Specific problem statements, or observations, are included for each hazard in Chapter 4. Information from the US Census was used to assess social vulnerability to the hazards identified in Chapter 4.

2.6 Set Goals

The Planning Committee created goals the planning area and the participating jurisdictions for the hazard mitigation plan. These goals are listed in the Mitigation Strategy, Chapter 5.

2.7 Review Possible Activities

The planning team reviewed previous plans, observations from the hazard assessment, and input from key members from Wagoner County to draft the mitigation activities. Action items from the

¹ The simple planning tool for hazards is produced by the Southern Climate Impacts Planning Program, one of 11 NOAA Regional Integrated Sciences Assessments Teams.

² Microsoft 2018 data

previous plan were reviewed to determine if they had been completed, were ongoing, not begun, or were still relevant to addressing the hazards facing the planning area. Actions with the same intent were combined into a general action item. Actions in Chapter 5 were also derived from specific observations and problem statements at the end of each hazard section in Chapter 4. New action items were drafted based on community assessments, hazard observations and input from the planning committee.³

In addition to identifying and prioritizing actions that are most important to Wagoner County, the planning team also identified internal and external revenue streams, existing plans, and partnerships that key officials in the County could leverage to execute these action items. A more detailed description of these items can be found in Chapter 5.

2.8 Draft an Action Plan

The planning team reviewed observations from the risk assessment and results of the capability assessment when considering different actions. From this analysis, the planning team evaluated and prioritized the most suitable mitigation actions for Wagoner County to implement. The mitigation strategy includes mitigation actions to reduce the impacts of hazards identified in the risk assessment.

2.9 Adopt the Plan

The 2021 Wagoner County Hazard Mitigation Plan was submitted to ODEMHS and then to FEMA for approval. Following final approval, the Plan was adopted by the County, participating communities, and school districts individually.

2.10 Plan Maintenance

Adoption of the *2021 Wagoner County Multi-Hazard Mitigation Plan* update is only the beginning of this effort. Community offices, other agencies, and private partners will proceed with implementation. The Committee will continue to meet on a regular basis to monitor progress, evaluate the activities, and periodically recommend revisions to the Plan and Mitigation Action Items.

The plan will be formally updated a minimum of every five years, as required by FEMA. Chapter 5 outlines this step in more detail and Chapter 6 contains more information on this process.

³ https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf <http://mitigationguide.org/task-6/mitigation-actions/>

Chapter 3. Capability Assessment

Communities can take several actions to prevent or mitigate the impacts of natural disasters. Such actions range from instituting regulatory measures (e.g., building and zoning codes) and establishing Emergency Operations Plans (EOP) and Emergency Operations Centers (EOC), to purchasing fire trucks and ambulances and constructing large and small infrastructure projects like levees and safe rooms. Participating jurisdictions have already made considerable investments in these critical areas. The sections that follow in this Chapter survey the regulations, plans and infrastructure that Wagoner County has in place for avoiding or mitigating the impacts of natural hazards. This survey is based on Task 4 of FEMA's *Local Mitigation Planning Handbook* and assesses existing authorities, policies, programs, and resources available to accomplish mitigation.

Wagoner County Capabilities

The primary types of capabilities for reducing long-term vulnerability through mitigation planning are the following:

- Planning and Regulatory
- Financial
- Administrative and Technical
- Education and outreach

Wagoner County, its communities and schools, have a unique set of authorities, policies, programs, staff, funding, and other mitigation related resources. The Planning Team reviewed appropriate comprehensive, capital improvement, emergency action, and other plans to incorporate their information into this planning effort. These plans contain information regarding development patterns, risk areas, and future actions.

Stakeholders from neighboring communities, tribes, counties, agencies, and non-profit organizations provided additional information during the planning process on their capabilities that play a role in hazard mitigation with Wagoner and the participating communities. This chapter outlines the entire planning area's participation in national programs, such as the National Flood Insurance Program (NFIP) or Community Rating System (CRS). The primary types of capabilities for reducing long-term vulnerability through mitigation planning are described below.

3.1 Planning and Regulatory Capabilities

Planning and regulatory capabilities summarize the programs and powers jurisdictions use to guide, manage, regulate, or mitigate growth and development. Examples of planning capabilities that can either enable or inhibit mitigation include comprehensive land use plans, capital improvements programs, transportation plans, neighborhood plans, zoning ordinances, building codes, disaster recovery and reconstruction plans, and emergency preparedness and response plans.

Table 3-1 summarizes the relevant local plans, ordinances, and programs already in place or under development for the jurisdictions in Wagoner County. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the Wagoner County Hazard Mitigation Plan requirements. A more detailed discussion on these planning and regulatory capability follow. Note, the list of plans or studies reviewed in this section was also considered in the development of Chapter 4. The existence of plans and regulatory capabilities does not directly reduce hazard impacts. Still, it is a vehicle for preventing development in hazard areas, building to sub-standard codes, resulting in a more resilient community. Previous hazard mitigation plans,

emergency operations plan, existing flood drainage studies, and many additional planning mechanisms described here were taken into significant consideration when developing the capability assessment. The State Hazard Mitigation Plan was used to determine which hazards may have been added since the previous Wagoner County hazard mitigation plan was approved but ultimately did not provide any level of new information warranting incorporation into this assessment. The county will revisit this at the next update of the state hazard mitigation plan.

Table 3-1 Wagoner County Planning and Regulatory Capabilities

	Hazard Mitigation Planning	Flood Management Plan	Emergency Operations Plan	Disaster Recovery Plan	COOP Plan	Capital Improvements Plan	Comprehensive Plan	Floodplain Ordinance	Building Codes	Zoning Ordinance	NFIP
Wagoner County	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
City of Coweta	✓	✓	✓			✓	✓	✓	✓	✓	✓
Town of Okay	✓		✓					✓	✓		✓
Town of Porter	✓		✓			✓	✓		✓	✓	
Town of Red Bird	✓		✓						✓		✓
Town of Tullahassee	✓										✓

National Flood Insurance Program (NFIP)

This section describes each jurisdiction's participation in the NFIP and their floodplain management program for continued compliance.

The planning area's participation in the NFIP is summarized in Table 3-2.¹ Participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with OWRB and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and

¹ <https://nfipservices.floodsmart.gov/reports-flood-insurance-data>

property. The Town of Porter was suspended from the NFIP in 2012. Wagoner County should work with Porter to identify ways to become compliant with the NFIP and allow citizens to purchase flood insurance. Ultimately participation will be the decision of Porter. Participation in the NFIP cannot be forced, and officials at Porter did not express a desire to rejoin the NFIP during the plan update.

Tulahassee participates in the NFIP but they lack FEMA mapped floodplain or historic flood impacts. As Tullahassee continues to annex land, they should be mindful of any new SFHA that may be within the newly annexed land or areas planned for annexation.

Table 3-2 NFIP Summary

	CID	Effective Date	Policies in force (11/30/2020)	Total Coverage	FIRM status Code	Status
Wagoner County	400215	9/30/16	155	\$39,019,300	3	Participating
Coweta	400216	9/30/16	56	\$10,594,800	3	Participating
Okay	400217	4/17/12	1	\$350,000	3	Participating
Porter	400434	4/17/12		Not Participating		
Red Bird	400321	4/17/12	-	-	6	Participating
Tulahassee	400218	NSFHA*	-	-		Participating
City of Wagoner	400219	4/17/12	20	3,829,300		Participating

Wagoner County

The Wagoner County Engineering Department provides Floodplain Administration and Stormwater Management in Wagoner County. According to the County Engineer, who serves as the Floodplain Administrator, the department is staffed for day-to-day operations. The County Floodplain Ordinance requires 2 feet of freeboard on all new construction in the FEMA mapped Special Flood Hazard Area. Permitting and enforcement of the floodplain ordinance is adequate. While the County Engineer does not currently identify gaps in capability or capacity, there is justification for hiring one additional staff member in the next 24 months (about 2 years). The County Engineer identified surveying and GIS as areas of expertise the county benefit from having on staff, though not currently necessary. Existing opportunities to further expand on capabilities of the department could be augmented through contractual services as needed.

Depending on the level of impact from a flood event, or hazard causing substantial damage to structures within the FEMA mapped SFHA, the County may need support after future events. The County Engineer the benefit of improving communication between all levels of government after a flood event to ensure Wagoner County's citizens receive the best and most accurate information about permitting requirements, compliance with the County floodplain ordinance, and NFIP insurance requirements. Section 1206 of the Disaster Recovery Reform Act allows FEMA to provide support for substantial damage determinations and floodplain management code administration as reimbursable tasks through FEMA's Public Assistance program. The County should coordinate with Oklahoma Department of Emergency Management and Homeland Security to learn about the floodplain administration activities eligible for reimbursement.

Coweta

Coweta is exposed to several floodplains. The community participates in the NFIP but does not currently participate in the CRS. As part of its NFIP participation, Coweta enforces stormwater regulations. Currently, those regulations require 1 ft of freeboard in the SFHA. This ordinance includes other floodproofing and general stormwater management. Coweta should make efforts to increase flood insurance coverage in the community and consider joining the CRS to expand their floodplain management program and incentivize flood insurance. The community Floodplain Administrator should maintain their Certified Floodplain Manager designation which requires continuing education annually.

Porter

As of this writing, Porter does not participate in the NFIP. Porter officials and officials in Wagoner County were reminded of the importance of being in compliance with the NFIP. Officials expressed interest in returning Porter to NFIP compliance.

Okay, Red Bird, and Tullahassee

The communities list a Floodplain Administrator for their community on the OWRB list of local Floodplain Administrators. If flooding occurs in the communities, it is likely they would rely on the county or the Oklahoma Water Resources Board for assistance in Substantial Damage determinations.

While Red Bird is listed as a participating NFIP community, there were no insurance policyholders reported in the latest available information. There are no identified Special Flood Hazard Areas in Tullahassee nor are there any insurance policyholders in the town, but it does participate in the NFIP according to FEMA data. Both Tullahassee and Redbird lack a floodplain ordinance, which does not meet NFIP standards.

As Tullahassee plans for growth, Tullahassee should adopt drainage criteria for development and ensure planned development is not in areas prone to flooding.

Continued Compliance

Communities in good standing with the NFIP will continue to comply by enforcing local floodplain ordinances and regulating new construction. Growth projections in Wagoner County will change the flood hazard over time. Wagoner County enforces some of the strictest floodplain requirements in Oklahoma and will continue to enforce the requirements. Wagoner County and participating communities would benefit from additional substantial damage estimator training in advance of the next flood event.

Planning and Zoning

The planning area has adopted plans in the past but has not had a consistent planning schedule or process. Where appropriate, information noted below was included in the risk assessment, Chapter 4. It should be noted, Wagoner County is one of the fastest developing County's in Oklahoma and one of the most restrictive in their zoning ordinances and building codes. Members of the Wagoner Metropolitan Area Planning Commission participated in this Plan update. Additionally, the Emergency Manager and community officials work together in is other local planning efforts. The coordination between Wagoner County and participating jurisdictions is a good example of integrating various planning processes and priorities.

Wagoner County

Comprehensive planning can increase communities' eligibility for federal and State funding. *The 2021 Wagoner County Hazard Mitigation Plan* and its planning process integrate information from these planning sources and their communities throughout its sections, especially those related to development patterns and floodplain management.

A 1981 comprehensive plan covered the City of Wagoner and Wagoner County. The City of Wagoner adopted *Re: Imagine Wagoner in 2018*. This comprehensive plan included a land-use intensity map that contains some unincorporated areas.

The Wagoner Metropolitan Area Planning Commission (WMAPC) comprises members from the City of Wagoner and unincorporated Wagoner County. WMAPC guides planning, zoning, and other development-related questions to the City Council and County Commission. Assessed fees fund it. WMAPC is working on expanding its services to other small, incorporated communities within the county. In 2020, it started providing services to Coweta. WMAPC's zoning code is applied to unincorporated areas and the City of Wagoner. Other communities' zoning codes will be discussed in their sections.

WMAPC also oversees subdivision codes, which regulate the approval of plats within its jurisdiction. Wagoner County originally adopted the codes in 1981, and a revision was being considered as of the writing of this plan. Subdivision codes can provide methods for ensuring space for stormwater systems, emergency access, and other mitigation items.

Wagoner County has a Flood Damage Prevention ordinance that regulates construction within SFHA. It includes requirements for two feet of freeboard in new construction and other floodproofing and stormwater management steps when permits are required. The City of Wagoner requires 1 foot of freeboard.

Wagoner County actively enforces the 2015 International building code as adopted by the State of Oklahoma. No BCEGS score was available for the County or the City of Wagoner as of the writing of this plan.

City of Coweta

The City of Coweta government offers a wide array of services to residents and businesses. Coweta already uses a variety of planning and regulatory structures that can or could integrate hazard mitigation. The City recently adopted a comprehensive plan that envisions future land use and growth. In addition, it enforces building codes and has zoning ordinances.

The City of Coweta adopted *City of Coweta Comprehensive Plan 2020-2030* to provide policy support for land-use changes, development, infrastructure upgrades, and overall community health and character. The plan includes a discussion of future land use and environmental considerations. This was discussed previously under Future Development. The City has its own planning and development staff but now uses WMAPC as its planning commission. It also has an MOU with Broken Arrow for building inspection assistance. Coweta has its own zoning codes and subdivision regulations.

Coweta's adopted building codes reflect the most recent International Codes Council publication. The City requires building permits for new construction, mobile homes, demolition, remodeling, and repairs.

Town of Porter

Porter reported having comprehensive plans, capital improvement plans, and zoning codes in place. These can all shape future mitigation by directly implementing measures or shaping future development to be more resilient. The Town also reported enforcing building codes (10/2001) flood management plans, and site review requirements. The Town of Porter's Board of Trustees operates as its planning commission, and they reported having a mitigation planning committee.

Okay, Red Bird, and Tullahassee

As incorporated, Towns, Okay, and Red Bird have access to various regulatory and planning mechanisms to mitigate hazards. According to the Oklahoma Unified Building Code Commission, both have adopted the State's building codes.

At the time of this update, Tullahassee had recently hired a new City manager and worked with the University of Oklahoma Institute for Quality Communities to begin exploring planning mechanisms. The community seeks to revitalize the Town and is currently working on the Town's charter.

Opportunities for Expanding and Integrating: While there are several plans in effect at the community level, it is unclear how many individuals served on the various planning teams. As Wagoner County grows, there is an opportunity for continued coordination and collaboration across County and Local Government. Planners should continue to participate in Hazard Mitigation and Disaster Recovery Planning. Similarly, the Emergency Manager and Floodplain Administrators identified for each community should serve on planning committees to provide feedback on areas at risk to natural hazards. Wagoner County and each participating jurisdiction should integrate the hazard mitigation plan into future long range and community planning processes.

3.2 Administrative and Technical Capabilities

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability can be evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of intergovernmental coordination among departments will also affect administrative capability for the implementation and success of proposed mitigation activities.

Technical capability can generally be evaluated by assessing the level of knowledge and technical expertise of local government employees, such as personnel skilled in using Geographic Information Systems (GIS) to analyze and assess community hazard vulnerability. The Capability Assessment Survey was used to capture information on administrative and technical capability through the identification of available staff and personnel resources.

Wagoner County

Wagoner County has a robust emergency management department engaged in mitigation and response activities throughout the County. Wagoner County and the City of Wagoner have a building inspector charged with helping to enforce those regulations. Other County technical staff include a civil engineer, a utility permitting coordinator, and a code enforcement officer. These positions all have impacts on development that could directly be related to mitigation action items. Additional staffing would allow for more efficient inspections and enforcement of codes.

Wagoner County's government helps support smaller local jurisdictions, especially in areas such as Emergency Management. The County could spearhead efforts to support smaller participating

communities expanding their local capabilities or create formal systems (MOU's for example) to supplement their efforts.

Technical Assistance and *Capability and Capacity Building* grants could help supplement, build, and develop local Administrative and Technical Capabilities. Depending on the type of activities included, funding could be drawn from FEMA's National Preparedness Directorate (NPD) and Grant Programs Directorate (GPD) Technical Assistance (TA) program.² Other avenues for increasing administrative capabilities exist, such as the Indian Nations Council of Government (INCOG), state agencies, MOU's with other jurisdictions, or private contractors when funds are available.³

City of Coweta

Coweta has a city government offers a comprehensive swath of services through multiple departments and boards.

Coweta's city website refers viewers to Wagoner County emergency management for additional information. Coweta's Fire Department leads local emergency management and education related to some mitigation and preparedness.⁴ Coweta has a safe room registration program.

Town of Porter

Porter has building permitting staff that provide guidance on development to the planning and zoning board. The Town's Government also provides other services related to economic development, utilities, animal services, and emergency services. In the event of a disaster, it will be necessary to augment the existing staff through either MOUs with the County and surrounding communities, or contractual services.

Okay, Red Bird, and Tallassee

Okay does not have many town employees other than, water/sewer, trash, and fire, since the Town lacks a tax or fee to collect revenue. The town has a part-time mayor, who has some administrative duties. The fire department is well equipped and trained to respond to emergencies in the town and surrounding areas.

Limited information was available on Red Bird's administrative and technical capabilities. At the most basic level, the town lacks a building inspector and someone to maintain roadways, which often leads these roads to become impassable following hazard events like flooding and severe winter storms. If the Town decides to expand those, they may be eligible for technical assistance or capacity building grants.

Tallassee's local leadership is working to increase the town's capabilities. At the time of writing, the town does not have adequate staffing to maintain daily operations. Many key community members, such as the Mayor and the City Manager, wear several hats and maintain various responsibilities. Tallahassee will continue to build capacity and intends to seek Federal grants, some of which will help alleviate these capability gaps.

² NPD is especially applicable to emergency planning that include a protection (human-incited event) or prevention component.

³ <http://www.incog.org/>

⁴ <https://www.cityofcoweta-ok.gov/158/Fire-Department>

3.3 Financial Capabilities

The ability of a local government to take action is often closely associated with the amount of money available to implement policies and projects. This may take the form of outside grant funding awards or locally based revenue and financing. The costs associated with mitigation policy and project implementation vary widely. In some cases, policies are tied primarily to staff time or administrative costs associated with the creation and monitoring of a given program. In other cases, direct expenses are linked to an actual project, such as the acquisition of flood-prone homes, which can require a substantial commitment from local, state, and federal funding sources. The Capability Assessment Survey was used to capture information on the county's fiscal capability through the identification of locally available financial resources.

For this discussion, internal funding refers to financial resources generated by the County or participating jurisdiction. External funding refers to all other sources of funding.

Internal Revenue

County and local governments may have access to a recurring source of revenue beyond property, sales, and income taxes, such as stormwater utility or development impact fees. These funds may be used to support local mitigation efforts independently or as the local match required for grant funding.

The County receives ad valorem (property) taxes.⁵ These taxes help fund both operations and capital improvement programs. Special taxes may be levied for large projects. Funding from services may supplement those agencies or operations. Ad valorem taxes are shared with school districts, which received a majority of property taxes in 2012.⁶ These taxes also supported the county health department. The County's portion of the sales tax is allocated to the "General Fund" and supports a wide array of county offices, programming, and staffing.

County Sales tax (in 2012) was at 1%. These funds were split between the County Commissioners (for use within their districts), the sheriff's office, and for county insurance and general obligations. A use tax (sales tax on out of state purchases) supports critical county services related to mitigation such as E-911, economic development, engineering services, stormwater and flood plain management, and other administrative services.

There is a county wide sales tax assessment used to support fire districts.⁷ This was at 0.3% in 2012 and is shared equally among the fire departments.

External Funding

The County indicated that it pursues funding from federal, state, and other sources as appropriate. Although some of these sources require a local match, much of the funding can be sourced outside Wagoner. The County Improvement Roads and Bridges (CIRB) has been an important source of resources for improving transportation infrastructure. Nine projects throughout Wagoner county have been allocated over \$20M in aggregate grant money; the earliest are to begin in 2022.⁸ The County has also pursued BUILD (Better Utilizing Investments to Leverage Development) grants and has

⁵ <https://extension.okstate.edu/fact-sheets/ad-valorem-taxes.html#:~:text=A%20tax%20authorized%20by%20the,thousand%20dollars%20of%20taxable%20value.>

⁶ <https://www.ok.gov/wagonercounty/documents/Where%20Do%20My%20Taxes%20Go.pdf>

⁷ https://www.ok.gov/wagonercounty/Emergency_Services/Fire_Departments/index.html

⁸ https://www.odot.org/cirb/pdfs/cirb_fy2021-2025_workplan.pdf. See section: 5 Year CIRB Work Plan

received funding from Tribal sources. The County has also received \$1.72M from FEMA's Hazard Mitigation Grant Program (HMGP) since 2001, not including the funding for this current plan.⁹ These funds have been used primarily for residential safe room programs implemented by Wagoner County Emergency Management.

Table 3-3 Available Funding Opportunities

Possible Funding	Uses
Capital Improvement Program	CIP funding is used for various infrastructure projects throughout the county and participating communities.
Incur debt through General Obligation or special tax bonds	Bonds are used to fund specifically identified projects.
Community Development Block Grant	CDBG are typically used to enhance functional needs populations.
Hazard Mitigation Assistance	HMA grants are used for mitigation projects whenever possible.
Federal Highway Administration Funding	FHWA funding is used for eligible transportation projects.
County Improvement Roads and Bridges	Important source of resources for improving transportation infrastructure.
Oklahoma Water Resource Board	OWRB loans are used for water and sewer projects. The potential exists to use these funds as a match
Emergency Management Performance Grant	Federal grant program. Funds various emergency management program needs.

City of Coweta

Coweta has a small sales tax base with its residents and commercial properties. With a large percentage of commuters to the larger cities, Coweta experiences a large amount of retail leakage.¹⁰ This lowers the city's tax base, which could impact its ability to undertake expensive capital improvement projects related to mitigation. Coweta levies a wide variety of fees, mostly associated with municipal services.¹¹ In 2012, it levied a 3 % sales tax.

Coweta received FEMA grant funds in the early 2000's to support an acquisition and demolition project that removed 13 flood prone residences.

Town of Porter

Porter receives local sales taxes and utility or service fees. It has the ability to raise funds through special bonds. Its sales tax was set at 4% in 2012.

⁹ FEMA AIP; Meshek GIS analysis

¹⁰

<https://www.retailattractions.com/Portals/0/PropertyAgent/513/Files/331/Coweta%20City%20Limits%20Report%20Summary.pdf>

¹¹ <https://www.cityofcoweta-ok.gov/DocumentCenter/View/1269/2019-2020-FEE-SCHEDULE-PDF?bidId=>

Porter has its own grant writing capabilities. It reported having received Community Development Block Grant (CDBG) as well as grants through other external funding programs.

Okay, Red Bird, Tullahassee

Okay has a limited sales tax base and access to other common municipal funding mechanisms. The town's sales tax was set at 4% in 2012.

Red Bird's local government has two sources of municipal income, natural gas and water services.¹² As of the writing of this plan, there were no commercial or industrial uses within the Town to provide sales tax or similar revenue. Red Bird's status as a small and impoverished community would enable it to receive a higher federal match on grants.

Tullahassee has limited revenue from the water services provided to citizens. In 2020, the community invested in a City Manager and began a significant effort to revitalize the Town. Volunteers from various disciplines are working with community leaders to clean the Town and attract businesses to the area to establish a tax base for the community. As of the writing of this plan, the Town secured a grant from the Tulsa Remote program for \$10,000 and a CED loan from a local bank for \$5,000. The Town will continue to rely heavily on funds from philanthropic organizations and grant funding until revenue streams are established. The community continues to struggle financially, and a disruption of any magnitude could devastate the Town. Tullahassee plans to expand its financial capabilities in FY21 by applying for FEMA's BRIC program in 2021 and expand staffing for grant application development, management, and implementation of projects. Additionally, the Town intends to seek direct technical assistance to identify opportunities for community resilience as the Town re-establishes itself from the ground up.

3.4 Educational and Outreach Capabilities

This type of capability refers to education and outreach programs, and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Several national programs exist to encourage education and outreach on specific hazards.

StormReady: Encourages grassroot efforts in communities to establish resilient storm communication and awareness systems.¹³ Wagoner County is a StormReady community.

Firewise Communities: Is a voluntary program for communities that meet a set of criteria. Firewise provides education and collaboration resources for residents and community members to enable them to lower the threat of wildfire to homes.¹⁴ There were no Firewise Communities or sites in Wagoner County at the writing of this plan.

Wagoner also addressed outreach programs in its 2009 Hazard Mitigation Plan. Planners prioritized media outreach campaign to educate the students and administrators about Wagoner's hazards. Coweta uses websites and social media to provide some educational materials on hazards and best practices to respond to hazard events. Porter, Red Bird, and Tullahassee do not have any specific education or outreach activities.

¹² <http://www.redbirdok.org/>

¹³ <https://www.weather.gov/StormReady>

¹⁴ <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA>

3.5 School District Capability Assessment

Wagoner County Public Schools conduct school according to provisions of state and federal law, and according to rules and regulations set forth by the Oklahoma State Department of Education. The checkmark (√) indicates that the jurisdiction School District reported to have the authority to implement the specified regulatory tool and that the tool is currently in place.

Table 3-4 Public Schools' Capabilities

Jurisdiction	Capital Improvement Plan	Emergency Management Plan and/or procedures in place	Budget to raise funds for mitigation (bond)	Ways to raise funds through public partnerships, corporate donations etc.	Designated emergency manager (even as a secondary position)	PTO/PTA
Coweta Public Schools	√	√	√	√		√
Okay Public Schools		√	√			
Porter Public Schools		√	√			
Wagoner Public Schools	√	√	√	√		√

Coweta Public Schools

Over the past few years, Coweta Schools has experienced substantial growth. Currently, the district serves over 3,300 students at eight different sites. The District has strong patron support for bond issues.

The District is currently preparing plans for new facilities and intends to seek FEMA funding for safe rooms on site. The Superintendent may use this hazard mitigation plan as a reference tool when recommending long range development plans to determine the site of new facilities and avoid development in more hazard prone areas. Structural recommendations from the Hazard Mitigation Plan may also be followed in new construction in order to create a higher resiliency to natural and manmade hazards. Coweta Public Schools recognizes that its responsibility for the safety of students extends to possible natural and man-made disasters and that such emergencies are best met by planning and preparedness. Coweta Public Schools maintain an Emergency Action Plan, updated

annually. State law requires fire and tornado drill at regular intervals. The District relies on the County emergency manager.

Okay Public Schools

Students are drilled throughout the year to be prepared in case of tornadoes, fires and any situation that might require a lock-down. The Superintendent may use this hazard mitigation plan as a reference tool when recommending long range development plans to determine the site of new facilities and avoid development in more hazard prone areas. Structural recommendations from the Hazard Mitigation Plan may also be followed in new construction in order to create a higher resiliency to natural and manmade hazards. Okay Public Schools maintain an Emergency Action Plan, updated annually. During the COVID-19 pandemic, the school district implemented a virtual learning plan and purchased Google Chromebooks for students to learn in a remote environment. State law requires fire and tornado drill at regular intervals. Okay Public Schools does not employ an emergency manager for the district.

Porter Public Schools

Porter Public Schools maintains an Emergency Action Plan that is reviewed and updated annually. The District remains stable in recent years. No future growth plans were provided during this plan update. If the District experiences growth in future years, it can use this Hazard Mitigation Plan to determine future development areas. Recommendations from the plan can be incorporated into new construction, or recovery after hazard events. State law requires fire and tornado drill at regular intervals. Porter Public Schools does not employ an emergency manager for the district.

Wagoner Public Schools

Wagoner Public Schools is a growing district with strong support for bond issues. Progress has been made to expand the district with new buildings using bond issues, such as the new VoAg building. In addition to the AG building At Ellington, the bond will add all new classrooms for kindergarten and 1st grade. EECC will receive a new office area/entrance, an expansion to the cafeteria and a new playground. At Teague, the bond will add 9 new classrooms and restrooms. Teague will now provide accommodations for grades 3rd, 4th and 5th. Wagoner Public Schools has entered a partnership with the K-20 Center (A statewide education research and development center that promotes innovative learning) who's mission is to cultivate a collaborative network engaged in research and outreach that creates and sustains innovation and transformation through leadership development, shared learning, and authentic technology integration.

As required by state law, the district maintains an Emergency Action Plan and participates in several drills each year. The Superintendent may use this hazard mitigation plan as a reference tool when recommending long range development plans to determine the site of new facilities and avoid development in more hazard prone areas. Structural recommendations from the Hazard Mitigation Plan may also be followed in new construction in order to create a higher resiliency to natural and man-made hazards.

NFIP Participation

None of the Districts profiled in this plan--Coweta, Okay, Porter, and Wagoner--participate in the NFIP.

Expanding on School Capabilities

The participating school districts can expand on mitigation capabilities through continued participation in the Local Emergency Planning Committee. Continued growth in the County will likely impact all Districts between the approval of this plan and its five-year update. The school districts

can increase mitigation capabilities by continued education of students, staff, and the public within the district. Teachers at each school should be trained on the various response procedures. The districts can promote hazard mitigation through education and outreach to students. Capabilities will be reassessed at the five-year update.

Chapter 4 2021 Risk Assessment

4.1 Overview

The risk assessment helps communicate vulnerabilities, develop priorities, and inform decision-making for the hazard mitigation plan and for other emergency management efforts. The Planning Team spent many hours in stakeholder workshops, meetings, and data collection and analysis. The 2021 risk assessment provides the factual basis for developing a mitigation strategy for Wagoner County and its participating jurisdictions. This assessment integrates an assets-based approach with an analysis of individual hazards to provide a deeper understanding of their impact on the planning area. Assets include people, utilities, and structures, as well as the organizations that support them. For hazard mitigation planning, this approach allows communities to drive mitigation actions more effectively.

Key Takeaways

Like Wagoner County's 2009 Hazard Mitigation Plan, flooding was identified as the biggest natural hazard to the County. The 2015 and 2019 flood events reinforced the planning area's vulnerability to flooding. This plan advances previous observations and actions in Wagoner County by identifying more precisely the areas that are most at risk of flooding and by identifying specific actions to mitigate these areas. Similarly, severe winter storms also received attention, which was due, in part, to the damages caused by the February 2021 snow and extreme cold event. This event emphasized the importance of infrastructure—in terms of physical structures and personnel coordination—in determining community vulnerability. Tornado and high winds remained a priority for the planning area, given the planning area's high vulnerability to these events.

Several mitigation elements received newfound, or renewed, emphasis in this risk assessment, namely: safeguarding infrastructure and critical facilities, communication, and developing or maintaining enhanced digital solutions. The planning team's analysis, along with FEMA's emphasis on lifelines (see chapter 1 or section 4.2.2 of this chapter), highlighted the importance of safeguarding infrastructure and other critical facilities that deliver essential goods and services to residents in Wagoner County. In this vein, the planning team and key officials in the County noted the importance of communicating and developing continuity of operations plans for utilities that deliver to residents in the County. The most important communication need identified was more comprehensive and effective communication between officials and residents. Some of the solutions to meet this need are digital solutions, such as electronic alert applications, along GIS mapping and positioning capabilities.

Structure of the Risk Assessment

This introductory section includes a brief discussion of previous FEMA disaster declarations in Wagoner County, an overview of the hazard assessment process, and a summary risk profile for the planning area. The risk profile is driven by an assessment of the hazard's overall significance, which combines a hazard's probability and extent, along with community vulnerabilities to the hazard. The individual risk assessments for each hazard align with the same format. They outline a hazard's overall significance from a determination of its specific probabilities, risks, and communities' specific vulnerabilities to them.

4.1.1 Disaster Declaration History

Wagoner County received 23 major disaster declarations (DR) since 1974. Table 4-1 outlines each FEMA declaration in Wagoner County. Since the 2009 Plan, Wagoner County has experienced 4 emergency declarations, 7 disaster declarations, and 1 fire management declaration. The planning jurisdiction has had a declaration in 6 of the 11 years, including two COVID-19 declarations in 2020 and one declaration in 2021.

Table 4-1 Historic FEMA Declarations Involving Wagoner County

Year of Declaration	Declaration Title	Disaster Number
1971	HEAVY RAINS & FLOODS	314
1972	SEVERE STORMS & FLOODING	317
1974	SEVERE STORMS & FLOODING	441
1976	SEVERE STORMS & FLOODING	504
1984	SEVERE STORMS & FLOODING	709
1984	SEVERE STORMS & TORNADOES	704
1986	SEVERE STORMS & FLOODING	778
1993	SEVERE STORMS & TORNADOES	987
1993	SEVERE STORMS, TORNADOES & FLOODING	991
2000	SEVERE WINTER AND ICE STORM	3158
2001	SEVERE WINTER ICE STORM	DR-1355
2005	HURRICANE KATRINA EVACUATION	EM-3219
2006	EXTREME WILDFIRE THREAT	DR-1623
2007	SEVERE STORMS, FLOODING, AND TORNADOES	DR-1712
2007	SEVERE WINTER STORMS	EM-3280
2007	SEVERE WINTER STORMS	DR-1735
2007	SEVERE WINTER STORMS	DR-1678
2007	SEVERE WINTER STORMS AND FLOODING	EM-3272
2008	SEVERE STORMS, TORNADOES, AND FLOODING	DR-1754
2010	SEVERE WINTER STORM	EM-3308
2010	SEVERE WINTER STORM	DR-1883
2010	SEVERE WINTER STORM	DR-1876
2011	SEVERE WINTER STORM	EM-3316
2011	SEVERE WINTER STORM AND SNOWSTORM	DR-1985
2015	SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING	DR-4222
2017	141ST FIRE	FM-5169
2019	FLOODING	EM-3411
2019	SEVERE STORMS, STRAIGHT-LINE WINDS, TORNADOES, AND FLOODING	DR-4438

Table 4-1 Historic FEMA Declarations Involving Wagoner County

2020	COVID-19	EM-3462
2020	COVID-19 PANDEMIC	DR-4530
2021	SEVERE WINTER STORM	DR-4587

4.1.2 Developing the 2021 Risk Assessment

The 2009 *Wagoner County Hazard Mitigation Plan*'s risk assessment was updated and enhanced with current, robust data. The process included reviews of the 2009 *Wagoner County Hazard Mitigation Plan*, the State of Oklahoma's hazard mitigation plan, previous events, and the specific vulnerabilities of the planning communities. Information on the frequency, magnitude, future patterns, and costs associated with hazards that threaten the planning area was included.

Outreach to subject-matter experts, stakeholders, and the public ensured the appropriate elements of each hazard were included and that the best-available data was used for the risk assessment. New, readily available, credible technical data was incorporated into the analysis as appropriate. This updated process combined best-in-class GIS analysis of hazard and development (trends, land use, and critical facilities) to locate high impact and highly vulnerable areas.

4.1.3 Hazard Classification and Identification

Wagoner County and the participating communities considered a full range of hazards that could affect the area for the 2021 Update. FEMA and the greater Department of Homeland Security (DHS) community generally organize threats and hazards into three categories:

1. Natural (tornado, hail, etc.)
2. Technological/accidental (dam incident, hazardous material incident, etc.)
3. Human-induced/intentional (terrorism, cyber-attack, active shooter, etc.)¹

This plan addresses hazards that can be categorized as natural or technological/accidental. Although this plan recognizes the potential threat caused by human-induced/intentional threats, these considerations are outside the scope of this mitigation plan. Natural or technological hazards that have posed a historical threat or a probable future threat were addressed because they meet FEMA's hazard mitigation requirements. These assessed hazards were derived from the state hazard mitigation plan and from the previous hazard mitigation plan. The Planning committee and stakeholders participated in a several workshops at Local Emergency Planning Committee (LEPC) meetings and other meetings, which were designed to discuss each hazard as it relates the planning area. Table 4-2 lists the assessed hazards in alphabetical order.

The organization of the evaluated hazards has changed somewhat since the 2009 plan. High Wind and tornado events were combined in this plan due to their similar impacts. Hail, high winds, and lightning were loosely combined as "thunderstorms" in 2009. These hazards were assessed separately due to their differences in damages and mitigation solutions; thunderstorms were not assessed individually. Wildfire from the 2009 plan was broadened for the 2021 update, allowing for the planning team to include structure fire in addition to wildfire.

¹ For example, see DHS, Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR) Guide: Comprehensive Preparedness Guide (CPG) 201, 3rd edition (2018), 12.

Expansive soils were discussed separately in the 2009 Plan, but now it is included as part of the extreme heat, flood, and drought hazards and not assessed as an individual hazard. The planning team made this determination on expansive soils for two main reasons. First, expansive soils almost exclusively result from prolonged periods of heat. Representing expansive soils as an effect of extreme heat and drought more accurately represents for the reader the conditions that cause expansive soils. Second, expansive soils do present risks to Wagoner County, but the historical and expected risk of the hazard was not significant enough to merit its own vulnerability assessment. Including expansive soils as part of drought and extreme heat hazards allows community members to understand the threat of expansive soils as part of several risks that can arise during drought and extreme heat events. Although these risks are not addressed directly in the plan, some of the action items listed in the following chapter can help mitigate risks to these hazards.

Table 4-2 2021 Plan Update Hazards

- | | |
|------------------------|--------------------------------|
| • Dam & Levee Incident | • Hail |
| • Drought | • Hazardous Materials Incident |
| • Earthquake | • Lightning |
| • Extreme Heat | • Severe Winter Storms |
| • Fire | • Tornado/High Wind |
| • Flooding | |

4.1.4 Hazard Risk Profile Overview

The hazard risk profile summarizes each hazard's probability, maximum possible extent, community vulnerability, and overall significance. *FEMA's Local Mitigation Planning Handbook Worksheet 5.1* provided the basis for these metrics, but they were adjusted to better meet the needs of Wagoner County. These metrics and their classifications are described below, and detailed assessments of each hazard follow.

Probability of Future Events

Probability describes the likelihood of the hazard impacting Wagoner County each year or the likely recurrence interval of the hazard. The planning team examined a range of factors to estimate probability, most prominently historical hazard data and community responses. Any available information related to future alterations of event probability was considered.

Table 4-3 Probability Classifications

Probability	2021 Definition	2009 Definition
Highly Likely	90% ≤ 100% probability of occurrence in the next year, or recurrence interval of less than 1 year	33% < 100% probability of occurrence in the next year; event is probable within the calendar year
Likely	10% < 90% probability of occurrence in the next year or recurrence interval of 1 to 10 years	20% < 33% probability of occurrence in the next year; event is probable within the next three years

Table 4-3 Probability Classifications

Occasional	1% ≤ 10% probability of occurrence in the next year or recurrence interval of 11 to 100 years	10% < 20% probability of occurrence in the next year; event is probable within the next five years
Unlikely	< 1% probability of occurrence in the next year or recurrence interval of greater than every 100 years	< 10% probability of occurrence in the next year; event is possible within the next ten years

Classification Changes

The 2021 *Plan Update*'s probability categories differ from those in the 2009 plan. The new categories aligned more closely with standard practices in the State of Oklahoma and FEMA Region VI. This should assist readers in comparing and integrating the 2021 *Wagoner County Hazard Mitigation Plan* with surrounding communities, enhancing potential mitigation and response actions.

Location and Extent

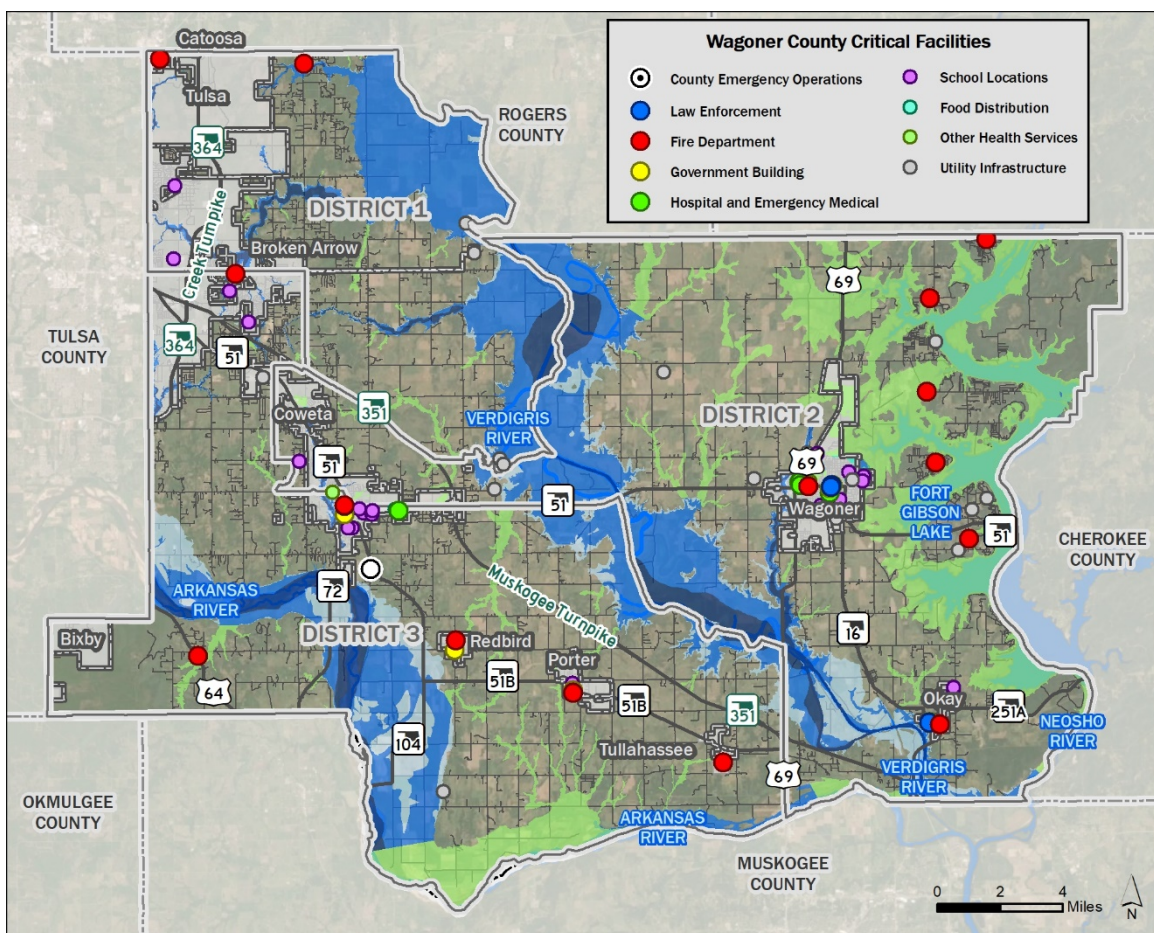
Generally defined for this plan, location is the area where a hazard event is more likely to occur, if such an area can be determined. The location for flooding, dam and levee incidents, hazardous materials incidents, and fire hazards can be defined more specifically within the planning area. The location for other hazards encompasses the planning area itself. Extent refers to the expected severity of the hazard. The planning team measured extent using a combination of scientific measures and historical incidences.

Community Vulnerability

Community vulnerability examines what assets are susceptible to damage from any given hazard. Assets include people, structures, infrastructure, or businesses. While people and populations are included as assets, it is important to remember that the damages to other assets are analyzed from a perspective of how their loss will impact people in the planning area. The direct impacts of hazards on peoples' health and lives is the first consideration when determining vulnerability. Community vulnerability is a qualitative estimate based on the planning team's desktop research and local expertise from the officials and stakeholders in Wagoner County. The planning team segmented community vulnerability into three components:

- **General Impacts** describe impacts that could affect almost anywhere in the planning area. This is based on expert knowledge, desktop research, and local input.
- **Specific Impacts and Vulnerabilities** outlines specific areas within the participating communities, school districts, or unincorporated areas in commissioner's districts where higher-than-average vulnerabilities have been identified. This is based on expert knowledge, desktop research, and local input. Communities that do not have a specific vulnerability identified will be noted as such.
- The last section, **Critical Facilities and Lifelines**, highlights structures, infrastructure, and systems that the planning team has determined to be at greater risk to hazards. Critical facilities are structures that are necessary to basic functioning of a community (see Appendix A for a list of critical facilities). Lifelines, which are composed of critical facilities and other assets, are systems that are crucial to community functioning.

Figure 1-1 - Critical Facility Map



Critical facilities are facilities that the planning team, stakeholders, and officials have identified as being crucial to the basic functioning of communities across Wagoner County. The planning team has identified critical facilities that are exposed to increased flooding risk, which is the baseline standard for FEMA.² The planning team expanded their study to identify critical facilities that are at risk for any of the identified hazards in Wagoner County, when possible.

FEMA's community lifelines are systems that are essential a community's basic functioning by supporting key government, business, and other essential functions. The planning team used FEMA's community lifelines categories in this plan: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Material. Critical facilities can impact one or more community lifelines.

Lifelines, however, provide officials and residents a system-wide approach to mitigation.³ FEMA's seven lifelines are listed below:

² <https://www.fema.gov/es/glossary/critical-facility>

³ For additional information on Community Lifelines, please visit FEMA's website:
<https://www.fema.gov/emergency-managers/practitioners/lifelines>



Safety and Security - Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety



Food, Water, Shelter - Food, Water, Shelter, Agriculture



Health and Medical - Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management



Energy - Power Grid, Fuel

Communications - Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch



Transportation - Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime



Hazardous Material - Facilities, HAZMAT, Pollutants, Contaminants



Overall Significance

Overall significance summarizes the importance of each hazard on the planning jurisdiction. It combines the previous three variables and their influence on the individual communities within the planning jurisdiction.

Table 4-4 Overall Significance

Overall Significance	2021 Definition	2009 Definition
High	The event's criteria consistently fall in the high classifications, and it expected to occur with severe strength over a significant portion of the planning area	No descriptor provided
Medium	The event's impacts on the planning area or specific areas in the community are noticeable but not devastating	No descriptor provided
Low	The event has a minimal impact on the planning area or specific areas in the community	No descriptor provided

Classification Changes

FEMA's worksheet 5.1 classifications are used in the 2021 Update; the 2009 Plan did not assign standardized classifications. The classification changes for overall significance are discussed in the risk profile below.

4.1.5 Hazard Risk Profile

Sections below combine each hazard's probability, maximum possible extent, and overall significance into a general snapshot. Hazards are grouped and prioritized according to their overall significance. The following hazards sections include the data, narratives, and assessments necessary to understand these classifications.

Current Assessment

Generally, the hazard prioritization, especially the highest priority actions, have remained the same since the 2009 Plan. Flooding, severe winter storm, and tornado/high wind remain the highest prioritized hazards for Wagoner County.

Although the highest prioritized actions remain relatively unchanged, several other hazards have received different classifications. The risk classification for dam & levee incidents has been increased slightly, which is due mainly to a greater emphasis on vulnerability to dams in the County. The classification for drought has been lowered somewhat to better reflect its lower probability and overall significance, compared to other hazards.

Future Trends

Hazard event patterns and vulnerability to hazards changes overtime. New development, and infrastructure upgrades all impact occurrence intervals and risk. The National Climate Assessment predicts that Oklahoma will begin to significantly deplete its drinking water supply, which will be driven by increased consumption levels.⁴ In addition, the Southern Climate Impacts Planning Program (SCIPP) simple planning tool predicts increased drought periods, unpredictable rainfall, and higher temperatures. When available, information on changing hazard characteristics is discussed in that hazard's subsection. The risk profile's predictions are based on the best available information and expert opinions of local leaders, stakeholders, and community members.

⁴ <https://nca2018.globalchange.gov/chapter/23/>

4.2 Flooding

4.2.1 Overall Significance

The overall significance for flooding hazards in the planning area is **high**. Flooding is a hazard where location and extent can be specified, meaning that the frequency and intensity of the hazard impact areas of the county in different, measurable ways. Flooding is one of the greatest threats to the planning area, as its vulnerability impact was determined to be high. Flooding threatens hundreds of structures and dozens of transportation networks, which can impact Wagoner County's ability to function effectively.

4.2.2 Overview and Description

A flood is the partial or complete inundation of water over normally dry land. Flooding can result in damage to personal property, buildings, and infrastructure, which can manifest in the form of bridge and road closures and service disruptions. In addition to

property destruction, flooding can lead to injuries or even fatalities. Wagoner County is affected by three common types of flooding: riverine flooding, flash flooding, and urban flooding. **Riverine flooding** occurs from excessive rainfall in upstream areas that gradually causes rivers and streams to overflow their banks, inundating the adjacent floodplains. This type of flooding typically lasts longer than flash or urban flooding

and often causes more damage due to the length of time structures are inundated, the velocity and depth of water, and floating debris. **Flash flooding** in Wagoner County is usually associated with the large convective thunderstorms that frequent the region, which can drop between 1 and 5 inches of rain in an hour. Flash floods can reach peak flow within a few minutes and can move with great force and velocity, rolling boulders, tearing out trees, and destroying structures. **Urban flooding** occurs when heavy rainfall runs off structures, parking lots and streets and converges in culverts and drainage ways, often clogged with debris, causing streets to flood and storm sewers to back up.



Figure 1-2 <https://ktul.com/news/local/heavy-rains-cause-flooding-in-wagoner-county>

4.2.3 Probability and Previous Occurrences

Based on data from national and local sources, the planning team determined that the probability of flooding in the planning area was **highly likely**. The National Centers for Environmental Information (NCEI) storm events database contains some basic data and narratives of past flood events. From January 2010 through December 2020, the database recorded 23 flood and flash flood events on 16 separate days.⁵ On an annualized basis, the probability for a flooding event was 2.3, meaning that a flooding event would be expected to occur more than 2 times per year. This annualized number was approximately consistent with the number of floods from 2000 - 2010.

⁵ <https://www.ncdc.noaa.gov/stormevents/>

According to the NCEI database, Wagoner County only had two reports of major damage over this ten-year period (one in 2010 and the other in 2015), totaling \$50,000. The 2015 damages were reported in Broken Arrow, which is outside the planning area. The number of damages from 2000 - 2010, was significantly higher, which was mostly due to a massive flood event in 2006.

Two of the six disaster declarations that occurred since the previous plan included flooding. DR 4222 occurred between May 5, 2015 and June 22, 2015. Both individual and public assistance were authorized in Wagoner County. News reports indicated flooding in the County, specifically Coweta, Broken, the City of Wagoner, and county roadways.⁶

DR-4438 covered events between May 7 and June 9 in 2019. This event impacted multiple states and waterways with a combination of heavy flooding, straight wind events, and tornadoes. Near historic releases from Keystone Dam upstream of Wagoner County led to extremely high flood levels along the Arkansas River. In addition, riverine flooding along the Verdigris, backwater flooding from Lake Fort Gibson on the Neosho River, and localized flooding throughout the county was also noted.⁷ Widespread Street flooding created dangerous driving conditions and isolated parts of the county. On May 25th, flooding along both the Arkansas and Verdigris Rivers resulted in voluntary evacuations in Wagoner County. The Town of Okay was specifically included in these evacuation orders, and Coweta High School was being used as a shelter.⁸ The area near Okay, especially south closer to the confluence of the rivers, was especially hard hit with repeated flooding. By June, more than 70 water rescue missions had been conducted, involving 103 people and 43 animals.⁹ Coweta's water intake was knocked offline, and repairs delayed by floodwaters during the event. The City asked for voluntary water conservation but had about 1 week of water reservoirs.¹⁰

Table 4-5 Historic Flooding Events

Date	Narrative
October 1998	Extensive storms throughout northeast Arkansas resulted in widespread flooding in Wagoner County. Portions of Highway 16 were closed due to flooding, and an abandoned bridge partially collapsed into the swollen Verdigris River. Other bridges were damaged. Coweta residents were evacuated and several of them had to be rescued from flood waters. The NCEI database reported \$97,000 in damages.
April 1999	Heavy rains were reported throughout northeast Oklahoma. Coweta creek overflowed and flooded portions of the former Cottonwood Subdivision. Coweta reported flooded streets. Near Okay, Highway 16 was flooded, and four feet of water was reported on Midway Road in the western part of the county.

⁶ <https://www.newson6.com/story/5e361fc72f69d76f6204487e/wagoner-county-residents-prepare-for-more-flooding> <https://www.fox23.com/news/local/more-flooding-impacts-green-country/67001370/> <https://www.newson6.com/story/5e361fc52f69d76f62044870/wagoner-county-dealing-with-flooding-aftermath-with-more-rain-on-the-way> <https://www.fema.gov/disaster/4222>

⁷ <https://www.fema.gov/disaster/4438> <https://www.kjrh.com/weather/flood-coverage/low-lying-areas-of-wagoner-county-under-voluntary-evacuation-as-river-levels-rise>

⁸ <https://www.kjrh.com/weather/flood-coverage/low-lying-areas-of-wagoner-county-under-voluntary-evacuation-as-river-levels-rise>

⁹ <https://www.kjrh.com/news/local-news/wagoner-county-prepares-for-more-flooding>

¹⁰ <https://www.fox23.com/news/tulsa-officials-urge-residents-to-prepare-for-flooding-near-arkansas-river/951186952/>

Table 4-5 Historic Flooding Events

June 1999	Highway 51 and several local roads were closed by flooding in and around Coweta. Some structure damage was also reported, totaling \$15,000 in the NCEI database.
May 2000	Up to 6 inches of rain was reported in parts of Wagoner County, resulting in highway closures (Highway 16 between Wagoner and Okay, Highway 104 between Porter and Haskell, Highway 72 between Coweta and Haskell) and local road closures. Flooding at Coweta Creek was reported, along with damages in the former Cottonwood subdivision. In addition to \$600,000 in property damages, the NCEI narrative estimated \$175,000 in infrastructure damages.
May 2002	Coweta streets and several residences flooded after over 4 inches of rain. \$20,000 in damages was reported in the NCEI database.
August 2002	Flash flooding between Coweta and Wagoner washed out two bridges along a secondary road.
May 2006	Up to 7 inches of rain fell in western Wagoner County, resulting in flash flooding of streets. Many homes reported damages. NCEI had \$500,000 in reported property damages.
September 2009	Severe thunderstorms resulted in flash flooding. An injury was reported in Broken Arrow related to a vehicle flooding. Street and residential flooding in and around Coweta was reported. \$50,000 in damages.
September 2010	Flooding from Tropical Storm Hermine resulted in approximately \$35,000 in damages. County roads were slightly damaged, but Wagoner County avoided some of the worst effects of the storm.
May 2015	Flash flooding effected nearly the entire planning area and surrounding areas. Waters inundated several roads, including some near Wagoner airstrip. No property damage was reported in the planning area, but Broken Arrow in Wagoner County recorded \$15,000 in damages.
May 2019	Flooding throughout the state led to a disaster declaration (DR-4438). The town of Okay was completely isolated, except for one route, across the Lake Fort Gibson Dam. The only route at that time into Muskogee from the dam was Highway 80, which itself was flooded and unpassable for a time.

4.2.4 Location and Extent

Although flooding can occur anywhere in the planning area, specific areas have a higher chance of flooding. For flooding, location refers to areas of that are at the highest risk of flooding frequently. Location is based on FEMA digital flood data and aggregated by 2019 flood flyover image analysis and data from communities in the planning area.

FEMA's digital flood data highlights flood scenarios for planning areas across the country. Two flood scenarios apply here:

- 1) 1% Annual Chance (100-year) flood zones. These zones are iterations of FEMA class A zones, which are also called special flood hazard areas (SFHAs). These flood zones are determined
- 2) to have a 1% chance of flooding annually. For the sake of clarity, this plan will refer to these zones as 1% (100-year) flood zones. (Similarly, the 2% Annual Chance (50-year) and 10% Annual Change (10-year) flood zones will be referred to at the 2% (50-year) and 10% (10-year) flood zones, respectively).
- 3) 0.2% (500-year) flood zones. These flood zones are determined to have a 0.2% chance of flooding annually.¹¹

Flood locations should not be understood as the only areas of flood risk; flooding can occur outside of these delineated areas.

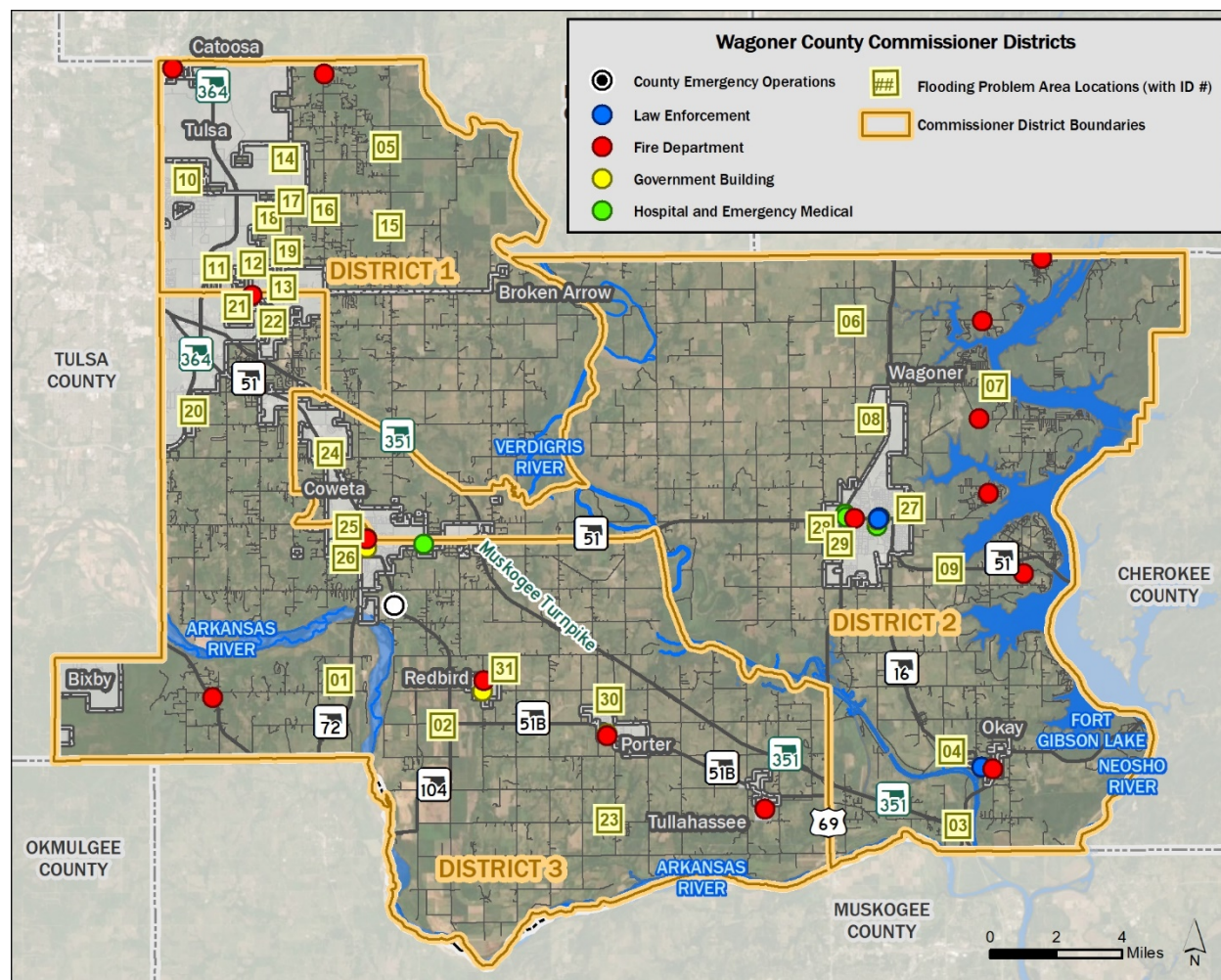
Some areas have deeper floodwaters than other areas, which can be attributed to topography, the built environment, event conditions (e.g. rainfall), and other factors. This is called the extent of flooding. Until better metrics and data are available, expected depth of the floodwaters primarily determines the extent of flooding. Flooding in Wagoner County ranges from a few inches to 6 ft in some areas depending on the amount and frequency of rainfall for overland flow, street flooding and minor creeks. For major creeks and rivers, the depth can reach nearly 30 feet, which occurred during the 2019 flood event. Flood depths were calculated by determining maximum flood elevations from flooded area maps and LiDAR contour data and comparing them to flood profiles from the Creek County Flood Insurance Study at Highway 69. To prioritize the highest risk areas, flooding extents will be calculated in designated areas of flooding location.

It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood related losses often do occur outside of delineated special flood hazard areas. Flooding problems in the planning area are widely dispersed. The planning team designated these problem areas as "Flooding Areas" in the following maps. Flood location varies across the planning area, with most of the flood risk to buildings is concentrated in Coweta and the City of Wagoner (discussed in the following pages) as well as in unincorporated areas on the west side of the Wagoner County. While the City of Wagoner is not participating in this plan, Wagoner County Emergency Management included their flood areas in the risk assessment.

The Figure below indicates that most of the problem areas (which will be numbered for the remainder of this assessment) are located in the northwest part of the County. This concentration of problem areas is mostly explained by a higher concentration of people and new development from Tulsa County, impacting areas downstream in Wagoner County.

¹¹ <https://www.fema.gov/flood-insurance/terminology-index>

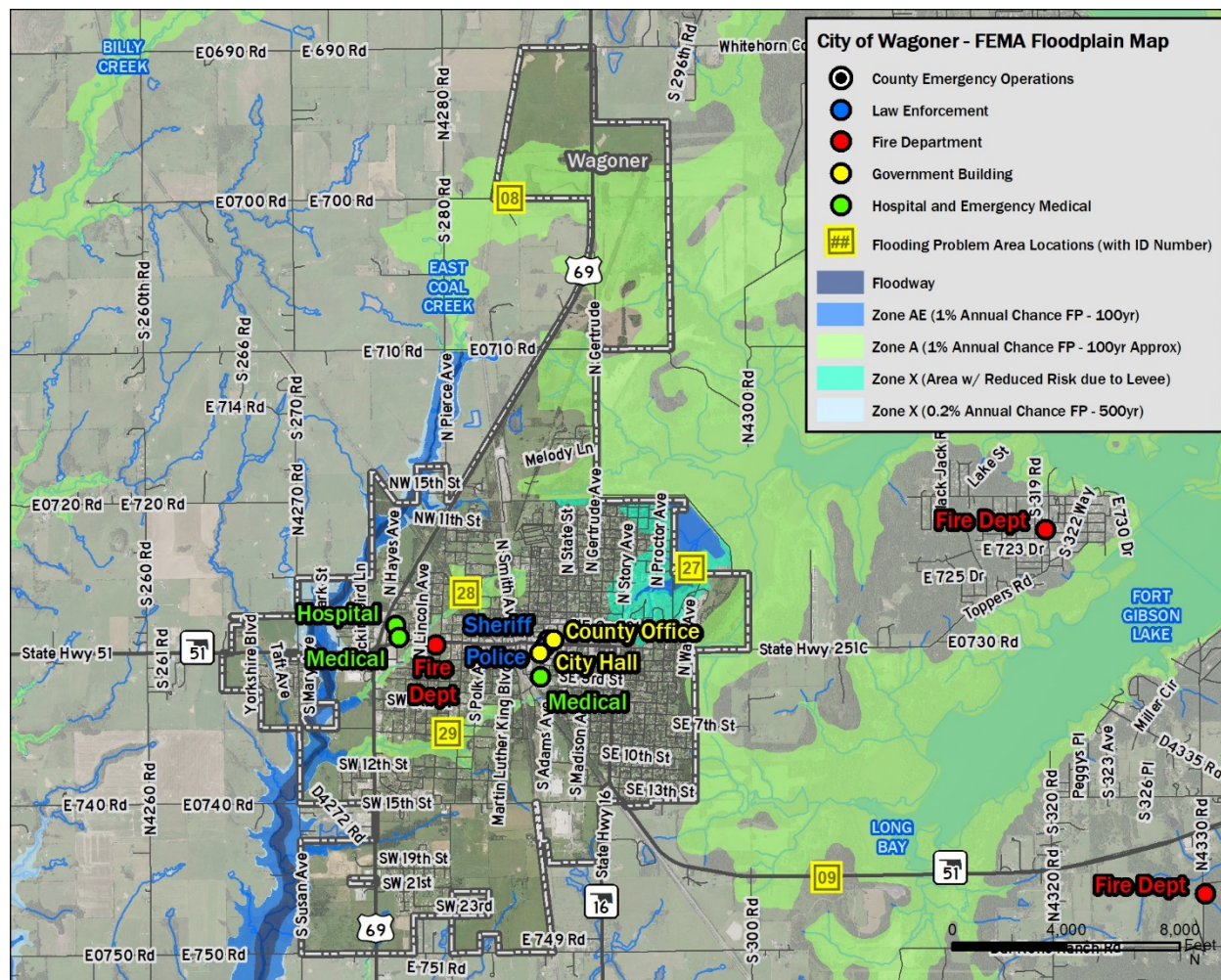
Figure 4-3 - Wagoner County Flood Map



There are three major areas of flood location in Wagoner's 1% (100-year) flood zones: North Bay, Coal Creek, and the North Tributary to Coal Creek. The North Bay area has the least risk flooding of the three, as it is protected by a levee. Flood extent in the North Bay area (**Flooding Area 27**) is determined by interior rainfall events but has flooded historically due to the closure of the discharge valve by the USACE when Lake Fort Gibson rises above 561.5 feet in elevation.

The flooding is exacerbated by long periods of high Lake Fort Gibson levels, requiring that the excess runoff on the land side of Dike No. 10 be pumped to protect interior properties. In 2019, the lake level was higher than 561.5 where gravity flow from the interior is possible, for approximately 3 months. Similarly, in 2017, the lake level was above 561.5 for almost 2 months.

Figure 4-4 City of Wagoner Flood Map

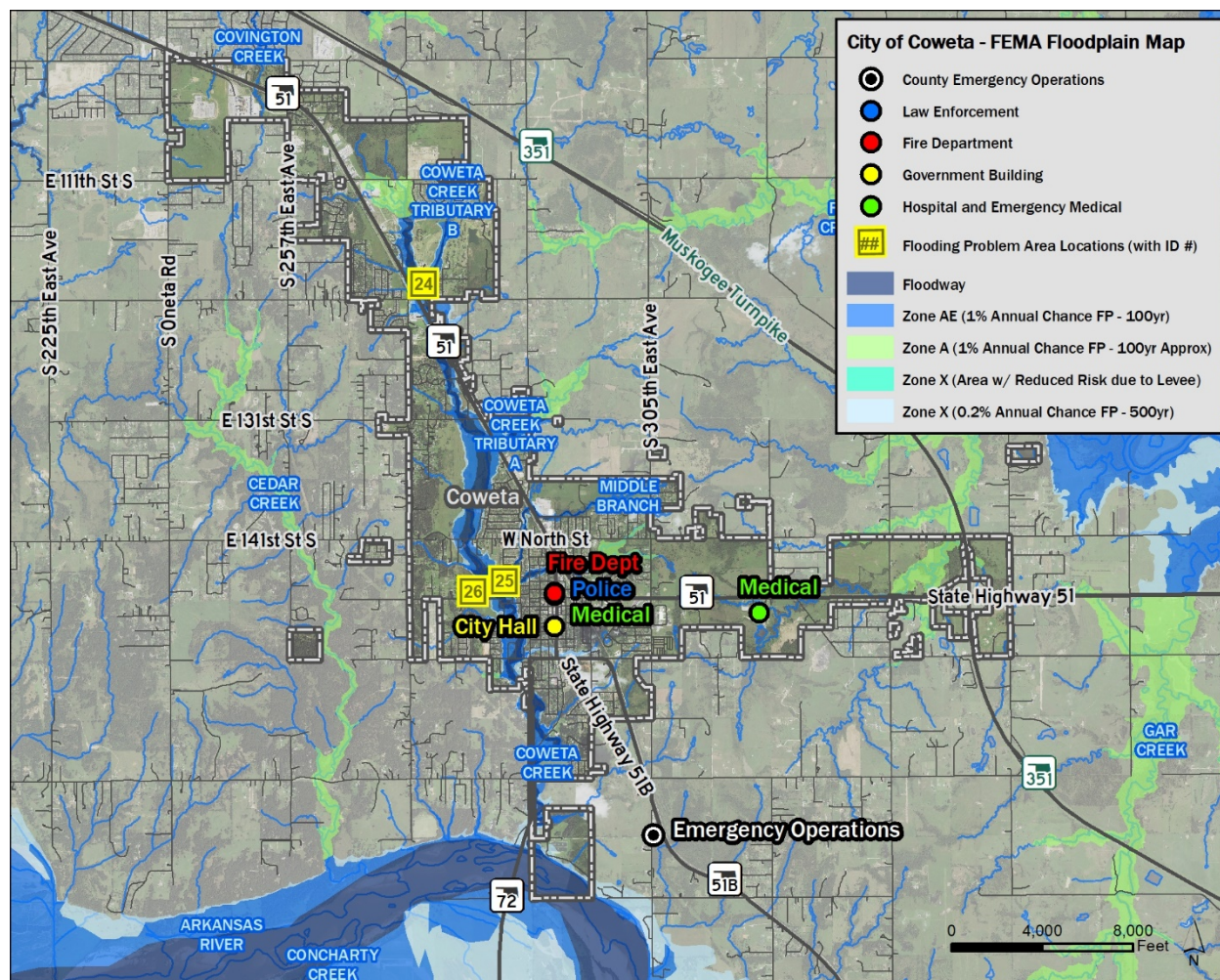


The south Un-Named Tributary to Coal Creek (**Flooding Area 29**) includes the area from SW 6th St. to SW 12th St. from the Union Pacific Railroad Upstream from the railroad bridge near N Wagoner Blvd. The north Un-Named Tributary to Coal Creek (**Flooding Area 28**) runs northeast to southwest in the northeast section. Both flood areas of unnamed tributaries can experience flood depths up to 10 feet.

Most of Coweta's flood location is driven by riverine flooding from Coweta Creek and its tributaries, which also contain the three biggest problem areas in Coweta (Flooding Areas 24, 25, 26).

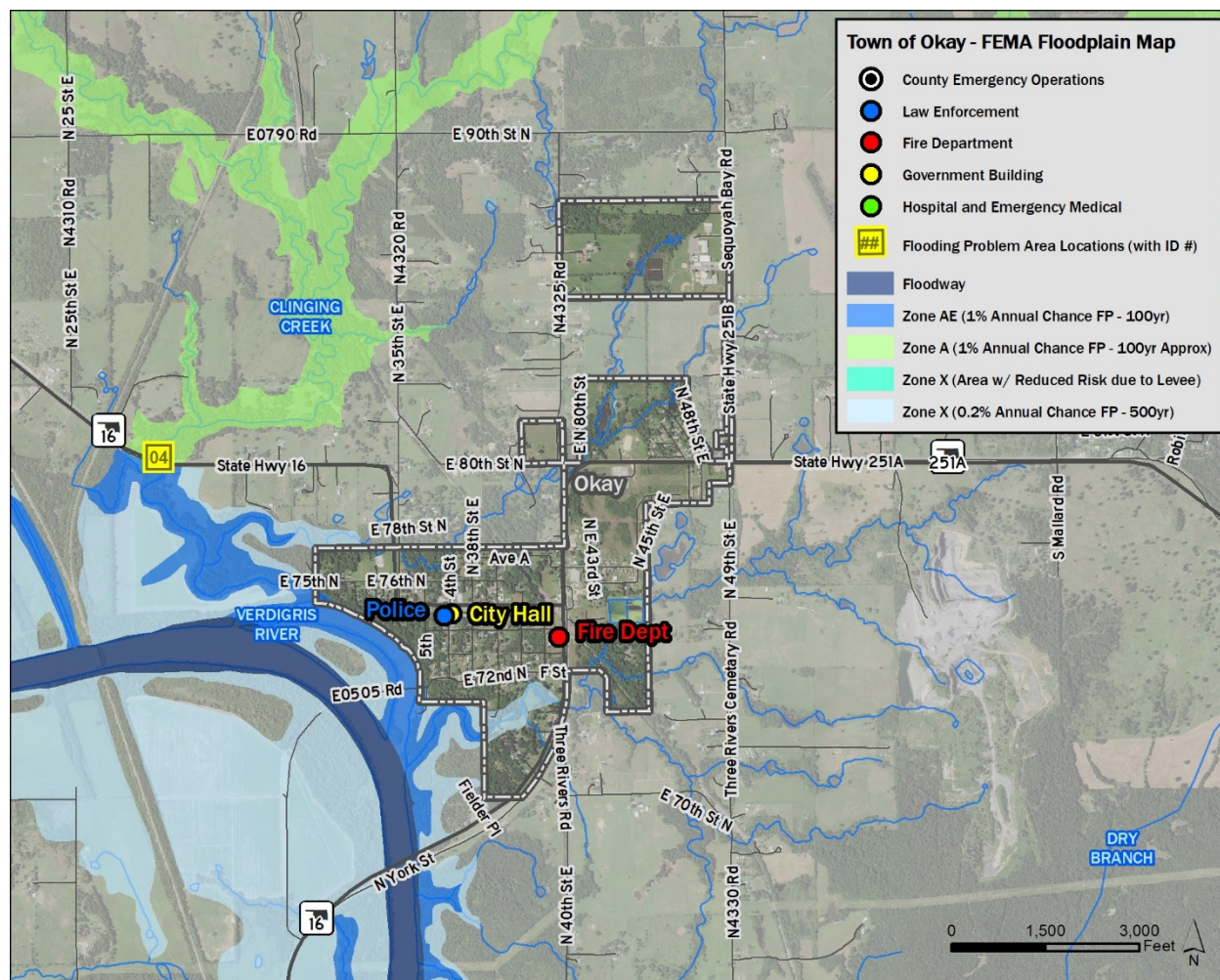
Areas along Highway 51 NW and SE of 121st St. inside the Coweta City limits are within the SFHA (**Flooding Area 24**). The 121st St. culvert over Coweta Creek overtops by approximately one foot in a 10% (10-year) flood. The Highway 51 culvert to the south of 121st St. and the Railroad bridge overtop by approximately 2 feet in a 10% (10-year) flood.

Figure 4-5 - Coweta Flooding Locations



Coweta Creek Middle Branch at Oak St. and South Branch from the Coweta Creek confluence to Highway 51 (**Flooding Area 25**) flood frequently. In terms of flood extent, the South Branch at Oak St., Division St., Atoka Rd., and Bristow St. culverts overtop by 3 - 4½ feet during a 10% (10-year) flood. The area south of Pine Street and on the South Branch Tributary west of Highway 51 experience frequent floods. The culvert at 146th St. overtops by 1 foot during a 10% (10-year) flood. The depth of flooding in the creek is 8 - 10 feet deep during a 10% (10-year) flood and up to 14 feet deep in a 1% (100-year) flood. The 121st St. culvert over Coweta Creek overtops by approximately one foot in a 10% Annual (10-year) Flood.

Figure 4-6 - Okay Flooding Locations



Parts of Highway 51 are also located in the 1% floodplain (**Flooding Area 26**). Some of the most frequent flooding in Coweta is located along the creek from 151st St. to Cypress. The 151st St. Culvert overtops by one foot in a 2% (50-year) flood and by 2 feet in a 1% (100-year) flood. The culvert at 146th St. overtops by one foot during a 10% (10-year) flood. The depth of flooding in the creek is 8 to 10 feet deep during a 10% (10-year) flood and up to 14 feet deep in a 1% (100-year) flood.

There are fewer flooding locations in Okay than the Cities of Wagoner and Coweta. Areas adjacent to Clinging Creek and the Verdigris River are at some risk, but only a handful of buildings are in the 0.2% floodplain, let alone the 1% floodplain. The most impactful locations for Okay are in the areas immediately outside the town. Clinging Creek overtops during the 1% (100-year) flood by more than 2 feet without the influence of the Verdigris River or the Arkansas River backwater.

Backwater from the Arkansas and the Verdigris increase the extent of existing flood areas, like Clinging Creek. During the 2019 flood event, backwater from the Arkansas River flooded portions of

Highway 16 immediately south of Okay and immediately north of Muskogee (**Flooding Area 3**). West of Okay, backwater from the Arkansas River and the Verdigris backed up Clinging Creek, a tributary to the Verdigris River, so that Highway 16 was overtopped by 6 feet (**Flooding Area 4**). The Town's only access route was through Highway 251A over the Lake Fort Gibson Dam.

Like Okay, there are significantly fewer flood locations in Porter compared to the City of Wagoner and Coweta. Nonetheless, the planning team identified some approximate 1% (100-year) floodplains in the western the northeast corner of the town (**Flooding Area 30**) that do not appear on the current 2-foot contour intervals for Wagoner County.

Figure 1-7 - Porter Flooding Locations

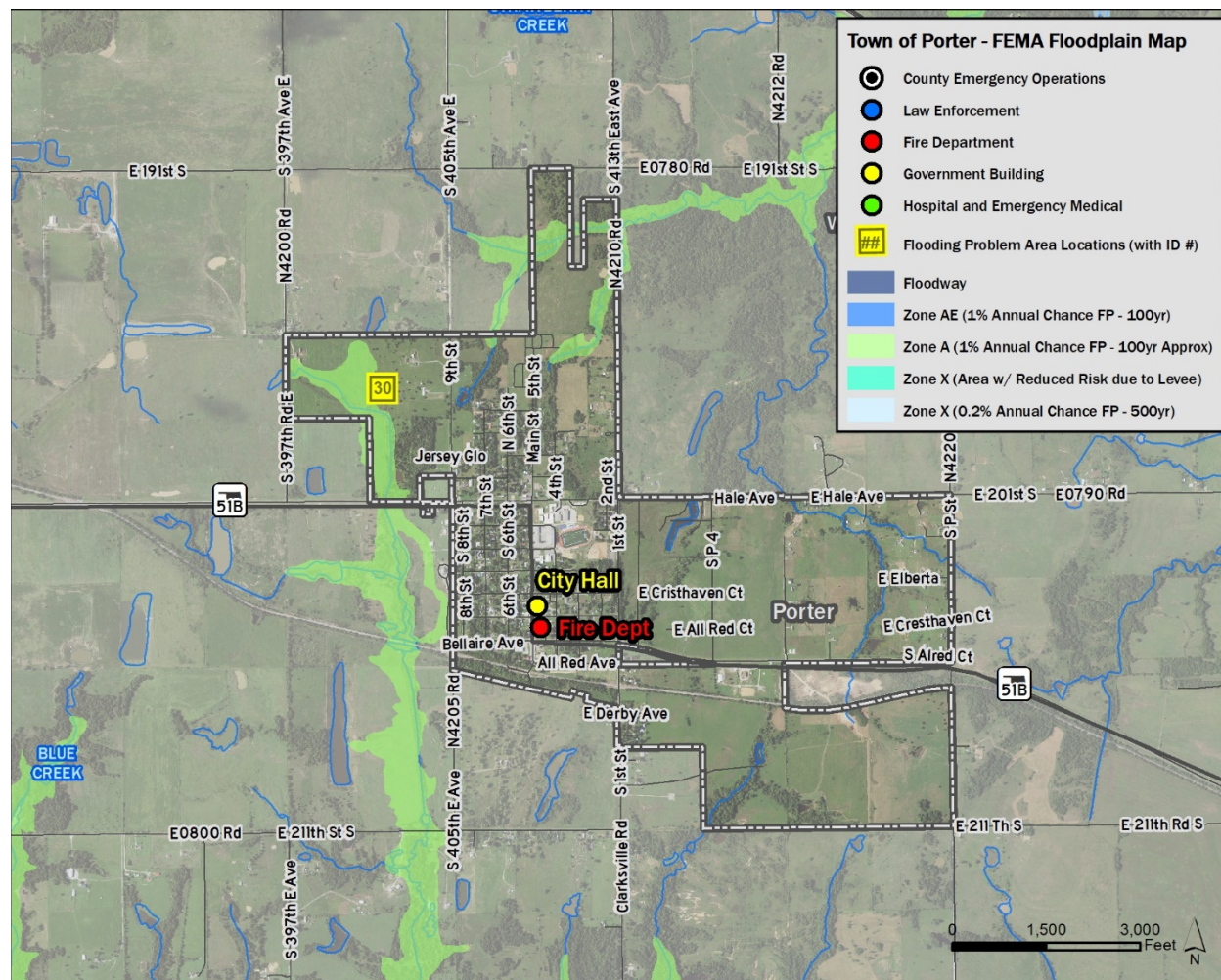
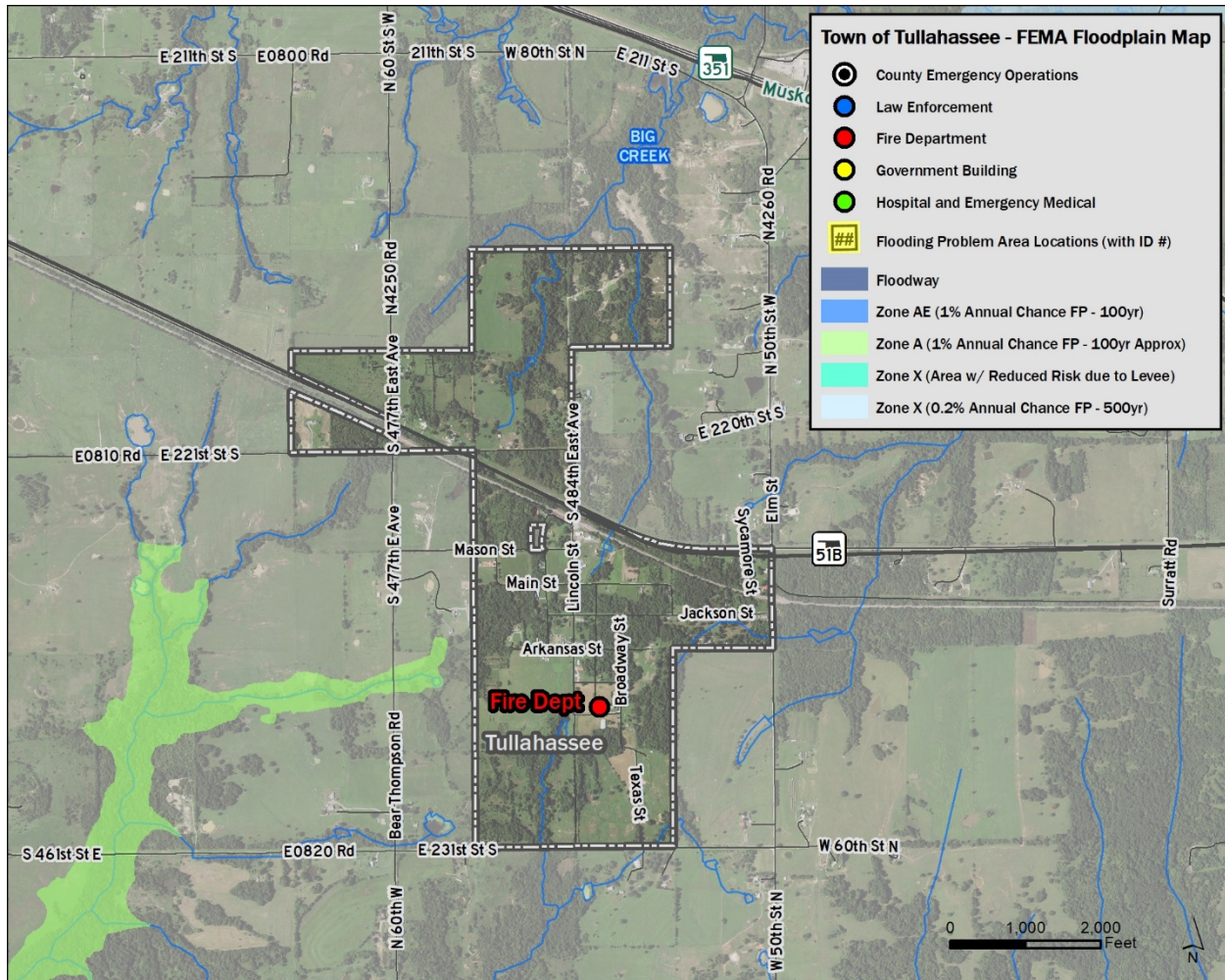
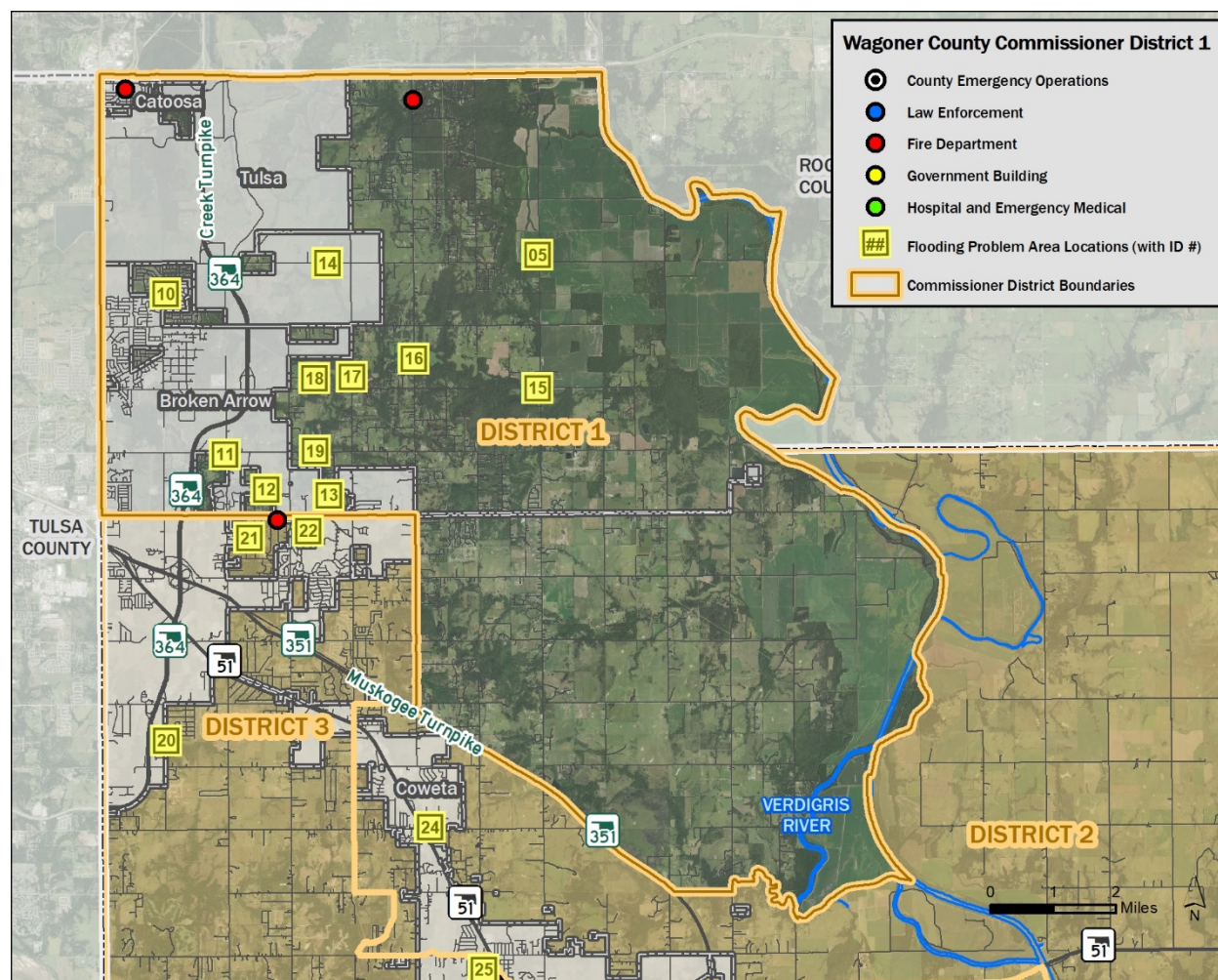


Figure 4-9 - Tullahassee Flooding Locations



There are no determined flood locations in Tullahassee. Tullahassee has not mapped 1% (100-year) floodplains. Big Creek drains through two parts of the Town limits but does not have a square mile of drainage area that would call for FEMA mapping the floodplain. The extent is assumed to be weak. The hazard will be readdressed at the 5-year plan update. Considerations in the update should include any areas of annexation as the Town works through a period of growth and revitalization.

Figure 4-10 - Commissioner District 1 Flooding Locations



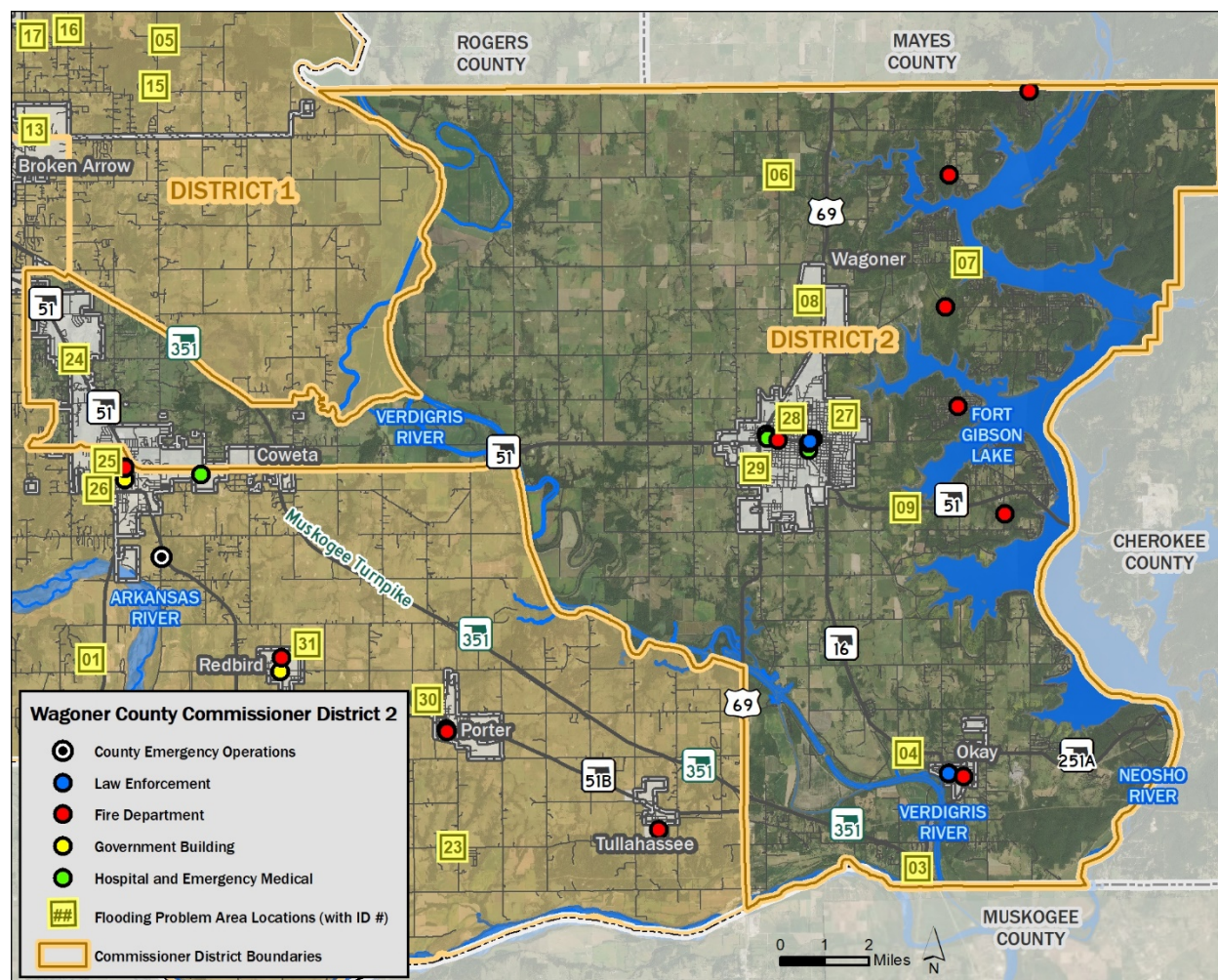
The planning team identified several flood locations and extents in District 1 outside of the communities identified in this plan.

The Renaissance Neighborhood (**Flooding Area 10**) has a creek channel that drains the Eastborough, Sunrise Estates, Swan Lake, Eagle Ridge, and portions of the Glen Eagle subdivisions. The drainage basin to this channel is approximately 300 acres and is a tributary to Spunky Creek. Upstream from the channel the stormwater is carried by a shallow ditch and the 209th E. Ave. right of way, which can reach several feet deep of water. This flooding occurs several times a year.

The Timberbrook Neighborhood south and east of the Creek Turnpike and 61st. St. on Adams Creek (**Flooding Area 11**) is also an area of flooding concern. Although the flood is several feet deep in most areas, flood waters can get as much as 10 feet deep in Adams Creek.

Several other neighborhoods flood frequently, including the northeast corner of Meadowood Estates (**Flooding Area 12**), at the north end of 234th E. Ave. along 66th St. and south along 236th St. Floodwater backs up into the neighborhood from Adams Creek to a depth of as much as 10 feet during a 1% (100-year) flood.

Figure 4-11 - Commissioner District 2 Flooding Locations



Another neighborhood is Adams Creek Estates from 71st St. and 254th E. Ave. on Timber Creek to the confluence with Adams Creek (**Flooding Area 13**). Overbank flooding during 1% (100-year) flood ranges from 1-3 feet deep on lots while flow in the channel is approximately 12 feet deep.

The culvert at 31st St. west of 257th E. Ave. overtops from flooding on Midway Creek Tributaries 5 & 5A (**Flooding Area 14**). This zone was also identified in the City of Tulsa East Tulsa Master Drainage Plan: Problem Area 5: Midway Creek Tributary 5 Culvert at E. 31st St. South. During a 10-year storm event, E. 31st St. roadway would be overtopped by 0.96 feet and during a 100-year storm event, E. 31st St. roadway would be overtopped by 1.26 feet.

305th E. Ave. floods from backwater from the Verdigris River flooding from 11th St. south to the Adams Creek floodplain north of 51st St. (**Flooding Area 5**). At 21st St. and 305th E. Ave. the intersection is at approximately elevation 548. 600 feet upstream (north) from the intersection Cross-Section AN (Station 182+266) from the Wagoner County FIS shows a 2% (50-year) flood elevation of 553 (5 feet over the roadway), and a 1% (100-year) flood elevation of 556 (10 feet higher than the roadway). At the extension of an un-lettered cross section at Station 180+651, approximately 800 feet downstream (south) from the intersection of 36th St. and 305th E. Ave., the

roadway elevation is approximately 546. From the FIS, the 2% (50-year) flood elevation is 552 (6 feet over the roadway), and a 100% (1-year) flood elevation of 557 (11 feet higher than the roadway). During the 2019 flood, the two intersections were affected or underwater for nearly 10 days. The Verdigris River experienced a flood larger than a 2% (50-year) flood event for nearly 5 days within that period.

The 305th E. Ave. bridge at 51st St. over Adams Creek also floods frequently (**Flooding Area 15**). This structure is a perched bridge that does not overtop in the 0.2% (500-year) flood, but the roadways north and south of the bridge overtop more frequently than during a 10% (10-year) flood. These roadways are also subject to backwater from the Verdigris River, discussed in **Flooding Area 5**.

The 273rd E. Ave bridge between 41st and 51st St. on Adams Creek has experienced frequent and dangerous flooding (**Flooding Area 16**). This structure is a perched bridge that does not overtop in the 0.2% (500-year) flood, but the roadways north and south of the bridge overtop by more than 4 feet during a 10% (10-year) flood and more than 8 feet during a 1% (100-year) flood.

The 257th E. Ave. bridge north of 51st St. on Adams Creek flood frequently (**Flooding Area 17**). The bridge is overtopped between and 10% (10-year) flood and a 2% (50-year) flood, However, the roadway north of the bridge is overtopped by approximately 3 feet in a 10% (10-year) flood.

The planning team noted 51st St. west of Adams Creek and east of 241st E. Ave. on an unnamed tributary of Adams Creek (**Flooding Area 18**). This large tributary is mapped Zone A but the bridge across the creek at 51st St. is an old wooden bridge that overtops frequently.

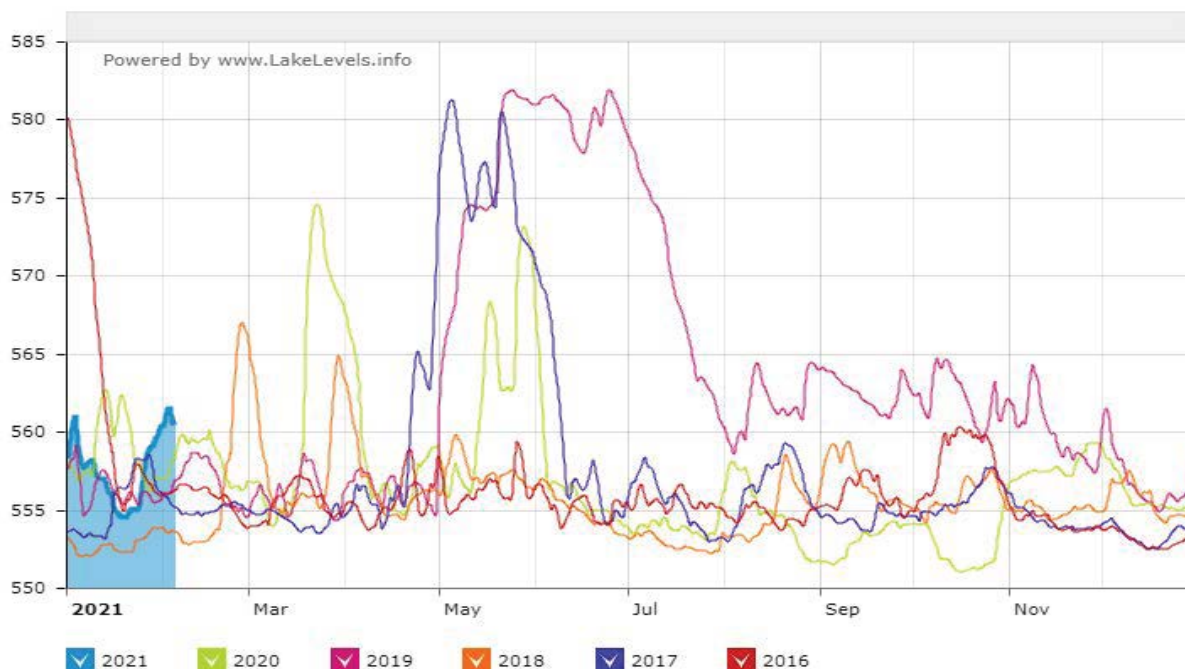
61st St. east of 241st E, Ave. over Adams Creek also experiences flooding (**Flooding Area 19**). The bridge is overtopped frequently. 61st St. on the east side of the bridge is overtopped by 2 feet during a 10% (10-year) flood and by as much as 5 feet during a 1% (100-year) flood.

The flooding locations and extents in District 2 mostly are due to backwater from Lake Fort Gibson. 670 Rd. (Hall Ranch Rd.) and 280 Rd. on Flat Rock Creek flood frequently due to backwater from Lake Fort Gibson (**Flooding Area 6**). The lake level was nearly 582 feet on May 24th and June 25th during the 2019 flooding event, as shown on the following page.¹² The elevation at the intersection is approximately 572 feet, which placed this intersection underwater by as much as 10 feet on those two dates. This intersection was inundated for two months during 2019. It also was also flooded in 2017 for approximately one month and in 2020 for a few days. The roadway will begin to be inundated in a 4-year recurrence interval based on the Lake Fort Gibson Pool Elevation Probability Curve from the USACE Water Control Manual. The current FEMA Zone A outline is approximately equal to the 2019 flood inundation areas.

690 Road and South 324 Road Creek flood due to backwater from Lake Fort Gibson (**Flooding Area 7**). The elevation of 690 Rd. varies from approximately 572 to 584 feet. The recurrence interval for lake levels above 672 is 4 years, based on Lake Fort Gibson Pool Elevation Probability Curve from the USACE Water Control Manual. This roadway was impassable for approximately two months during flooding that occurred in 2019 and 2017. FEMA's Zone A outline is approximately equal to the 2019 flood inundation areas.

¹² <http://fortgibson.uslakes.info/Level/>

Figure 1-12 - Lake Fort Gibson Lake Levels 2015-2021

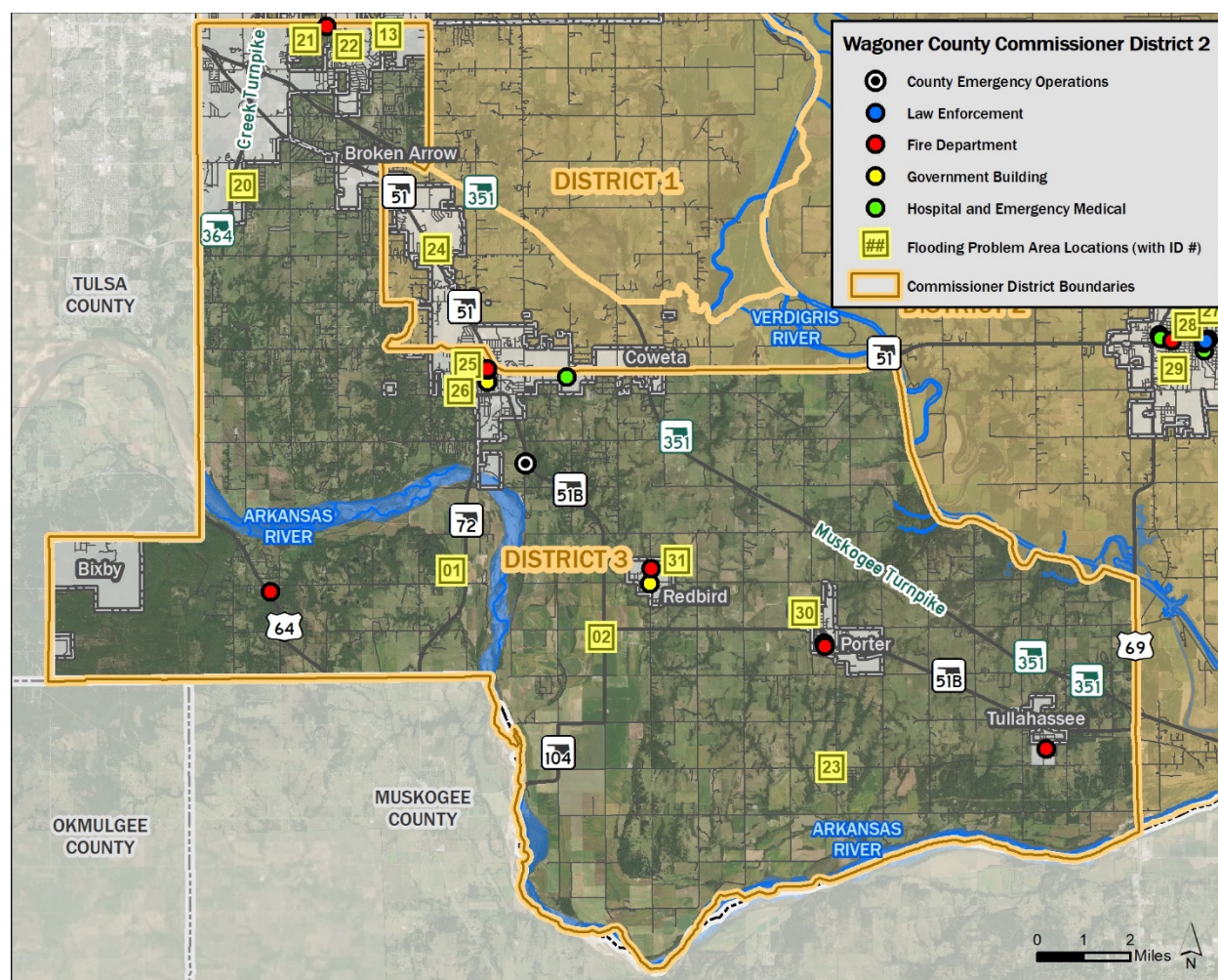


700 Road between highway 69 and 280 Rd. Creek also floods due to backwater from Lake Fort Gibson (**Flooding Area 8**). This roadway was underwater in 2017 and 2019. In 2019, it was impassable for two months. The lowest point in the roadway between Highway 69 and 280 Rd. is 576 feet and would begin to flood during a 5-year recurrence based on the Lake Fort Gibson Pool Elevation Probability Curve from the USACE Water Control Manual. At elevation 582 feet on Lake Fort Gibson, the roadway would have been inundated by water 6 feet deep. FEMA's Zone A outline is larger than the 2019 flood inundation areas.

East Highway 51 and 300 Road Creek flooding is caused by backwater from Lake Fort Gibson (**Flooding Area 9**). The low elevation just north and just south of Highway 51 on 300 Road is 574, with a recurrence interval of 4 years based on the Lake Fort Gibson Pool Elevation Probability Curve from the USACE Water Control Manual. The FEMA Zone A outline is approximately equal to the 2019 flood inundation areas.

Parts of Highway 16 were also inundated south of Anchor Road (820 Rd) and Highway 16 (**Flooding Area 3**). There were several weeks in 2019 when flooding blocked access to Okay at Highway 16 from Muskogee, and Anchor Road (E 820 Rd) had to be used to get west to Highway 69. Even this route was blocked for a few weeks during the peak of flooding. This was also discussed in the Okay section. Parts of the Muskogee Turnpike towards Muskogee were also flooded.

Figure 1-13 - Commissioner District 3 Flooding Locations



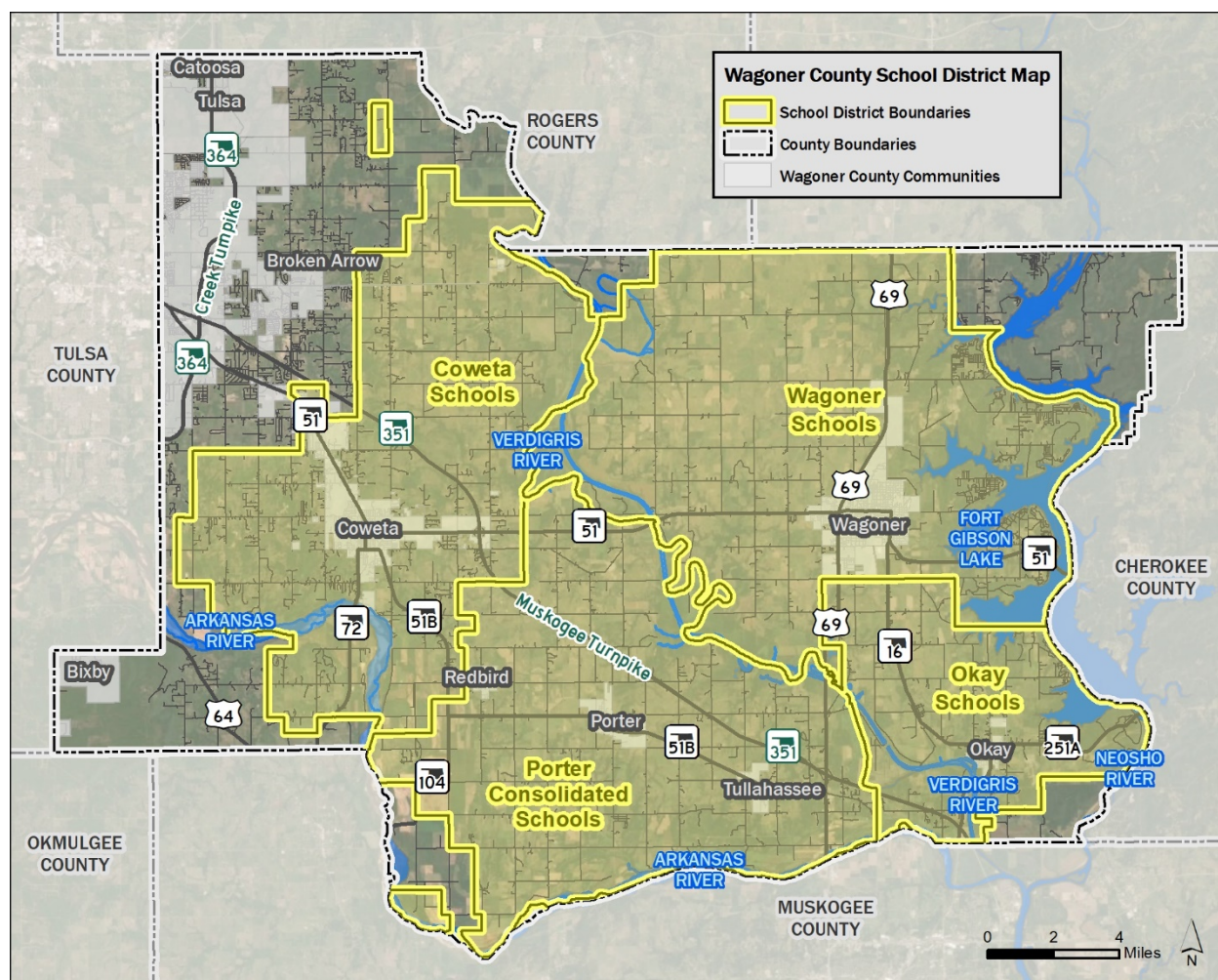
The location and extent of flooding in District 3 is spread across residential areas and transportation routes.

A residential area around 71st St., east of Broken Arrow (**Flooding Area 21**), has experienced frequent flooding due to its proximity to School Creek, a tributary to Adams Creek. Parklane Estates into Expressway County Estates has experienced flooding at least 3 feet deep. During a 10% annual (10-year) flood Water overflows approximately 3 feet deep north along 234th E. Ave.

A residential area near Adams creek in this district, Covington Creek Estates also experiences frequent flooding (**Flooding Area 22**), as it has drainage area of 5 square miles upstream that completely overtakes the creek and roadway during a frequent storm. During a 10% annual (10-year) flood, the subdivision experiences approximately 2 feet of flooding in yards. During a 1% (100-year) flood, properties experience approximately 4 feet of flooding in yards. Total depth in the creek, including yard flooding, is approximately 10 feet during a 1% (100-year) flood.

In addition to residential areas, the bridge on Broken Arrow Creek Tributary 2, halfway between 101st Street and 111th Street on 209th East Avenue (**Flooding Area 20**) overtops frequently. The 209th Bridge overtops during the 10% (10-year) flood by about 2½ feet.

Figure 4-14 - Wagoner County School Districts Flooding Areas



The intersection of 231st Street and 413th East Ave. (Clarksville) floods at least annually (**Flooding Area 23**). The streams that are directed to two culverts, just west of the intersection of 231st St. and 413th E. Ave., combine at a point approximately 150 - 200 feet south of 231st St. Both of these streams have a drainage area of approximately one square mile. Both streams are mapped upstream of the culverts, as an Approximate Zone A SFHA for approximately 1½ miles.

State Highway 72 south of Coweta on the south side of the Arkansas River (**Flooding Area 1**) floods when the Arkansas River backflows into the Conchart Creek floodplain in Sec 35, T17N, R15E and reenters the Arkansas River in Sec 7, T16N., R16E. Highway 72 flooded in 2019 from approximately 181st St. (770 Rd.) south to a point approximately halfway between 780 Rd and 79 Rd. The roadways across the Arkansas River, 770 Rd. and 780 Rd. are inundated as well. During the 2019 flooding, Highway 72 was overtopped by approximately 2 feet.

Additional flooding occurs near State Highway 104 and State Highway 51b (Stone's Corner) (**Flooding Area 2**). This flooding is caused by backwater from the Arkansas River and occurs more frequently than an 1% Annual Chance (100-year) Storm. This intersection and 201st St., west of the intersection, flooded during the 2019 storm as much 2 feet over the roadway. This is an overflow

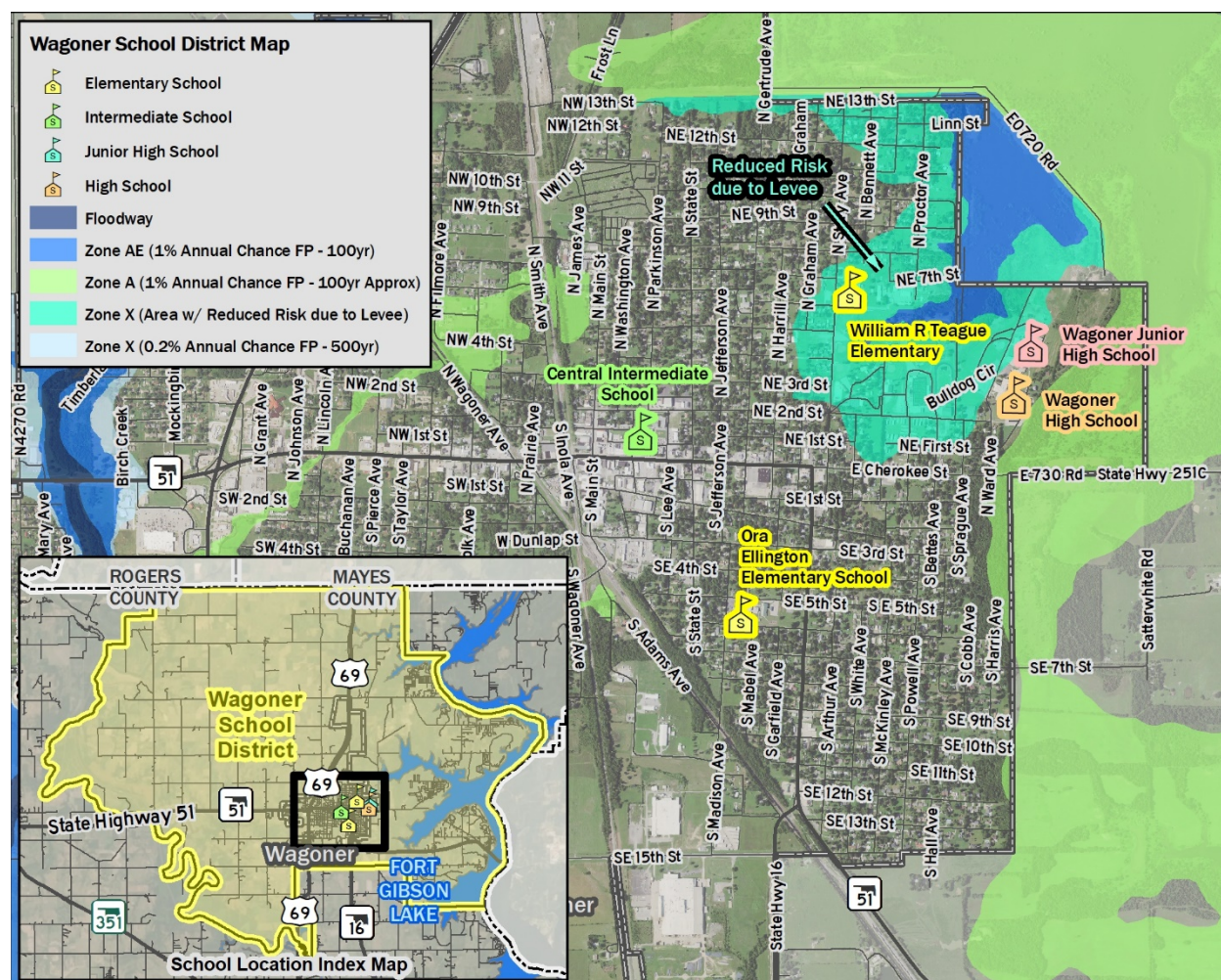
area from the Arkansas River in Sec. 6, T16N., R16E. southeast and reenters the Arkansas River in approximately Sec. 9, T15N, R16E.

Although Figure 4-14 outlines school district boundaries across the entire planning area, this assessment focused on school districts with structures that were located in flood-risk areas. There is flood risk northwest of Wagoner County school district. The bus lot located in this area has flooded in the past (**Flooding Area 27**; see Figure 4-15 on next page). The extent of flooding in school structures is reduced due to Wagoner Dike 10, is addressed in the Levee Hazard.

No structure from any other school District is located directly in a 1% annual floodplain or a higher-risk floodplain. To the planning team's knowledge, none of these structures has ever flooded, but access to schools is impacted by the flooding on roadways and highways described herein. Wagoner and Coweta school districts are the districts located most proximate to floodplains.

Several School buildings in Coweta, like the elementary school, are located close to the 1% floodplain, but not within the floodplain. They should maintain flood insurance as a precaution. The area of Highway 51 near to the school district also floods, which may block transportation access to these schools, causing the district to close and disrupting classes.

Figure 4-15 Wagoner School District Flood Risk



4.2.5 Vulnerability and Risk Assessment

Flooding events in 2015 and 2019 significantly impacted the planning area, causing road closures and some isolation, leading to flooded homes, and causing other significant damages. Of the natural hazards to affect Wagoner County, flooding is among the most serious hazards.

General Impacts: People, Economy, and Built Environment

Flooding directly threatens human lives. Driving through flooded areas accounts for most flood-related deaths, though residents trapped in their homes also are at risk of rising waters. Contaminated flood waters can result in long term health and environmental impacts, and buildings inundated by flood waters may develop mold. Flooding can cause significant economic losses by damaging infrastructure, any structure, and forcing business and road closures. Long duration flooding may impact supply chains, or widespread infrastructure damage can leave residents and business without power and lead to secondary risks. Flooding will also affect future development, especially if those structures are built in a floodplain. Future development also can shape flood zones, like urban runoff.

The sections below detail specific information about specific risks of flooding in the planning area. The greatest concern throughout the planning areas is the overtopping of critical transportation routes. This not only impacts things like emergency response times, commerce, and mental health and wellbeing, but can become incredibly dangerous when people drive through the water. Historically, Wagoner County Emergency Management has had to deploy their Swift water rescue team on multiple occasions. This information was used to assist in identifying problem areas through the planning area.

Specific Impacts and Vulnerability

Similar to location and extent, specific areas across the planning area are vulnerable to unique and varied flood risks. The planning team developed the specific impact analysis by focusing on the intersection between flood location, flood extent, and the existence of asset, including private property, public buildings, infrastructure, and other assets critical to functioning. Representatives from each jurisdiction were interviewed about the impacts and vulnerabilities of flooding in their areas, which aggregated the planning team's specific impact analysis. The planning team compiled these sources and analyses into the section below.

In order to avoid redundancies, this section focuses on structures—especially residential structures—that are at risk of flooding. This section includes discussion of roads and flood depths. If a section road, flood depth, or other consideration was discussed in the location and extent section, however, this section will refer the reader to the location and extent section. Readers are encouraged to review the maps featured in the location and extent section to locate the risk areas described below.

The planning team has identified over 6,000 parcels (2,000 structures) in the **Entire Planning Area** valued at over \$560 million that are exposed to increased flood risk (defines as floodway, 1% FEMA Floodplain, 1% FEMA Approximate Floodplain, 0.2% FEMA Floodplain). Over the last two decades, there have been approximately 303 flood claims across the planning area. There are 44 repetitive loss properties in Wagoner County, but 13 of these properties are located in the City of Broken Arrow, which did not participate in this plan.¹³ All of the repetitive loss properties are residential structures.

¹³ NFIP claims data 2002-2019; NFIP repetitive loss data 2002-2018.

These flood claims and properties are identified generally for each community and area, which protects homeowners pursuant to FEMA guidelines.

Table 4-6 Floodplain Structure Analysis ¹⁴			
Floodplain	Number of Structures	Number of Parcels	Improvement Value of Parcels
Floodway	129	1,394	\$126,481,895
1% FEMA Floodplain	809	1,905	\$168,227,962
1% FEMA Approximate Floodplain	432	1,926	\$143,017,635
0.2% FEMA Floodplain	832	847	\$78,389,140

In addition, local officials expressed concern that all residents throughout the County did not have access to a universal flood warning system leaving some citizens unaware of their flood risk. The county hopes to develop an emergency management app to assist in additional warning methods throughout the county.

The City of Wagoner

The City of Wagoner has its own Hazard Mitigation Plan. This section was profiled by the request of County officials since Wagoner serves as the County Seat.

The City of Wagoner has experienced 20 NFIP flood claims with 2 repetitive losses. Areas along the banks of Coal Creek, north of Highway 51, have experienced flooding claims and some repetitive loss. Similarly, areas along the banks of the North Tributary have experienced the highest number of flood claims and repetitive losses over the last 20 years. Continued rainfall and stormwater runoff “ponds” behind Dike 10 and floods the low-lying areas within the USACE Flowage Easement and areas adjacent within the City of Wagoner through the storm drainage ditches and culverts.¹⁵ Roadways in the area are vulnerable and have a history of having to be closed during flooding events. This can cause temporary interruptions to the highway and road system and has the potential to isolate a community for several days, cutting off access by emergency responders. The Wagoner County Bus Barn would be impacted at an elevation of approximately 574 feet. In 2017, water levels at Fort Gibson met or exceeded the 561.5-foot limit for almost 2 months, and for 3 months in 2019.

The North Un-Named Tributary to Coal Creek (**Flooding Area 28**) runs northeast to southwest in the northwest part of the community between NW 3rd to NW 7th from N. Wagoner Ave to Union Pacific Railroad and then between NW 5th to SW 6th from the Union Pacific Railroad to Highway 69, with several areas of concern. Upstream from the railroad bridge near N. Wagoner Boulevard, the undersized culvert causes the water to get nearly 10 ft depth based on the Zone A SFHA outline and an NFIP flood claim from 2016. Downstream from the railroad and N. Wagoner Ave., there are several NFIP flood claims, including one repetitive loss. The stream is currently being re-mapped by the City, with the goal of developing mitigation measures to reduce flooding.

¹⁴ Building counts were based on a 2018 Microsoft Building footprint database; parcels and improvement values were based on 2020 Wagoner County Assessor database. Floodplains were collected in 2020.

¹⁵ See: USACE, Map 13

The South Un-Named Tributary to Coal Creek (**Flooding Area 29**) runs east to west in the areas between SW 6th St to SW 12th St from the Union Pacific Railroad, with several areas of concern based on the Zone A SFHA outline but with no reported claims. The flood depths are similar to those of the North Un-Named Tributary. It is also being re-mapped by the City of Wagoner, with the goal of developing mitigation measures to reduce flooding.

Coweta

Most of Coweta's at-risk zones are located near Coweta creek and its tributaries. The City has experienced 85 NFIP flood claims with 10 repetitive losses. **Flooding Area 26** has some of the most frequent structural flooding in Coweta, which is located along the creek from 151st St. to Cypress. Many of these structures in the most impacted areas (Cottonwood Acres) have been mitigated since the last plan. The culvert at 151st St. is inadequate. The culvert overtops by 1 foot during a 2% (50-year) flood by 2 feet in a 1% (100-year) flood.

All roadway culverts are inadequate and do not pass the 10% Annual Chance storm in Coweta Middle Branch (**Flooding Area 25**). On the South Branch, there are 3 properties that have filed flood insurance claims, one of which is a repetitive loss property. According to NFIP data, areas along Highway 51 NW and SE of 121st St. inside the City's limits (**Flooding Area 24**) have 4 properties that have made flood insurance claims. There are approximately total 20 properties in the SFHA, with 7 properties in or touched by the floodway.

Okay

Okay is located near a tributary (Clinging Creek) to the Verdigris River. Areas adjacent to Clinging Creek and the Verdigris River are at some risk, but only a handful of buildings are in the 0.2% floodplain. Flooding above the 0.2% level could impact these properties. The town is most vulnerable to the closures on Highway 16 to the south and west that make the access to the town impassable except for Highway 251A over the Lake Fort Gibson Dam. Road closures can cause delays in emergency response times. Additionally, any closures would require residents to detour, generating mental stress and anxiety and possibly lost wages.

Porter

In Porter, the planning team noted the existence of approximate 1% (100-year) floodplains in the western and northeast corner of the town (**Flooding Area 30**). The flood zones do not agree with the current 2-foot contour intervals for Wagoner County. Care must be taken in any floodplain permitting to ensure compliance with the NFIP. Porter fire company does not respond to flooding events; that is the job of Wagoner County Emergency Management. The town should consider a study to determine actual flood risk and incorporate that information into the next plan update. This assessment did not identify any structures currently at risk to flooding, however flood risk can never be eliminated completely.

Red Bird

West of Red Bird, parts of Highway 51 in 1% and 0.2% floodplains could close due to flooding. There is a Zone A floodplain in the northeast corner of the City limits that must be considered if any insurable buildings are planned in that area (**Flood Area 31**). This assessment did not identify any structures currently at risk to flooding, however flood risk can never be eliminated completely.

Tulahassee

Tulahassee's water supply was threatened when a pump had to be shut down during the 2019 flood event. Although the town is not in a floodplain, Town officials noted that development could produce runoff problems, unless development incorporates stormwater drainage planning effectively. In

addition, recent and increasingly development around the outskirts of Town leaves some community officials concerned that development could continue in areas that are more flood prone. In addition, Tullahassee does not have the means to receive and manage a grant currently, as it has not conducted an audit. The Town itself does not appear to be at risk of flooding based on FEMA mapping, but should take great care to prevent local drainage issues as development increases.

Public School Districts

Wagoner School District are the only public school system that has had structures/parcels flood, with the Wagoner bus lot to the Northwest of Campus flooding (for more information, see location and extent section). This flooding was a result of a Levee Incident and is profiled that section of the plan. For the effect of Wagoner Dike 10 on Wagoner School District, see the Dam and Levee Section in this Chapter. No other school district reported flooding vulnerabilities. No school structures are in the floodplain. Covered roadways noted throughout this section would be the only concern for school busses, or students and staff attempting to travel to and from school.

Wagoner County District 1

There are 5 repetitive loss areas in the unincorporated area of district 1, with several others in the City of Broken Arrow. District 1 is vulnerable in several areas, especially near Adam's Creek: Upstream from the channel in the Renaissance Neighborhood (**Flooding Area 10**), flooding occurs several times each year and closes the roadway for up to several hours at a time. Houses have been reported to flood as well.

The Timberbrook Neighborhood south and east of the Creek Turnpike and 61st. St. on Adams Creek (**Flooding Area 11**) is also an area of flooding concern. Five houses at the south end of 219th E. Ave. have the potential to flood 2 - 3 feet deep during a 1% (100-year) flood. The clubhouse just south of those houses has flooded before, and water can get as much as 10 feet deep between the clubhouse and the creek during a 1% (100-year) flood.

According to the Timberbrook Neighborhood HOA:

- All bridges within the subdivision (total of 3) go under water each time we have major flooding.
- The clubhouse has flooded to a depth of approximately 28" several times.
- We have had some vehicles get flooded out, and one motorcycle and rider get washed off the bridge.
- Wagoner County has not barricaded the roadway during the flood water. They have barricaded the road due to damage from flooding.

In the northeast corner of Meadowood Estates (**Flooding Area 12**), floodwater backs up into the neighborhood from Adams Creek to a depth of as much as 10 feet during a 1% (100-year) flood. Adams Creek Estates (**Flooding Area 13**) has several homes touched by the floodway. Overbank flooding during 1% (100-year) flood ranges from 1 - 3 feet deep on some lots.

The existing culvert at 31st St., West of 257th E. Ave., has less than a 1-year storm event capacity (**Flooding Area 14**). During a 10% (10-year) flood, E. 31st St. would be overtopped by 0.96 feet and during a 1% (100-year) flood, E. 31st St. would be overtopped by 1.26 feet.

Parts of 305th E. Ave., 273rd E. Ave., and 257th E. Ave. are overtopped during a 10% (10-year) flood (**Flooding Areas 15 - 17**) on Adams Creek. These are discussed in greater detail in the location and extent section. The bridge near 51st St. and 241 E. Ave. is an old wooden bridge that is overtopped

frequently (**Flooding Area 18**). When that happens, approximately 5 properties are completely isolated.

305th E. Ave. is an ODOT designated major collector through District 1. It had an Average Annual Daily Traffic (AADT) count of 820 in 2018, down from 930 in 2015. It experiences flooding of the roadway during a flood between a 10% (10-year) event and a 2% (50-year) flood event. It was flooded for approximately 10 days during the 2019 flood event on the Verdigris River, cutting off access for more than 2 miles between Salt Creek and Adams Creek.

Wagoner County District 2

There are 12 repetitive loss areas in the unincorporated area of District 2, with several others in the City of Broken Arrow. Flooding in District 2 is mostly caused by backwater from Lake Fort Gibson. This affects some roadways in the district, including: 670 Rd. (Hall Ranch Rd.) and 280 Rd. on Flat Rock Creek (**Flooding Area 6**), 690 Rd. and S. 324 Rd. (**Flooding Area 7**), 700 Road between highway 69 and 280 Rd (**Flooding Area 8**), East Highway 51 and 300 Road Creek (**Flooding Area 9**), Highway 16 at Anchor Road (**Flooding Area 3**). The depths (extents) of these problem areas are discussed in greater detail in the location and extent section.

Wagoner County District 3

There are 2 repetitive loss areas in the unincorporated area of District 3. The location and extent of flooding in District 3 is spread across residential areas and transportation routes. A residential area around 71st St., east of Broken Arrow (**Flooding Area 21**), has experienced frequent flooding. It floods properties from the point it exits Meadowbrook Estates just north of 71st St. Several homes have flooded and will flood again up to 3 feet deep, surrounding houses. An inadequate culvert also causes water to overflow north along 234th E. Ave. approximately 3 feet deep in a 10% (10-year) flood.

Covington Creek Estates also experiences frequent flooding (**Flooding Area 22**). During a 10% annual (10-year) flood, the subdivision experiences approximately 2 feet of flooding in residential yards. During a 1% (100-year) flood, properties experience approximately 4 feet of flooding in yards.

The bridge on Broken Arrow Creek Tributary 2, halfway between 101st Street and 111th Street on 209th East Ave. (**Flooding Area 20**), overtops frequently. The intersection of 231st St and 413th E. Ave. also floods frequently (**Flooding Area 23**), which is due, in part, to two undersized culverts just west of the intersection of 231st St. and 413th E. Ave. This area floods at least annually and causes loss of access to several local properties.

State Highway 72 south of Coweta on the south side of the Arkansas River (**Flooding Area 1**) floods when the Arkansas River backflows into the Concharty Creek floodplain. Highway 72 flooded in 2019 from approximately 181st St. (770 Rd.) south to a point approximately halfway between 780 Rd and 79th Rd., isolating approximately 15 properties. There is one repetitive loss in the Arkansas River floodplain where this overflow occurs. Roadway inundation is discussed in greater detail in the location and extent section.

Lifelines and Critical Facilities

The main lifelines impacted are the food, water, and shelter lifeline and the transportation lifeline. Flooding can damage utilities and networks that deliver food and water to residents in the County. In addition, flooding can damage residential and public structures, threatening people's access to adequate shelter. Flooding disrupts transportation networks by inundating parts of roadways, bridges, and intersections, sometimes for days or weeks at a time. These disruptions affect the

delivery of goods and services and have secondary effects on emergency response, within the safety and security lifelines, along with other lifelines.

At least 3 critical facilities are in the 100-year floodplain, all of them being water utilities of some kind. These water treatment facilities are located east of **Coweta**, along the Verdigris River, and are part of Rural Water District (RWD) 4. RWD 4 could not be reached to provide information on mitigation measures for these facilities or contingency plans when these facilities flood. In addition to facilities in the floodplain, the sewage treatment plant in **Okay** lacks a generator. This plant lost power during the 2019 Flood event. This loss of power did not result from the flooding directly. Loss of power at the RWD or treatment plant would lead to serious public health concerns including water quantity and quality if not restored quickly. Several of the City of Wagoner's critical facilities, like the school bus barn, are located within the 0.2% annual (500-year) floodplain.

4.2.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-7 - Summary of Observations, Recommendations, and Actions

Observation	Recommendation	Action(s)
Motorists continue to endanger themselves by driving around barriers into flooded roadways. Residents, especially new residents, should have access to education on the dangers of flooding events.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Most residents do not live within reach of an outdoor flood warning system.	Evaluate, upgrade, and maintain community-wide outdoor omni-directional voice/siren warning systems.	2
Residents would benefit from an electronic flood alert system.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Emergency response to flooding incidents would be enhanced with updated, more accurate 911 information.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.	4
Several critical facilities lost power during the 2019 event and did not have generators to supply backup power.	Provide generators or other forms of electrical backup for critical facilities and schools.	6
All participating communities should be a member of the National Flood Insurance Program (NFIP).	Continue participation in the NFIP or become a member of the NFIP.	7, 8

Table 4-7 - Summary of Observations, Recommendations, and Actions

Floods have damaged and can damage government and critical facilities.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies. Complete hazard evaluations of schools and retrofit or remodel buildings to make them more disaster resistant.	10, 14
The 2019 flood highlighted the need for more accurate risk assessments on the Verdigris and Neosho rivers.	Conduct a flood risk analysis of the Verdigris and the Neosho Rivers.	11
Development over the past 20-30 years causes flooding of structures, parcels, and roadways in some residential and other trafficked areas.	Conduct a master drainage plan study of Adams Creek, Covington Creek, and other high-risk flood areas in Wagoner County.	12
Some utilities in the County have experienced losses in function due to flooding.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of all hazards.	13
Many bridges and roadways overtop, placing motorists and pedestrians at risk.	Mitigate sections of road, including bridges, which are subject to repeated flooding or are at heightened risk of inundation.	16
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Roadways can be damaged by floodwaters.	Design infrastructure to withstand future hazards more effectively. Mitigate erosion on County roads.	18, 25
Responders and key leaders would benefit from having access to current GIS mapping capabilities to identify threats from flooding and function needs populations and assets.	Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	19, 20
Structures located in the floodplain are at risk of being damaged and put occupants in danger. Repetitive loss properties exist in some low-lying areas.	Elevate, relocate, reconstruct, or acquire and demolish flood-prone properties. Develop a Substantial Damage Plan.	22, 39
Future development may lead to increased stream use or development in floodplains.	Maintain natural and beneficial functions of streams and floodplains.	34

4.3 Severe Winter Storm

4.3.1 Overall Significance

The overall significance of winter storms is **high**. The event's impacts on the planning can threaten lives and severely damage infrastructure. Extended power outages and iced local roads could isolate large numbers of people without adequate access to food, water, or heating. Extensive damage to utility lines could be expensive and take time to repair throughout the county. In particular, the planning area should ensure that they have operations plans, generators, or other backup measures if parts of the planning area lose power.

4.3.2 Overview and Description

A **winter storm** is a winter weather event that produces significant and impactful accumulations of freezing rain/ice, sleet and/or snow. Winter storms may include heavy snowfall, blowing and drifting snow, high winds, extreme cold or ice storms. Of the most extreme instances is a blizzard, which is defined as winds greater than 35 mph, visibility less than $\frac{1}{4}$ mile, and a duration of at least 3 hours. New snowfall is not necessary for a blizzard, since blowing snow can obscure visibility. Another more extreme winter storm event in the planning area is an ice storm, which is characterized by unusually low temperatures, freezing rain, and winds. Most significantly, ice storms can result in the rapid accumulation of ice on the built and natural environments. Winter storms are measured by snowfall accumulation or ice thickness. Winter storms usually occur in the planning area between November and March and are usually created by large low-pressure systems moving rapidly across the country. Ice storms are often a greater threat than blizzards. Moisture from the Gulf of Mexico moving over shallow cold air near the earth's surface can produce ice accumulations of two inches or greater.

4.3.3 Probability and Previous Occurrences

Based on historical incidence and community feedback, the planning team determined that the incidence of winter storms in the planning area was **likely**. Seven disaster declarations in Wagoner County have involved winter storms, including four since the previous plan was adopted. DR-1883 and DR-1876 were both declared in 2010, DR-1985 was declared in 2011, and DR-4587 was declared in 2021.

The NCEI storm database included 7 events on separate dates from January 2010 through March 2021. Table 4-8 below summarizes select historic events. The database did not include any casualties or damages. The databased was aggregated by community input, making a total of 9 major events since January 2010. This being said, the 2007 ice storm, just outside the 10-year timeframe, was arguably the most significant winter storm event to impact Wagoner County. The 2007 ice storm in Wagoner County resulted in FEMA DR-1735 and over \$5.5M costs associated with debris removal. Many homes went without power for days, or even weeks, following this event.

Table 4-8 Historic Severe Winter Storm Impacts

Date	Narrative
December 2007	Severe winter weather resulted in extensive power outages that extended to 45 days in areas of the state (DR-1735). In addition to widespread damage to the electrical grid, ice and snow accumulation made some roads impassable. The previous plan reported more than \$30 million in damages. According to the NCEI database, \$2 million of these damages were recorded in Wagoner.
January 2010	The NCEI database recorded significant ice accumulation and several inches of snow throughout the county (DR-1883). Across the state, freezing rain and snow resulted in dangerous travel conditions and extensive power losses. At one point, 180,000 power meters were without service. ¹⁶ Wagoner county fared better than other areas in the state, with several hundred power outages at the peak of the event. ¹⁷ Wagoner County Emergency Management prepared equipment and shelters in preparation for the storm. ¹⁸
December 2010	Extensive heavy snows, which disrupted travel in much of the central part of Oklahoma, led to a disaster declaration (DR-1876). Freezing rain and sleet preceded the snow and created dangerous road conditions.
January 2011	Sleet and freezing rain were followed by heavy snow. High winds created blizzard conditions in some areas, which resulted in a disaster declaration (DR-1985). Interstate travel was shut down in parts of the state. Wagoner County reported between 9 and 14 inches of snow.
February 2014	Ice, sleet, and snow accumulation were reported across the state.
March 2014	Freezing rain and sleet were accompanied by thunderstorms in the region. Eventually, this turned into snow.
February 2015	Snow and sleet accumulation was reported throughout northeast Oklahoma.
December 2020	Several inches of snow accumulation occurred throughout the state.
February 2021	A disaster was declared (DR-4587) in response to extremely cold temperatures, combined with high winds and days with substantial precipitation. This caused numerous vehicle accidents. Crews constantly responded to accidents due to the inclement weather. Many people lost power because the storm disrupted power distribution systems. The low temperatures also strained the electrical grid excessively, causing other power blackouts. Water lines broke and some water providers ran low on water.

¹⁶ <https://oklahoma.gov/oem/emergencies-and-disasters/2009/winter-weather-event-20100128-master.html>

¹⁷ https://www.weather.gov/tsa/weather-event_jan2010_winterstorm#power

¹⁸ https://tulsaworld.com/communities/wagoner/news/article_d5c058e0-31cc-5550-801e-63f939f6a3d0.html

4.3.4 Location and Extent

The location of this hazard is uniform over the planning area. This is due to winter storms' widespread location, along with their potential severity and duration. Given the size of fronts that produce storms in northeast Oklahoma, a winter storm should encompass the entire planning area. The extent of a storm is determined by its duration and severity. Severity reflects the general combination of a storm's temperature, wind speed, and precipitation levels (precipitation type is determined, in part, by temperature).

During the winter months, Wagoner County occasionally experiences snowfall combined with high winds, freezing rain, or ice storms. The snowfall season usually lasts from November to April. Total seasonal snowfall averages around 8.1 inches. The greatest recorded annual snowfall was 23 inches in the winter of 1912 - 1913. The greatest daily snowfall recorded was 12 inches in 1937.

Wagoner County has experienced ice accumulation during winter storms. The Sperry-Piltz Ice Accumulation (SPIA) Index, shown in Table 4-9 below, can be used to predict the types of damages that may occur before the onset of a winter storm. The SPIA Index is used to predict the location, timing, and severity of ice storm impacts days in advance. The tool allows schools, power cooperatives, and other entities to better prepare for severe ice events. The planning area may experience a winter storm event with wind surface winds gusting of 5 mph to over 30 mph and over a foot of snow accumulation. The planning area also may experience an ice storm with a range of 0 to a rating of 5 on the SPIA.

Table 4-9 SPIA Index

Ice Damage Index	Damage and Impact Descriptions
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 - 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 - 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

In addition to ice, windchill (wind and temperature) has a significant impact on a winter storm's extent. The National Weather Service and the National Oceanic and Atmospheric Association created one of the most used windchill charts in the nation (Table 4-1 below). This chart's primary use is to

indicate immediate threat to human safety by listing approximate time periods for exposed skin to develop frostbite. Rapid onset times for frostbite, although rare, are possible. Several days during the February 2021 event had the windchill factor approaching the 30-minutes-to-frostbite zone. The planning can expect the windchill factor approaching the 30-minutes-to-frostbite zone for extreme cold events.

Table 4-10 - Windchill Factor

		Temperature (°F)																	
		40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	
		Frostbite Times 30 minutes 10 minutes 5 minutes																	
Wind Chill (°F) = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16}) Where, T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/01																			

4.3.5 Vulnerability and Risk Assessment

The overall vulnerability to winter storms across the planning area is listed as **high**. Communities and individuals exposed to severe winter storms are at risk of extended loss of utilities. Combined with dangerous travel conditions and possible structure damage, winter storms can put the planning area residents at high risk.

General Impacts: People, Economy, and Built Environment

The entire population in the planning area is exposed to severe winter storm events. Public safety should be of utmost concern during a severe weather event. Though the NCEI database did not report any fatalities or injuries within Wagoner County for the reporting period, winter storms have resulted in both in northeast Oklahoma. Transportation accidents and cold-related injuries and fatalities present the biggest concerns to public safety. Ice accumulation on roadways immediately creates hazardous driving conditions. Snow packed hills and slick road surfaces increase the frequency and impact of traffic accidents for the general population, which can result in personal injuries and fatalities. Smaller, less maintained roads may be additionally damaged by ice or more difficult to navigate. Debris during future ice and snow events can be mitigated to some degree by ensuring tree management programs continue throughout the planning area. The County should maintain and update their debris management plan and ensure debris management sites are in advance of future ice events. Hypothermia is the most prominent cold-induced threat to human life. Children and the elderly are at increased physiological risk. Lower-income residents may not have access to housing, or their housing may more poorly insulated from cold temperatures. They may resort to alternate methods of heat such as space heaters or using the oven as a heat source, which can lead to carbon monoxide poisoning or produce other harmful side effects. Extended power

outages can put residents at additional risks and prevent businesses from opening. Power outages may occur at the house level due to broken connections.

Economically, winter storms can damage structures and infrastructure distribution networks. Winter storms can damage roofs (especially on flat or low-grade sloped roofing surfaces), but the most frequent damage to structures occurs with frozen pipes that burst. Disruption of the power grid is perhaps the largest threat. Loss of power disconnects people from key networks in the job, school, and support system. It can also expose people to greater cold-induced health issues, such as hypothermia. Loss of electricity and/or mobility can prevent businesses and schools from opening. In addition to economic concerns, the environment, especially large flora, is at risk of snow and ice accumulation. As little as ¼-to-½-inches of ice accumulations can break small branches and weak limbs, while ½-to-1-inch ice accumulations can cause larger branches to break.

Based on reports and other desktop research, the planning area could have benefited from a knowledge share of best practices and preventative measures during events with extreme cold. Running diesel backup generators or other heaters before the onset of extreme cold, along with water management practices, could have prevented some of the electrical and water failures across the planning area during the February 2021 event.

Specific Impacts and Vulnerabilities

Across the **entire planning area**, crews can maintain most main roads even in the event of a 10-year or 20-year storm. Lack of resources, however, caused the condition of arterial roads to suffer during the February 2021 winter storm. Some commentators noted that 273rd, 121st, and 111th streets were especially impacted by this event. In addition to roadways, electrical providers face risks from winter storms. Electrical providers, including public companies and regional cooperatives, use the Oklahoma Association of Electrical Cooperatives to predict, allocate, and deploy resources to mitigate a predicted or ongoing disaster in a region. Usually, electrical providers begin preparations about 2-3 days in advance of the expected storm. Electrical providers also have mutual aid agreements to assist each other as needed. Lake Region Electrical Cooperative and OG&E, two main providers in the region, both noted that they had solid communications platforms through text/call, social media, and email. Both entities noted, however, that increased public knowledge of this information-sharing service may benefit the public during times of crisis. In terms of power interruptions, electrical providers are often given about 15 minutes notice before a power interruption, which may make it difficult to communicate to their customers. Officials also noted that there were no electronic alert systems from Emergency management to update residents of winter storm events. Lack of this form of direct emergency communication could affect response and recovery efforts in the event of a flooding.

Although **Coweta** has improved its tree limb management of power lines and the power lines themselves since the major ice storm of 1987, downed power lines still pose a significant threat to the City's ability to maintain power for its residents. The City's building codes may reduce damage to new developments, but it is unclear whether new power lines are being buried in the ground.

Okay is connected to the region by Highway 16 and Highway 251 A. The bridge over the Verdigris River may be iced and dangerous, limiting access south to Muskogee. A similar issue exists east over the Neosha River along the Fort Gibson Dam. The city does not have a snow removal service and all its electrical lines are above ground. City officials noted that street conditions were adequate during the February 2021 event. Okay receives its water from Muskogee County. Unlike some water service

providers in Wagoner County, the water provider does not circulate electronic messages about best practices for water usage.

Several private contractors offer snow removal service, but none seem to be based in **Porter** and it is unclear the quality and quantity of the service they can offer. Porter's planning and zoning commission enforcement increases the likelihood that the town's newer structures can withstand a severe snowstorm. Porter's fire department can assist in the event of downed powerlines due to snowfall. Although no power lines went down during the February 2021 event, most of Porter's power lines are still above ground, presenting a risk. Porter still experienced outages, which affected several of its critical facilities (see below). In addition, Porter purchases its water supply from the City of Muskogee and sells water to Tullahassee. This water distribution linkage would benefit from having increased and preemptive communication across all three channels: from Tullahassee to Porter to the City of Muskogee. During the February 2021 storm, for example, a lack of communication may have hindered efforts to reduce water through citizen outreach and may have exacerbated the problems in Tullahassee.

The County offers snow removal service only on the main roads in **Red Bird**. Other roads, which are dirt, can become impassable quickly. In addition, Red Bird is vulnerable to electrical failure, as its power lines are above ground, and it does not have a backup generator for its fire department or its town hall. During the February 2021 storm, several water meters broke and one water main broke in town. Unlike other communities in the planning area, Red Bird residents did not receive any electronic messages from their water provider on best practices for water use.

Tullahassee's main issue is water line breaks and other water distribution problems resulting from a severe winter storm. The town recorded 5 water main breaks following the 2021 winter storm. At its peak, the town lost 85 gallons of water per-minute. The town also lacks electric water meters, which would have aided in the speed and accuracy of water reporting. The town noted that their water supplier did not communicate with them during the February 2021 event. For more information on water issues, see the Porter section. Tullahassee's water problems during this event were compounded by a lack of 4-wheel drive transportation vehicles, which prevented the relevant authorities from responding to the sites. Winter storms also cause significant damage to Tullahassee's damaged road infrastructure, impairing mobility. Damaged roads include Broadway, Jackson, Main, Lincoln, Mason, and Rita. In addition to water and transportation issues, the town has not adopted uniform building codes, increasing the chance that new structures may be less able to withstand in the impacts of a severe winter storm. In addition, Tullahassee does not have the means to receive and manage a grant currently, as it has not conducted an audit.

Northwest Elementary School in **Coweta Public School District 1s** only accessible along one road, which could be blocked during a severe winter storm. Southside Elementary School and Heritage Intermediate Grade School are both along a single road each, but the campuses are connected, which could allow for students to be moved from one campus to the other if access were prevented to one during an event. A few facilities appear to have flat roofs that might be more susceptible to damages from snow accumulation. Although the school district has a gas generator, the line is not big enough to handle the demands of the system.

With only one access road, **Okay Public School District** could be isolated by debris, snow, or ice accumulation. Some flat roofs may be vulnerable to snow and ice accumulation.

Flat-roof buildings in **Porter Public School District** may accumulate dangerous snow loads, though school buildings are usually designed to withstand them. Two local arterials provide access to the school district.

Wagoner Public School District may accumulate dangerous snow loads and be required to close. Students traveling on rural roads into Wagoner may have access issues.

In **District 3**, water supply offered by Rural Water District (RWD) 6 has mitigated against some of the worst effects of winter storms, which was demonstrated during the February 2021 winter event. Following a winter weather event in 2017-2018, which ruptured meters and some other water delivery mechanisms, RWD 6 buried its meters. RWD 7, located in the southern part of the district, also buried most of its meters (unrelated to the 2017-2018 event). During the February 2021 winter storm event, RWD 6 and 7 did not experience any water breaks in their distribution networks. RWD 7 also faced a potential shortfall in water, which was due mainly to customers running water to prevent their pipes from freezing. RWD 7 mitigated this shortfall by distributing a public information message effectively through Facebook and their website for customers to reduce their water consumption. Nonetheless, RWD 6 and 7 continue to face challenges during a winter storm event. Both districts noted that road conditions made it difficult for them access to customers during and following a winter weather event (for maintenance, billing, and other issues). RWD 7 also faced a water shortfall due to their lower carrying capacity. Some communities in District 3 reported that their RWD did not communicate with them during the February 2021 event.

Lifelines and Critical Facilities Impacted

The lifelines most impacted by severe winter storm are the food, water, and shelter lifeline, the transportation lifeline, and the power lifeline. Severe winter storms can damage structures and infrastructure, leaving residents without shelter or easy access to water for periods of time. In addition, severe winter storms also can affect the transportation lifeline by making roads more dangerous or impassable for people or goods to be transported. In Wagoner County, this is especially the case of nonarterial roads. Although the County has taken steps to mitigate affects to the power lifeline, ice, and other forms of winter precipitation, especially when compounded by severely cold temperatures, threaten power lines or power stations themselves.

All critical facilities in the planning area are susceptible to the potential impacts of a winter storm event. Among other things, power outages interrupt vital services, and snow/ice accumulation or debris from damaged trees result in inaccessibility due to road closures or blockages. Three critical facilities in **Porter** are at risk from winter storms for electrical reasons: the pump station, the wastewater treatment plant, and the town hall. None of these critical facilities have a backup generator. During the February 2021 event, all three facilities lost power. This limited response time of some emergency vehicles, as the gates and facilities housing the vehicles are powered by electricity. Had the treatment plant been out of power for a longer period, a sanitation issue from the sewage may have developed. Lifelines impacted by this hazard include safety and security (due to a disruption in energy). Similarly, the fire department and the town hall in **Red Bird** lack a generator. The sewage treatment plant in **Okay** also lacks a generator. The plant lost power during the February 2021 storm.

4.3.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-11 - Summary of Observations, Recommendations, and Actions

Observation(s)	Recommendation	Action(s)
Residents should have the opportunity to learn about the best practices to safeguard themselves against severe winter storms.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Residents would benefit from an electronic winter storm alert system.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Emergency response to severe winter storms would be enhanced with updated, more accurate 911 information.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.	4
Several critical facilities lost power during the 2021 winter event and did not have generators to supply backup power.	Provide generators or other forms of electrical backup for critical facilities and schools.	6
Snow and ice storms can create system-wide damage to transportation infrastructure.	When government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies. Complete hazard evaluations of schools and retrofit or remodel buildings to make them more disaster resistant.	10, 14
Snow and ice storms can damage utility infrastructure and/or disrupt utilities' delivery services. Some of these damages could be avoided using best practices.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of severe winter storms. Design infrastructure to withstand future hazards more effectively.	13, 25
School buildings and campuses can be damaged by severe winter storms.	Complete hazard evaluations of schools and retrofit or remodel buildings to make them more disaster resistant.	14
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Responders and key leaders would benefit from having access to current GIS mapping capabilities to identify threats from severe winter storms and function needs populations and assets.	Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	19, 20
Emergency management personnel and residents would benefit from having a County Emergency Operations Center to oversee a response to a winter storm.	Construct a multipurpose structure that can serve as a centralized County Emergency Operations Center that meets or exceeds criteria of FEMA P361.	21

Table 4-11 - Summary of Observations, Recommendations, and Actions

Storms, especially when accompanied by extremely cold temperatures, can deplete the water supply. This is especially a problem in water districts with a more limited carrying capacity.	Connect Rural Water District 6 and 7 networks so that they can share water.	29
Conditions on arterial roads and in some communities made some roads impassable.	Enhance debris, snow, and ice removal capabilities.	30, 31
Some communities lack tree trimming services, making electrical lines more vulnerable in these areas.	Implement tree-trimming capabilities around electrical lines.	31

4.4 Tornado and High Wind

4.4.1 Overall Significance

The overall significance of tornadoes and high winds is **high**. The probabilities that high wind and tornadoes impact the planning area are highly likely and likely, respectively. The combined location and extent for these events is severe. Given these observations, the Planning Area's vulnerability to high winds and tornadoes was rated as severe, with threats to human life and the built environment.

4.4.2 Overview and Description

Tornadoes and high winds form differently, but can have similar features (e.g. high windspeeds), depending on their severity. According to the National Weather Service, a **tornado** is a violently rotating column of air, usually pendant to a cumulonimbus, with circulation reaching the ground.¹⁹ Tornadoes generally form during severe thunderstorms. Thunderstorms may result in conditions favorable to the formation of numerous or tornadoes with longer durations. Supercell thunderstorms are often associated with increased tornado risk. Tornadoes may also develop along squall lines or in bands of storms associated with hurricanes. Tornadoes require moist air, instability (warm air rising), a source of lift such as a front, dryline, or heating, and wind shear (change in wind direction and speed with height).

High wind is the motion of air relative to the earth's surface. Extreme windstorm events are associated with cyclones, severe thunderstorms, and accompanying phenomena such as tornadoes and downbursts. High winds can result from thunderstorms, strong cold front passages, or gradient winds between high and low pressure. Damaging winds are often called "straight-line" winds to differentiate the damage caused by tornadoes. Downdraft winds are a small-scale column of air that rapidly sinks toward the ground, usually accompanied by precipitation. A downburst is the result of a strong, thunderstorm associated downdraft that causes damaging winds near the ground.

4.4.3 Probability and Previous Occurrences

The probabilities assigned to tornadoes and high winds are **likely** and **highly likely**, respectively. High wind and tornado events have occurred throughout Wagoner County. The NCEI database includes reports of 95 high wind, strong wind, thunderstorm wind, or tornado events (on 45 separate days) between January 2010 and December 2019. High winds were determined to be highly likely because they occur every year based on previous occurrences, making this a greater than 90% chance that the planning area will experience a high wind event in any given year based on the Hazard Risk Profile Overview Section. Tornadoes, based on previous occurrences data, are considered to have a less than 90% chance of occurring each year and were given a rating of likely.

During this ten-year period, the planning area experienced high wind events on an annual basis. The NCEI database reported two injuries and over \$7 million in property damage. Table 4-12 summarizes some previous tornado and high wind events. FEMA declarations DR-4222 in 2015 and DR-4438 in 2019 included wind events across the state and planning area.

¹⁹ <https://www.weather.gov/safety/tornado>

Table 4-12 Historic Tornado and High Wind Impacts

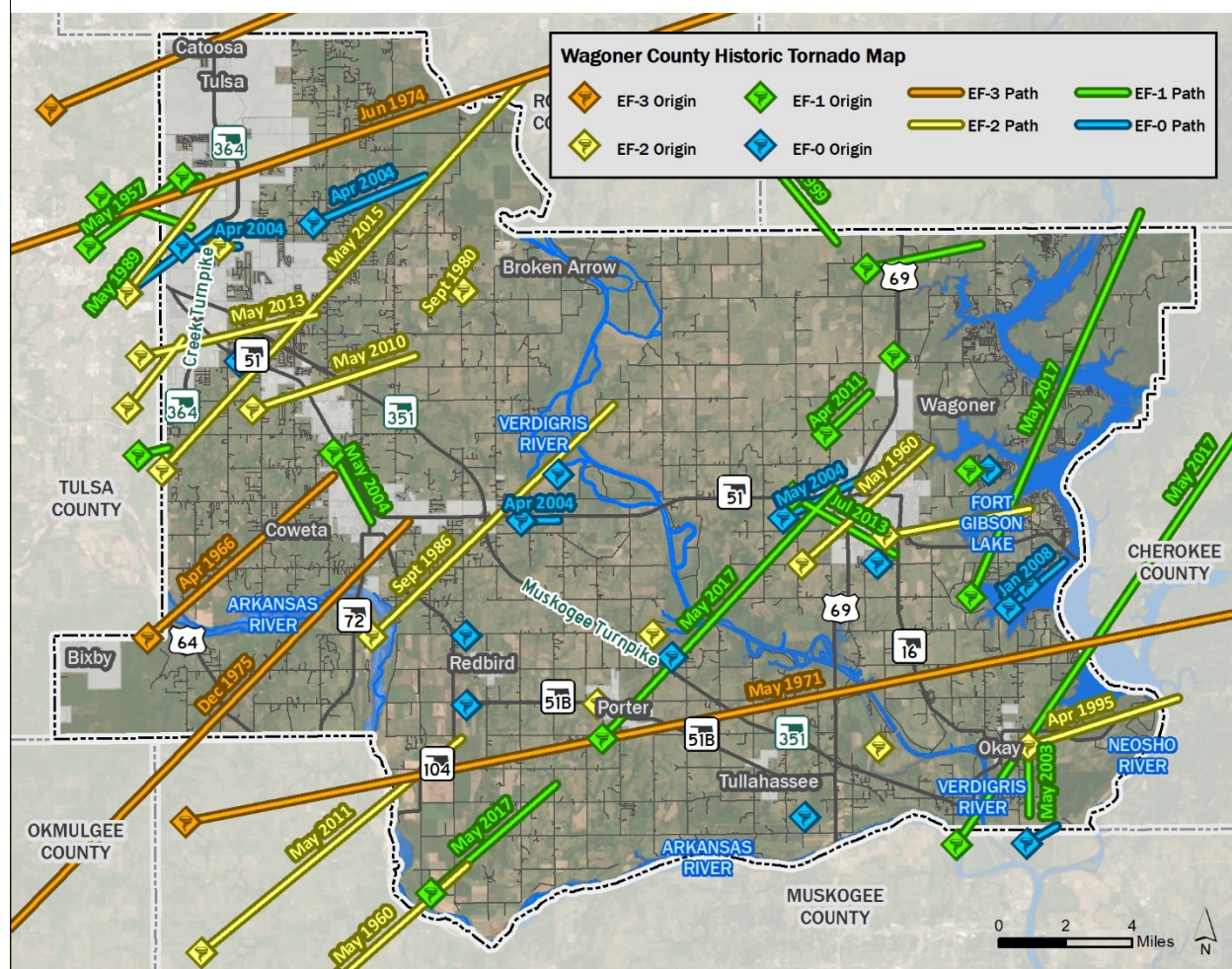
Date	Narrative
April 11, 1966	An F3 tornado caused an estimated \$250,000 in property damages and 6 reported injuries.
October 4, 1998 ²⁰	A severe storm system produced a tornado southeast of Tullahassee that reported damaged trees and a roof. High wind damage was also reported in Tullahassee. A little less than \$6,000 in damages was reported by NWS
May 16, 2015	High winds associated with region wide thunderstorms and squall line damaged roofs and trees throughout the County. The NCEI database estimated \$10,000 in property damages. These storms were part of the DR-5222 declaration that included Wagoner County.
May 16, 2015	The thunderstorm system generated tornadoes throughout the state. An EF2 tornado tore through the eastern portion of the County on a northeastern path. The NCEI database reported as many as 1200 homes were damaged in addition to barns and outbuildings being destroyed. The database estimated damages from the tornado at \$2,000,000.
July 14, 2016	Strong thunderstorm winds damaged buildings, trees, and powerlines in the County. Coweta School's roof was damaged. \$175,000 in damages were reported.
April 30, 2019	Two tornadoes were reported in Wagoner County, both rated as EF1. The first went through the northeastern portion of the county. It damaged outbuildings, uprooted trees, and snapped power poles, and the database recorded \$20,000 in property damages. The second tornado followed a northeastern path from south of the County till it dissipated near Red Bird. It also damaged outbuildings, trees, and power poles totaling near \$25,000 in damages.
May 25, 2019	A tornado caused a reported \$75,000 in damages as it traveled through the western portion of the County. It damaged roofs and trees, and was mostly contained within Broken Arrow. In addition to the tornado, thunderstorm winds were reported in the County, but no monetary damages were estimated. These events were included in DR-4438.

The NOAA Storm Prediction Center.²¹ maps Wagoner County's historic tornado paths from the mid

²⁰ <https://www.weather.gov/media/tsa/stormdata/tsaoct98.pdf>

²¹ <https://www.spc.noaa.gov/climo/online/probs/?lat=35.954&lon=-95.525&rad=25>

Figure 1-16 - Wagoner County Historic Tornado Map



20th century to 2018, based on National Weather Service data. The annual probability of a tornado occurring within planning area was derived using the Tornado Risk Assessment Tool from the Storm Prediction Center. A historical analysis was run to determine the annual probability of a tornado striking any single point within Wagoner County. This value is calculated by comparing the mean area affected by tornadoes each year with the total circular area of the search. The search area for this analysis was a 25km radius from a point near the center of the county (35.954, -95.525). Based on this method, any point in the calculated area has a 0.146% annual chance of experiencing a tornado. Based on a historical analysis, the most likely month the planning area should expect to experience a tornado is the month of May.

4.4.4 Location and Extent

The combination of location and extent for tornadoes and high winds and is rated to be **severe**. In terms of location, wind and tornado events can occur anywhere in the planning area. High wind events would impact a large proportion of the jurisdiction during a single event. Although tornado

events are usually localized, the likelihood that they impact any specific location is relatively uniform throughout the planning area.

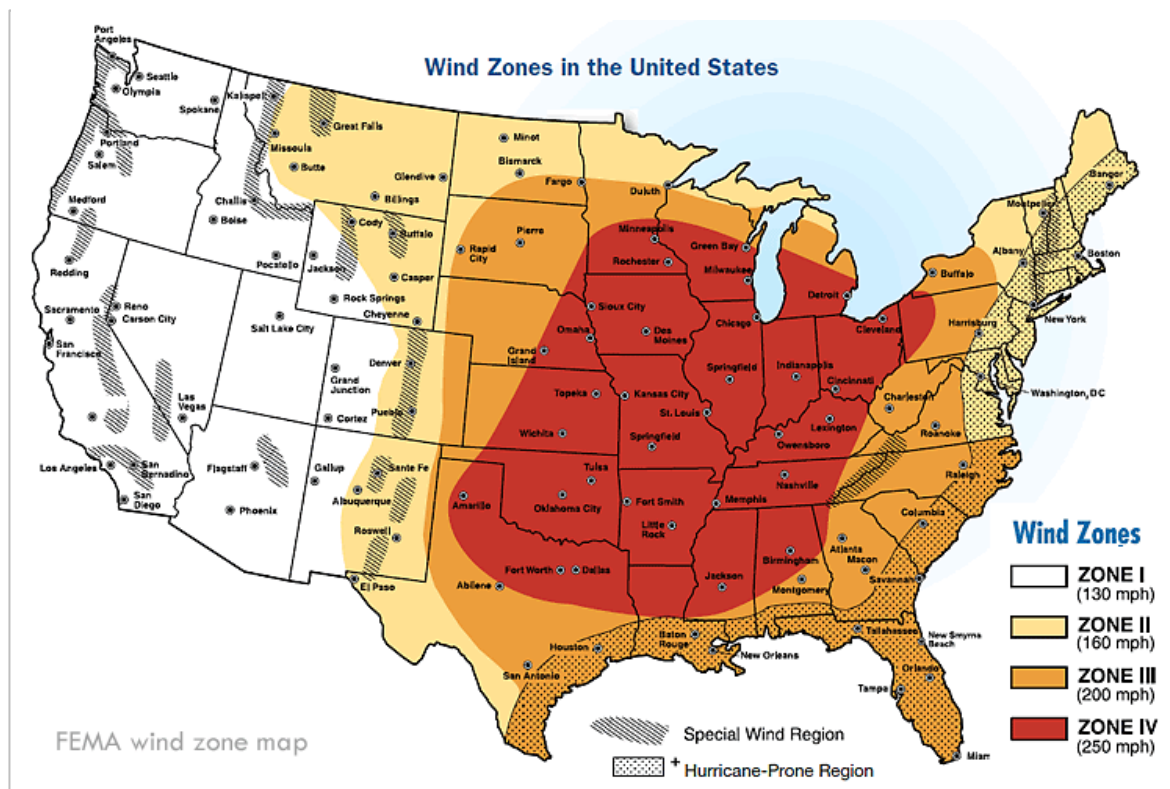
The planning team used Enhanced Fujita (EF) scale to classify the extent of tornadoes in Wagoner County. In terms of extent, it is often difficult to separate windstorms and tornado damage when winds get above 73 mph. Tornadoes are classified according to the Enhanced Fujita (EF) scale, which became operational on February 1, 2007. The EF Scale was revised from the original Fujita Scale to better reflect the relationship between damage surveys and observed wind speeds. The entire planning area may experience a tornado ranging from EF-0 to EF-5 on the EF Scale.

Table 4-13 Enhanced Fujita Scale

Rating	Summary	Estimated Wind Speed	Description
EF-0	“Minor” Damage	65-85 MPH	Shingles or roof parts blown off, damage to gutters/siding, branches broken off of trees, shallow rooted trees toppled.
EF-1	“Moderate” Damage	86-101 MPH	More significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.
EF-2	“Considerable” Damage	111-135 MPH	Roof torn off well-constructed homes, homes shifted off their foundation, mobile homes destroyed, large trees snapped or uprooted, cars can be tossed.
EF-3	“Severe” Damage	136-165 MPH	Entire stories of well-constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.
EF-4	“Extreme” Damage	166-200 MPH	Well-constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.
EF-5	“Massive/Incredible” Damage	>200 MPH	Well-constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.

The planning team used FEMA mapping to determine extent of high winds, although this map also can apply to tornadoes, given that both measures use wind speeds as a gauge. Oklahoma and many surrounding states have the highest wind zones in the United States. According to FEMA analysis, which can be seen in the figure below, the entirety of Wagoner County and the planning jurisdictions are within Zone IV and share a uniform risk to winds up to 250 mph.²²

Figure 1-17 - FEMA Wind Zones



4.4.5 Vulnerability and Risk Assessment

The overall community vulnerability for tornadoes and high winds is **high**. Tornadoes and high winds can result in injury. These events also can cause significant economic loss, especially through damages to the built environment.

General Impacts: People, Economy, and Built Environment

Adequate warning systems are essential to public safety during high wind and tornado events. Though the purpose of outdoor warning sirens is to provide a warning for people participating in outdoor activities, many rely on them as their primary notification.

Major determinants that play into effects of this hazard on the population include social vulnerability. Areas in Wagoner County with a higher income disparity are more vulnerable to high wind and tornadoes than areas with a higher per capita income. Quality of housing, language barriers, and education level play a role in increased vulnerability to this hazard and the level of resilience post-

²² https://www.fema.gov/media-library-data/20130726-1630-20490-8357/9_taking_shelter.pdf

event. Lack of knowledge about tornadoes and best practices to respond to a tornado event also increases risk.

People should plan and prepare for shelters in or near their homes. Local government facilities should not be relied upon for shelter. The best option is for residents to install Safe Rooms in their home, which provide near-absolute protection to wind events of at least 250mph. One ongoing problem with safe rooms is the lack of public understanding that safe rooms are not created equal. Lack of adequate safe room design can cause the unit to fail. Communities in the planning area should consider applying for residential safe room funding through FEMA's Hazard Mitigation Assistance Programs. Additionally, Wagoner County should continue to maintain a GIS database with storm shelter locations listed for use in response activities.

While forecasting and early warning have decreased the number of fatalities associated with wind events, less has been done to address economic losses. Direct tornado damage is one of several factors contributing to economic loss after a tornado. Tornadoes and high winds in Wagoner County can cause significant damage to infrastructure, resulting in extended, widespread loss of power or other utilities and services. Debris along roads can delay recovery and response operations. Loss of power and communication lines will require alternate methods of communication until cellular service or landlines can be restored. Local cellular service can be overwhelmed immediately after a catastrophic event. The residential building stock in the Wagoner County is diverse in the type of construction, age, and size of the building. According to U.S. census data, 13% of homes in Wagoner County are mobile homes (see specific impacts section for more details). Mobile homes or manufactured homes are the most vulnerable to high wind and tornado damage. Wagoner County enforces 2015 international building codes.

Future development could be less vulnerable to high wind events if higher building standards are implemented. In 2018, insurance companies began offering discounts on insurance premiums for homes constructed to the Insurance Institute for Business and Home Safety's (IBHS) fortified home standards. Homes constructed to this structural capacity can withstand winds up to 130 mph, which includes 95% of tornadoes. Wagoner County should consider promoting fortified home construction throughout the planning area.

Specific Impacts and Vulnerabilities

Areas that were not identified specifically in this assessment should refer to the general statement above. None of the school districts have been directly impacted by this hazard in the past. Local officials expressed concern that the residential development across **the entire planning area** could put newer developments outside the effective range of the County's existing storm sirens. Since the last plan update, the County delivered several NOAA radios and other emergency notification devices to the public and offered these devices to the public. Currently, the County lacks a communication network that reaches most residents in the planning area. It is important to note outdoor warning sirens are not intended to warn residents indoors. The County previously used the blackboard connect system to send notification of severe weather. Wagoner County Emergency Management would benefit from developing and maintaining an emergency app. Wagoner County also lacks a continuity of Operations Plan if utilities' services are disrupted due to a tornado or high wind event. In addition, the County could benefit from an addition building that could serve as an Emergency Operations center, with sheltering capabilities for Wagoner County's residents.

As one of the more densely populated towns, a strong tornado impacting **Coweta** would threaten more families, homes, and businesses. Newer development in Coweta will be built to newer building

codes and should be more resilient. High windstorms could impact numerous utility connections and roofs, generating disrupted power grids and large amounts of debris. Coweta has had some individual safe rooms installed through FEMA funding, and the City has its own siren system in addition to a couple listed on the County website. In addition to public protection, the percentage of mobile homes in Coweta, at 4%, is less 1/3rd of the Wagoner County average of 13%.

A larger population and more housing stock put **Porter** at greater risk of catastrophic events, while also providing some more resources for response and recovery. The fire department has one station, and if that were directly impacted, emergency response would be delayed. Nonetheless, Porter has an assistance agreement with Red Bird and Tullahassee Fire Departments, which reduces the vulnerability of losing the fire station. Several sirens provide additional warning opportunities. The town has two individual safe rooms, which were funded by FEMA. The housing stock is also concerning, since Porter has one of the highest percentages of mobile homes in the County at 36%.

According to U.S. Census data, **Okay** has the highest percentage of mobile homes in Wagoner County, with 45% of homes being mobile homes. This exposes the town to greater risk of damage and human injury since mobile homes tend to be much more vulnerable to damage from tornados and high winds. In terms of community protection measures, Okay has a storm shelter and a siren to protect its residents. The storm shelter should be able to withstand the effects of an EF-2 tornado. Debris management could be a concern if a large portion of the town were impacted, as the town does not have enough staffing to manage the debris. The community should consider installing a safe room that meets or exceeds the criteria of FEMA Publication 361 and ICC 500 to withstand windspeeds of at least 250 mph.

Red Bird is threatened by tornadoes and high wind events due to three key gaps. It lacks a working siren, a community storm shelter, and usable roads. Without the siren, community officials note that neighbors have taken to warning each other and assisting each other to find some form of shelter. Without a shelter, the community has no opportunity to provide a safer option for its residents. Lastly, officials are worried that the condition of dirt roads throughout town may make it difficult for residents to reach the shelter in time, especially elderly residents. The lack of public protection from tornadoes and high winds is particularly concerning because Red Bird has one of the highest percentages of mobile homes in the County, at 36%.

Tullahassee is sparsely populated with open space around residences. There are also several mobile homes at higher risk of high wind impacts. The fire department operates out of a single building. A county siren is in the community. A high wind impact could impact a large percentage of residents, creating hardships for many residents at once. A higher number of wooded lots may create debris during high wind or tornado events. Limited resources will impact recovery efforts. In addition, the percentage of mobile homes in Tullahassee, while not as high as Okay, Porter, and Red Bird, is almost double the County average at 24%. In addition, Tullahassee does not have the means to receive and manage a grant currently, as it has not conducted an audit.

Coweta Public Schools operates multiple campuses throughout the City. Tornadoes and high winds could directly impact any campus, putting students and staff in direct harm. Five schools are in the same general area, a tornado here could case extensive damage to the district's ability to operate. Northwest Elementary School is only accessible from one road and could be blocked from the City by debris. The school district intends to apply for FEMA funds to include safe rooms in the implementation of the school district's master plan.

Okay Public Schools does not have a safe room. In addition, Okay's combined campus means a tornado could impact all facilities at once. The campus is only accessible along Sequoyah Bay Rd, and debris on this road would prevent ingress and egress into the facilities.

Porter Public Schools operates on a single campus. A strong tornado could impact both of its schools at once. The District proposed the construction of a safe room in 2017 through a bond package. The campus has large, flat-roof buildings, with some HVAC, which could be damaged during high winds events.

Wagoner Public Schools campuses could be impacted by tornado events in similar ways as other school districts in the plan. Loss of life and extended school closure are the greatest concerns. The school district should consider incorporating shelters that meet the requirements of ICC-500 or FEMA P361 in all new facilities. The school has experienced losses from wind damage on their buildings in the past.

Lifelines and Critical Facilities Impacted

The lifelines most impacted by a tornado are the food, water, and shelter lifeline, along with the power lifeline and the communications lifeline. Tornadoes and high winds can damage or destroy residential and public buildings, disrupting residents' access to shelter. These events also can affect residents' access to water and other basic needs by damaging infrastructure that delivers these services. Tornadoes and high winds disrupt the power and communications similarly by destroying or damaging assets, like cell towers or power lines, that enable the delivery of these services to residents in the County.

It is impossible to predict the geographical area of impact of high wind and tornadoes. Although all critical facilities in the planning area are exposed to this hazard, the current condition of **Tulahassee's** civic center, which is the only public building current in operation, makes it particularly vulnerable to tornadoes and high winds. In addition, Wagoner County should consider purchasing and installing of generators at all critical facilities. The only critical facility that is confirmed to have a storm shelter is the Wagoner County Emergency Operations Center.

4.4.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-14 - Summary of Observations, Recommendations, and Actions

Observation(s)	Recommendation	Action(s)
Residents would benefit from understanding the best practices to safeguard themselves against tornadoes and high winds.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Early warning is paramount in individuals' ability to seek shelter during an event. In addition, residential development across the entire planning area could put newer developments outside the effective range of the County's existing storm sirens.	Evaluate, upgrade, and maintain community-wide outdoor omnidirectional voice/siren warning systems. Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	2,3

Table 4-14 - Summary of Observations, Recommendations, and Actions

Emergency response to Tornado/ High wind incidents would be enhanced with updated, more accurate 911 information.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.	4
Some critical facilities and other critical buildings lack generators to support their functioning in the event of an outage resulting from tornado/ high wind.	Equip critical facilities with generators, as appropriate.	6
Safe Rooms can prevent loss of life when events impact residences, schools, or critical facilities.	Construct safe rooms that meet or exceed criteria of FEMA P361 at school facilities. Implement a safe room program.	5,9
Government buildings and other critical facilities have been damaged by high winds in the past.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies.	10
Tornadoes and high winds have caused widespread damage to utilities, especially electrical utilities, resulting in power outages and other disruptions.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of these events. Design infrastructure to withstand future hazards more effectively. Harden, strengthen, or bury electrical infrastructure when cost-effective. Implement tree-trimming capabilities around electrical lines.	13,25, 26,31
Determine if school buildings can be enhanced for protection from tornado and high wind events.	Complete hazard evaluations of schools and retrofit or remodel buildings to make them more disaster resistant.	14
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Responders and key leaders would benefit from having access to current GIS mapping capabilities to identify threats from tornadoes/ high winds and function needs populations and assets.	Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	19, 20
Emergency management personnel and residents would benefit from having an additional safe room in a centralized County Emergency Operations Center.	Construct a multipurpose structure that can serve as a centralized County Emergency Operations Center that meets or exceeds criteria of FEMA P361.	21

Table 4-14 - Summary of Observations, Recommendations, and Actions

Not all areas and communities enforce the minimum statewide building codes.	Implement and enforce at least the minimum statewide building codes across all communities. Encourage residents and businesses to build to IBHS fortified standards.	23,24
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4.5 Dam and Levee Incidents

4.5.1 Overall Significance

The overall significance for Dam and Levee Incidents in the planning area is **high**. The probability of dam and levee incidents is unlikely. This being said, the combined location and extent is severe, and the vulnerability is high. In other words, although the likelihood of a dam and levee event is unlikely, the consequences of such an event threaten the planning area significantly.

4.5.2 Overview and Description

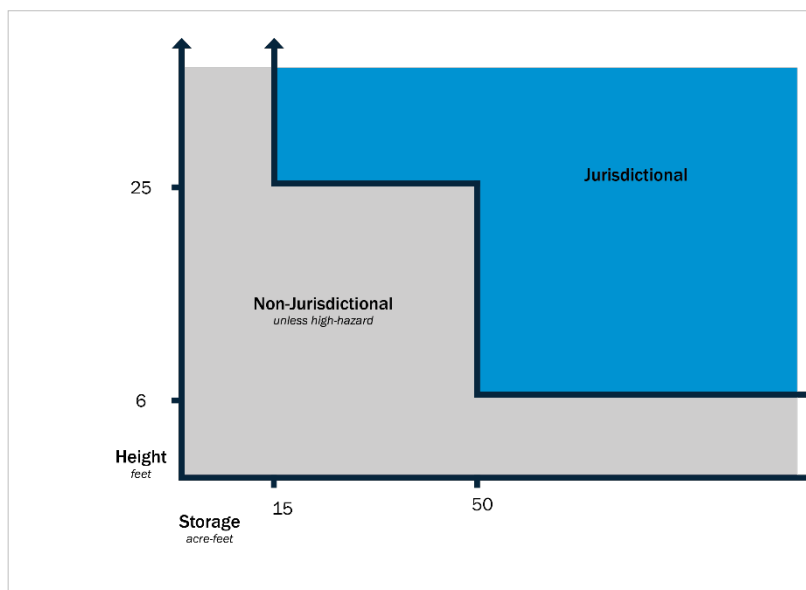
The Federal Emergency Management Agency (FEMA) defines a **dam** as “a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water.” Dams typically are constructed of earth, rock, concrete, or tailings (chaff) from mining operations. A dam incident is the release, collapse, breach, or other failure resulting in downstream flooding. The amount of water impounded in the reservoir behind a dam is measured in acre-feet. An acre-foot is the volume of water that covers an acre of land to a depth of one foot, or approximately 325,000 gallons. As a function of upstream topography, even a very small dam may impound or detain many acre-feet or millions of gallons of water.

A breach in a dam or levee produces an extremely dangerous flood situation because of the high velocities and large volumes of water released. In the event of a dam or levee incident, the potential energy of the water stored behind even a small dam or levee can cause substantial property damage, as well as loss of life if there are people in the inundation area. The extent of this inundation may be weak to uninhabited farmland or catastrophic in an urban environment.

Flooding can occur downstream from a dam without the structure being breached. Sometimes, to prevent overtopping and catastrophic failure, dams are forced to make emergency releases of large amounts of water, which can cause downstream flooding incidents.

Dam failures are primarily caused by hydrologic or structural deficiencies. A hydrologic deficiency is inadequate spillway capacity caused by excessive runoff from heavy precipitation. Structural deficiencies include seepage, erosion, cracking, sliding, and overturning, mainly caused by the age of a dam and lack of maintenance. The operation of a reservoir can also influence the safety of the structure. There can be varying levels of dam failure. Partial dam failures include inadequate spillway capacity that causes excess flow to overtop the dam or internal erosion through the dam or foundation. Complete failure occurs if internal erosion or overtopping results in a total structural

Figure 1-18 - OWRB Jurisdictional Sizes of Dams



breach, releasing a high-velocity wall of debris-laden water rushing downstream, damaging, or destroying everything in its path.

The USACE determines dam failure scenarios based on two conditions as shown in the Figure below. The Maximum High Pool includes the total storage space in the reservoir below the design water elevation. It includes surcharge, flood, conservation, inactive and dead storage. It is determined

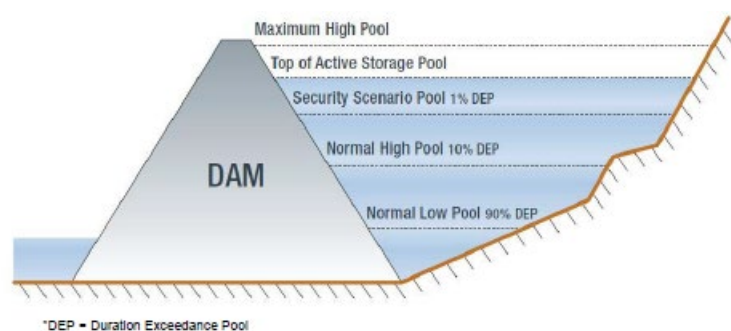


Figure 1-19 - USACE Dambreach Scenarios

based on an elevation excluding any allowance for freeboard or wedge storage due to a sloping water surface. It establishes the upper limit of reservoir storage capacity, downstream inundation, and potential consequences for the dam. Failure is assumed during a maximum high pool assumed to occur due to overtopping during a Probable Maximum Flood (PMF).

The Normal High Pool (10% Duration Exceedance) is the maximum reservoir

water surface elevation obtained when the reservoir is fully utilized for conservation purposes (e.g. municipal and industrial water supply, irrigation, hydroelectric power generation, navigation, etc.) excluding flood and surcharge storage. In this case failure is assumed to occur because of piping through the dam, otherwise known as a Sunnyday breach. While the Maximum High Pool provides the largest footprint and consequence from a dambreach, it is also quite unlikely. The Normal High Pool is seen as the reasonable lower limit to consider for dambreach and is the pool level with a 10% recurrence interval. Since this pool level occurs more frequently, the possibility of failure at this elevation would be more likely. The Maximum High and Normal High dambreach limits are mapped for consideration in the location and extent section.

In addition to complete or partial failure, the planning area also can be impacted by a high release event. A high release is an intentional release of water that exceeds normal release levels. A high release can occur in response to more runoff entering the reservoir than what is being released, causing the water surface to rise to the top of the flood pool while inflow is still occurring. Operating the gated spillway at that level requires that the outflow through the spillway must be equal to the inflow so that the water surface will not overtop the dam.²³ More data is needed to analyze the impact of a high release in the planning area, making it an objective for future study. High-level indicators about the possible impacts of a high release event are included in the next section.

Any dam that has a height of 25 feet or more from the natural streambed and/or 50 acre-feet or more of storage capacity, is under the jurisdiction of the Oklahoma Water Resources Board (OWRB) as shown in Figure 1.

Levee failures or damages behind levees can be caused by several occurrences:

- Overtopping due to flood heights exceeding the levee design-protection elevation.
- Flooding from upstream sources internal to the levee.

²³ High release events occur after heavy precipitation events, as in the case of the May 2019 flood event, which makes them likely to overlap with periods of flooding.

- Erosion caused by embankment leaking or “piping” or excessive saturation of a sand levee. “Piping” is internal erosion caused by seepage, and can occur around pipes, through animal burrows, around roots of trees, and other weaknesses.
- Improper operation and maintenance, including failure to inspect and repair seepage problems or manage vegetation.

4.5.3 Probability and Previous Occurrences

The planning team determined that a dam failure would be **unlikely**, with less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years. That being said, a high release from a dam is much more likely to occur. A levee failure, was rated as **occasional**, given uncertainties about the levees’ construction and maintenance, when compared to dams.

The 2019 flooding along the Arkansas River was due to large releases from Keystone Dam, but not a dam failure. These large releases, which are more likely to occur than dam failures, are discussed in the vulnerabilities section. As of this writing, there has never been a dam failure that has affected Wagoner County, so all probability assessments will be based on projected expectations from the planning team and the operators of the dams.

The USACE believes there is a low probability that Keystone Dam would fail, because it is operated by the USACE and inspected at least once each year. The age of Keystone Dam is another issue of concern. When Keystone was built in 1964, the USACE estimated it would have a 50-year useful life. In addition, a great deal of silt has collected upstream from the dam, including in the floodpool. The Keystone flood pool filled completely in 1974 and 1986. In 2016 the flood pool was within 1.4 feet of filling the flood pool. During the 2019 flood event, the dam reached surcharge levels (above the maximum high pool) for the first time since 1993.

Even though a dam break is unlikely, there is a high probability that the USACE will once again be forced to make flooding releases from the dam. Even without a breach of the dam, forced releases of flooding from Keystone Dam, such as occurred in 1986 and 2019, could cause extensive property damage and disruption, as well as safety risks. The USACE and City of Tulsa have studied and mapped areas that would be inundated from various releases ranging from 100,000 cubic feet per-second (cfs) to 450,000 cfs from the Keystone reservoir. Keystone Dam’s maximum discharge could be as much as 939,000 cfs. A 1% (100-year) discharge is estimated at 205,000 cfs.

There is a low probability that Skiatook or Oologah Dams will fail because they are operated by the USACE and inspected at least once each year.

The planning team’s evaluation indicated that the **levees** (with the exception of Dike 10) were more likely to fail than dams. Although levees in the planning area have not reported a failure in the last 10 years, the planning team determined that their failure was rated to be **occasional**. This conclusion was reached because the levees’ construction and maintenance were not up to the same standard as the dams. The planning team could not access the construction records for the levees. Based on knowledge from some of the levee’s operators and other research on the levees themselves, however, the planning team concluded that the construction of the levees were made them less stable than dams. The planning team concluded that the maintenance of levees was less rigorous than dams. The danger of levees, relative to floods, could be seen during the 2019 flood, when county, state, and federal partners expended considerable efforts to keep dams in the area from collapsing.

There is no information on levee failures for the Verdigris River and Salt Creek levees. These levees would be assumed to fail during a 1% storm because they would be inundated over most of their height, and in the case of the Old Fish Hatchery Levee, it would be completely inundated during that event.

Dike 10 of the Fort Gibson Lake system is assumed to be able to withstand inundation over much of its height during a 1% storm. It is maintained by the USACE. The risk associated with Dike 10 is more related to the land side which may not be able to store water that would normally be drained through the dike without flooding buildings on the upstream side. The land side of Dike 10 must be pumped during Fort Gibson Lake levels higher than 561.5 when the valve is shut to prevent backwater from the Lake.

4.5.4 Location and Extent

Dams

The Oklahoma Water Resources Board (OWRB) classifies dams as high-hazard, significant-hazard, and low-hazard, depending on the potential impact on downstream structures, populations, and infrastructure. These classifications do not reflect the likelihood that a dam will have an emergency release or fail; only the effects if it does. The two tables below summarize OWRB's classifications and the high hazard dams within the County, respectively.²⁴

Table 4-15 - OWRB Dam Classifications

Hazard-Potential Classification	Risk Involved with Dam Failure	Inspection Frequency
High	Probable loss of human life	Annually, by a registered professional engineer
Significant	No probable loss of human life but can cause economic loss or disruption of lifeline facilities	Every three years by a registered professional engineer
Low	No probable loss of human life and low economic loss	Every five years

According to OWRB, there are five high hazard dams within Wagoner County. According to David Williams, the USACE does not consider Chouteau Lock and Dam 17 and Newt Graham Lock and Dam 18 to be high hazard because they are run-of-the-river facilities with very little conservation storage.²⁵ Therefore, the USACE does not prepare Emergency Action Plans or Dambreach Inundation Mapping for any of the Lock and Dam facilities. They are listed in the table below because the OWRB categorizes them as High Hazard Dams.

Table 4-16 - Wagoner County High Hazard Dams (OWRB and USACE)

Nat Id	Dam Name	Owner	River
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²⁴ <https://www.owrb.ok.gov/damsafety/index.php>

²⁵ David Williams, Ph.D., P.E., D.WRE, Chief, Hydrology and Hydraulics Branch, USACE Tulsa District.

Table 4-16 - Wagoner County High Hazard Dams (OWRB and USACE)

OK10303	Chouteau Lock and Dam 17	Corps of Engineers	Verdigris River
OK10314	Fort Gibson Lake	Corps of Engineers	Grand River
OK10302	Newt Graham Lock and Dam 18	Corps of Engineers	Verdigris River
OK30398	East Pre-Sedimentation Basin	Broken Arrow Municipal Authority	Verdigris River-Old Channel
OK30393	West Pre-Sedimentation Basin	Broken Arrow Municipal Authority	Verdigris River-Old Channel

An incident from other high hazard dams outside the County could nonetheless impact the planning area. These dams are:

- Keystone Dam along the Arkansas River
- Heyburn Dam along Polecat Creek
- Skiatook Dam along Hominy Creek and Oologah Dam along the Verdigris River
- Pensacola Dam and Markham Ferry Dam along the Grand River

Lynn Lane Terminal Storage Reservoir is also on the border of the county, but its failure would be contained within the City of Tulsa. Flooding in 2019 along the Arkansas River was related to high releases from Keystone Dam.

Table 4-17 below provides data for each of the high-hazard dams—located inside and outside the County—which would affect the County as a breach flooding hazard. Locations of the inundation areas in the Wagoner County jurisdictions are shown on the maps in Figure 1-21 through Figure 1-28.

Table 4-17 - High Hazard Dams Impacting Wagoner County

Keystone Dam	
Location	10 miles west of Tulsa
Source	Arkansas River
Drainage basin	22,351 sq. miles
Owner/operator	U.S. Army Corps of Engineers
Year built	1964 (with an estimated useful life of 50 years)
Length/ Height	4,600 feet long, 121 feet high
Surface area	23,610 acres
Construction material	Masonry and earth-fill
Use of Dam	Water storage, flood control, hydroelectric, and recreation
Capacity	431,922 acre-feet (normal), 1,560,564 (maximum)
Results of failure/high releases	Inundation of homes and infrastructure below dam ²⁶
Emergency Action Plan (EAP)	Yes

²⁶ See other figures further in this section for specific areas impacted. Applies to dams analyzed specifically in this section.

Table 4-17 - High Hazard Dams Impacting Wagoner County

Fort Gibson Dam	
Location	About 5 miles north of Fort Gibson, Oklahoma, and about 12 miles northeast of Muskogee, Oklahoma.
Source	Neosho River
Owner/operator	Grand River Dam Authority
Year built	Completed in 1949, fully operational in 1953
Length/ Height	2990/110
Surface area	19,900 acres
Construction material	Earth, Gravity, Concrete
Use of Dam	Flood Control, Hydroelectric Power, Water Supply and Recreation
Capacity	365,199 (normal), 1,284,399 (maximum)
Results of failure	Inundation of homes and infrastructure below dam
Emer Action Plan (EAP)	Yes
Skiatook Lake Dam	
Location	18 miles north-northwest of Tulsa
Source	Hominy Creek
Drainage basin	354 sq. miles
Owner/operator	US Army Corps of Engineers
Year built	1984
Length/ Height	3,590 feet long, 143 feet high
Surface area	10,502 acres
Construction material	Concrete and earth-fill
Use of Dam	Flood control, water supply, fish and wildlife, recreation
Capacity	321,408 acre-feet (normal), 499,102 acre-feet (maximum)
Results of failure	Inundation of homes and infrastructure below dam
Emergency Action Plan (EAP)	Yes
Oologah Lake Dam	
Location	27 miles northeast of Tulsa, 36°25'19"N, 95° 40'49"W
Source	Verdigris River
Drainage basin	4,339 sq. miles
Owner/operator	US Army Corps of Engineers
Year built	1974
Length/ Height	4,000 feet long, 137 feet high
Surface area	29,500 acres
Construction material	Earth-fill and concrete
Use of Dam	Flood control, water supply, navigation, fish and wildlife, recreation
Capacity	549,209 acre-feet (normal), 1,509,721 acre-feet (maximum)
Results of failure	Inundation of low-lying homes and infrastructure below dam

Table 4-17 - High Hazard Dams Impacting Wagoner County

Emergency Action Plan (EAP)	Yes
Pensacola/Grand Lake Dam	
Location	36° 28' 17" N, 95° 02' 19" W, Sec. 14, T23N, R21E in Mayes County about 13 miles southeast of Vinita.
Source	Neosho River
Owner/operator	Grand River Dam Authority
Year built	1940
Length/ Height	6,565 feet / 147 feet
Surface area	45,200
Construction material	Reinforced-concrete arch (4284 feet), concrete spillway (861 feet), non-overflow gravity (805 feet), reinforced concrete gravity spillway 1 mile east (886 feet)
Use of Dam	Hydropower generation, water supply, public recreation, and wildlife enhancement
Capacity	1,393,000 (elev. 742), 1,680,000 (elev. 745) and 2,021,678 (maximum)
Results of failure	Inundation of homes and infrastructure below dam
Emergency Action Plan (EAP)	Yes
Markham Ferry/Lake Hudson Dam	
Location	36° 13' 48.34" N, 95° 10' 55.87"W just north of Locust Grove, Oklahoma
Source	Neosho River
Owner/operator	Grand River Dam Authority
Year built	1964
Length/ Height	4494 feet / 90 feet
Surface area (acres)	12,000
Construction material	Concrete gravity and earth filled embankment with a concrete ogee weir spillway
Use of Dam	Hydropower generation and flood control
Capacity	200,189 (normal), 444,469 (maximum)
Results of failure	Inundation of homes and infrastructure below dam
Emergency Action Plan (EAP)	Yes
East Pre-Sedimentation Basin	
Location	12 miles east of the Broken Arrow city center
Source	Unnamed tributary of the Verdigris River
Owner/operator	City of Broken Arrow, OK
Year built	2013 (current improvements)
Length/ Height	8270 feet (combined with west basin)/ 22 feet
Surface area	31 (normal) and 51.1 (maximum) combined with west basin
Construction material	Earthen embankment
Use of Dam	Sedimentation basin for water supply
Capacity (acre-feet)	266 at elev. 616 (conservation pool) and 342 at elev. 620 (top of dam)

Table 4-17 - High Hazard Dams Impacting Wagoner County

Results of failure	Flooding of seven structures located in the breach flow path, including two barns, three mobile homes, and two houses.
Emer Action Plan (EAP)	Yes
West Pre-Sedimentation Basin	
Location	12 miles east of the Broken Arrow city center
Source	Unnamed tributary of the Verdigris River
Owner/operator	City of Broken Arrow, OK
Year built	2013
Length/ Height	8270 feet (combined with east basin)/ 22 feet
Surface area	51.1 combined with east basin
Construction material	Earthen embankment
Use of Dam	Sedimentation basin for water supply
Capacity	541 at elev. 616 (conservation pool) and 658 at elev. 620 (top of dam)
Results of failure	Flooding of seven structures located in the breach flow path, including two barns, three mobile homes, and two houses.
Emergency Action Plan (EAP)	Yes
Heyburn Dam	
Location	11 miles southwest of Sapulpa in Creek County, Oklahoma, 35° 56' 52" N, 96° 17' 55" W
Source	Polecat Creek
Owner/operator	US Army Corps of Engineers
Year built	1950
Length/ Height	2,920 feet/89 feet
Surface area (acres)	940
Construction material	Rolled earthfill structure
Use of Dam	Flood control, conservation, water supply, recreation, and fish & wildlife
Capacity (acre-feet)	5508 (normal), 54,651 (maximum)
Results of failure	Inundation of homes and infrastructure below dam
Emergency Action Plan (EAP)	Yes

Dam Inundation Maps

All of the dambreach analyses prepared by the USACE assumed a breach would take less than one hour to develop. Following a breach, two measurements for time of arrival are listed in the EAPs prepared by the USACE at each cross-section downstream. Failure wave arrival time is the time following initial dam breach, until increased flow directly resulting from dam breach arrives at a given location (a two-foot increase in water surface elevation). Cross sections and flood wave arrival time points are based on the dambreach model. The second time measurement is the time for the peak flow to reach that cross-section. Water surface elevations are included for both time measurements within the EAPs at each of the mapped cross-sections.

Keystone Lake Dam Breach

Figure 1-20 - Keystone Normal High Dam Breach Inundation Area

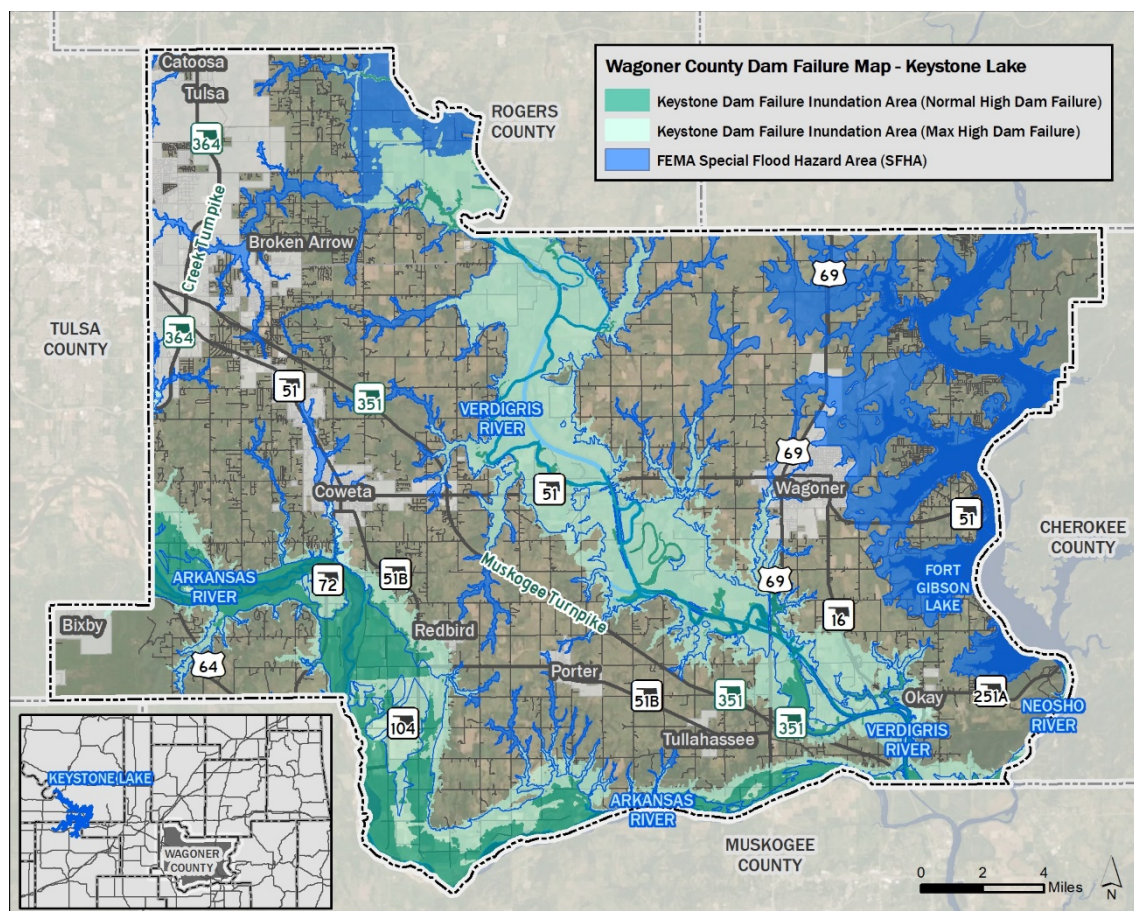


Table 4-18 shows the warning time for the Normal High Breach and failure of Keystone Dam as well as the levels of flooding related to the 1% flood elevation discussed in the Flood Section.²⁷ Although no public school structures were affected by a normal high breach, school transportation routes for Coweta, Okay, and Porter Public Schools could be affected.

Keystone Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
City of Wagoner				Not affected			
City of Coweta	48	10hrs 20min	K	24hrs	569	570	-1
Town of Okay	80	19hrs 22min	Q	44hrs	513	516	-3
Town of Porter				Not affected			
Town of Redbird				Not affected			
Town of Tullahassee				Not affected			

²⁷ USACE, Keystone Lake Emergency Action Plan, March 2018

Table 4-18 – Keystone Normal High Breach Warning Times and Elevations							
Keystone Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Wagoner County District 1				Not affected			
Wagoner County District 2	79	17hrs 19min	P	26hrs	514	518	-4
Wagoner County District 3	43	10hrs 20min	K	24hrs	579	581	-2
Wagoner School District				Not affected			
Coweta School District				Not affected			
Okay School District				Not affected			
Porter School District				Not affected			

The Normal High breach elevations are below the Special Flood Hazard Area (SFHA) Base Flood Elevations (BFE)s. None of the school districts are impacted by the Keystone Normal High Dam Breach.

Table 4-19 shows the warning time for the Maximum High Breach and failure of Keystone Dam as well as the levels of flooding related to the 1% flood elevation discussed in the Flood section of this assessment.

Table 4-19 – Keystone Maximum High Breach Warning Times and Elevations							
Keystone Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
City of Wagoner				Not affected			
City of Coweta	48	7 hrs 32min	K	19hrs	605	570	+35
Town of Okay	80	16hrs 57min	Q	1hr 19min	543	516	+27
Town of Porter				Not affected			
Town of Redbird				Not affected			
Town of Tullahassee				Not affected			
Wagoner County District 1				Not affected			
Wagoner County District 2	79	15hrs 55min	P	1hr 16min	543	518	+25
Wagoner County District 3	43	7 hrs 32min	K	19hrs 0min	611	581	+30
Wagoner School District				Not affected			
Coweta School District				Not affected			
Okay School District				Not affected			
Porter School District				Not affected			

The vulnerable structures (buildings larger than 750 square feet) in the Normal High Dambreach and the Maximum High Dambreach inundation areas are shown in Table 4-20. These buildings flood at elevations that are lower than the SFHA BFEs.

Table 4-20 - Buildings Located within the Keystone Normal and Maximum High Dambreach Inundation Limits

<u>KEYSTONE DAM BREACH SUMMARY</u>	Residential		Commercial		Exempt		Total	
	Keystone Normal High Dam Breach	Keystone Max. High Dam Breach	Keystone Normal High Dam Breach	Keystone Max. High Dam Breach	Keystone Normal High Dam Breach	Keystone Max. High Dam Breach	Keystone Normal High Dam Breach	Keystone Max. High Dam Breach
City of Wagoner	-	2	-	-	-	1	-	3
City of Coweta	-	38	-	-	-	2	-	41
Town of Okay	-	122	-	6	-	6	-	141
Town of Porter	-	-	-	-	-	-	-	-
Town of Redbird	-	4	-	3	-	-	-	7
Town of Tullahassee	-	-	-	-	-	-	-	-
Wagoner County Dist 1 (Uninc.)	-	11	-	-	-	3	-	28
Wagoner County Dist 2 (Uninc.)	6	230	1	9	-	23	12	529
Wagoner County Dist 3 (Uninc.)	143	368	5	15	2	12	256	741
Wagoner School District	-	-	-	-	-	-	-	-
Coweta School District	-	-	-	-	-	-	-	-
Okay School District	-	-	-	-	-	-	-	-
Porter School District	-	-	-	-	-	-	-	-
Totals	149	775	6	33	2	47	268	1490

Heyburn Lake Dam Breach

Figure 1-21 - Heyburn Normal High Dam Breach

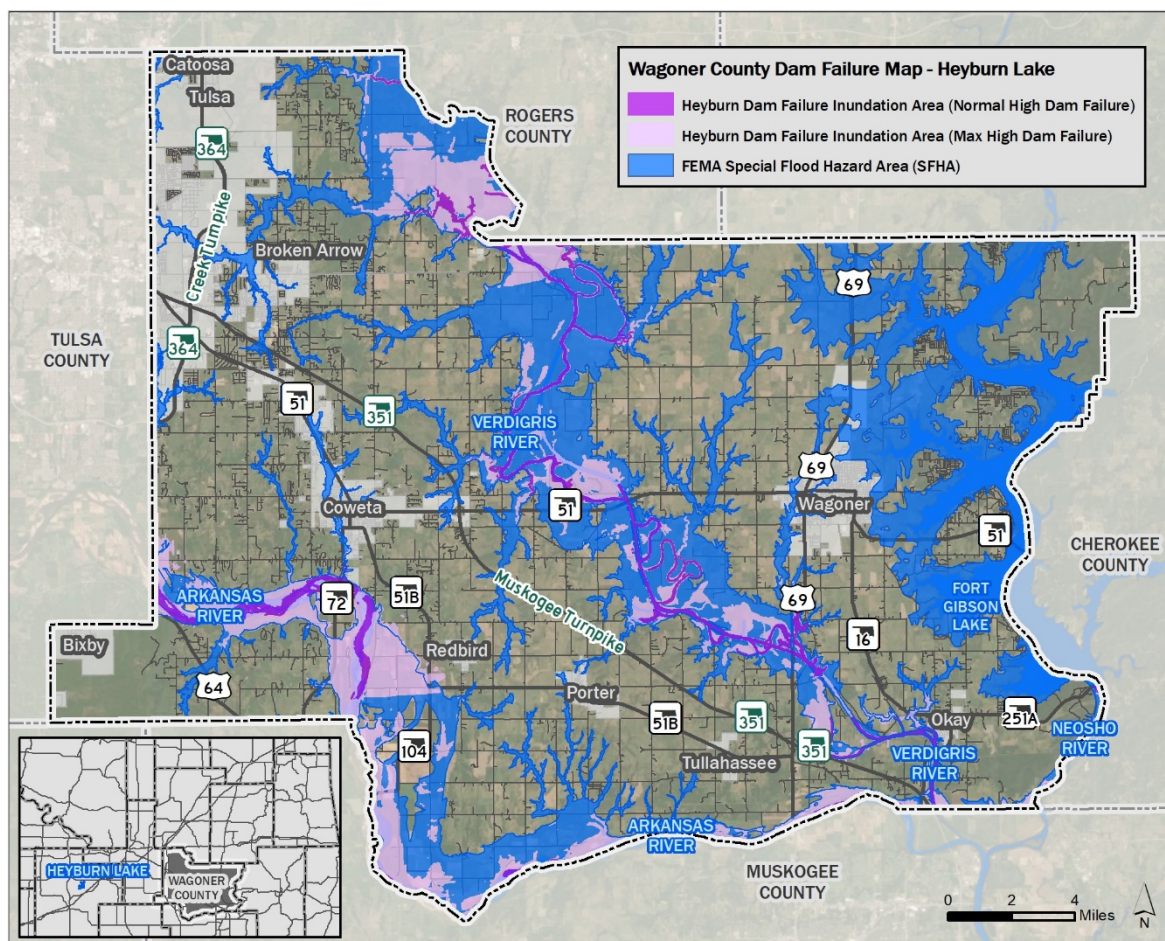


Table 4-21 and Table 4-22 show the warning time for the Normal High breach and the Maximum High breach and failure of Heyburn Dam as well as the levels of flooding related to the 1% flood elevation discussed in Flood Section.²⁸

Heyburn Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/ below the 1% flood
City of Wagoner				Not affected			
City of Coweta	72	Not Available	K	38hrs 45min	553	570	-17
Town of Okay	104	Not Available	Q	53hrs 30min	494	516	-22
Town of Porter				Not affected			
Town of Redbird				Not affected			
Town of Tullahassee				Not affected			

²⁸ USACE, Heyburn Lake Emergency Action Plan, July 2019

Table 4-21 - Heyburn Normal High Breach Warning Times and Elevations

Heyburn Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Wagoner County District 1				Not affected			
Wagoner County District 2	102	Not Available	P	39hrs 30min	495	516	-21
Wagoner County District 3	66	Not Available	K	38hrs 45min	563	581	-18
Wagoner School District				Not affected			
Coweta School District				Not affected			
Okay School District				Not affected			
Porter School District				Not affected			

The breach elevations are well below the Special Flood Hazard Area (SFHA) Base Flood Elevations (BFE)s and are contained within the channel. None of the school districts' structures are impacted by a normal or maximum high Heyburn Dam Breach.

Table 4-22 shows the warning time for the Maximum High breach and failure of Heyburn Dam as well as the levels of flooding related to the 1% flood elevation discussed in the Flood section.

Table 4-22 - Heyburn Maximum High Breach Warning Times and Elevations

Heyburn Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
City of Wagoner				Not affected			
City of Coweta	72	18hrs 4mins	K	27hrs 30min	568	570	-2
Town of Okay	104	30hrs 0min	Q	42hrs 0min	512	516	-7
Town of Porter				Not affected			
Town of Redbird				Not affected			
Town of Tullahassee				Not affected			
Wagoner County District 1				Not affected			
Wagoner County District 2	102	27hrs 7min	P	38hrs 30min	514	516	-2
Wagoner County District 3	66	18hrs 4mins	K	27hrs 30min	578	581	-3
Wagoner School District				Not affected			
Coweta School District				Not affected			
Okay School District				Not affected			
Porter School District				Not affected			

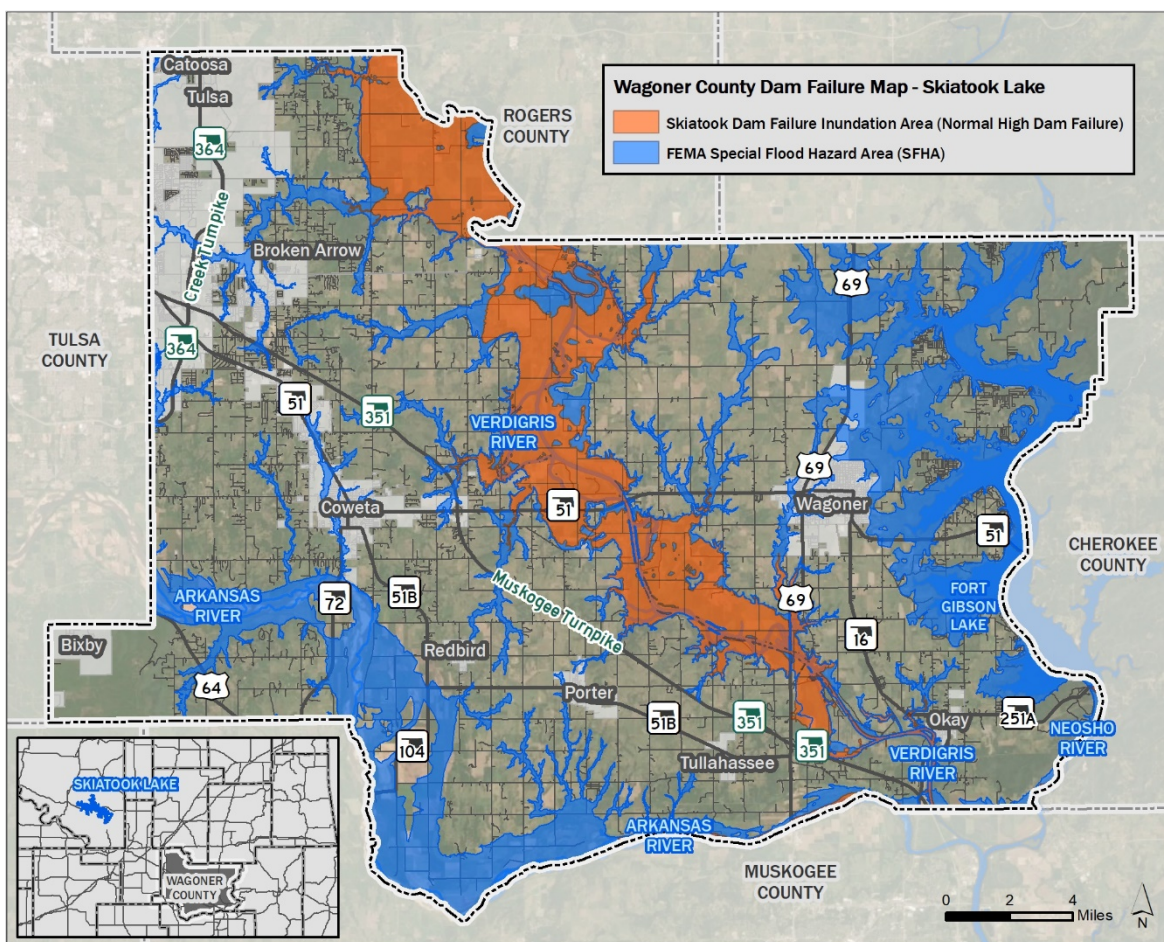
The vulnerable structures (buildings larger than 750 square feet) in the Normal High Dam breach and the Maximum High Dam breach inundation areas are shown in Table 4-21. These buildings flood at elevations that are lower than the SFHA BFEs.

Table 4-23 - Buildings Located within the Heyburn Normal and Maximum High Dambreach Inundation Limits

HEYBURN DAM BREACH SUMMARY	Residential		Commercial		Exempt		Total	
	Heyburn Normal High Dam Breach	Heyburn Max. High Dam Breach	Heyburn Normal High Dam Breach	Heyburn Max. High Dam Breach	Heyburn Normal High Dam Breach	Heyburn Max. High Dam Breach	Heyburn Normal High Dam Breach	Heyburn Max. High Dam Breach
City of Wagoner	-	-	-	-	-	-	-	-
City of Coweta	-	-	-	-	-	-	-	-
Town of Okay	-	-	-	-	-	-	-	-
Town of Porter	-	-	-	-	-	-	-	-
Town of Redbird	-	-	-	-	-	-	-	-
Town of Tullahassee	-	-	-	-	-	-	-	-
Wagoner County Dist 1 (uninc.)	1	8	-	-	-	3	1	17
Wagoner County Dist 2 (uninc.)	-	8	-	-	-	1	3	16
Wagoner County Dist 3 (uninc.)	-	53	-	1	-	2	-	111
Wagoner School District	-	-	-	-	-	-	-	-
Coweta School District	-	-	-	-	-	-	-	-
Okay School District	-	-	-	-	-	-	-	-
Porter School District	-	-	-	-	-	-	-	-
Totals	1	69	0	1	0	6	4	144

Skiatook Lake Dam Breach

Figure 1-22 - Skiatook Normal High Dam Breach Inundation



*Note – the Skiatook Maximum High dam failure was not available from the USACE and is not mapped.

Table 4-24 -Skiatook Normal High Breach Warning Times and Elevations

Skiatook Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
City of Wagoner				Not affected			
City of Coweta				Not affected			
Town of Okay	N/A	36hrs 52min	O	102hrs 49min	510	516	-6
Town of Porter				Not affected			
Town of Redbird				Not affected			
Town of Tullahassee				Not affected			
Wagoner County District 1	57	16hrs 34min	H	44hrs 49min	556	558	-2
Wagoner County District 2	65	20hrs 16min	K	71hrs 49min	532	545	-13

Wagoner County District 3	84	45hrs 1min	N	96hrs 49min	524	532	-8
Wagoner School District				Not Affected			
Coweta School District				Not Affected			
Okay School District				Not Affected			
Porter School District				Not Affected			

Table 4-24 shows the warning time for the Normal High breach and failure of Skiatook Dam as well as the levels of flooding related to the 1% flood elevation discussed in Section 4.1 Flood.²⁹ The breach elevations are well below the SFHA BFEs and are contained within the channel. None of the school districts are impacted by the Skiatook Dam Breach.

Table 4-24 shows the warning time for the Maximum High breach and failure of Skiatook Dam as well as the levels of flooding related to the 1% flood elevation discussed in the Flood section.

Table 4-25 -Skiatook Maximum High Breach Warning Times and Elevations							
Skiatook Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
City of Wagoner				Not affected			
City of Coweta				Not affected			
Town of Okay	N/A	39 hrs 6 min	O	61 hrs 49 min	524.5	516	+8.5
Town of Porter				Not affected			
Town of Redbird				Not affected			
Town of Tullahassee				Not affected			
Wagoner County District 1	57	13 hrs 25 min	H	26 hrs 49 min	560.4	558	+2.4
Wagoner County District 2	65	20 hrs 4 min	K	50 hrs 49 min	552	545	+7
Wagoner County District 3	84	40 hrs 45 min	N	60 hrs 49 min	532	532	+/- 0
Wagoner School District				Not Affected			
Coweta School District				Not Affected			
Okay School District				Not Affected			
Porter School District				Not Affected			

The vulnerable structures (buildings larger than 750 square feet) in the Normal High Dam Breach inundation areas are shown in Table 4-26. These buildings flood at elevations that are lower than the SFHA BFEs. The Skiatook Maximum High dam failure was not available from USACE for analysis of structures in that breach zone.

²⁹ USACE, Skiatook Lake Emergency Action Plan, December 2017

Table 4-26 Buildings Located within the Heyburn Normal High Dam Breach Inundation Limits

	Residential	Commercial	Exempt	Total
<u>SKIATOOK DAM BREACH SUMMARY</u>	Skiatook Normal High Dam Breach	Skiatook Normal High Dam Breach	Skiatook Normal High Dam Breach	Skiatook Normal High Dam Breach
City of Wagoner	-	-	-	-
City of Coweta	-	-	-	-
Town of Okay	-	-	-	-
Town of Porter	-	-	-	-
Town of Redbird	-	-	-	-
Town of Tullahassee	-	-	-	-
Wagoner County Dist 1 (uninc.)	38	7	3	75
Wagoner County Dist 2 (uninc.)	13	-	6	42
Wagoner County Dist 3 (uninc.)	1	-	-	6
Wagoner School District	-	-	-	-
Coweta School District	-	-	-	-
Okay School District	-	-	-	-
Porter School District	-	-	-	-
Totals	52	7	9	123

Oologah Lake Dam Breach

Figure 1-23- Oologah Normal High Dam Breach Inundation

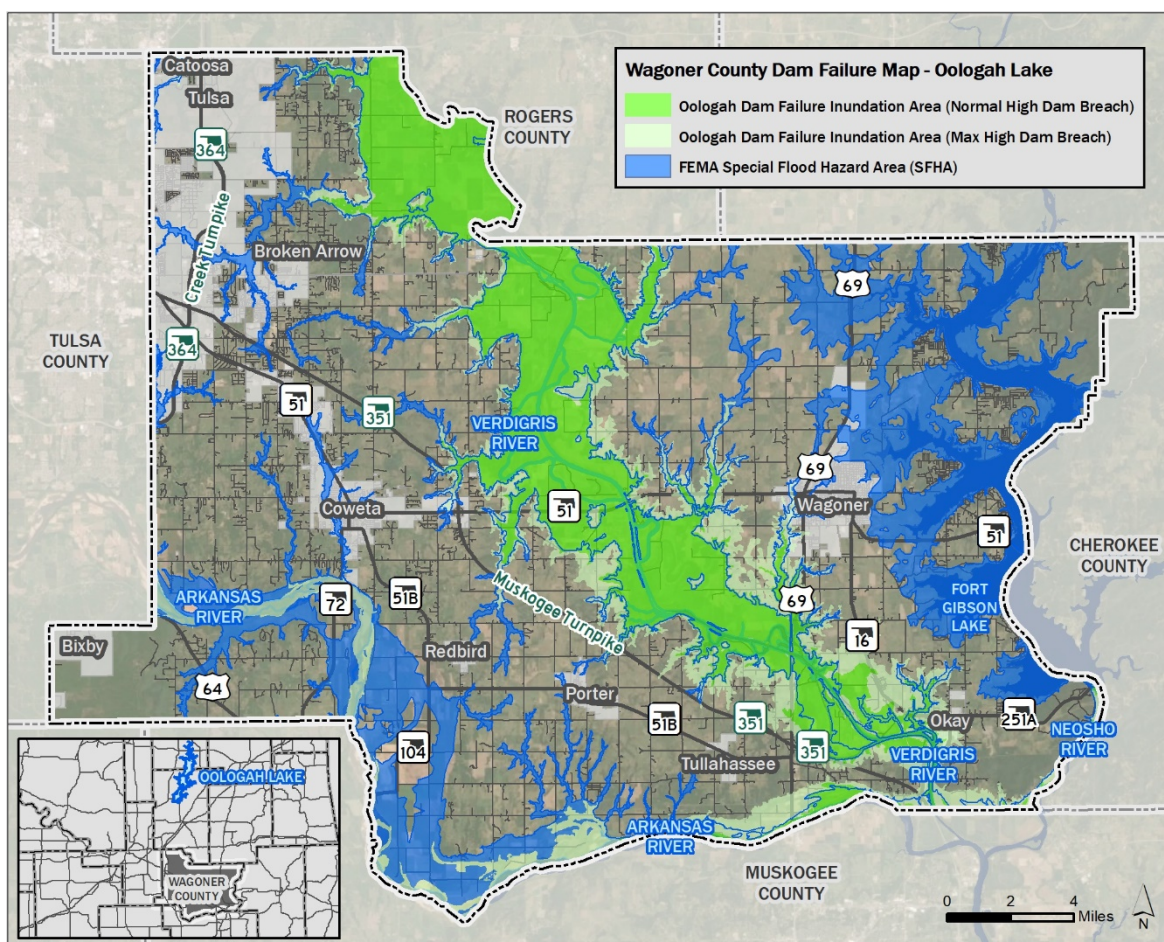


Table 4-27 shows the warning time for breach and failure of Oologah Dam as well as the levels of flooding related to the 1% flood elevation discussed in the Flood Section.³⁰ No public school structures were affected by a normal high breach.³¹

Oologah Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
City of Wagoner				Not Affected			
City of Coweta				Not affected			
Town of Okay	73	31hrs 55min	M	61hrs 30min	520.4	516	4.4
Town of Porter				Not Affected			
Town of Redbird				Not Affected			

³⁰ USACE, Oologah Lake Emergency Action Plan, October 2016

³¹ school transportation routes for Wagoner, Coweta, Okay, and Porter Public Schools would be affected

Table 4-27 – Oolagah Normal High Breach Warning Times and Elevations							
Oolagah Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Town of Tullahassee				Not Affected			
Wagoner County District 1	40	9hrs 40min	F	28hrs	561	558	3
Wagoner County District 2	48	14hrs 8min	G	40hrs 9min	551	545	6
Wagoner County District 3	56	17hrs 42min	I	51hrs 30min	538	532	6
Wagoner School District				Not affected			
Coweta School District				Not affected			
Okay School District				Not affected			
Porter School District				Not affected			

The Oolagah Dam breach mostly impacts the Verdigris River. Although no school structures are impacted, larger portions of the rural areas within the school districts that include school bus routes are impacted higher than the SFHA BFEs by the levels shown in Table 4-27.

Table 4-28 shows the warning time for the Maximum High Breach and failure of Oolagah Dam, as well as the levels of flooding related to the 1% flood elevation, discussed in the Flood section.³² Although no public school structures were affected by a normal high breach, school transportation routes for Wagoner, Coweta, Okay, and Porter Public Schools would be affected.

Table 4-28 – Oolagah Maximum High Breach Warning Times and Elevations							
Oolagah Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
City of Wagoner				Not Affected			
City of Coweta				Not affected			
Town of Okay	73	22 hrs 27 min	M	50 hrs 39 min	547	516	+31
Town of Porter				Not Affected			
Town of Redbird				Not Affected			
Town of Tullahassee				Not Affected			
Wagoner County District 1	40	10 hrs 59 min	F	31 hrs 30 min	561	558	+3
Wagoner County District 2	48	13 hrs 36 min	G	34 hrs 9 min	563	545	+8
Wagoner County District 3	56	20 hrs 29 min	I	48 hrs 0 min	553.9	532	+21.9
Wagoner School District				Not affected			
Coweta School District				Not affected			
Okay School District				Not affected			

³² USACE, Oolagah Lake Emergency Action Plan, October 2016

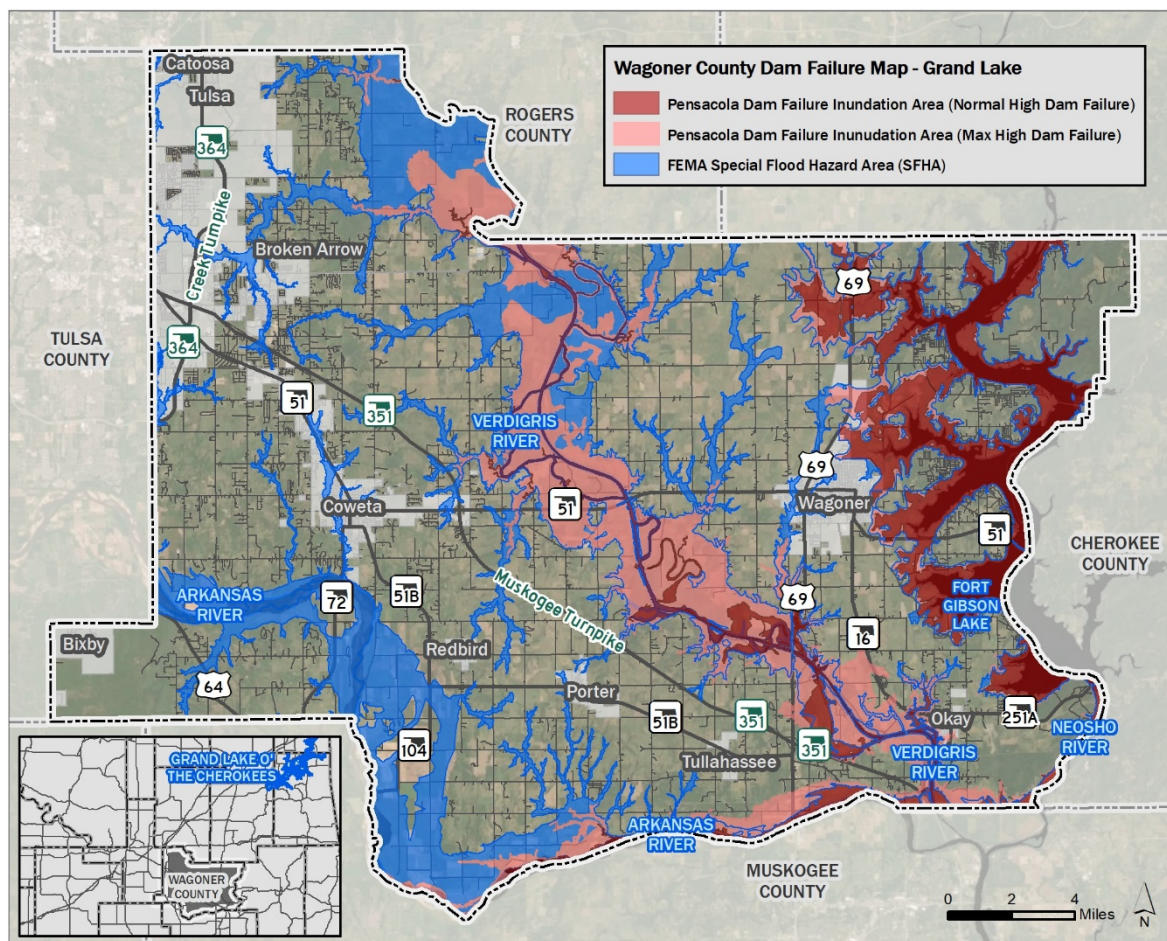
Table 4-28 – Oologah Maximum High Breach Warning Times and Elevations							
Oologah Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Porter School District				Not affected			

The vulnerable structures (buildings larger than 750 square feet) in the Normal High Dambreach and the Maximum High Dambreach inundation areas are shown in Table 4-29. These buildings flood at elevations that are lower than the SFHA BFEs.

Table 4-29 - Buildings Located within the Oologah Normal and Maximum High Dambreach Inundation Limits								
	Residential		Commercial		Exempt		Total	
<u>OOLOGAH DAM BREACH SUMMARY</u>	Oologah Normal High Dam Breach	Oologah Max. High Dam Breach	Oologah Normal High Dam Breach	Oologah Max. High Dam Breach	Oologah Normal High Dam Breach	Oologah Max. High Dam Breach	Oologah Normal High Dam Breach	Oologah Max. High Dam Breach
City of Wagoner	-	13	-	2	-	1	-	22
City of Coweta	-	-	-	-	-	-	-	1
Town of Okay	2	160	-	15	-	14	2	198
Town of Porter	-	-	-	-	-	-	-	1
Town of Redbird	-	-	-	-	-	-	-	-
Town of Tullahassee	-	-	-	-	-	-	-	-
Wagoner County Dist 1 (uninc.)	57	139	7	7	3	3	112	274
Wagoner County Dist 2 (uninc.)	28	300	-	11	9	25	106	730
Wagoner County Dist 3 (uninc.)	10	85	-	2	-	5	37	236
Wagoner School District	-	-	-	-	-	-	-	-
Coweta School District	-	-	-	-	-	-	-	-
Okay School District	-	-	-	-	-	-	-	-
Porter School District	-	-	-	-	-	-	-	-
Totals	97	697	7	37	12	48	257	1462

Pensacola (Grand) Lake Dam Breach

Figure 1-24 – Pensacola (Grand Lake) Normal High Dam Breach Inundation



See Table 4-30 for the levels of Normal High Dambreach flooding related to the 1% flood elevation discussed in the Flood Section.³³

Pensacola Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Town of Wagoner				Not Affected			
Town of Okay	77	Not Available	P	24 hrs+	517	516	1
Town of Porter				Not Affected			
Town of Redbird				Not Affected			
Town of Tullahassee				Not Affected			
Wagoner County District 1	49	15hrs 15min	H	24 hrs+	578	582	-4

³³ USACE, Pensacola Dam Emergency Action Plan, Updated 12/15/2018

Table 4-30 - Pensacola Normal High Breach Warning Times and Elevations							
Pensacola Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Wagoner County District 2	77	Not Available	P	24 hrs+	517	518	-1
Wagoner County District 3	61	Not Available	K	24 hrs+	578.6	582	-3.4
Wagoner School District				Not Affected			
Coweta School District				Not Affected			
Okay School District				Not Affected			
Porter School District				Not Affected			

The Highway 16 bridge over Clingan Creek in District 2 west of Okay is overtopped by the Pensacola Normal High Dam breach by more than 3 feet. The City of Wagoner is protected by Dike 10 which has a top elevation of 588 feet compared to a Pensacola Normal High Dam Breach elevation of 578.6 feet.

See Table 4-31 for the levels of Maximum High Dambreach flooding related to the 1% flood elevation discussed in the Flooding Section.³⁴

Table 4-31 - Pensacola Maximum High Breach Warning Times and Elevations							
Pensacola Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Town of Wagoner				Not Affected			
Town of Okay	77	Not Available	P	24 hrs+	531	516	+15
Town of Porter				Not Affected			
Town of Redbird				Not Affected			
Town of Tullahassee				Not Affected			
Wagoner County District 1	49	15hrs 15min	H	24 hrs+	584	582	+2
Wagoner County District 2	77	Not Available	P	24 hrs+	531	518	+13
Wagoner County District 3	61	Not Available	K	24 hrs+	583	582	+1
Wagoner School District				Not Affected			
Coweta School District				Not Affected			
Okay School District				Not Affected			
Porter School District				Not Affected			

³⁴ USACE, Pensacola Dam Emergency Action Plan, Updated 12/15/2018

During a Maximum High Dam breach, US 69 over an unnamed creek 1.5 miles north of the Muskogee Turnpike interchange would be overtopped by 4.1 feet and SH 16 over Clingan Creek by 17.2 feet.

The vulnerable structures (buildings larger than 750 square feet) in the Normal High Dambreach and the Maximum High Dambreach inundation areas are shown in Table 4-32. These buildings flood at elevations that are lower than the SFHA BFEs.

Table 4-32 - Buildings Located within the Pensacola Normal and Maximum High Dambreach Inundation Limits

	Residential		Commercial		Exempt		Total	
<u>PENSACOLA DAM BREACH SUMMARY</u>	Pensacola Normal High Dam Breach	Pensacola Max. High Dam Breach	Pensacola Normal High Dam Breach	Pensacola Max. High Dam Breach	Pensacola Normal High Dam Breach	Pensacola Max. High Dam Breach	Pensacola Normal High Dam Breach	Pensacola Max. High Dam Breach
City of Wagoner	-	-	-	-	-	-	-	-
City of Coweta	-	-	-	-	-	-	-	-
Town of Okay	-	11	-	1	-	1	-	14
Town of Porter	-	-	-	-	-	-	-	-
Town of Redbird	-	-	-	-	-	-	-	-
Town of Tullahassee	-	-	-	-	-	-	-	-
Wagoner County Dist 1 (uninc.)	-	4	-	-	-	3	-	13
Wagoner County Dist 2 (uninc.)	17	73	-	2	41	64	69	225
Wagoner County Dist 3 (uninc.)	-	7	-	-	-	-	-	27
Wagoner School District	-	-	-	-	-	-	-	-
Coweta School District	-	-	-	-	-	-	-	-
Okay School District	-	-	-	-	-	-	-	-
Porter School District	-	-	-	-	-	-	-	-
Totals	17	95	0	3	41	68	69	279

Markham Ferry (Hudson) Lake Dam Breach

The planning team was unable to access mapping for the Markam Ferry Normal or Maximum High Dam Breach. Nonetheless, data from the EAP, provided below, and other analysis offers some indication as to the location and extent of a Markam Ferry Dam Breach.

Table 4-33 shows the warning times for the Normal High Breach and failure of Markham Ferry Dam as well as the levels of flooding related to the 1% flood elevation discussed in the Flood Section.³⁵

³⁵ Markham Ferry Dam Emergency Action Plan, Updated 12/15/2018

Table 4-33 - Markham Ferry Normal High Breach Warning Times and Elevations							
Markham Ferry Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Town of Wagoner				Not Affected			
Town of Okay	47	Not Available	K	24 hrs+	507	516	-9
Town of Porter				Not Affected			
Town of Redbird				Not Affected			
Town of Tullahassee				Not Affected			
Wagoner County District 1	18	Not Available	C	24 hrs+	562	582	-20
Wagoner County District 2	47	Not Available	K	24 hrs+	507	518	-11
Wagoner County District 3	30	Not Available	F	24 hrs+	566.6	582	-15.4
Wagoner School District				Not Affected			
Coweta School District				Not Affected			
Okay School District				Not Affected			
Porter School District				Not Affected			

None of the public school districts' structures would be impacted by a Markham Ferry Normal High Dam Breach. The breach inundation area is smaller than those of Pensacola Dam due to the smaller amount of storage in the reservoir. The dam breach volume can be contained within the Ft. Gibson flood pool.

Table 4-34 shows the warning times for the Maximum High Breach and failure of Markham Ferry Dam as well as the levels of flooding related to the 1% flood elevation discussed in Section 4.1 Flood.³⁶

During a Maximum High Dam breach, US 69 over an unnamed creek 1.5 miles north of the Muskogee Turnpike interchange would be overtopped by 0.3 feet and SH 16 over Clingan Creek by 14.8 feet. Releases downstream from the dam produce water surface elevations anywhere from 2 to 11 feet higher than the SFHA BFEs.

The vulnerable structures (buildings larger than 750 square feet) in the Normal High Dambreach and the Maximum High Dambreach inundation areas were not available because the dam inundation limits were not available.

Table 4-34 - Markham Ferry Maximum High Breach Warning Times and Elevations							
Markham Ferry Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Town of Wagoner				Not Affected			
Town of Okay	47	Not Available	K	24 hrs+		516	

³⁶ Markham Ferry Dam Emergency Action Plan, Updated 12/15/2018

Town of Porter				Not Affected			
Town of Redbird				Not Affected			
Town of Tullahassee				Not Affected			
Wagoner County District 1	18	Not Available	C	24 hrs+	584	582	+2
Wagoner County District 2	47	Not Available	K	24 hrs+	529	518	+11
Wagoner County District 3	30	Not Available	F	24 hrs+	583	582	+1
Wagoner School District				Not Affected			
Coweta School District				Not Affected			
Okay School District				Not Affected			
Porter School District				Not Affected			

Ft. Gibson Lake Dam Breach

Figure 1-25 - Fort Gibson Lake Normal High Dam Breach Inundation

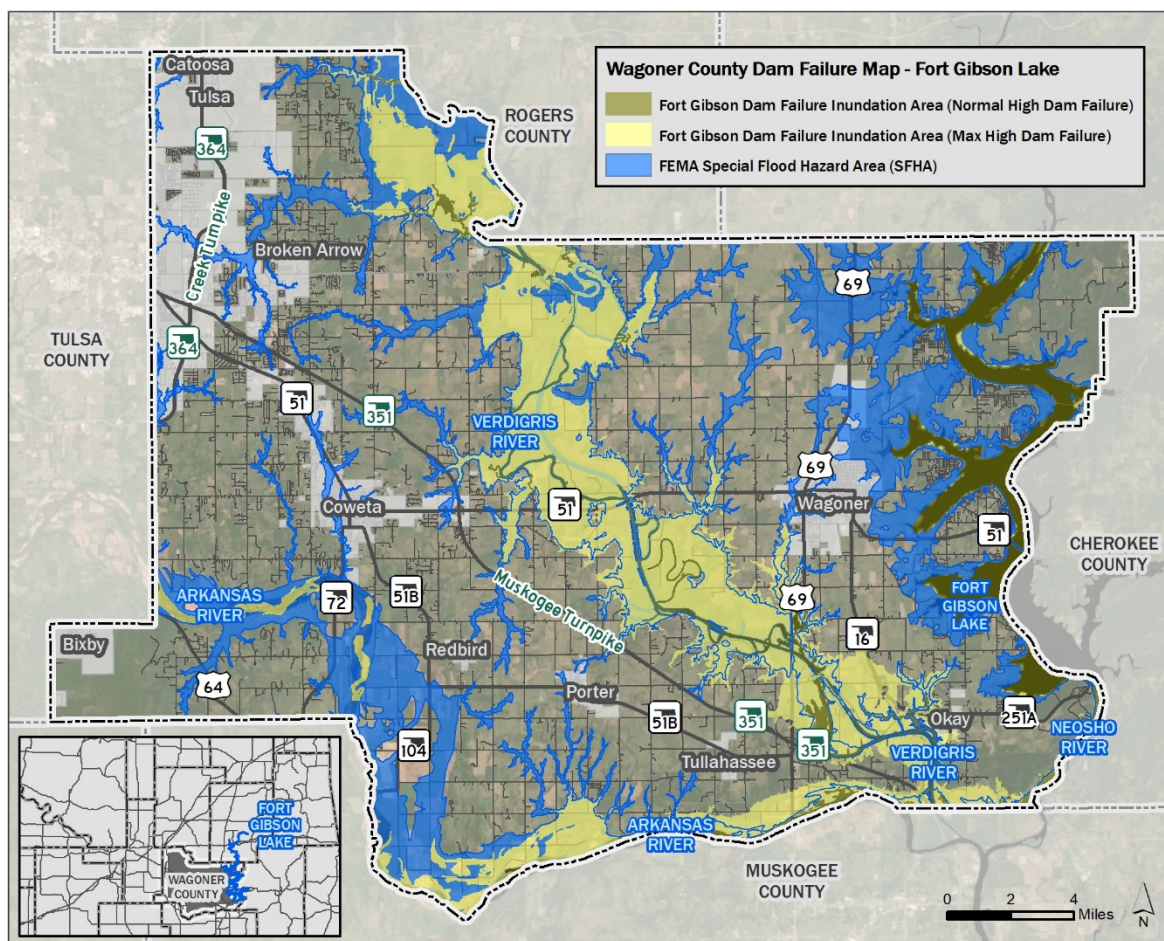


Table 4-35 shows the warning time for the Normal High Breach and failure of Ft. Gibson Dam as well as the levels of flooding related to the 1% flood elevation discussed in Section 4.1 Flood.³⁷

Ft. Gibson Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Town of Wagoner				Not Affected			
Town of Okay	8	1hrs 33min	C	19hrs 39min	510.7	516	-5.3
Town of Porter				Not Affected			
Town of Redbird				Not Affected			
Town of Tullahassee				Not Affected			
Wagoner County District 1				Not Affected			

³⁷ USACE, Fort Gibson Dam Emergency Action Plan, February 2021

Table 4-35 – Ft. Gibson Breach Warning Times and Elevations							
Ft. Gibson Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Wagoner County District 2	4	0hrs 39min	B	4hrs	521.5	519	2.5
Wagoner County District 3	8	1hrs 33min	C	19hrs 39min	510.7	518	-7.3
Wagoner School District				Not Affected			
Coweta School District				Not Affected			
Okay School District				Not Affected			
Porter School District				Not Affected			

For the Ft. Gibson Normal High Dam Breach, the breach elevations for backwater up the Verdigris and Arkansas Rivers are at elevations well below the SFHA BFEs. None of the School District structures would be impacted by a Ft. Gibson Normal High Dam Breach. Table 4-36 shows the warning time for the Maximum High Breach and failure of Ft. Gibson Dam as well as the levels of flooding related to the 1% flood elevation discussed in the Flood Section.³⁸

Table 4-36 – Ft. Gibson Breach Warning Times and Elevations							
Ft. Gibson Dam Breach	Upstream River Mile	Arrival Time (2' depth increase)	Closest EAP Cross Section (XSEC)	Arrival Time of Peak to Closest XSEC	Peak Elevation from profile	1% flood elevation	Depth above/below the 1% flood
Town of Wagoner				Not Affected			
Town of Okay	8	2 hrs 46 min	C	25 hrs 19 min	541	516	+23
Town of Porter				Not Affected			
Town of Redbird				Not Affected			
Town of Tullahassee				Not Affected			
Wagoner County District 1				Not Affected			
Wagoner County District 2	4	0 hrs 20 min	B	13 hrs 0 min	542	519	+23
Wagoner County District 3	8	2 hrs 46 min	C	25 hrs 19 min	541	518	+23
Wagoner School District				Not Affected			
Coweta School District				Not Affected			
Okay School District				Not Affected			
Porter School District				Not Affected			

³⁸ USACE, Fort Gibson Dam Emergency Action Plan, February 2021

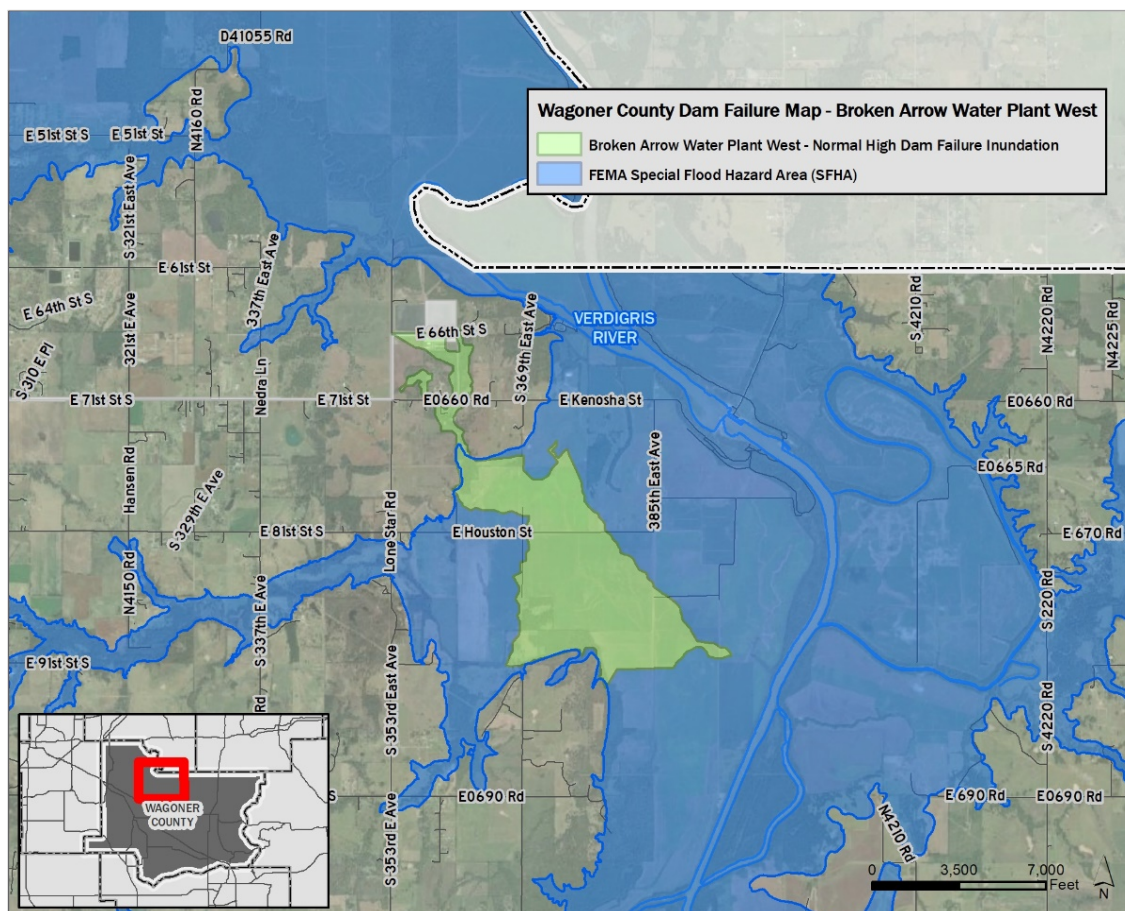
For the Ft. Gibson Maximum High Dam Breach, in Table 4-36, the breach elevations for backwater up the Verdigris and Arkansas Rivers are at elevations well below the SFHA BFEs. None of the School Districts would be impacted by a Ft. Gibson Normal High Dam Breach.

Table 4-37 - Buildings Located within the Ft. Gibson Normal and Maximum High Dambreach Inundation Limits

	Residential		Commercial		Exempt		Total	
<u>FT GIBSON DAM BREACH SUMMARY</u>	Ft Gibson Normal High Dam Breach	Ft Gibson Max. High Dam Breach	Ft Gibson Normal High Dam Breach	Ft Gibson Max. High Dam Breach	Ft Gibson Normal High Dam Breach	Ft Gibson Max. High Dam Breach	Ft Gibson Normal High Dam Breach	Ft Gibson Max. High Dam Breach
City of Wagoner	-	-	-	-	-	-	-	-
City of Coweta	-	-	-	-	-	-	-	-
Town of Okay	-	40	-	5	-	2	-	53
Town of Porter	-	-	-	-	-	-	-	-
Town of Redbird	-	-	-	-	-	-	-	-
Town of Tullahassee	-	-	-	-	-	-	-	-
Wagoner County Dist 1 (uninc.)	-	4	-	-	-	3	-	23
Wagoner County Dist 2 (uninc.)	-	145	-	3	2	24	6	352
Wagoner County Dist 3 (uninc.)	-	17	-	-	-	4	-	83
Wagoner School District	-	-	-	-	-	-	-	-
Coweta School District	-	-	-	-	-	-	-	-
Okay School District	-	-	-	-	-	-	-	-
Porter School District	-	-	-	-	-	-	-	-
Totals	0	206	0	8	2	33	6	511

Broken Arrow Water Plant West Pre-Sedimentation Basin

Figure 1-27 - Broken Arrow Water Plant West Pre-Sedimentation Basin Dam Breach Inundation



The Broken Arrow Water Plant West Pre-Sedimentation Basin was analyzed as a sunny day breach.⁴⁰ The plant does not have a chart prepared like the other dams that affect the planning area, since this plant is regulated by the OWRB rather than the USACE and is subject to different regulations and reporting measures. A sunny day breach would affect Commissioner District 1 in Wagoner County. No other participating communities or school districts would be affected.

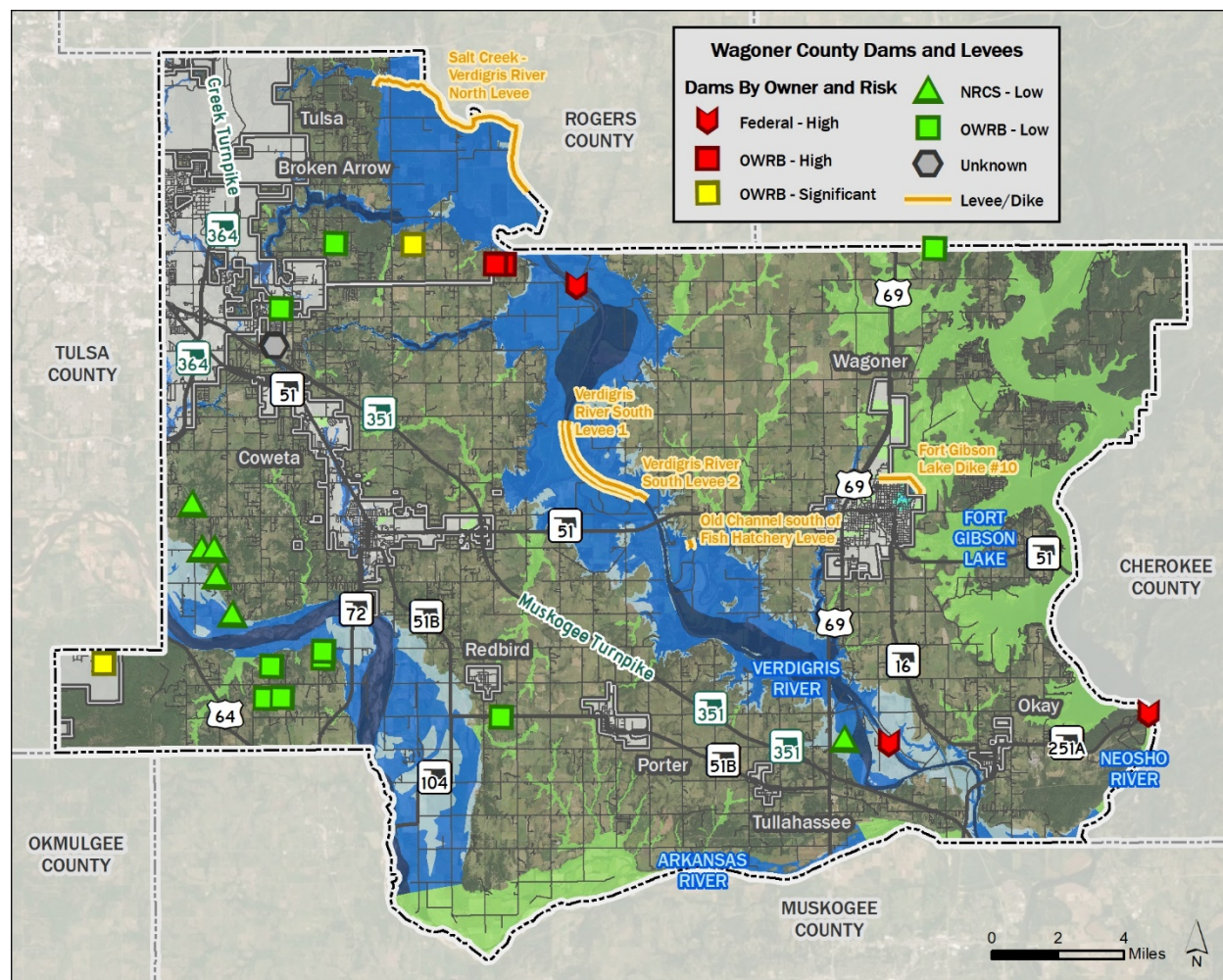
The 50% PMF storm would be completely contained within the basin with nearly 2 feet of freeboard so no 50% PMF breach was prepared.

The depth of water 3,000 feet downstream, over 71st St., will be 6 feet. The water will reach the roadway within 5 minutes of a breach. The depth of water through the downstream structures can exceed 8 feet. Inundation waters would reach the Verdigris River floodplain approximately 7,500 feet downstream, at a depth of 5.6 feet, with a water surface elevation approximately the same as the SFHA BFE for the Verdigris River. Depths further downstream are 2.2 to 3.5 feet deep at elevations below the Verdigris SFHA BFE of 544 feet.

⁴⁰ Emergency Action Plan (EAP) Broken Arrow Water Plant, City of Broken Arrow, December 1, 2020.

Levees

Figure 1-28 Wagoner County Levees



While the location of Levees in the planning area is known, there is limited information about the extent of overtopping. More data is needed to identify flood extent due to a levee breach or overtopping of levees located in Wagoner County. This information will be collected and incorporated in the next plan update.

There are five levees in Wagoner County, according to the National Levee Database⁴¹ (NLD). These levees are shown in Figure 1-29. Three levees are on or near the Verdigris River. Lake Ft. Gibson Dike 10 on the northeast side of Wagoner is on the Neosho River. The affected participating jurisdictions are listed by levee, below:

- Salt Creek - Verdigris River North Levee: Commissioner District 1
- Verdigris River South Levee 1: Commissioner District 1, Commissioner District 2
- Verdigris River South Levee 2: Commissioner District 2
- Old Channel south of fish Hatchery Levee: Commissioner District 2

⁴¹ <https://levees.sec.usace.army.mil/#/>

- Wagoner Dike 10: Commissioner District 2, Wagoner School District

Salt Creek - Verdigris River North Levee (NLD ID 1605473404) is located adjacent to the west bank of the Verdigris River and on the south of Salt Creek in the northern part of the County (District 1). No information was available other than what is included in the NLD. It is a non-accredited levee system with a total length of 7.7 miles. The NLD lists the levee as "locally constructed, locally operating and operated." The population behind the levee (west of the Verdigris River and south of Salt Creek) is listed as 119 people and 44 structures valued at \$9.35M. It appears to have been constructed at or slightly above the SFHA BFE on both the Verdigris River and Salt Creek. However an opening in the levee is located approximately 850 feet west of 305th E. Ave. to allow for drainage from the south to Salt Creek. It is not known if this opening is controlled during flood events.

The Salt Creek - Verdigris River North Levee is described in the NDL as "A man-made structure that was not specifically designed with flood risk reduction in mind but may provide some level of flood risk reduction for the levee system."

Verdigris River South Levee 1 (NLD 1604473774) is located adjacent to the Verdigris River on the west side of the Verdigris River navigation channel. just north of Highway 51. It is a non-accredited levee system with a total length of 3.49 miles. The NLD lists the levee as "locally constructed, locally operating and operated". The population behind the levee to the west is listed as 51 people and 16 structures valued at \$5.93M (includes District 1 and 2). The levee has openings that appear to be uncontrolled to allow the old Verdigris River channel to drain into the navigation channel, limiting any benefit as a levee.

The Verdigris River South Levee 1 is described in the NDL as "A man-made structure that was not specifically designed with flood risk reduction in mind but may provide some level of flood risk reduction for the levee system."

Verdigris River South Levee 2 (NLD 1604473775) is located adjacent to the Verdigris River on the east side of the Verdigris River navigation channel. just north of Highway 51. It is a non-accredited levee system with a total length of 3.67 miles. The NLD lists the levee as "locally constructed, locally operating and operated." The population behind the levee to the west is listed as 2 people and 1 structures valued at \$45.6K (District 2). Similar to the west levee, this levee has openings that appear to be uncontrolled to allow the old Verdigris River channel to drain into the navigation channel, limiting any benefit as a levee.

The Verdigris River South Levee 2 is also described in the NDL as "A man-made structure that was not specifically designed with flood risk reduction in mind but may provide some level of flood risk reduction for the levee system."

Old Channel south of fish Hatchery Levee (NLD 1605995039) is located south of highway 51 along the east bank of the old Verdigris River channel. The levee is approximately four feet lower than the BFE for the SFHA. It is 0.23 miles long and protects 2 people and one structure valued at \$152,000 (District 2). No other information is available from the NDL.

Dike 10 is was constructed to protect the City of Wagoner from high water levels in Ft. Gibson Lak (District 2 and Wagoner Public Schools). It is 1.51 miles long with a top elevation of 588. The top of the Fort Gibson Lake flood pool is at elevation 582. Dike 10 collects water and discharges by gravity into a drain to the lake. When the elevation of the lake reaches 561.5, a valve is closed to protect the land side from higher elevations in the lake and water must be pumped back into the lake.

4.5.5 Vulnerability and Risk Assessment

The planning team determined that community vulnerability to a dam or levee failure is **high**. Damage potentials from a high hazard dam incident or failure could include the destruction of homes or put people directly in the path of inundation waters. In addition, a dam or levee incident could damage infrastructure or key facilities, limiting peoples' access to vital resources. The best available resources from EAPs, inundation maps, and public sources were used to assess the vulnerability of Wagoner County to dam failures.

People

People who are living, working, at school, or traveling downstream of dams are at risk in the event of a high release or failure. The number of fatalities or injuries resulting from a high release or failure is influenced by the number of people in the inundation area, the warning period that they are provided, and the community's investment in pre-event public education and planning. There is often a lack of awareness for the risk of dam or levee incidents. This lack of awareness, when combined with the sudden rush of dam or levee failure water, creates extremely high risk to those within the inundation areas.

Economic Impact

In addition, dam failure, or even a dam incident, may impact economic activities by damaging structures, closing roadways, and damaging infrastructure. Structures, infrastructure, and critical facilities within the inundation area of a dam failure are at risk of damage or complete destruction. Waters from events may cause damages like flooding (contamination or mold damage) as well as physical damages. People and structures also can become isolated during events due to inundation. Future development located within inundation areas will share these vulnerabilities.

Built Environment

All of the Dam Breach analyses prepared by the USACE assumed a breach would take less than one hour to develop. People in the inundation areas identified in the maps displayed in the location and extent section are vulnerable to dam breaches.

Natural Environment

The natural environment may experience some damages, mostly from contaminated waters. Lake habitat may be lost due to a dam failure. A large release may result in erosion or sediment deposition which could impact water flow in the future.

Dam Impacts and Vulnerabilities

The **East Pre-Sedimentation Basin** (OK30398) and **West Pre-Sedimentation Basin** (OK30393), located in Wagoner County District 1 are considered high hazard dams by the OWRB. The City of Broken Arrow's water plant, located on E. 360 Rd. east of S. 353rd E. Ave. (NW/4 Section 2, T18N, R16E north of 71st St.) contains these two basins and share a common embankment. The EAP prepared for the two basins shows the inundation area for a sunny-day breach of the dams separately. They only impact Wagoner County District 1.⁴²

The East basin would produce elevations as high as 8.1 feet at a location 6,200 feet south of the plant and then dropping to levels of approximately 3 feet into the East Coal Creek and Verdigris River

⁴² Emergency Action Plan (EAP), Broken Arrow Water Plant, National Inventory of Dams (NID) No. OK 30393, S/2 of NW/4 of Section 2, T-18-N, R-16-E, Wagoner County, Oklahoma, Patrick P. Wilson, PE, CFM, Broken Arrow Dam Safety Coordinator, December 1, 2020.

floodplain. The flood wave would be 5.6 feet just upstream of 71st St. dropping to 2.2 feet just upstream from 81st St.

The breach outline from the West Basin follows approximately the same path. The flood wave would be 6.0 feet just upstream of 71st St. dropping to 3.5 feet just upstream from 81st St. Downstream from the 2 basins there are 8 Residences/Businesses/Highways at Risk, including 71st St. previously mentioned.

Levee Impacts and Vulnerabilities

Fort Gibson Dike No. 10 protects a population of 1,921 and 430 structures in the City of Wagoner with a total property value of \$102,417,491.⁴³ This is a Dam-associated project—part of the Fort Gibson Lake Dam—and is also registered in the National Inventory of Dams (NID ID OK10314). The dike is a FEMA-accredited levee and will remain in the National Levee Database. The elevation of the top of the dike is approximately 588 feet, which is 5 feet above the top of the flood pool (582 feet) and 5 feet below the top of the dam (593 feet). A breach would impact the entire City.

From the Fort Gibson Dam Emergency Management Plan regarding Dike 10:

The 4-04. Risk Characterization Summary of Dike 10. USACE completed a risk assessment in 2015 and classified the risk associated with Dike 10 as low. Although extremely unlikely, the primary risk to the integrity of Dike 10 is the potential for water to seep along the conduit and eventually weakens the dike and leads to embankment failure. In the remote event of a dike failure, the most immediate impact would be to the city of Wagoner, OK.

Salt Creek - Verdigris River North Levee (NLD ID 1605473404) protects a population of 119 people and 44 structures valued at \$9.35 million. This top of the levee appears to be higher than the BFEs for the SFHA. However the opening in the levee 850 feet west of 305th E. Ave. with no know closure structure limits the effectiveness of the levee.

Verdigris River South Levee 1 (NLD 1604473774) protects a population behind the levee of 51 people and 16 structures valued at \$5.93 million, according to the National Levee Database. The structure has several openings that allow water to move into the levee protection area. There are no know closure structures, so the effectiveness of the levee is limited.

Old Channel south of fish Hatchery Levee (NLD 1605995039) protects 2 people and one structure valued at \$152,000. However, the levee would overtop at elevations 4 feet lower than the BFE so the probability of overtopping or failure greater than 1% in any year.

⁴³National Levee Database, <https://levees.sec.usace.army.mil/#/levees/system/1605473001/summary>

4.5.6 Summary of Observations and Recommendations

Table 4-38 - Summary of Recommendations, Observations, and Actions

Observation	Recommendation	Action(s)
Residents, especially new residents, should have access to education on the dangers of dam and levee incidents.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Residents do not have access to outdoor warning systems to notify them of a dam or levee incident.	Evaluate, upgrade, and maintain community-wide outdoor omni-directional voice/siren warning systems.	2
Residents would benefit from an electronic alert system that could provide dam or levee breach warnings and updates.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Emergency response to dam and levee incidents would be enhanced with updated, more accurate 911 information.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.	4
Several critical facilities lost power during the 2019 event, which included high release from dams, and did not have generators to supply backup power.	Provide generators or other forms of electrical backup for critical facilities and schools.	6
Maintain flooding activities with beneficial overlap to mitigate dam or levee events.	Continue participation in the NFIP or become a member of the NFIP.	7, 8
Dam and levee inundation can damage government and critical facilities.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies. Complete hazard evaluations of schools and retrofit or remodel buildings to make them more disaster resistant.	10, 14
Inundation from high dam releases in 2019 highlighted the need for more accurate risk assessments on the Verdigris and Neosho rivers.	Conduct a flood risk analysis of the Verdigris and the Neosho Rivers.	11
Development over the past 20-30 years causes new inundation of structures, parcels, and roadways in some residential and other trafficked areas, especially in District 1.	Conduct a master drainage plan study of Adams Creek, Covington Creek, and other high-risk flood areas in Wagoner County.	12
Some utilities in the County could experience losses in function due to dam and levee inundation.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of all hazards.	13

Table 4-38 - Summary of Recommendations, Observations, and Actions

Many bridges and roadways overtop, placing motorists and pedestrians at risk.	Mitigate sections of road, including bridges, which are subject to repeated flooding or are at heightened risk of inundation.	16
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Roadways can be damaged by water from dam and levee incidents.	Design infrastructure to withstand future hazards more effectively. Mitigate erosion on County roads.	18, 25
Responders and key leaders would benefit from having access to current GIS mapping capabilities to map inundation levels from possible dam and levee incidents and identify function needs populations and assets.	Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	19, 20
Structures located in a dam or levee inundation area are at risk of being damaged and put occupants in danger.	Elevate, relocate, reconstruct, or acquire and demolish flood-prone properties.	22
Future development may lead to increased stream use or development in dam and levee inundation areas.	Maintain natural and beneficial functions of streams and floodplains.	34

4.6 Hail

4.6.1 Overall Significance

The overall significance of hailstorms in the planning area is **moderate**. The probability of hail in the planning area is likely, which was determined mostly by historical occurrence statistics. The planning team rated the combination of location and extent as moderate for hail events. The planning team derived this rating by estimating of the frequency of hailstorms with a severe rating or greater. Hail was determined to have a medium impact on the planning area, with most of the impacts being concentrated on vehicle and crop damage.

4.6.2 Overview and Description

A **hailstorm** often results from severe thunderstorm or similar atmospheric event. Hail, in the form of irregularly shaped lumps of ice, fall with rain. Extreme temperature changes from the ground into the jet stream produce strong updraft winds that cause hail formation. Hailstorms are usually considered “severe” when hail is larger than 1 inch. Hail of this severity tends to be accompanied by winds greater than 58 miles per hour.

4.6.3 Probability and Previous Occurrences

The probability of hail in the planning area is **highly likely**, as Wagoner County should expect future hail and severe hail events almost annually. The NCEI storm database, which was queried between 2010 and 2020, reported 39 events on 22 separate days in Wagoner County.⁴⁴ No injuries or deaths were reported, but \$250,000 in property damage was reported in the database. This is likely an underestimate, as most private property owners do not report damages from hail. Due to the widespread nature of hail events, it is likely these events were experienced across the planning area. Unless noted here, no jurisdictional specific events were recorded, though we can assume each community and school district has been impacted by hail events in the past based on the geographic extent of occurrence.

Table 4-39 - Historic Hail Events

Date	Narrative
April 2016	\$100,000 in property damage and 2-inch stones reported in Coweta. 2.5-inch stones and \$25,000 in damages reported in Red Bird.
April 2011	Up to 2-inch stones reported in Coweta with estimated damages of \$45,000.
April 2016	1.25-inch stones reported in Coweta, which caused approximately \$20,000 in damages.
March 2016	1.5-inch stones reported throughout the County with \$10,000 in damages.
November 2019	A large thunderstorm system created up 2-inch hail stones in Coweta. \$10,000 in property damage was reported.

⁴⁴ <https://www.ncdc.noaa.gov/stormevents/>

Table 4-39 - Historic Hail Events

August 2020	Very large hailstones were reported in Coweta. ⁴⁵ No damages could be determined by the planning team.
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According to the SCIPP Simple Planning Tool for Oklahoma Climate Hazards, climate models predict an increase in the frequency and intensity of large hail events (resulting from severe thunderstorms).⁴⁶ However, the overall number of days with hail is expected to decrease over time. The report indicated low confidence in these predictions due to the sporadic nature of the events.

4.6.4 Location and Extent

Hail has an equal likelihood of occurring anywhere in the planning area. Hail is typically a by-product of thunderstorms, tornadoes, or other atmospheric events, making the location of hail uniform over the planning area. Extent is determined by the frequency of hail events that receive a classification of severe or higher.

Table 4-40 - Combined NOAA/TORRO Hailstorm Intensity Scale

Size Code	Intensity Category	Typical Hail Diameter (inches)	Approximate Size	Typical Damage Impacts
H0	Hard Hail	up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33-0.60	Marble or Mothball	Slight damage to plants, crops
H2	Potentially Damaging	0.60-0.80	Dime or grape	Significant damage to fruit, crops, vegetation
H3	Severe	0.80-1.20	Nickel to Quarter	Severe damage to fruit & crops, damage to glass & plastic structures, paint & wood scored
H4	Severe	1.2-1.6	Half Dollar to Ping Pong Ball	Widespread glass damage, vehicle bodywork
H5	Destructive	1.6-2.0	Silver dollar to Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	2.0-2.4	Lime or Egg	Aircraft bodywork dented; brick walls pitted
H7	Very Destructive	2.4-3.0	Tennis ball	Severe roof damage, risk of serious injuries
H8	Very Destructive	3.0-3.5	Baseball to Orange	Severe damage to aircraft bodywork

⁴⁵ https://tulsaworld.com/community/wagoner/news/large-hail-reported-in-coweta-as-severe-weather-moves-through-wagoner-county/article_ed163afb-de11-53da-acd0-e7f4facbfb61.amp.html

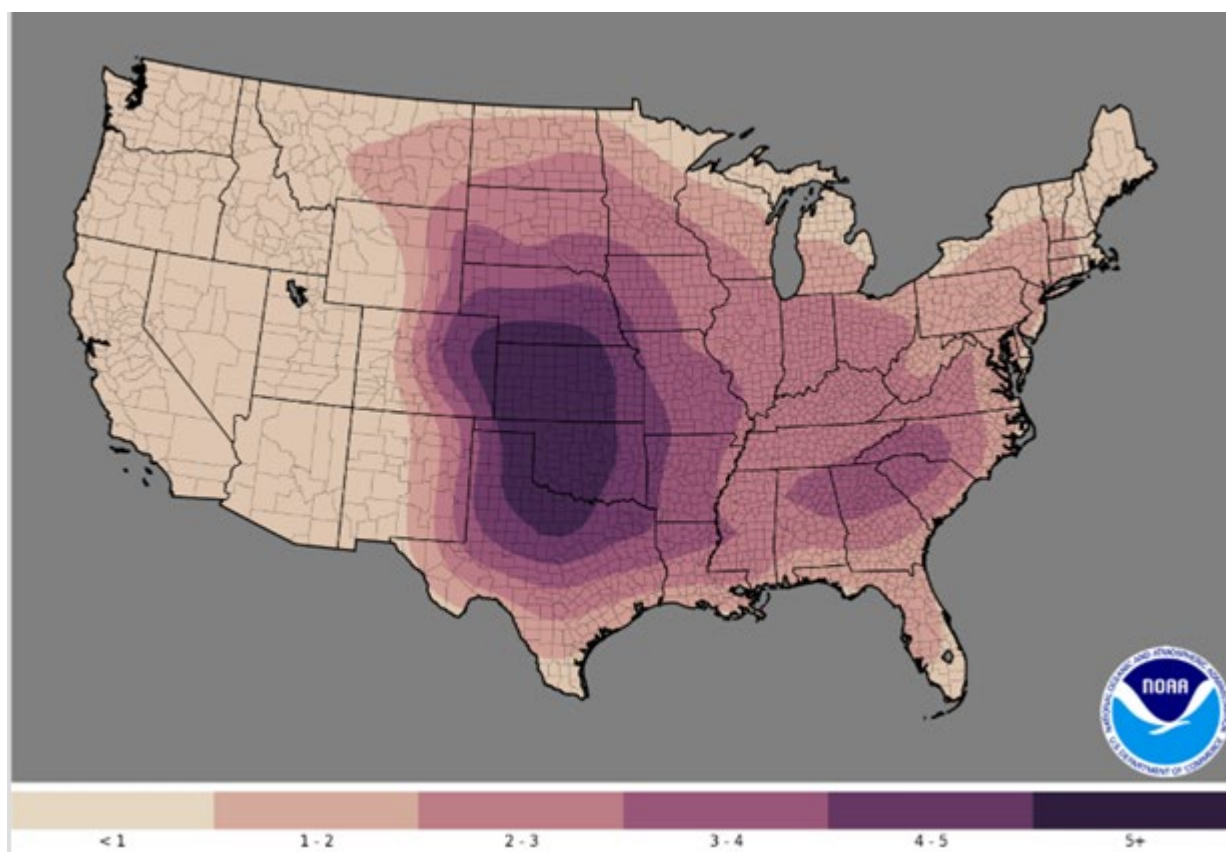
⁴⁶ <http://www.southernclimate.org/documents/SPTOK.pdf>

Figure 4-29 - Days with Hail Events

Table 4-40 - Combined NOAA/TORRO Hailstorm Intensity Scale				
H9	Super Hailstorms	3.5-4.0	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	4+	Softball & up	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

As shown in the Combined NOAA/TORRO Hailstorm Intensity Scale, hail begins to be considered severe when it reaches an inch in diameter or larger. Hail is considered destructive when it reaches 1.6 inches in diameter, or approximately the size of a golf ball.⁴⁷

Figure 4-29 below represents NOAA data related to the number of days with hail exceeding 1 inch in diameter.⁴⁸ The NOAA data estimates the planning area will experience 4 to 5 events with hail 1 inch or larger hail each year. On the upper end, the planning area has experienced hail exceeding 2.75 inches in diameter.



⁴⁷ <http://www.torro.org.uk/hscale.php>

⁴⁸ http://climate.ok.gov/index.php/climate/map/1.00_inch_hail_days_1986_2015/tornadoes_severe_storms

4.6.5 Vulnerability and Risk Assessment

The community vulnerability to hail is **medium**. Hail has not led to a recorded fatality in the planning area. The greatest vulnerabilities to hail result from vehicle and roof damage.

General Impacts: People, Economy, and Built Environment

Wagoner's population is at risk to hail. Although not as common as structure and vehicle damage, personal injury can be caused by large hail driven by high winds. People engaging in outdoor activities may find themselves in a situation where adequate shelter is unavailable. Lack of education about hail events could contribute to more injuries to poor planning or judgement in response to hail events.

The economic impacts associated with this hazard could include agriculture, as crops such as corn and soybeans can be damaged to the point of total loss. Damage to structures and equipment stored outdoors may cause financial hardship. Severe roof damage could also lead to water damage from rain. Vehicles are particularly at risk to hail. In addition to private damages, hail events can damage infrastructure and critical facilities. Hail, especially when accompanied by another hazard like wind, can disrupt the delivery of key services, including electricity. Potential power outages make critical facilities and other structures without a generator more vulnerable to hail.

Specific Impacts and Vulnerability

Areas that were not identified specifically in this assessment should refer to the general statement above. Officials noted that there were no electronic alert systems to warn residents across **the planning area** of a major hail event. Lack of this form of direct emergency communication could affect response and recovery efforts in the event of hail. Wagoner County is working to develop GIS capabilities to identify populations at risk to fires and to improve response to a severe hail event. Currently, the planning area does not have a continuity of operations plan between utilities and the County to continue delivering services in the event of a drought event. In addition, the County could benefit from a building that could serve as an additional Emergency Operations center if the operations center in Coweta was damaged by a hail event.

Coweta has several car dealerships, which is substantially more than other communities in the planning area. Given previous damages to vehicles in Wagoner County, increasing the concentration of vehicles in an area may increase the vulnerability of these sites to hail.

Officials in **Okay** did not report any significant vulnerabilities to hail or concerns related to the hazard. It could be assumed Okay would be impacted by the general impacts noted previously.

Hail commonly impacts agricultural production to varying levels of severity. Crop fields to the north and west of **Red Bird** are vulnerable, as are fields farther south and east. Nonetheless, Red Bird officials report no significant vulnerabilities to hail.

Porter has similar vulnerabilities compared to Red Bird. The farm areas surrounding the town are vulnerable to hail events. In addition, hail larger than one inch could damage structural components, like roofs and windows. Porter's high number of mobile home structures are particularly vulnerable to hail events, given their construction. There also seems to be a smaller number of garages or other sheltering for vehicles in Porter than Coweta or even Red Bird, further exposing vehicles to risk. In addition, community gathering areas with large open parking lots, like First Baptist Church, are more vulnerable to hail during times when many vehicles are parked in these lots.

A GIS analysis indicates that there are comparatively fewer mobile homes in **Tulahassee** than Porter. Nonetheless, a lack of garages or other shelters for vehicles increases their vulnerability to a hail event. Officials in Tullahassee also noted that the roof of the Civic Center, which functions as the government and operations building, has sustained some hail damage. In addition, Tullahassee does not have the means to receive and manage a grant currently, as it has not conducted an audit.

None of the school districts reported significant vulnerabilities to hail or previous impacts. The greatest impact would be roof and window damage, and damages to busses and vehicles. The school districts in the planning area should consider impact resistant roofs and windows in all new construction, and when repaired. Additionally, things like window film may reduce the impacts of large hail stones and prevent injury.

In **District 3**, Wagoner Emergency Management department had 38 vehicles that sustained hail damage. The department has since mitigated this problem by building shelters for their vehicles.

Lifelines and Critical Facilities Impacted

The lifelines most impacted by hail events is the food, water, and shelter lifeline and the safety and security lifeline. Hail events, especially when considered over time, have damaged residential and public structures in Wagoner County. Sufficient damage to important critical facilities or multiple residences would impact the food, water, and shelter lifeline. Damages to vehicles, including emergency response vehicles, are largest reported damages from hail over the last decade. Damages to emergency vehicles can disrupt emergency response in the planning area, impacting the Safety and Security lifeline.

Officials in **Tulahassee** also noted that the roof of the Civic Center, which functions as the government and operations building, has sustained some hail damage and is vulnerable to additional hail damage. Hail damage could cause the Civic Center to shut down temporarily.

4.6.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-41 - Summary of Observations, Recommendations, and Actions

Observation(s)	Recommendation	Action(s)
Residents should have the opportunity to learn about the best practices to safeguard themselves against hail events.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Residents would benefit from an electronic alert system for hail.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Emergency response to hail incidents would be enhanced with updated, more accurate 911 information.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.	4

Table 4-41 - Summary of Observations, Recommendations, and Actions

Some critical facilities and other critical buildings lack generators to support their functioning in the event of power loss from a hail event.	Equip critical facilities with generators, as appropriate.	6
Critical buildings have been damaged by hail in some communities and are a vulnerable to being damaged in other communities.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies. Install protective film on windows in all County and local government buildings.	10, 39
Hail can damage utility infrastructure and/or disrupt utilities' delivery services.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of hail.	13
Although schools did not report any significant damage to hail, they should incorporate an analysis of the impact of hail on their buildings.	Complete hazard evaluations of schools and retrofit or remodel buildings to make them more disaster resistant.	14
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Responders and key leaders would benefit from having access to current GIS mapping capabilities to identify threats from hail and to identify function needs populations and assets.	Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	19, 20
Emergency management personnel and residents would benefit from having a County Emergency Operations Center to oversee a response to a severe hail event.	Construct a multipurpose structure that can serve as a centralized County Emergency Operations Center that meets or exceeds criteria of FEMA P361.	21
Hail can result in extensive damage to homes and other structures.	Implement and enforce at least the minimum statewide building codes across all communities. Encourage residents and businesses to build to IBHS fortified standards.	23, 24
Hail has damaged infrastructure in Wagoner County.	Design infrastructure to withstand future hazards more effectively.	25
Emergency responder vehicles have been damaged, in part, by hail.	Construct protected parking for first responder/ government vehicles.	33

4.7 Fire

4.7.1 Overall Significance

The overall significance of fire is **medium**. Although the probability for fires is highly likely, given the number of fire runs available to the planning team, the location and extent analysis received a moderate rating, and the risk and vulnerability section also received a medium rating. Based on conversations with local and state officials, the planning area would benefit from having a centralized repository that would allow responders to access detailed information about historical structure fire runs and use enhanced GIS mapping capabilities.

4.7.2 Overview and Description

The 2021 Plan has included wildfires and structure fires into this assessment. A **wildfire** is any outdoor fire that is not controlled, supervised, or arranged. Wildfire probability depends on local weather conditions; outdoor activities such as camping, debris burning, and construction; and the degree of public cooperation with fire prevention measures. Wildfires can result in widespread damage to property and loss of life.

A **structure fire** is one that burns a home or other improved structure. Fire generates a black, impenetrable smoke that blocks vision and stings the eyes, making it often impossible to navigate through or evacuate a building on fire.

4.7.3 Probability and Previous Occurrences

It is **highly likely** that the fire hazard will impact the planning area more than once a year. Data was collected from 2010 – 2019, since employees at the Fire Marshal's office reported that 2020 data was not available at the time of this writing. According to the Oklahoma State Fire Marshal, from 2010 to 2019 fire departments in Wagoner County responded to 1559 wildfires, which burned nearly 15,000 acres and resulted in approximately \$1,593,000 in damages. Annualized over this 10-year period, this averages to approximately 160 runs, nearly 1500 acres burned, and nearly \$160,000 in losses. From 2010-2014, the County reported higher numbers than from 2015-2019. These data may be incomplete since they are based on voluntary reporting measures from the fire departments in Wagoner County. Based on insight from officials, however, fire departments, and the Fire Marshal's office, Wagoner County could expect the average number of wildfires from the past decade. The planning team could not locate data on the overall number of structural fires at the time of this writing.

According to the Oklahoma Fire Marshal's Office, Coweta Fire Department reported a total of 170 wildfire runs from 2010-2019. The fire company did not respond to any incident with major damages until 2019, when a wildland fire burned 78 acres and resulted in \$21,100 in damages. Okay Fire Department recorded 70 runs during this period. Like Coweta, Okay did not report any financial losses until 2019, when a portable building fire resulted in \$30,000 in damages. Porter Fire Department reported 291 runs. From 2017-2019, Porter Fire Department responded to 42, 31, and 19 wildland fires, respectively. These runs totaled to \$77,500, \$95,435, and 36,000, respectively. Red Bird Fire Company reported 6 runs during this period and no damages. Of the communities examined in this plan, Tullahassee reported the most damages during this period: 2010 (\$221,400), 2012 (\$15,000), 2014 (\$8,850), 2015 (\$30,500), 2016 (\$123,500), 2017 (\$35,750), 2018 (\$31,700), and 2019 (\$36,000). In total, Tullahassee reported 350 runs and \$535,200 in

damages.⁴⁹The following fire departments did not report any loss that exceeded \$5,000: Flat Rock, Oak Grove, Rolling Hills, Taylor Ferry, Toppers, and Whitehorn.

Table 4-42 - Historic Fire Impacts (OK Fire Marshal)

Year	No. of Wildfire Runs	Acres Burned	Losses
2010	153	1843	\$998,400
2011	402	2557	\$31,100
2012	146	4241	\$0
2013	83	658	\$28,000
2014	225	941	\$8,850
2015	114	1409	\$35,050
2016	96	354	\$123,775
2017	117	1480	\$114,250
2018	85	1153	\$130,135
2019	140	254	\$123,100
10-year average	160	1499	\$159,266

The NCEI database only included 1 wildfire event (on February 23, 2017) for the County during the ten-year study window. No monetary damages were recorded in the database, but it did estimate 500 acres were burned. During this period, the National Weather Service reported dry, windy conditions and extensive fires across the Southern Great Plains. The report credited coordination and rapid response with saving nearly 300 homes.⁵⁰ The fire impacted the Coweta area along 141st St. near Evans Rd. Nearly 100 homes were evacuated as crews from more than 4 departments responded, and the national guard mobilized two helicopters to assist. The wildfire approached within 30 yards of residential structures, but the response was able to prevent the structure loss and allowed residents to return within 2 hours of the blaze's start.⁵¹ This fire was declared as a fire emergency, FM-5169-OK.

There was no data on the overall number of structural fires available at the time of this writing. Nonetheless, the Planning team was able to identify some more significant fires that caused structural damage during this period. In February 2014, several wildfires burned hundreds of acres throughout the County. The Board of Commissioners released a burn ban in response. There were reports of damages to nonresidential buildings, but no monetary estimates were available.⁵² One of these fires also involved 141st St. near Coweta.

⁴⁹ The largest damages in dollar terms were reported by Stone Bluff Fire Department in 2010. Over the course of 11 runs, the fire department reported \$700,000 in damages. Stone Bluff fire chief did not report anything unusual during 2010, which raises questions about the precision of this data.

⁵⁰ <https://www.weather.gov/news/170604-fire>

⁵¹ https://tulsaworld.com/community/wagoner/news/grass-fire-near-coweta-contained-after-homes-evacuated-dry-windy-weather-draws-red-flag-warning/article_392c6d3a-fa3d-11e6-86ec-dfd245f4761c.html

⁵² https://tulsaworld.com/community/wagoner/news/burn-ban-to-prevent-wildfires/article_f8001cf5-4395-568a-9df2-525049e37d94.html

Although it is not a participating community in the plan, the City of Wagoner has experienced multiple damaging fires in the past several years. On July 30, 2017, a large structure fire destroyed multiple structures that contained both businesses and residential apartments.⁵³ The City of Wagoner's comprehensive plan reported that a third of the buildings along the east side of the road were destroyed, but the City acquired the properties for redevelopment following the disaster. Steps were taken to preserve the brick façade materials to maintain the downtown area's character when the buildings are rebuilt. Another historic building with a business was lost to fire in 2019.⁵⁴

4.7.4 Location and Extent

The location of fire was determined by the Wildland Urban Interface (WUI), while the extent of fire was determined by Keetch-Byram Drought Index (KDBI), Fire Danger Rating System, and the Burning Index.

All structures in Wagoner County and the participating communities and school districts have some level of risk to the fire hazard. Nonetheless, several factors impact the location of the fire hazard by increasing an area's likelihood of being affected by fire. Factors that affect the risk of a fire event include the age of structures, type of construction, uses, location relative to fire stations, and open woods or grassland.

Based on the best available data and analyses, the Wildland Urban Interface (WUI) can be used to determine areas of fire hazard location within Wagoner County, as shown in Figure 4-30. WUI was obtained through the Southern Group of State Foresters, Wildfire Risk Assessment Portal.⁵⁵

Residential and business structures developed near grassy and woody fuels will be at higher risk for wildfires. The also 2009 plan identified most of these areas at the zone between urban and rural areas. The WUI defines these areas as interface and intermix. Interface refers to areas with structures that have little to no vegetation but remain near undeveloped land. Intermix refers to areas where the built and natural environment overlap significantly. Intermix and interface zones are displayed on the following maps. Individual WUI maps for each participating jurisdiction are shown on the following pages. Although all participating jurisdictions are at risk according to the WUI, **Tulahassee, Red Bird, and Okay** are of particular concern because the lack of maintenance within the communities, such as mowing and tree trimming. **All school districts in the planning area have campuses located in areas** in a WUI area.

Wildfire extent is measured by the expected severity levels of the fire hazards across Wagoner county. Wildfire danger is measured using indices that relate longer-term soil and vegetation conditions to shorter-term weather patterns. The most explosive conditions occur when dry, gusty winds blow across dry vegetation. The planning team combined the Keetch-Byram Drought Index (KDBI), Fire Danger Rating System, and the Burning Index to determine extent in Wagoner County.

53 <https://ktul.com/news/local/crews-fighting-massive-fire-in-downtown-wagoner>

54 <https://www.newson6.com/story/5e35b905fcd8ef694720bec1/fastmoving-explosive-fire-destroys-downtown-wagoner-business>

55 <https://www.southernwildfirerisk.com/>

Figure 4-30 - Wagoner County Fire WUI

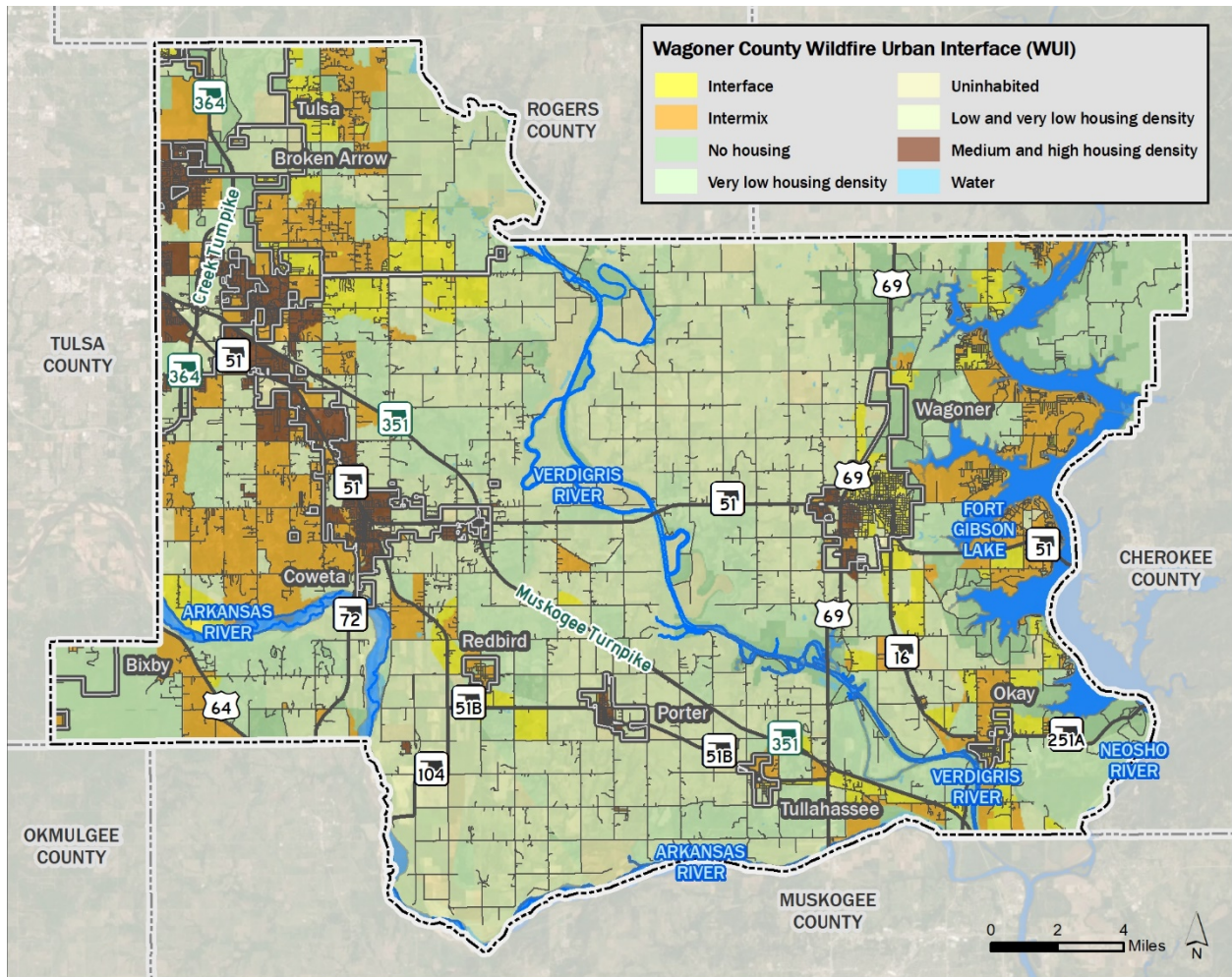


Figure 4-31 City of Wagoner WUI

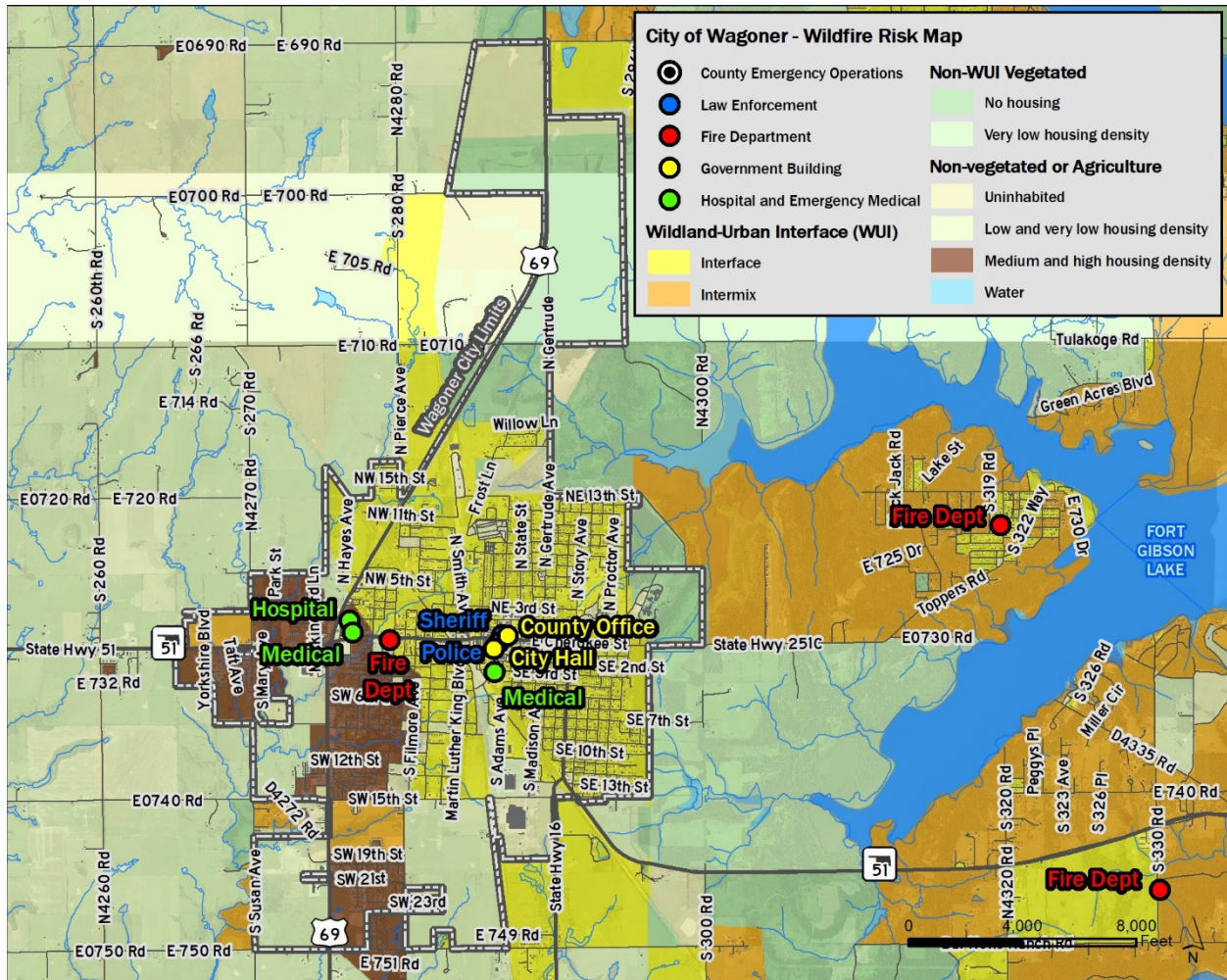


Figure 4-34 Redbird WUI

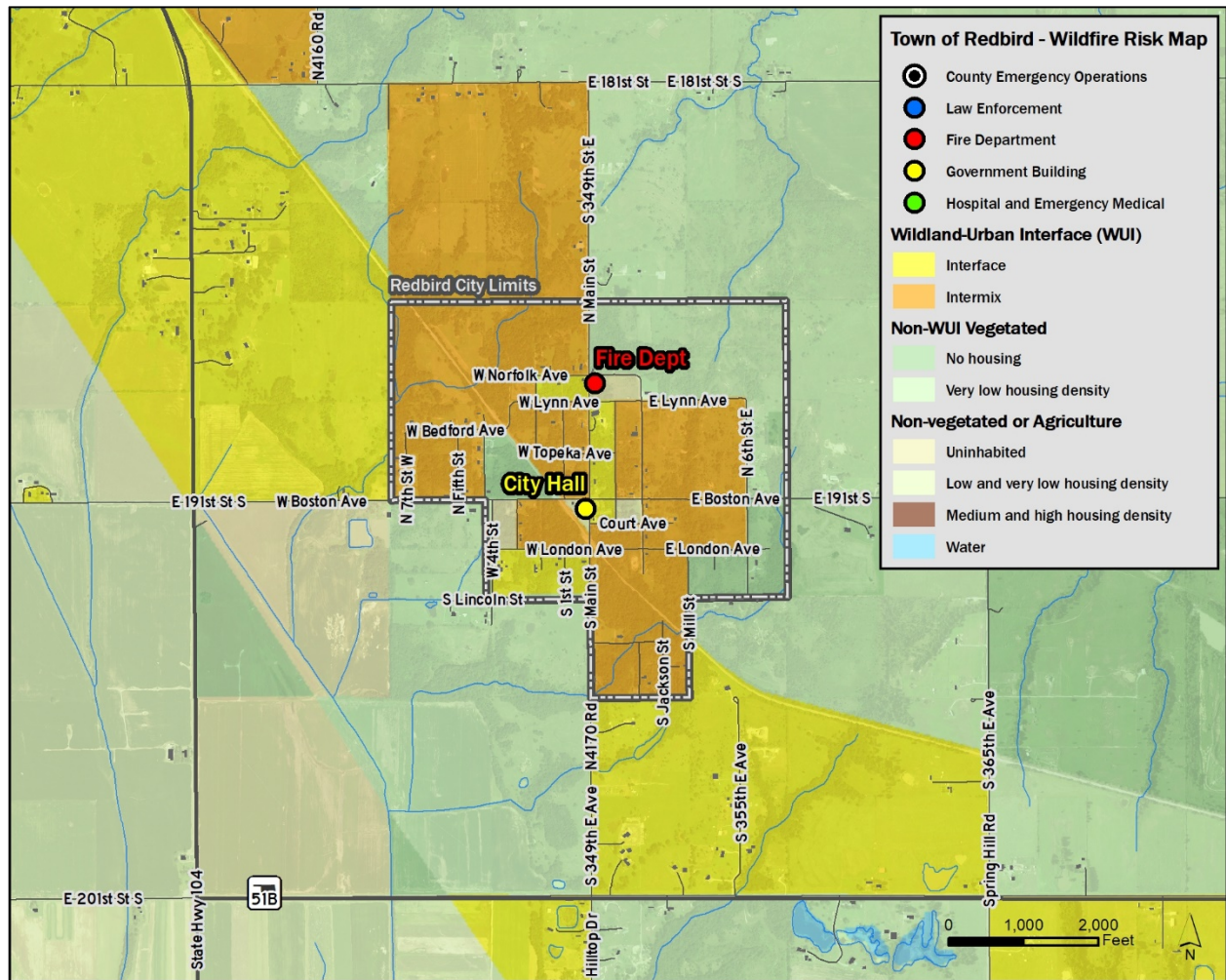


Figure 4-35 Tullahassee WUI

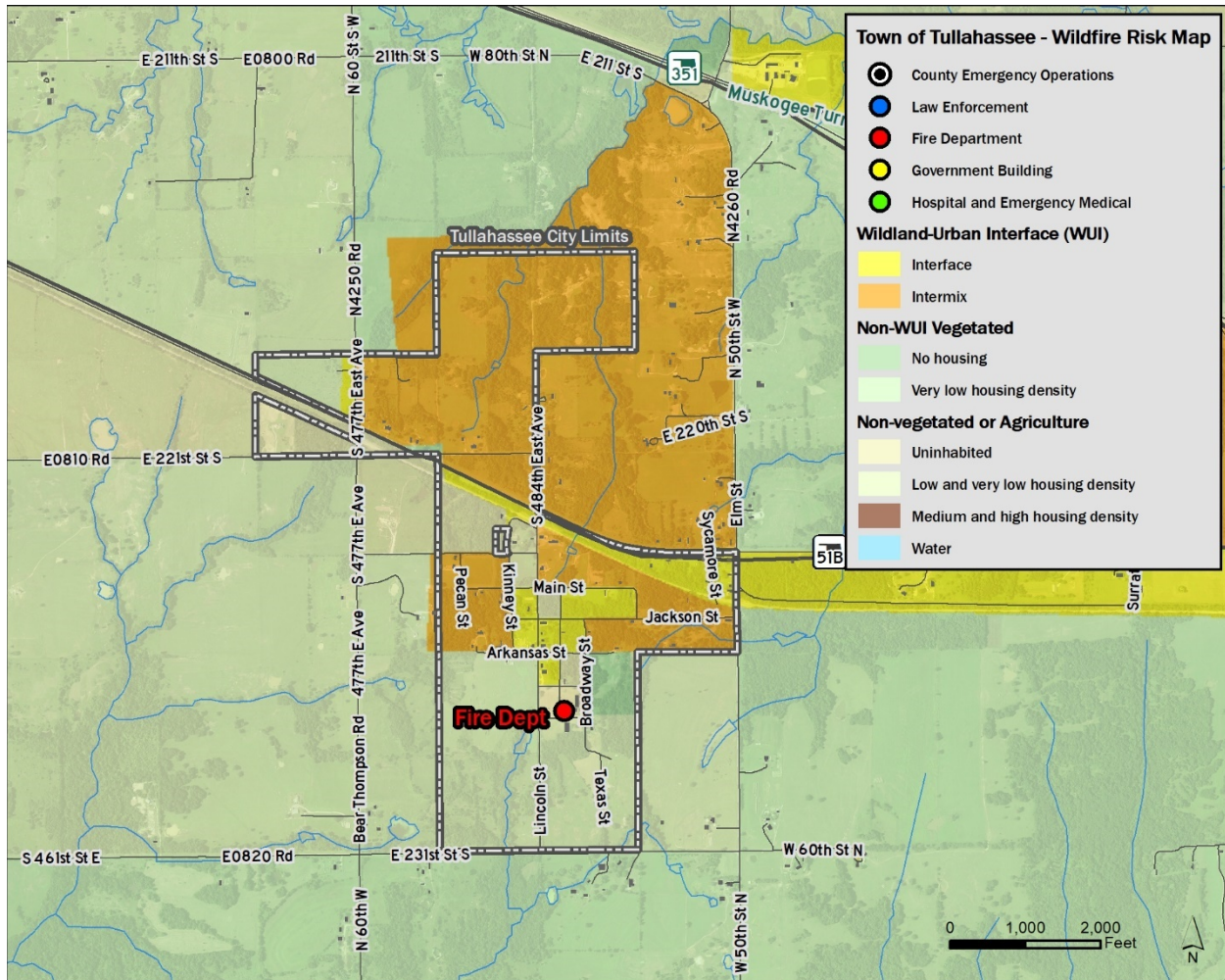


Figure 4-36 Coweta School District WUI

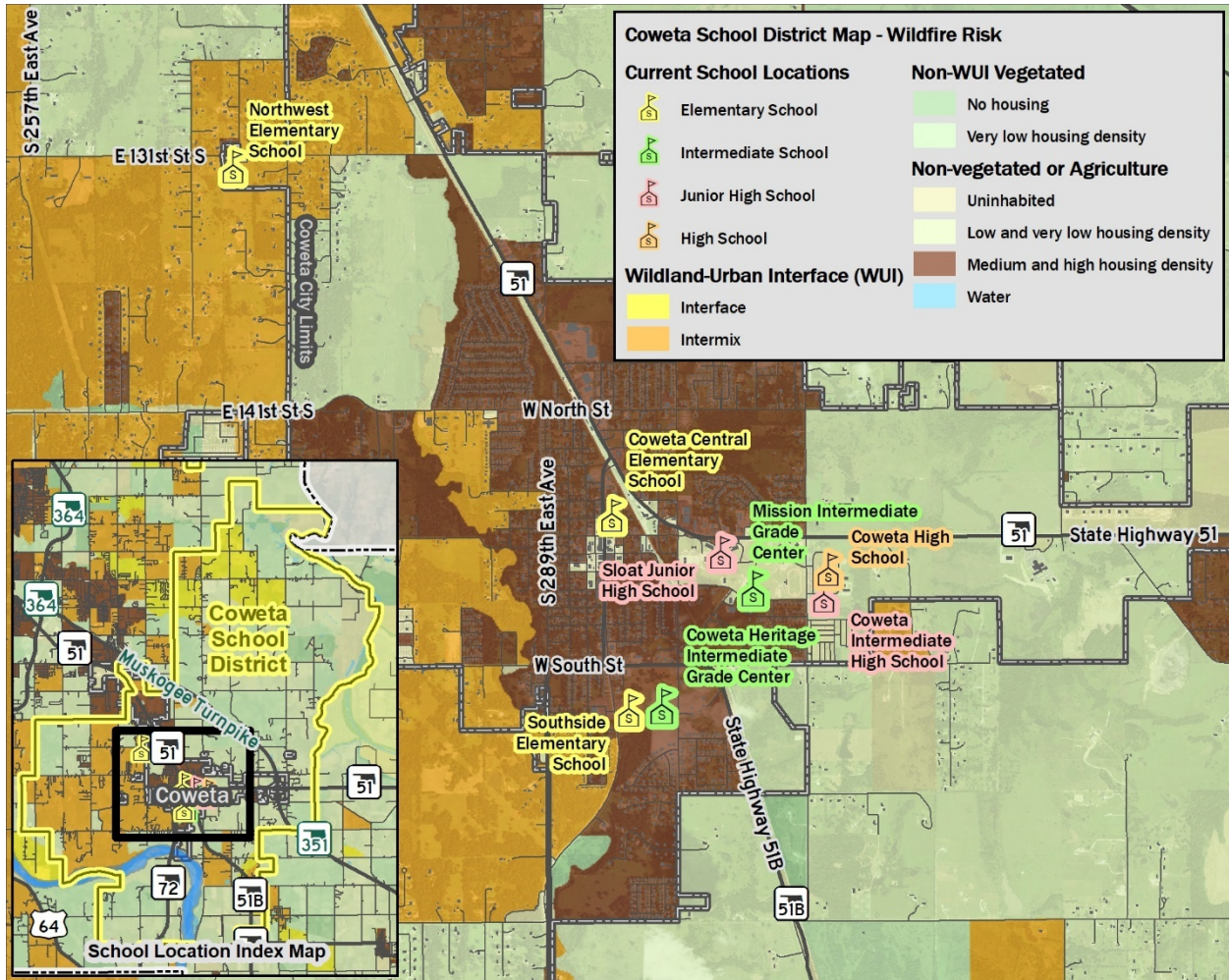


Figure 4-37 Porter School District WUI

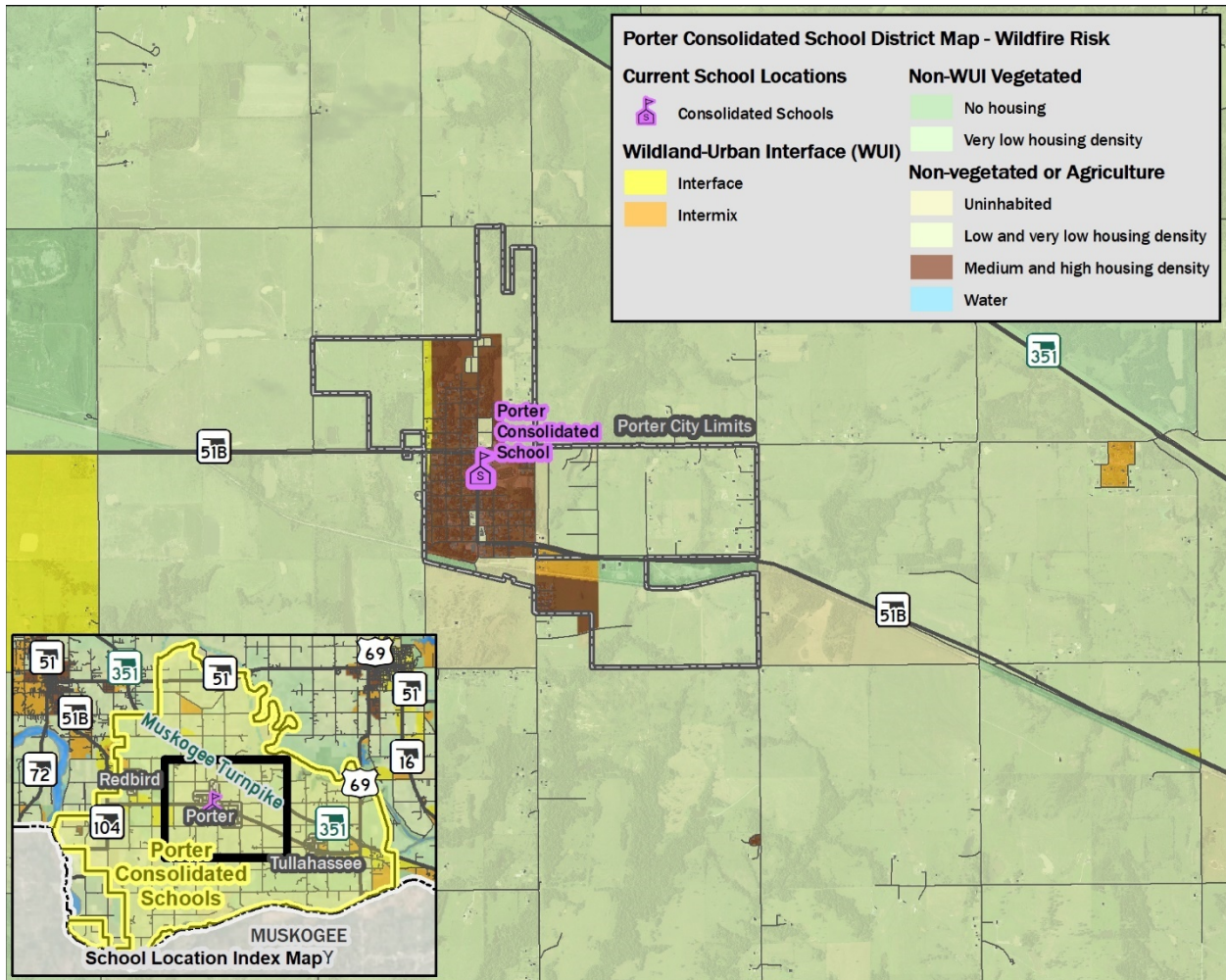


Figure 1-38 Okay School District WUI

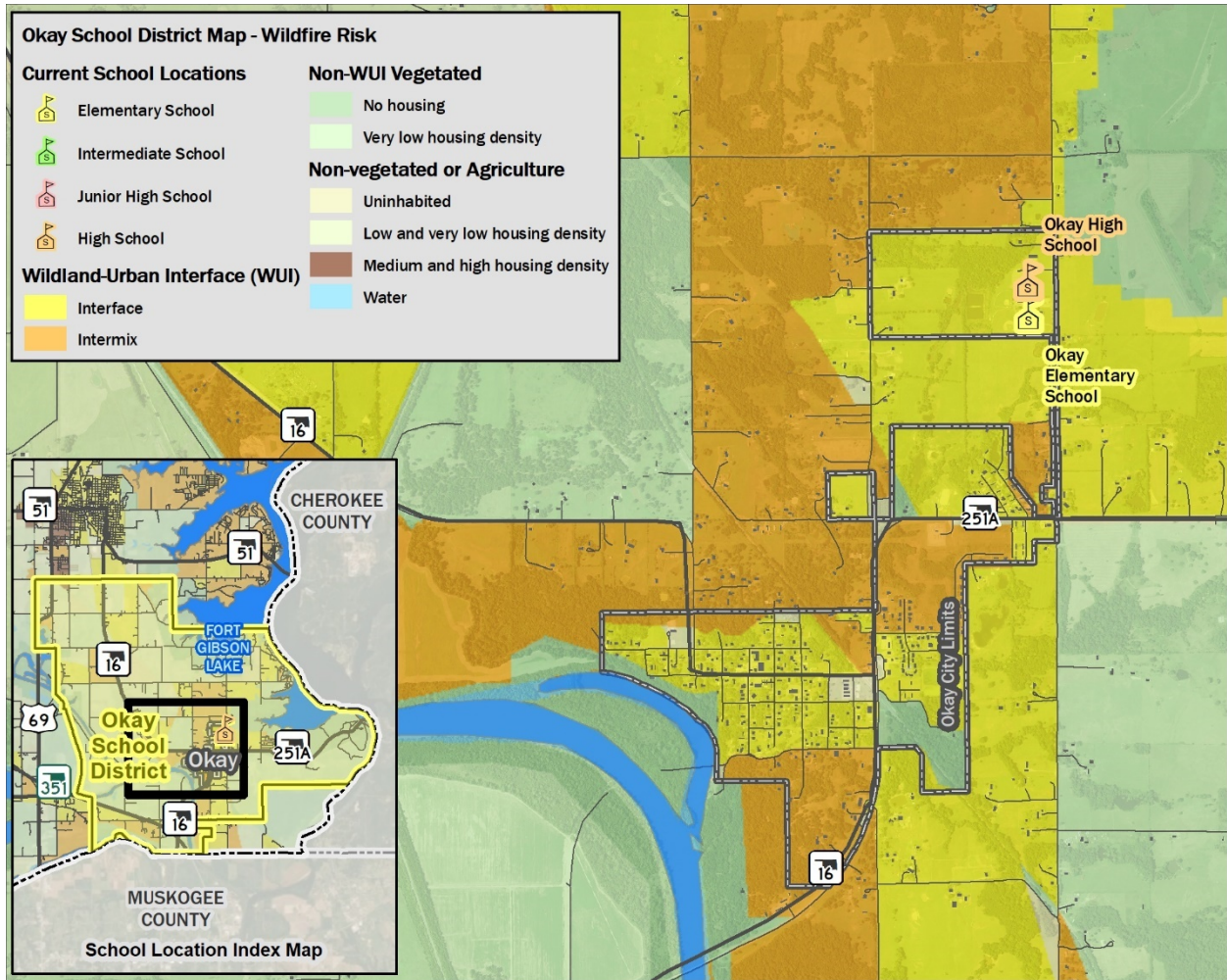


Table 4-43 - Keetch-Byram Index

200-400	Typical in late spring, early growing season. Lower litter and duff layers are drying and beginning to contribute to fire intensity.
400-600	Typical in late summer and early fall. Lower litter and duff layers actively contribute to fire intensity and will burn actively.
600-800	Often associated with more severe drought with increased wildfire occurrence. Intense, deep burning fires with significant downwind spotting can be expected. Live fuels can also be expected to burn actively at these levels.

The Burning Index relates temperature, relative humidity, wind speed, and solar radiation to the “relative greenness” of vegetation (taken from satellite measurements) and fuel models for native vegetation (assigned on a 1-kilometer grid across the State).⁵⁷ These factors are used to derive four indices: Spread Component, Energy Release Component, Ignition Component, and Burning Index. The Burning Index is a synthesis of the Spread and Energy Release components. It is used to predict fire line intensity and flame length. The higher the Burning Index number, the higher the potential severity of the fire.

The Fire Danger Rating System combines the combustibility of vegetation and weather conditions.⁵⁸ The planning area may experience days of extreme fire danger on the Fire Danger Rating System. There is no scientific scale to measure the extent of a structural fire, however, fires that cause a total loss of a structure and contents may occur. The most devastating events are those that cause loss of life. Even small fires may result in expensive damages and/or force an evacuation and relocation until the damaged structures can be repaired. The planning area may experience days of extreme fire danger on the Fire Danger Rating System/ Burning Index.

The following table shows a combination of the Fire Danger Rating System and Burning Index.

Table 4-44 - Combined Fire Danger Rating and Burning Index

Fire Danger Rating	Burning Index	Flame Length	Description
Low	<20	<2 feet	Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.

⁵⁷ https://www.mesonet.org/index.php/agriculture/map/range_forest/fire_danger/burning_index1

⁵⁸ <https://www.fs.usda.gov/detail/cibola/landmanagement/resourcemanagement/?cid=stelprdb5368839>

Table 4-44 - Combined Fire Danger Rating and Burning Index

Moderate	20-40	2-4 feet	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur but is not persistent. Fires are not likely to become serious and control is relatively easy
High	40-80	4-8 feet	All fine dead fuels ignite readily, and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
Very High	80-110	8-11 feet	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
Extreme	>100	> 11 feet	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash (trunks, branches, and treetops) or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

Depending on the conditions and location within the Wildland Urban Interface or Intermix, the entire planning area could experience a fire rating of Low to Extreme on the Combined Fire Danger Rating and Burning Index.

4.7.5 Vulnerability and Risk Assessment

The overall vulnerability to winter storms across the planning area is listed as **medium**. Wildfire can result in fatalities, structural damage, and crop damage. Some of the most significant economic vulnerabilities are economic result from structure and infrastructure damage along with costs due to business closures.

General Impacts: People, Economy, and Built Environment

Structural fires and wildfires can put people in life-threatening danger from smoke inhalation and burn wounds. Residential structural fires can occur at night, putting sleeping people at a very high risk of injury or death. Wildfires moving into residential areas or along roadways can threaten individuals. Residents would benefit from fire awareness, prevention, and education programs.

A wildfire or structural fire could call for evacuation of school or other large gathering facilities. Modern buildings are designed to minimize the probability of catastrophic fires. Nonetheless, all buildings have some risk of structural fire which could result in light damage to complete destruction. Many existing structures were built to older building standards and may lack some resilient construction techniques. Fire suppression technology in commercial or residential buildings can contain and limit fire damages.

The most likely threat to infrastructure from fires relates to power outages from poles or lines damaged by fire. This could lead to power outages from local to community-wide levels. Infrastructure facilities could be impacted by structure fires directly, leading to interruption of electrical, water, gas, or sewage treatment services. Gas supply lines near fires can create extremely dangerous situations if they are impacted.

Structural fires risk releasing pollutants into the natural environment. These could include household chemicals or industrial scale releases. Wildfires are a part of natural cycles and can be beneficial. Controlled burns should be conducted to reap these benefits and minimize the buildup of fuel materials which could result in more dangerous fires.

Specific Impacts and Vulnerabilities

Officials noted that there were no electronic alert systems to warn residents across **the planning area** of a serious fire. Lack of this form of direct emergency communication could affect response and recovery efforts in the event of a fire. In addition, Wagoner are working to develop GIS and E911 capabilities to identify populations at risk to fires and to improve response to fires. Currently, the planning area does not have a continuity of operations plan between utilities and the County to continue delivering services in the event of a severe lighting event.

Coweta's external residential developments are more exposed to wildfire threats in recent history. If residential growth continues into agricultural or open space, the risk of wildfire impacts will continue to increase in the future.

Okay is buffered to the southeast by the Verdigris River. Areas to the west and north have higher burn probabilities. There are several parcels throughout town with grass and other vegetation that are not well maintained, increasing the risk to residents. In addition, a railroad runs through town, which can block the fire department's access to respond to a fire if a train is passing through town. Okay's Fire Chief estimated that that his units were blocked an average of once every two months by a passing train. Okay also has several formal and informal working relationships with fire departments throughout Wagoner County.

Land with higher burn probability surrounds the Town of **Porter**, resulting leads to a high rating in the Risk Index. A small residential development in the south is nearly surrounded by open space. Older building stock is at heightened risk of fires.

Red Bird's location exposes it to wildfire threats. Despite its location and wooded lots, it had a low burn probability. However, all residences are more exposed to the threat of wildfires due to their

connection to undeveloped land. Limited road access into town can be threatened by fires. A combination of older structures and no enforced building codes.

Tulahassee contains many undeveloped plots that are not maintained. The vegetation and other flammable material on these plots present an immediate burn hazard to the town. Tullahassee's Fire Chief noted a slight uptick in fires due as more plots are left unmaintained. In addition, several of the roads have fallen into a state of severe disrepair. Vegetation and other overgrowth have started to spread onto sections of some key streets, including Rita and Arkansas. Other roads that are somewhat affected include Broadway, Jackson, Main, Lincoln, and Mason. Not only does this overgrowth present a burn risk, but it also presents a mobility risk, since some of the inaccessible areas are located near the fire station. In addition, there are downed power lines on Broadway street that still have not been removed. It is unclear whether the lines are still live. If they are live, these lines pose tremendous risk to the residents, along with a serious fire hazard.

In **Coweta School District**, Northwest Elementary School is adjacent to areas with high burn probability, and Coweta Junior High school is also in an area of moderate burn probability. These campuses are further from the developed core of the city and are more exposed to wildfires.

Porter School District 1s exposed slightly higher burn risks to the east and north. The school buildings are buffered from these by playing fields and small residential developments.

Okay Schools District's campus is north of the town of Okay and is more highly exposed to wildfire risks than other parts of town. The school campus is buffered by a small, forested wetland to the west and the road to the east. This road is the only point of access for the school and could be threatened by wildfire.

Wagoner Public School District is in the community of Wagoner (not participating in this plan). The facilities are well maintained, and grasses cut. The High School and Junior High are located on the eastern edge of town, north of Highway 251. The campus backs up to an area of open space that could potentially be a concern during times of high fire danger. The district should continue to ensure all campuses are well maintained and educate their students and faculty how to respond if a fire were to threaten the area. A fire could cause the district to close certain facilities. It is not known if the district has been impacted in the past.

In **District 3**, Wagoner Rural Water District (RWD) 6 has installed fire hydrants on most local roads, which can help it mitigate fire threats. RWD 6 and 7 have reported good and consistent communication with officials and fire chiefs located near their districts (the City of Wagoner and Okay, respectively). RDW 7 has fewer hydrants in rural areas, which is mitigated by a robust network of mutual aid agreements from local fire companies (Okay, Porter, Tullahassee, and Red Bird). Nonetheless, RWD 7 may face vulnerabilities during major fires or simultaneous because of its more limited ability to draw water, which is due to its lower carrying capacity.

Lifelines and Critical Facilities Impacted

The lifeline most likely impacted by Fire is the safety and security and the food, water, shelter lifeline. Depending on its location and severity, fire can threaten public safety and can strain or disrupt the network of healthcare and response in the County. Fire, especially structural fire, often results in the partial or complete loss of shelters for residents.

Tulahassee's fire department is located close to several parcels that are unmaintained. In addition, several of the streets near the fire station have been overgrown with vegetation, blocking mobility.

4.7.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-45 - Summary of Observations, Recommendations, and Actions

Observation(s)	Recommendation	Action(s)
Residents should have the opportunity to learn about the best practices to on how to prevent and respond to fires.	Develop and fund hazard preparedness, education, information, and awareness programs. Implement FireWise program.	1, 38
Residents would benefit from an electronic alert system for fires near their location.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Emergency managers, fire departments, and other related stakeholders would benefit from having a 911 GIS solution that would help them pinpoint the location of fires more precisely and coordinate more effectively.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.	4
Some critical facilities and other critical buildings lack generators to support their functioning in the event of power loss from a major fire event.	Equip critical facilities with generators, as appropriate.	6
Structural fires have resulted in significant damage to public, governmental, and historic structures in the County.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies.	10
Extensive fire damage can disrupt utilities' delivery services.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of a severe, widespread fire.	13
Coweta and Okay School District's grounds are located next to areas with higher vegetation.	Complete hazard evaluations of schools and school grounds.	14
Large wildfires have threatened and will continue to threaten residential developments.	Provide and maintain defensible space around structures vulnerable to wildfires, especially within communities.	15
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Responders and key leaders would benefit from having access to current GIS mapping capabilities to identify threats from fire and to identify function needs populations and assets.	Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	19, 20

Table 4-45 - Summary of Observations, Recommendations, and Actions

Emergency management personnel and residents would benefit from having a County Emergency Operations Center/ potential shelter space to oversee a response to severe fire event.	Construct a multipurpose structure that can serve as a centralized County Emergency Operations Center/ shelter that meets or exceeds criteria of FEMA P361.	21
Fire has resulted in extensive damage to homes and other structures.	Implement and enforce at least the minimum statewide building codes across all communities.	23
Fire can damage infrastructure in Wagoner County.	Design infrastructure to withstand future fire hazards more effectively.	25
In the event of a major fire, hydrants and other delivery infrastructure should be able to supply enough water to fight the fire.	Connect Rural Water District 6 and 7 by an emergency water line.	29

4.8 Hazardous Materials

4.8.1 Overall Significance

The overall significance of hazardous materials in the planning area is a **medium** risk. The probability of hazardous materials was rated as highly likely. The combined location and extent ratings for hazardous materials was moderate, given the available data for the planning area. The planning area's vulnerability rating for hazardous materials was low. The impacts of hazardous material releases on the planning area are noticeable but not devastating, but more data would certify this assessment.

4.8.2 Overview and Description

Hazardous substances include materials and wastes that are considered severely harmful to human health and the environment, as defined by the United States Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (commonly known as Superfund). Many hazardous materials are commonly used substances, which are harmless in their normal uses, but are quite dangerous if released in concentration. The EPA designates more than 1,300 substances as hazardous, making them subject to the reporting requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA), CERCLA, and/or Clean Air Act (CAA). This does not include all hazardous chemicals for which material safety data sheets are required.⁵⁹ Because relevant legislation uses the term "hazardous substance", but the emergency management and response community typically use the term "hazardous materials," for this hazard profile, "hazardous materials" and "hazardous substances" are used interchangeably. Hazardous materials sites, for regulatory purposes, are divided into two general categories, fixed sites, and transportation facilities:

Fixed-site hazardous substances (materials and waste) incidents are the uncontrolled release of materials from a fixed-site capable of posing a risk to health, safety, and property as determined by the Resource Conservation and Recovery Act (RCRA). It is possible to identify and prepare for a fixed-site incident because federal and state laws require those facilities to notify state and local authorities about what is being used or produced at the site. The EPA regulates hazardous materials at fixed sites. Hazardous substances, as listed, are generally materials that tend to persist for long periods and pose long-term health hazards for living organisms if released into the environment. Extremely hazardous substances, while also generally toxic materials, represent acute health hazards that are immediately dangerous to the lives of humans and animals and can cause serious damage to the environment if released. When facilities have these materials in quantities at or above the threshold planning quantity (TPQ), they must submit Tier II information to appropriate state and/or local agencies to facilitate emergency planning.

Transportation of hazardous materials incidents are any events resulting in the uncontrolled release of materials during transport that can pose a risk to health, safety, and property as defined by the U.S. Department of Transportation (U.S. DOT) Materials Transport regulations. The U.S. DOT regulates hazardous materials in transit. Transportation of hazardous waste is regulated by the Oklahoma Dept of Transportation. The U.S. DOT regulations define hazardous materials as a substance or material that the Secretary of Transportation has determined could pose an unreasonable risk to health, safety, and property.

⁵⁹ <https://www.epa.gov/epcra/consolidated-list-lists-under-epcracerclacaa-ss112r-august-2020-version>

4.8.3 Probability and Previous Occurrences

The overall probability rating for hazardous material events in the planning area is **highly likely**, based on available data. In other words, it is likely that a hazardous material will be released every year.

The National Response Center maintains a database of reports for the release of pollution for both fixed site and transportation events. The database contains initial information that has not been validated, and therefore it can only be used as a rough guide. The Pipeline and Hazardous Materials Safety Administration (PHMSA) tracks in-transit hazardous material releases through its nationwide database.⁶⁰ Regulations in 49 CFR 171.15 and 171.16 govern situations where hazardous materials are released, along with required notifications and reporting measures. Unless hazardous materials are properly reported, it is difficult to identify and track past hazardous materials releases that occur in transit. Some examples of hazardous material releases are in the table below.

The planning team identified 14 reported material releases over the ten-year period from two national databases. The National Response Center database included 16 calls reporting suspected hazardous material spills in the planning area from 2009 through 2019. Three of those calls, however, did not confirm a material release. The PHMSA database included both natural gas and liquid pipelines transporting materials through the northwest portion of the county, and it mapped Oklahoma Natural Gas pipelines in the south-central area of the county. There was 1 report of a liquid pipeline release from 2013, with less than one barrel of substance released and recovered. Most releases involve low amounts of material, often associated with traffic accidents. In addition to these databases, a news report covered a gas line explosion that hospitalized several workers.

Table 4-46 - Historic Hazardous Material Impacts

Date	Narrative
1980s	The previous Plan reported PCB spills from transformers and lead contamination in Fort Gibson Lake.
Autumn 1997	A fire was reported in the previous Plan at the Chief Chemical Co (a hazardous waste site) near Stonebluff.
March 31, 2009	A suspected lightning strike damaged a power transformer and resulted in a material release.
April 5, 2009	Suspected high winds detached a floating fuel dock from its moorings, resulting in a fuel spill in Fort Gibson lake.
September 19, 2013	A caller reported that an injection well on their property overflowed. The caller reported a loss of cattle suspected to be related to the release.
June 4, 2016	A tractor-trailer accident resulted in the release of fuel onto the roadway and shoulder. The event occurred during a storm and nearby storm drain may have been impacted by the release.
June 20, 2016	A tractor-trailer accident released dicyclopentadiene.
February 23, 2017	A recently relocated, private line servicing gas wells, exploded and injured four workers. This event was not contained in the federal databases.

⁶⁰ <https://pvnpmhs.phmsa.dot.gov/PublicViewer/>

Table 4-46 - Historic Hazardous Material Impacts

July 12, 2017

27 rail cars loaded with coal derailed and spilled coal.

4.8.4 Location and Extent

Although the hazard could affect any location in the planning area, the hazard's location generally is concentrated in the areas immediately proximate to Tier II facilities and transportation networks. Given the multitude of hazardous materials and their various effects, it is difficult to determine an extent for hazardous materials. Wagoner County has miles of highway, railroad track, and waterways—all of which can carry volatile and toxic chemical products through the jurisdiction.⁶¹ Nonetheless, an analysis of tier II reporting suggests that there are no extremely hazardous materials stored in the planning area.

To facilitate community planning for hazardous material events, the Emergency Planning and Community Right-to-Know Act (EPCRA) requires **Tier II** reporting on the storage, use, and release of hazardous substances. Facilities that use or store chemicals over EPA thresholds must submit Tier II reports to ODEQ on an annual basis; these facilities can be known as Tier II facilities. The LEPC and fire departments use this information create response plans.

In addition to Tier II sites, transportation networks also key locations of transmission for hazardous materials. The occurrence of a transportation incident involving hazardous materials is also a concern. The complexity of this hazard has much to do with the location of an event and materials involved.

Roadways account for many hazardous material releases. The Muskogee Turnpike (State Highway 351) is the largest highway through the County and the primary roadway for hazardous material transportation. This highway can be used for long range transportation of any number of hazardous materials. Additionally, U.S. 69 and State Highway 51 are regional roadways and may be used to transport materials through the County. Local roadways may also be used to move materials through populated areas to final destinations

Accidents involving **aircraft** can range from human error to meteorological causes. Fog, ice, thunderstorms, and wind shear are conditions that can lead to difficulties in properly controlling aircraft. Weather delays are common in air transportation and are respected to help prevent accidents. Airport runway pavement is also a concern. When deteriorated, runway pavement can cause damage to aircraft turbines, propellers, and landing gear and may result in runway closure. There were four airports listed in Wagoner County, 1 public and 3 private airports.⁶²

Over 1.52 million carloads of hazardous material move by **rail** each year. Collisions and derailments are the most common accidents for rail travel. Three operating railways were reported in the County.⁶³

The McClellan-Kerr Navigation System is a **waterway** that runs almost 450 miles through Oklahoma and Arkansas before joining the Mississippi River, passes north/south through the center of the County along the Verdigris River. The Port of Catoosa is just north of the County and is the head of

⁶¹ **There** are no hazardous material restricted highways listed in the County.

⁶² <http://www.tollfreeairline.com/oklahoma/wagoner.htm>

⁶³ <https://www.odot.org/maps/railroad/index.htm>

the waterway. The Port of Muskogee, just south of the County, also serves the waterway. Barge traffic is common along the waterway.

The **pipeline** network supporting energy transportation in the United States includes approximately 1.9 million miles of natural gas and hazardous liquid pipelines and has more than 3,000 companies operating in all 50 states. Pipelines represent 18.4% of all hazardous material transportation in the U.S. Natural gas distribution, with over 1.8 million miles of pipelines, represents the greatest commodity transported through pipelines. Most pipelines are installed in underground rights-of-way (ROW), which are maintained for access and marked with above ground markers and warning signs. Both gas and liquid pipelines were reported in the County.

There are more than 40 **facilities** throughout the planning area. Almost all these facilities can be segmented into three basic categories. The primary, and largest, category of facilities are located in unincorporated areas west of the City of Wagoner. Most of these facilities are small waste control transports, which are privately owned and controlled. The second category are Tier-II facilities in the northwest part of the County are larger than most of the facilities in the east. These facilities are attached to industries and are used or created in the production of these goods. The third category of facilities are located near waterways throughout the County, which treat water for some purpose. Although any of these facilities could be a danger to the planning area, none presented a uniquely heightened risk. Addition analysis, which is outside the scope of this project, is required to confirm or refute this conclusion.

4.8.5 Vulnerability and Risk Assessment

The community vulnerability to hazardous materials is **low**. Some communities may be more at risk due to their proximity and use of local transportation networks, but data on the types and frequency of hazardous material transportation and storage throughout the planning area is very limited.

General Impacts: People, Economy, and Built Environment

Although the planning area's vulnerability and risk to hazardous materials is assessed as low, it still poses a risk to people's health and safety and could have some impact on the economy and the built environment. The natural environment is also at risk.

People working and living in the areas near hazardous materials facilities and transportation routes are at the greatest risk. Given the different materials and their physiological effects, hazardous materials can have limited health impacts, on one extreme, or cause death, on the other. People at heightened risk include those with mobility or severe health issues that would limit their ability to evacuate quickly and people who speak a language other than English, limiting their ability to receive warning messages. Construction and maintenance workers are at increased risk of personal injury when working on or near lines.

A large spill could impact recreational activities or close a manufacturing facility, having severe economic impacts. Most events would not have broad implications for the economy. An explosion at any Tier II facility may create off-site collateral damage. Adjacent structures and properties are most vulnerable. Hazardous material releases can damage and destroy public, commercial, and private property. Losses include both direct and indirect costs. Direct costs can be defined as the cost of materials, property damage, response cost, and remediation/cleanup cost for a specific release. In addition, hazardous materials could disrupt infrastructure. A hazardous substance spill at a treatment plant could force the shutdown of the facility. In addition, a malfunction at the plant could cause the spill of contaminated wastes into rivers and streams. A traffic incident involving hazardous

materials would cause significant traffic delays. Damages to transportation infrastructure and their closure are not uncommon following a hazardous materials release. Flammable materials could result in cascading events where fires may damage power transmission utilities.

A hazardous substance release, whether at a fixed site or in transit, can negatively impact the natural environment. Depending on the nature and amount of the substance, the release may contaminate the air, water, or soil potentially causing concern for direct human and animal exposure, recreational usage, and fish and wildlife consumption. Water contamination, whether surface water or groundwater, is an immediate concern from a hazardous material release potentially impacting potable water supplies, wildlife, and recreational activities. Reports indicated that in the 1980's contamination impacted fishing in Fort Gibson Lake. Hazardous material releases could also significantly impact soils, harming agricultural uses. Depending on the characteristic of the hazardous material and/or the volume of product involved, the affected area can be as small as several square feet or as large as many square miles that require soil remediation. Such environmental damage can linger for decades and result in extensive remediation costs.

Specific Impacts and Vulnerabilities

Although the planning team identified some possible threats, senior level personnel in Wagoner County noted that the response to a possible hazardous incident across the **entire planning area** was well covered by Region IV Hazardous Material response teams, along with units from Tulsa. In addition, officials also noted that there were no electronic alert systems to update residents during hazardous materials events. Lack of this form of direct emergency communication could affect response and recovery efforts in the event of hazardous materials. In addition, the County does not have a centralized center that could secure, isolate, and/or inoculate patients to a hazardous materials event, especially a biohazards event.

The primary exposure of hazardous materials for **Coweta** comes from Highway 51 and Highway 72. These corridors pass through the center of the City and provide regional connections to the Muskogee Turnpike. In addition, a BNSF-operated railroad passes through the City.

Porter has limited exposure to the transportation of hazardous materials along Highway 51B. The BNSF railroad also passes through Porter, possibly exposing the community to larger risks.

Okay is exposed to the transportation of hazardous materials along Highway 16 and 251A. These regional roads connect the Muskogee Turnpike to local destinations. A Union Pacific railroad runs through the town, possibly carrying large quantities of hazardous materials. The McCellan-Kerr Arkansas River Navigation System uses the Verdigris River just southwest of town.

Red Bird is exposed to hazardous materials along the BNSF operated railroad. In addition, the town has limited exposure to roadway transportation as it is not near any main roadways. Local pipelines or gas tanks may pose a threat.

In **Tulahassee**, Highway 51B and the BNSF railroad run parallel to each other and through the center of town. Local use of the railroad is limited to residential tanks and supplies. In addition, Tullahassee does not have the means to receive and manage a grant currently, as it has not conducted an audit.

School campuses in the **School District of Coweta** are located on Highway 51 and Highway 72. In addition, the railroad passes near an elementary school and the near the western edge of the district's bus yard.

In **Porter School District**, Highway 51B runs north/south to the west of campus. It is likely that is the district's primary exposure to hazardous materials. The campus is within ½ a mile from the BNSF railroad, where an extreme release could force a shelter in place or evacuation of the facilities.

Okay School District 1s not directly exposed to any known hazardous material transportation route or facility at the time of this writing.

Lifelines and Critical Facilities

The lifelines most affected by a hazardous materials incident are the hazardous materials lifeline, the safety and security lifeline, and the health and medical lifeline. Depending on its severity, a hazardous materials incident can result in a serious breach to the hazardous materials lifeline. In the same vein, the primary or secondary affects of an incident can threaten community safety and the ways that health services respond to the incident.

No critical facility within Wagoner county was highlighted as being particularly vulnerable to hazardous materials.

4.8.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-47 - Summary of Observations, Recommendations, and Actions

Observation(s)	Recommendation	Action(s)
Contamination and hazardous material releases can cause negative impacts to human health.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Residents would benefit from an electronic alert system for hazardous materials incidents near their location.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Hazardous materials can occur throughout the county from transportation accidents or fixed site events.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.	4
Some critical facilities and other critical buildings lack generators to support their functioning if power must be cut to limit the effects of a hazardous materials event.	Equip critical facilities with generators, as appropriate.	6
Hazardous materials could result in significant damage to critical facilities throughout the County.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies.	10
Extensive fire damage can disrupt utilities' delivery services.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of a severe, widespread fire.	13

Table 4-47 - Summary of Observations, Recommendations, and Actions

Coweta, Okay, and Porter School Districts are located near transportation corridors.	Complete evaluations of schools for hazardous material protection.	14
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Responders and key leaders would benefit from having access to current GIS mapping capabilities to identify threats from hazardous materials events and to identify function needs populations and assets.	Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	19, 20
Emergency management personnel and residents would benefit from having a County Emergency Operations Center/ potential shelter space to manage a response to a severe hazardous materials event. The space also could serve as a space to treat (e.g. provide vaccines) or hold patients exposed to hazardous materials.	Construct a multipurpose structure that can serve as a centralized County Emergency Operations Center/ shelter.	21
Hazardous materials could result in extensive damage to homes and other structures.	Implement and enforce at least the minimum statewide building codes across all communities.	23
Certain hazardous materials could damage or destroy infrastructure in Wagoner County.	Design infrastructure to withstand future hazardous materials events more effectively. Harden, strengthen, or bury electrical infrastructure when cost-effective.	25, 26

4.9 Extreme Heat

4.9.1 Overall Significance

The overall significance of extreme heat is **medium** across the planning area. The planning team rated the probability of occurrence to be highly likely and the extent to be moderate. The planning area's vulnerability to extreme heat was determined to be low, at least over the next 5 years, however. People in Wagoner County have developed solutions to mitigate most of the severe risks to the hazard.

4.9.2 Overview and Description

Extreme heat is defined as unusual hot weather (maximum, minimum, daily average) over a region persisting at least two consecutive days based on local climatological conditions, with thermal conditions recorded above given thresholds (WMO 2015). Note: There is no universally recognized metric for what constitutes extreme heat. The World Meteorological Organization recommends characterizing a heat wave by its magnitude, duration, severity, and extent. Heat is the leading weather-related cause of death in America.⁶⁴

4.9.3 Probability and Previous Occurrences

Based on past events and expected events, it is **highly likely** that the hazard will occur in the County annually. The NCEI database recorded 26 excessive heat events from January 2010 through December 2020. No damages, injuries, or deaths were recorded in the database. According to mesonet station data, Wagoner County averages several days above 100 degrees each summer, with high humidity throughout the year.⁶⁵

Table 4-48 - Historic Extreme Heat Events

Date	Narrative
June - August 2010	The NCEI database included 5 entries during this period. High humidity and hot summer weather resulted in excessive heat conditions throughout much of the state. Heat related illnesses were reported to the west in Tulsa.
June - August 2011	Four excessive heat events were reported during this time period.
July – August 2016	Heat indexes exceed 110°F, and nighttime lows were reported to be above 75°F, resulting in excessive heat conditions. 3 events were included in this time period.
July – August 2019	Excessive heat conditions extended throughout the region. The database reported individuals treated for heat related illnesses in Tulsa, though no reports of injuries in Wagoner County were included.

⁶⁴ <https://www.weather.gov/phi/heatcond>

⁶⁵ http://climate.ok.gov/index.php/climate/county_climate_by_county/wagoner

4.9.4 Location and Extent

In terms of location, extreme heat is a hazard that impacts the entire planning area. The entire northeast Oklahoma region, including Wagoner County, is known for its hot, humid summers.

In terms of hazard extent, temperatures often reach above 100°F for extended periods, with heat indexes significantly exceeding 100°F. The Heat Index and Heat Disorders table, below, combines temperature and relative humidity into heat index.⁶⁶ Table 1-49 suggests varying degrees of caution depending on the relative humidity combined with the temperature. The shaded zones on the chart 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 a possibility, whereas a “Danger” level means that these symptoms are likely. “Extreme Danger” indicates that heat stroke or sunstroke is highly likely.

According to the Oklahoma Climatological Survey, Wagoner county has a record high of 119 degrees from July 13, 1901.⁶⁷ Wagoner County and participating jurisdictions should expect to experience temperatures above 100 degrees and high relative humidity in the future.⁶⁸

Table 1-49 - Heat Index and Heat Disorders

Heat Index

Apparent Temperature

Caution

Fatigue possible

Extreme Caution

Sunstroke, muscle cramps, and / or heat exhaustion possible

Danger

Sunstroke, muscle cramps, and / or heat exhaustion likely

Extreme Danger

Heat stroke or sunstroke highly likely

Relative Humidity

40%

45%

50%

55%

60%

65%

70%

75%

80%

85%

90%

95%

100%

Air Temperature (F)

110°

136

108°

130

137

106°

124

130

137

104°

119

124

131

137

102°

114

119

124

130

137

100°

109

114

118

124

129

136

98°

105

109

113

117

123

128

134

96°

101

104

108

112

116

121

126

132

94°

97

100

102

106

110

114

119

124

129

136

92°

94

96

99

101

105

108

112

116

121

126

131

90°

91

93

95

98

100

103

106

109

113

117

122

127

132

88°

88

89

91

93

95

98

100

103

106

110

113

117

121

86°

85

87

88

89

91

93

95

98

100

102

105

108

112

84°

83

84

85

86

88

89

90

92

94

96

98

100

103

82°

81

82

83

84

84

85

86

88

89

90

91

93

95

80°

80

80

81

81

82

82

83

84

84

85

86

86

87

Source: NWS Heat Index

⁶⁶ <https://www.weather.gov/safety/heat-index>

⁶⁷ http://climate.ok.gov/index.php/climate/county_climate_by_county/wagoner

⁶⁸ https://climate.ok.gov/index.php/climate/county_climate_coop_summary/wagoner/OK9247_stnsum.html
https://climate.ok.gov/index.php/climate/county_climate_mesonet_summary/wagoner/PORT_stnsum.html

4.9.5 Vulnerability and Risk Assessment

Despite the highly likely probability of occurrence and moderate location and extent rating, the planning team determined that the overall community vulnerability to extreme heat is **low**, at least for the next 5 years. Extreme heat is a relatively normal occurrence for Wagoner County. Residents and workers have developed solutions to mitigate most of the severe risks to the hazard. The impact on infrastructure and buildings is very localized, if any.

General Impacts: People, Economy, and Built Environment

Despite its comparatively low vulnerability rating, extreme heat poses a risk for people and the economic in Wagoner County. Extreme heat can take its toll on all people in Wagoner County and participating jurisdictions; even physically fit individuals can succumb to heat effects. Certain segments of the population are at higher risk.⁶⁹ Of particular concern are individuals over the age of 65 who live below the poverty line. These are at the highest risk of loss of life due to extreme heat conditions. Generally, public schools are not in session during the peak of the extreme heat season; however, athletic and band practices typically begin in early August and run through September. All students and staff of participating schools are vulnerable to heat illnesses. In addition, high temperatures and dry air can lead to heat stress in trees or wildlife. Wildfire conditions are exasperated by extreme heat, and response during these events puts responders at even greater risk. In addition, officials also noted that there were no electronic alert systems to update residents during extreme heat events. Lack of this form of direct emergency communication could affect response and recovery efforts in the event of extreme heat.

Heat waves can affect the economy by slowing worker productivity, affecting structures and infrastructure, and damaging crops. Worker productivity decreases during heat waves. The slowdown is particularly acute in outdoor industries, such as construction. In addition, structures can be vulnerable to extreme heat, but these vulnerabilities tend to be limited. Expansive soils, for example, can damage foundations and walls. High temperatures also can affect infrastructure. Deteriorating roads and rail lines, and energy demands are among the impacts.

During extreme heat, electric providers could experience any combination of the following challenges: failure of vital delivery components due to exposure to high heat, excessive/simultaneous demand, or insufficient field and office staff to effectively handle the workload. Residences or critical facilities without generator may become uncomfortable or uninhabitable during a power outage, leading to human health risks. Water and sewer lines in areas with highly expansive soils are vulnerable to damages. Extreme heat can further degrade some paving systems or limit the ability of crews to repair damages. Extreme heat causes concern for the agricultural community due to crop loss.

Specific Impacts and Vulnerabilities

There are no electronic alert systems to update residents **in the planning area** during extreme heat events. Lack of this form of direct emergency communication could affect response and recovery efforts in the event of a lightning. Currently, the planning area does not have a continuity of operations plan between utilities and the County to continue delivering services in the event of an extreme heat event.

⁶⁹ Individuals 65 years and older, children under five years old (especially infants), socially isolated individuals, mentally & mobility challenged individuals, obese individuals, individuals under the influence of alcohol or medication, individuals and families living below the poverty line, outdoor workers.

Coweta and **Porter's** summer community athletics activities, like the Coweta Tiger 5k fun run and Peach 5k classic, tend to be well-mitigated against heat risk, as they tend to be scheduled during cooler periods of the morning. Nonetheless, administrators need to remain aware of the dangers of overheating and heat exhaustion.

Okay did not report any vulnerability to extreme heat. See general impacts for Okay's vulnerability.

Red Bird's community shares the general threat to extreme heat. Residents lacking reliable transportation may be further isolated as the temperatures make long travel by foot or bike more hazardous.

Extreme heat can exacerbate other threats of drought or wildfire, impacting the wooded lots across **Tallahassee**. Expansive soils could damage older building stock and road infrastructure. In addition, Tallahassee does not have the means to receive and manage a grant currently, as it has not conducted an audit.

For **all School Districts** in the planning area, sports practices in the summer months can mitigate risk by training during cooler parts of the day. This will not mitigate risk to participants entirely. Sports requiring significant amounts of worn equipment, like football, particularly present a risk. School buildings, especially older buildings with older air control system, should be evaluated to ensure that they can cool students adequately during the school day. Specific reports of heat impacting the school districts in the planning area were not reported. The school districts should consider purchasing wet bulb globe temperature readers and implementing heat policy for all outdoor activities.

No unincorporated area within Wagoner County was highlighted as being particularly vulnerable to extreme heat.

Lifelines and Critical Facilities

The lifelines most at risk to extreme heat are the Safety and Security lifeline. Extreme heat can affect the built environment. It poses a greater immediate risk to Wagoner residents' health and safety, however, especially for residents who are unable to manage their exposure to extreme heat, either for occupational, financial, or other reasons.

No critical facility within Wagoner County was highlighted as being particularly vulnerable to extreme heat.

4.9.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-50 - Summary of Observations, Recommendations, and Actions

Observation(s)	Recommendation	Action
Extreme heat can cause illness or death for citizens throughout the county.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Residents would benefit from an electronic alert system for extreme heat incidents in their area.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3

Table 4-50 - Summary of Observations, Recommendations, and Actions

Responders and key leaders would benefit from having access to current 911 and GIS mapping capabilities to identify function needs populations and assets that are especially at risk from heat events.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service. Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	4, 19, 20
Some critical facilities and other important buildings lack generators to support their functioning if power must be cut to limit the effects of an extreme heat event.	Equip critical facilities with generators, as appropriate.	6
Extreme heat can stress utility systems and damage infrastructure.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of a prolonged or extreme heat event. Design infrastructure to withstand future hazardous materials events more effectively.	13, 25
Coweta, Okay, and Porter School Districts are jointly responsible to ensure that their students are protected from extreme heat events while they are on school grounds.	Complete evaluations of schools for opportunities for addition protection from extreme heat events.	14
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17

4.10 Lightning

4.10.1 Overall Significance

Lightning has a **low** overall significance in the planning area. The probability of lightning is very frequent, as the frequency of lightning strikes in the planning area are much higher than the national average. The location and extent of lightning do not differ across the planning area. Although lightning can result in deaths and damages, historical data and participants' feedback suggest that the extent of lightning is low.

4.10.2 Overview and Description

Lightning is a discharge of electrical energy that results from the buildup of positive and negative charges in a thunderstorm, generating a "bolt" when the buildup of charges reaches a certain level. Lightning can occur between a cloud and the ground (cloud-to-ground lightning), between two clouds (Intercloud Lightning), or within the same cloud (Intracloud Lightning). Lightning can strike 10 miles outside the rain column.

4.10.3 Probability and Previous Occurrences

The probability of lightning strikes in Wagoner county is **highly likely**. Wagoner County and participating jurisdictions should expect future lightning events to fall in line with the NLDN data from previous years, with a high probability of lightning occurring on an annual basis.

The VAISALA Annual Lightning Report 2019 summarizes its National Lightning Detection Network (NLDN) and reported Oklahoma as having the second highest lightning counts (14,772,145 cloud-to-ground strikes) of any state in America.⁷⁰ Lightning was recorded frequently in the planning area, only one single-family fire (resulting from fire) was identified between 2010 and 2020. This assessment was confirmed by stakeholders from the County and corroborated by other sources.

Table 4-51 Historic Lightning Events

Date	Narrative
August 1998	A lightning strike related fatality was reported at Sequoyah Bay State Park, about 7 miles southeast of Wagoner.
June 1999	A lightning strike damage the Wagoner water plant, resulting in a loss of tap water for 3 days.
March 2004	A lightning strike sparked a house fire in Coweta ⁷¹
August 2017	A lightning strike sparked a house fire in Coweta ⁷²

4.10.4 Location and Extent

The combination of location and extent is **moderate** for lightning. The location of lightning is uniform across the planning area. Lightning is typically a by-product of thunderstorms or other atmospheric events, making the location of lightning uniform over the planning area. Extent is determined by density of lightning strikes that reach the ground (cloud-to-ground strikes). Oklahoma has one of the

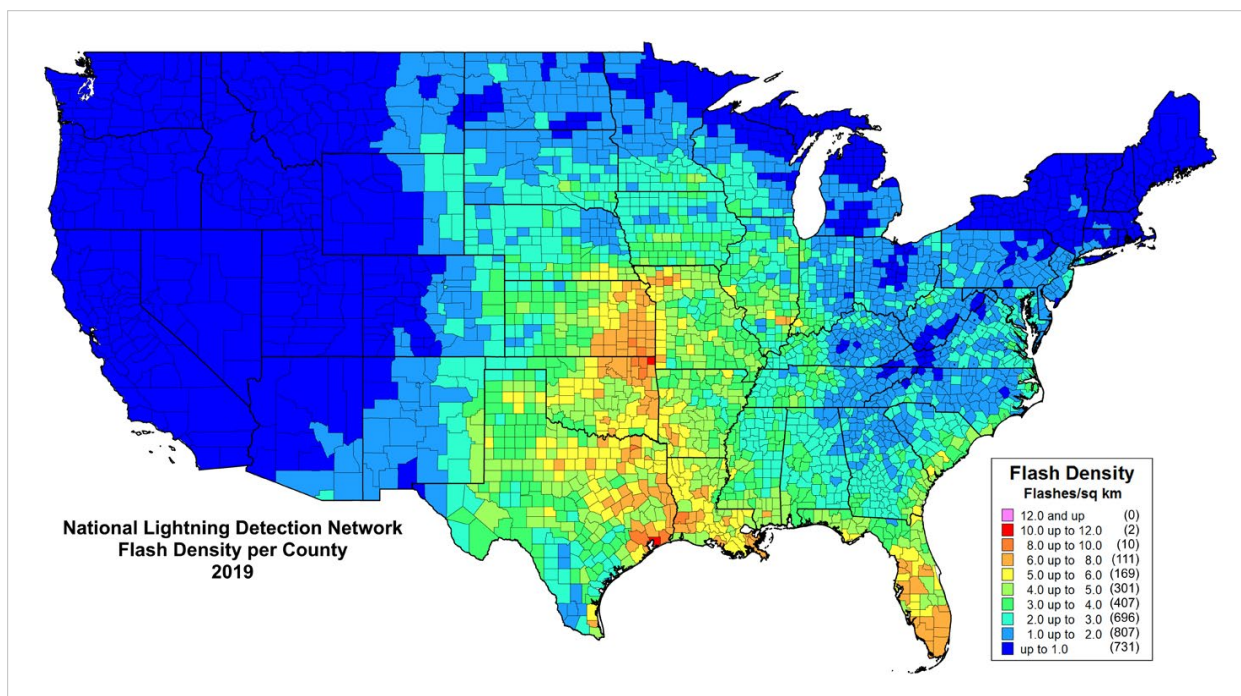
⁷⁰ https://www.vaisala.com/en/system/files/documents/Vaisala-Annual-Lightning-Report-2019_0.pdf

⁷¹ <https://www.newson6.com/story/5e367e4a2f69d76f62091b19/lightning-blamed-for-coweta-house-fire>

⁷² https://tulsaworld.com/community/wagoner/news/lightning-sparks-fire-that-destroys-rural-coweta-home/article_07f5534b-0892-561b-ae94-f1baa66dee07.amp.html

highest average lightning densities in the United States. Wagoner County, like most of Northeast Oklahoma, has higher-than-average lightning strike densities compared to the rest of the state. The National Lightning Detection Network estimates that the planning area experiences, and will continue experience, 8-10 flashes per square kilometer annually (see Figure 4-40 below). Based on this metric, the planning area can expect an average of about 11,000 cloud-to-ground lightning strikes per year.

Figure 4-40 - Wagoner County Lightning Detection Network Lightning Density



4.10.5 Vulnerability and Risk Assessment

Lightning has a **low** overall significance in the planning area. Lightning has not resulted in a recorded fatality in more than two decades. Fires that result from lightning have also damaged structures significantly, but these are underreported.

General Impacts: People, Economy, and Built Environment

The entire population of Wagoner County is at risk of lightning. Lightning strikes on individuals can cause serious injuries or death. The planning area's large recreational areas could mean visitors are in imminent danger during lightning events, especially at Fort Gibson Lake. People who do not have access to lightning warnings are at higher risk of being exposed to lightning. Lightning's economic impacts are primarily related to loss of power and business interruption; however, lightning can cause structural damage, disrupt electrical services, and spark fires.

Specific Impacts and Vulnerabilities

Local and county leaders, utility providers, and other stakeholders interviewed were unsure whether all of Wagoner's critical facilities had lightning rods. This holds true across the **entire planning area**. In addition, officials also noted that there were no electronic alert systems to update residents during lightning events. Lack of this form of direct emergency communication could affect response and

recovery efforts in the event of a lightning. Currently, the planning area does not have a continuity of operations plan between utilities and the County to continue delivering services in the event of a severe lightning event.

In **all communities**, residential structures away from the fire department can be more at risk of being lost from lightning sparked fires. This is also true of wooded areas surrounding the town, which is especially the case in **Porter** and **Tulahassee**. In addition, Tulahassee does not have the means to receive and manage a grant currently, as it has not conducted an audit. **No other participating community** reported specific vulnerabilities to lightning.

All participating **school districts** share similar vulnerabilities to lightning. The school districts should consider purchasing lightning warning systems to ensure adequate warning during outdoor athletic events. Additionally, the districts should implement severe weather policy, including cancellations for severe weather and lightening delays. No school district reported light damage in the past, though every district has experienced lightning delays.

Critical Facilities Impacted

The lifelines most at risk to lightning are the food, water, and shelter lifeline and the communications lifeline. As described in the other vulnerability subsections above, damage to infrastructure or utilities could disrupt the delivery of key services to residents. Although Wagoner County has installed more wireless towers over the last decade, it is possible that a lightning storm could affect or disable communication networks in part of the County.

The planning team could not determine whether critical facilities were equipped with lightning rods or other lightning detection or mitigation systems. Given that a lightning strike disabled a water plant in Wagoner County, it is recommended that the County determine which critical facilities need to install lightning rods or similar measures.

4.10.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-52 - Summary of Observations, Recommendations, and Actions

Observation	Recommendation	Action(s)
Lighting can cause injury and death.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Residents would benefit from an electronic alert system for hazardous materials incidents near their location.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Lightning strikes that lead to fires can occur throughout the county, making response a critical element.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.	4

Table 4-52 - Summary of Observations, Recommendations, and Actions

Some critical facilities and other critical buildings lack generators to support their functioning if power must be cut to limit the effects of lightning strike or a fire caused by lightning.	Equip critical facilities with generators, as appropriate.	6
Hazardous materials could result in significant damage to critical facilities and schools throughout the County.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies. Construct lightning rods or air terminals for protection of critical facilities and schools.	10
Extensive lightning damage can disrupt utilities' delivery services.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of a severe, widespread lightning.	13
Coweta, Okay, Porter, and Wagoner School Districts are located near transportation corridors.	Complete evaluations of schools for hazardous material protection.	14
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Responders and key leaders would benefit from having access to current GIS mapping capabilities to identify threats from hazardous materials events and to identify function needs populations and assets.	Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	19, 20
Lightning has damaged infrastructure in Wagoner County.	Design infrastructure to withstand future lightning events more effectively.	25
Lightning can impact outdoor areas before thunderstorms arrive.	Install lightning detection systems at school facilities and community parks.	27

4.11 Drought

4.11.1 Overall Significance

Droughts have a **moderate** overall significance on the planning area. The probability in the planning area is likely. Droughts affect the entire planning area and are not location-specific, like flooding, dams, or risks. The extent of droughts is weak, as the most severe event that Wagoner County has experienced was not the most extreme event according to a scientific measure. The planning area should ensure that all its water suppliers are employing the best practices and procedures in the event of an extreme drought.

4.11.2 Overview and Description

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

4.11.3 Probability and Previous Occurrences

The probability of drought in the planning area is **likely**. The NCEI database reported 22 months with drought entries from January 2010 through December 2020. The 22 entries seem to correspond with 4 separate periods of drought, which are indicated on the table below.

Table 4-53 - Historic Drought Impacts

Date	Narrative
July - November 2011	A high-pressure system impacted much of Eastern Oklahoma and the wider region. Hot, dry weather resulted in drought conditions throughout the region and included Wagoner County. Some small thunderstorms provided localized reprieve from drought conditions during the 4-month event.
July 2012 – April 2013	This ten-month period of drought posed severe conditions started with a combination of high, summer temperatures and uncommonly low levels of precipitation. Drought conditions impacted the majority of eastern Oklahoma. Wagoner FSA offered water hauling cost-sharing assistance to help alleviate conditions for local farmers and ranchers. ⁷³

⁷³ https://tulsaworld.com/communities/wagoner/news/article_198214d0-9a99-5f3e-804a-380df071b368.html

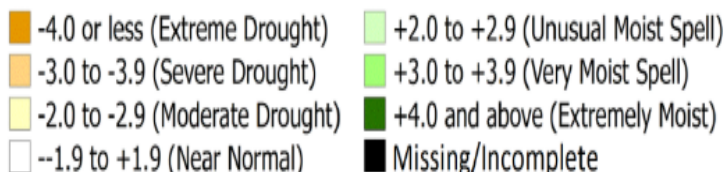
Table 4-53 - Historic Drought Impacts

December 2016 – April 2017	An extended period of low rainfall resulted in drought conditions in eastern Oklahoma. Severe drought conditions were reported in portions of Wagoner County as early as August of 2016. ⁷⁴ Emergency loans through the USDA were made available to farmers in response to this drought. ⁷⁵
January– February 2018	Drought conditions were alleviated in mid-February due to regional thunderstorms.

4.11.4 Location and Extent

The location of droughts is uniform across the planning area, as drought usually affects an area larger than the planning area. The extent of droughts was calculated by determining a drought's severity, using the Palmer Drought Severity Index (PDSI), and its duration. The extent of droughts in Northeast Oklahoma (including the planning area) could be severe or extreme. The PDSI depicts prolonged (months, years) abnormal dryness or wetness. Based on historical averages of the Palmer Drought Index, the drought conditions for Northeast Oklahoma normally ranges from -2.9 to +2.9.⁷⁶

Although Northeast Oklahoma has experienced drought, the extent of the drought tends to be less severe than the rest of the state. According to PDSI, the July – November 2011 drought reached a moderate level.



The 2012 - 2013 drought peaked at a severe level, which was the highest for the decade. It was also the longest recorded drought in the region at roughly 9 months in duration. The 2016 - 2017 drought barely reach a moderate level, while the 2018 drought did not reach a moderate level.⁷⁷

Expansive soils can result from drought conditions. Expansive soils are soils and soft rock that tend to swell or shrink due to changes in moisture content. They are often referred to as swelling clays because clay materials attract and absorb water. Dry clays will increase in volume as water is absorbed and will decrease as they dry. This expansion and contraction can lead to cracking and buckling of the infrastructure built on or in expansive soils, which can lead to significant costs from these damages.

4.11.5 Vulnerability and Risk Assessment

Vulnerability for the planning area was determined to be **low**. Assets in Wagoner County are not likely to be directly damaged or harmed by a drought. Agricultural uses are among the most vulnerable.

⁷⁴ https://www.enidnews.com/news/state/drought-returns-to-parts-of-oklahoma-after-its-wettest-year/article_0baa4e8b-e829-5781-bce4-da5393726dee.html

⁷⁵ https://tulsaworld.com/community/wagoner/news/emergency-loans-available-for-drought-relief-through-farm-service-agency/article_576b8c04-9118-541b-b394-f394dee607ca.html

⁷⁶ <https://www.drought.gov/drought/data-maps-tools/current-conditions> <https://www.ncdc.noaa.gov/temp-and-precip/drought/weekly-palmers/>

⁷⁷ <https://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/pdi/201001-202012> Planning team analysis.

General Impacts: People, Economy, and Built Environment

As of the time of this writing, water resources were sufficient to meet the needs of Wagoner's population. Any changes to this analysis will be updated in the next plan cycle. Drought rarely impacts people's health directly (heat will be discussed in the extreme heat section). The largest economic vulnerabilities tend to be agricultural. Severe drought may result in the widespread loss of crops and even livestock. Drought can also have secondary effects on people's health, the economy, and the environment by heightening risk of fires.

Drought also is a cascading hazard for other hazards, especially fire and expansive soils. As discussed in the fire hazard section, the Keetch-Bryam Drought index is an index specifically developed to measure the probability of fire due to drought conditions. This is discussed in more detail in the location and extent section for drought hazards. For information on how fire impacts people, the economy, and the built environment, see the fire vulnerabilities section. Expansive soils are soils that expand and contract depending on their moisture levels, with wetter conditions generally causing these soils to expand and drier conditions causing soils to shrink. The shrinkage from expansive soils caused by drought can damage structures and infrastructure.

Specific Impacts and Vulnerabilities

Although the **planning area** is known for its higher-than-average volumes of water in Oklahoma, the water distribution system may not be equipped to handle a prolonged, extreme drought. For water suppliers other than RWDs 6 and 7, there were no electronic alert systems to update residents during drought periods. Lack of this form of direct emergency communication could affect response and recovery efforts in the event of a drought. In addition, the planning area does not have a database of vulnerable populations. Currently, the planning area does not have a continuity of operations plan between utilities and the County to continue delivering services in the event of a severe drought.

In **District 3**, Rural Water Districts (RWDs 6 and 7) use a combination of informal and formal procedures to mitigate against water shortages from drought. Both districts have their own electronic communication systems via social media to curb individual usage during periods of prolonged drought. This strategy has worked effectively over the last decade, as citizens have reduced their water consumption enough to avert a crisis. In the event of an extreme drought that is not mitigated through reductions in individual consumption, the rural water districts have drought contingency plans that they can enact. In addition, **Okay's, Porter's, and Tullahassee's** water supply comes from Muskogee County. A lack of water supply during a drought could lead customers to not be able to fulfill basic functions, such as drinking, washing, and bathing. These jurisdictions should coordinate with Muskogee County to ensure that there is an established plan in the event of drought. In addition, **Tullahassee** does not have the means to receive and manage a grant currently, as it has not conducted an audit.

In addition, drought also gives rise to the secondary threat of wildfires for **all communities and all school districts**, especially on their jurisdictional boundaries. In **District 3**, mutual aid agreements between fire departments (such as Porter, Red Bird, and Tullahassee) may help aggregate the water needed to fight a fire, but the widespread impacts of a drought will strain community resources, nonetheless. In addition, RWD 6 has installed hydrants on rural roads to mitigate this secondary hazard.

No other jurisdiction, including the school districts in the planning area, reported a specific vulnerability to drought and none have had the need to mitigate drought impacts previously. This hazard will be re-evaluated in future plan updates.

Lifelines and Critical Facilities Impacted

The lifeline most at risk to drought is the food, water, and shelter lifeline. As described in the other vulnerability subsections above, a drought of a significant magnitude could disrupt the delivery of water to residents, especially those that do not have clear communication with their water provider. Expansive soils as the result of droughts could cause structural damage.

Given its more limited capacity, the facilities at Rural Water District 7 in **District 3** may be more at risk to the effects of a drought. In addition, **Okay's**, **Porter's**, and **Tallahassee's** water supply comes from a line outside Wagoner County. Other critical facilities in the planning area reported no specific vulnerability to drought—other than from expansive soils.

4.11.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-54 - Summary of Observations, Recommendations, and Actions		
Observation(s)	Recommendation	Action(s)
Citizens may need to change behaviors to respond to drought conditions.	Develop and fund drought preparedness, education, information, and awareness programs.	1
Residents would benefit from an electronic alert system to provide updates on drought conditions in their area.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Responders and key leaders would benefit from having access to current 911 and GIS mapping capabilities to identify function needs populations and assets that are especially at risk from drought.	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service. Develop and maintain a web-based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	4, 19, 20
Some critical facilities and other important buildings lack generators to support their functioning if their power supplies are disrupted due to an earthquake.	Equip critical facilities with generators, as appropriate.	6

Table 4-54 - Summary of Observations, Recommendations, and Actions

Expansive soils, as the result of drought conditions, can damage government or critical facilities, including school buildings.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies. Complete hazard evaluations of schools and retrofit or remodel buildings to make them more resistant to the effects of expansive soils.	10, 14
Water suppliers should ensure that they have a series of appropriate actions and redundancies to take in the event of a drought, especially since much of Wagoner District 3 purchases water from Muskogee County. Drought can impact agricultural businesses throughout the County.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of prolonged drought. Develop water/ drought management plan for Wagoner County. Implement activities identified in water/drought management plan. Connect Rural Water District 6 and 7 (Wagoner District 3) by an emergency water line.	13, 29, 35, 36
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Expansive soils, resulting from drought conditions, can damage infrastructure.	Design infrastructure to withstand expansive soils from drought events more effectively.	25

4.12 Earthquake

4.12.1 Overall Significance

The overall significance of earthquakes in the planning area is **low**. The probability was identified as to be unlikely. The combination of location and extent was determined to be weak. Accordingly, the vulnerability and risk assessment for the planning was determined to be low, with no specific areas that were particularly vulnerable to earthquakes, given the probability and extent ratings.

4.12.2 Overview and Description

An **earthquake** is a sudden release of energy that generates a seismic shift in the earth's crust. This section is not concerned with seismic tremors that do not cause any damage and are not a threat to human or natural life, which Federal agencies define as 3.0 Magnitude on the (see following section for more detail). Only seismic movements that exceed 3.0 on the Richter scale will be defined as earthquakes. Most severe earthquakes take place at tectonic fault lines. They can also occur along any of the multitudes of fault and fracture lines within the plates themselves.

4.12.3 Probability and Previous Occurrences

The planning team determined that the probability of an earthquake to be **occasional**. Based on an Oklahoma Geological Survey query from 2010 to 2020, Wagoner County's recent seismic history suggests about a 20% percent probability of occurrence in the next year.

Table 4-55 - Historic Drought Impacts	
Date	Narrative
April 2013	A 2.1 magnitude earthquake was recorded southeast of Porter and south of Redbird. No damages, deaths, or other destruction was reported by residents in these areas.
August 2013	A 2.0 magnitude earthquake was recorded near the location of the event in April 2013. No damages, deaths, or other destruction was reported by residents in these areas.

Typically, earthquakes are not felt until they reach a magnitude of 3.0 on the Richter Scale.⁷⁸ To the planning team's knowledge, no earthquakes with a magnitude of 3.0 or higher have occurred in the planning area in recorded history. The 5.6 Magnitude earthquake on November 5, 2011 near Prague, OK, and the 5.6 magnitude quake near Pawnee, OK on September 3, 2016 were likely felt in the planning area, but no damages were reported.

⁷⁸ The planning area may experience tremors from light to moderate earthquakes in surrounding communities. It is not likely an earthquake with a magnitude greater than 3.0 will be centered in the planning area.

4.12.4 Location and Extent

The combination of location and extent for earthquakes in the planning area was determined to be **weak**. For an earthquake's location, it is probable that an earthquake would impact the entire planning area. In fact, an earthquake with an epicenter in an entirely different state also could affect the entire planning area. Given an earthquake's possible geographic reach, the risk of this hazard is uniform over the entire planning area.

Two standard measures are used to classify an earthquake's extent: magnitude and intensity. In the past, these measures were sometimes referred to as the Richter Scale (magnitude) and the Modified Mercalli

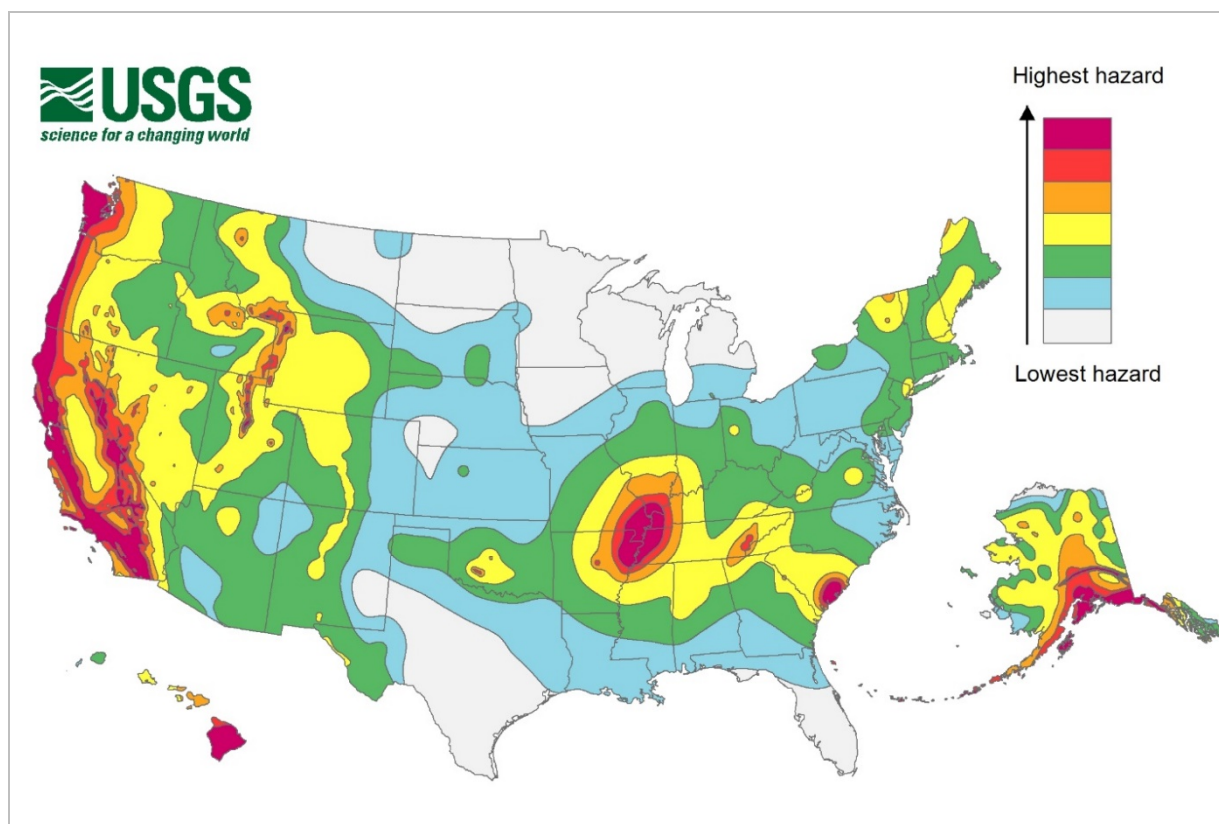
(intensity). As more seismograph stations were installed around the world, it became apparent that the method developed by Richter was strictly valid only for certain frequency and distance ranges. Because of the limitations of all three magnitude a new, more uniformly applicable extension of the magnitude scale, known as moment magnitude, was developed. For very large earthquakes, moment magnitude gives the most reliable estimate of earthquake size. Earthquakes are classified in categories ranging from minor to great, depending on their magnitude. The planning area can expect to experience an earthquake magnitude of up to 3.0.

From these and other measures, USGS has charted the probability of peak ground accelerations that have only a 2% probability of being exceeded in 50 years. The map below reflects the upper limits of earthquake severity compared to the rest of the county. According to USGS, Wagoner County is at a moderate risk for earthquakes compared to the rest of Oklahoma and lower risk compared to the rest of the country.⁷⁹

Figure 4-41 - Earthquake Hazard Level

Class	Magnitude
Great	8 or more
Major	7-7.9
Strong	6-6.9
Moderate	5-5.9
Light	4-4.9
Minor	3-3.9

⁷⁹ <https://www.usgs.gov/media/images/2018-long-term-national-seismic-hazard-map>



4.12.5 Vulnerability and Risk Assessment

The previous plan included earthquakes but did not assess the jurisdiction's vulnerability or impacts due to the low probability of impacts from events. Based on the planning team's assessment, the overall community vulnerability and risk assessment is **low**. The specific impacts and critical facilities sections were omitted because the planning team could not identify specific vulnerabilities from community members or any other sources.

General Impacts: People, Economy, and Built Environment

A severe earthquake, although unlikely, would threaten public safety, the economy, and the built environment across the planning area. Most earthquake injuries and fatalities occur within buildings from collapsing structures, flying glass, and falling objects. Populations considered most vulnerable are those located in/near the built environment, particularly near unreinforced masonry construction. People who do not know how to respond when an earthquake occurs remain vulnerable. All people in Wagoner County and participating jurisdictions should be made aware of what actions to take during an earthquake event. Any unsecured objects can move, break, or fall during an earthquake, creating potential safety hazards, including death, and property losses. Wagoner County should continue its all-hazards education program to make citizens in the planning area better prepared for future earthquakes.

Given the historic record, future earthquakes in Wagoner County and participating jurisdictions are not likely to directly affect the economy and the built environment. Even so, small business owners should make their businesses safer to be in during earthquakes and more resistant to earthquake damage by assessing its structure and contents and correcting any weaknesses.

Earthquakes of a larger magnitude could cause structural or infrastructure damage to critical facilities, public buildings, schools, and residences. Structures that are not built to Oklahoma's building codes are particularly vulnerable. In addition, a severe earthquake, especially one that destroys or damages infrastructure, could disrupt utilities' continuity of operations, which would threaten residents' ability to access basic material needs.

Specific Impacts and Vulnerabilities

Officials noted that there were no electronic alert systems to warn residents across **the planning area** of an earthquake in the planning area. Lack of this form of direct emergency communication could affect response and recovery efforts in the event of an earthquake. In addition, Wagoner emergency services should know the location of the needs populations and assets that are especially at risk from earthquakes. Currently, the planning area does not have a continuity of operations plan between utilities and the County to continue delivering services in the event of a severe earthquake. In addition, the County lacks an available shelter and Emergency Operations center large enough to meet the growing needs of Wagoner County.

No participating community, school district, or other area within the planning area was highlighted as being very and uniquely vulnerable to earthquakes.

Lifelines and Critical Facilities

The lifelines most at risk to earthquakes are the food, water, and shelter lifeline and the safety and security lifeline. As described in the other vulnerability subsections above, an earthquake of a significant magnitude could disrupt the delivery of key services to residents. In addition, an earthquake of this magnitude would cause structural damage. Damages to government or first responder structures or infrastructure would threaten the safety and security lifeline.

The public building in **Tulahassee** within Wagoner county was highlighted as being particularly vulnerable to the primary effect of earthquakes, as it needs significant repair. In the event of a power outage caused by an earthquake, other critical facilities, like fire stations, utilities, and government buildings without a generator **throughout the planning area** also would be threatened by a loss of power to function and deliver services.

4.12.6 Summary of Observations and Recommendations

This list was compiled from observations made in the vulnerability and risk assessment, with a focus on specific impacts and vulnerabilities and lifelines and critical facilities, if applicable.

Table 4-57 - Summary of Observations, Recommendations, and Actions

Observation(s)	Recommendation	Action(s)
Earthquakes can cause injury or death for citizens throughout the county.	Develop and fund hazard preparedness, education, information, and awareness programs.	1
Residents would benefit from an electronic alert system for earthquakes incidents in their area.	Develop an emergency management app to send notifications to citizens about various hazards throughout the County.	3
Responders and key leaders would benefit from having access to current 911 and GIS mapping capabilities to identify function needs populations and	Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service. Develop and maintain a web-	4, 19, 20

assets that are especially at risk from earthquakes.	based resource that identifies access and function needs populations and assets. Maintain and continue to develop County GIS capabilities.	
Some critical facilities and other important buildings lack generators to support their functioning if their power supplies are disrupted due to an earthquake.	Equip critical facilities with generators, as appropriate. Harden, strengthen, or bury electrical infrastructure when cost-effective.	6, 26
Earthquakes can damage government or critical facilities.	When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies.	10
Earthquakes can damage utilities and infrastructure throughout the County.	Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of an earthquake. Design infrastructure to withstand future earthquakes events more effectively.	13, 25
Coweta, Okay, Porter, and Wagoner School Districts should consider whether students are protected from earthquake events while they are on school grounds.	Complete hazard evaluations of schools and retrofit or remodel buildings to make them more resistant to potential earthquakes.	14
Some communities in the planning area need to develop the capabilities to receive grant funding.	Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.	17
Emergency management personnel and residents would benefit from having a County Emergency Operations Center/ potential shelter space to manage a response to a major earthquake. severe hazardous materials event.	Construct a multipurpose structure that can serve as a centralized County Emergency Operations Center/ shelter.	21
Low magnitude earthquakes can lead to long-term damages in homes. Even mild earthquakes can shake residences and commercial buildings, resulting in damages.	Implement and enforce at least the minimum statewide building codes across all communities. Encourage residents and businesses to build to IBHS fortified standards.	23, 24

Chapter 5 Mitigation Strategy

This chapter includes the hazard mitigation strategy, created by the planning team, officials, and stakeholders in Wagoner County. The strategy, the goals, and mitigation actions from the previous plan guide an inform this Chapter. Key components of the strategy and goal have not changed since the previous update. In addition, all mitigation actions from the previous plan were reassessed for this mitigation strategy update.

The mitigation strategy is made up of three components: mitigation goals, mitigation actions, and a plan for implementation. There is some overlap across these three components, but each generally represents a different aspect of the strategy. The goals section addresses the *why*, the actions section addresses the *what*, and the implementation section addresses the *how*. The comprehensive mitigation strategy, which is the final section in this chapter, builds on elements of all three components. This strategy will enable Wagoner County to best identify, prioritize, and implement actions to reduce risks across its planning area. For an itemized list of mitigation actions in the strategy, see Section 5.4 of this chapter.

Key Takeaways

Wagoner County devised a strategy to mitigate all hazards that were identified in the risk assessment. Most actions outlined in the 2009 Plan were ongoing as of this Plan update, and as such were reconsidered as action items.

Educational and hazard awareness programs, alert systems, and were some of the actions identified as the highest priority. Actions were prioritized based on their estimated impact to communities, valued against the cost of the action. This prioritization included quantitative and qualitative measures. These mitigation actions could impact all FEMA community lifelines (see introduction to Chapter 4), especially the food, water, shelter, lifeline and the safety and security lifeline, which is consistent with Wagoner County's mission statement and the mitigation planning process.

5.1 Mitigation Goals

The mitigation goals section is composed of a mission statement, community goals, and guiding principles subsections. The mission statement provides Wagoner County's overarching goal that governs the entire mitigation strategy. The community goals subsection outlines specific jurisdictional and school district goals. It also considers the goals from the 2009 Plan and the State of Oklahoma's 2019 Plan. From these two subsections, the planners developed a set of principles that will guide Wagoner's strategic approach to risk mitigation.

5.1.1 Mission Statement

We endeavor to create a disaster-resilient community and improve the safety and well-being of the citizens of Wagoner County. This mitigation strategy contributes to that goal by identifying and promoting actions that reduce deaths, injuries, property damage, and environmental losses from natural and technological hazards. Implementing a mitigating strategy as best as possible will allow Wagoner to build more livable, viable, and sustainable communities throughout its planning area.

5.1.2 Community Goals

Community goals are guided by the mission statement above. Wagoner's individual goals remain consistent with its 2009 Plan, which are reflected in the guiding principles section below.

Wagoner County and Municipalities' Jurisdictional Goals

Wagoner County, the City of Coweta, along with the Towns of Porter, Tullahassee, Red Bird, and Okay have joined together in this plan to achieve the goals of improved safety and well-being of people residing and working in incorporated and unincorporated areas of Wagoner. These goals seek to reduce the potential of deaths, injuries, property damage, environmental and other losses from natural and manmade hazards in a manner that creates disaster-resistant communities, enhances economic development opportunities, and produces a better quality of life, resulting in more livable, viable, and sustainable communities.

Wagoner County School District Goals

The School Districts of Coweta, Okay, Porter, and Wagoner collectively endeavor to improve the safety and well-being of the students, faculty, staff and patrons of the school districts by reducing the potential of deaths, injuries, property damage, interruption of educational activities and other losses from natural hazards, and to do this in a manner that creates disaster-resistant school system that advances the quality of education, resulting in a more viable and sustainable educational system.

Previous Plan Goals

The 2009 Plan included the same mission statement as this Plan (although the 2009 Plan called the mission statement the overall goal).¹ The 2021 Plan update also aligns with the goals established by the State of Oklahoma's Hazard mitigation plan.²

5.1.3 Guiding Principles

To meet Wagoner County's mission statement and goals, mitigation actions are guided by several principles. These principles align with the goals outlined with the 2009 Plan.³ These principles are the actionable components of the goals section, as they appear as a line-item in the mitigation strategy. Not every mitigation action will meet all these principles equally, but all mitigation actions will fulfill at least one of these principles:

- Protect public health and safety
- Minimize property loss/damage from natural hazard events
- Increase public awareness of risk from natural hazards
- Continue to assess and update hazard risk for local area
- Improve disaster prevention
- Improve forecasting of natural hazard events
- Limit or cease development in high-risk areas

¹ Wagoner 2009 plan, 1.1.4.

² State of Oklahoma 2019 plan, 4.1.

³ Wagoner 2009 plan, 4.1.

- Improve building construction and enforce current building codes to reduce the dangers of natural hazards
- Improve governmental and public response to natural hazard disasters
- Ensure that jurisdictions maintain NFIP participation, or that they become involved in the NFIP

5.2 Actions

A mitigation action is a policy, project, activity, or process taken to reduce or eliminate long-term risk to people, property, and the environment from hazards. Based on the principles section, the types of mitigation actions reviewed to reduce long-term vulnerability include:

- Preventative Activities
- Floodplain Management Regulatory/Current and Future Conditions
- Property Protection Activities
- Natural Resource Protection Activities
- Emergency Services Activities
- Structural Projects
- Public Information Activity

Specific observations and problem statements, resulting in the actions listed below, are included at the end of each hazard section in chapter 4, the Risk Assessment. Stakeholders reviewed actions to mitigate against the observations identified in the risk assessment.

This actions section is divided into two parts. The first part provides an overview of the status of actions listed in the 2009 Plan. Items that were not completed were added to the list of potential action items for the 2021 Plan update. This part also provides a list of actions identified by the planning team to reduce long-term vulnerability.

The second part discusses the benefit and cost review that was used to prioritize mitigation actions. The benefits and costs of an action, which included qualitative and quantitative measures, were measured together to generate a Benefit-Cost Review (BCR). The planning team prioritized actions based on the BCR.

5.2.1 2009 Hazard Mitigation Plan Action Review

A review of the 2009 mitigation actions was completed by the planning team. Actions were evaluated with the intent of carrying over incomplete actions. Incomplete actions were reviewed and prioritized in the prioritization section. Of the more than 40 actions listed in the 2009 Plan, a significant majority of actions are ongoing. All these actions have been incorporated or updated into the 2021 actions. The few actions that have been completed or not started, however, are as follows (Note, the 2009 Plan listed actions by hazard; e.g. "Hazard, Number 1," which is the way they appear below).

Completed:

- Flooding Hazard, Number 7. *Raise and strengthen bridges to allow school busses to cross.* The County engineer confirmed that bridges in the County now meet the standards for school bus crossing.
- Tornado Hazard, Number 1. *Develop an emergency operation plan for Tornadoes.* The County's recently updated Emergency Operations plan includes a plan for tornadoes. The County will continue to update the emergency operations plan as needed.

- Tornado, Number 4 and 10. *Install NOAA receivers in Public Facilities and Provide NOAA Weather Radios.* The county and several communities, including the City of Wagoner, distributed NOAA Weather Radios to public facilities and private citizens. The planning committee could have continued with this initiative but decided that investing in a mobile emergency application would be more suitable, given the relative cost and proven effectiveness of a mobile electronic application.
- Wildfire, Number 1. *Purchase Tanker Fire Trucks.* Since the adoption of the 2009 plan, Fire Departments have increased revenues from a County tax. All fire departments were reported to have at least one tanker truck.

Not Started:

- Tornado, Number 9. *Construct Safe Rooms in County Schools.* Officials reported that the participating school districts—Coweta, Okay, and Porter—do not have safe rooms constructed. This action was listed as a priority action in this plan.
- Severe Thunderstorm (includes, hail, lightning, and high winds), Number 11. *Determine why Lightning has Increased in Frequency and Intensity in Wagoner County.* Since the last update, officials in Wagoner County decided that this action would not be a good allocation of resources to reduce risk Wagoner County. Officials confirmed the decision to not pursue this action for the 2021 plan.
- Drought, Number 1. *Drill Additional Water Wells.* This action was not completed because the costs of doing so outweighed the expected benefits. Wagoner officials noted that the County currently has sufficient water to meet needs, even during a drought, and noted that other options would be pursued to access water during a drought. Given the increasing population in Wagoner County, however, officials decided to focus on developing a more robust water management and drought plan for the County to increase the accessible sources of water and water redundancies for citizens that currently have access to only one water provider.

5.2.2 Prioritization

The planning team identified possible actions to mitigate risk in Wagoner's communities. From these potential mitigation actions, the planning team and community stakeholders weighed benefits and costs of each action. This review allowed Wagoner to prioritize actions that mitigate risk across Wagoner's most vulnerable areas.

This section includes a commentary on the types of benefits and costs that were considered for each action. The benefits and costs of each action were weighted against each other to calculate a Benefit Cost Ratio (BCR) which is very similar to the review conducted in the 2009 Plan.⁴ The prioritization of actions was determined by the BCR.

Benefits

Mitigation actions were evaluated using these benefits criteria. Although this list does not include every specific benefit discussed during this process, this list of items covers all categories of benefits that were considered. Wagoner County emphasized benefits impacting public safety and property protection, which is consistent with the 2009 Plan.

⁴ 2009 Plan, Table 5.2.

Criteria	Description
Public Safety	How effective will the action be at protecting lives and preventing injuries?
Critical Infrastructure	Will the action safeguard assets that are vital for the community's functioning?
Other Public Property	How significant will the action be at eliminating or reducing damage to infrastructure and public open spaces? What is approximate dollar value of the expected benefit(s)?
Other Private Property	How significant will the action be at eliminating or reducing damage to private property? What is approximate dollar value of the expected benefit(s)?
Development	Does the action mitigate or prevent development in high-risk areas?
Environmental	Will the action include natural solutions or safeguard the environment?
Partnerships	Will the action provide an opportunity to foster new partnerships or strengthen existing ones?
NFIP	Will the action maintain, increase, or commence a jurisdiction's compliance with NFIP requirements? (For more information, see capability section)
Other Community Objectives	Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation?

Costs

An action's costs were also considered for the review. Some of the costs made it difficult to execute an action, while other costs made an action impossible to complete. Items that were considered impossible to complete were discarded at this stage. The list below provides an overview of all the general categories of costs considered.

Criteria	Description
Technical	Is the mitigation action technically feasible? Is it financially feasible? Is it a long-term solution?
Construction	Is the action financially feasible?
Political	Is there overall public support for the mitigation action? Is there the political will to support it?
Legal	Does the community have the authority to implement the action?
Environmental	What are the potential environmental impacts of the action? Will it comply with environmental regulations?
Social	Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of marginalized people?

Criteria	Description
Administrative	Does the community have the personnel and administrative capabilities to implement the action and maintain it or it require outside help? Will this strain community resources too excessively? Could the cost of maintaining partnerships necessary to complete this project be burdensome?

Benefit-Cost Review (BCR)

The benefits of each action are assigned a high, medium, or low rating. This is based on which benefits an action incorporates and to what degree it incorporates these benefits. Costs are also measured as high, medium, or low. Costs estimate the internal and external resources needed to implement an action, including the likelihood of obtaining those resources. External resources will be discussed in the implementation section. This analysis is very similar to the review conducted in the 2009 Plan.⁵

Benefits		Costs	
Classification	Description	Classification	Description
High	The action meets many priority benefit criteria and/or meets these criteria to a significant degree	Low	The action does not strain community resources and minimal external assistance is required
Medium	The action meets some priority benefit criteria and/or meets criteria to moderate degree	Medium	The action could strain community resources, making external assistance a significant component of the action
Low	The action meets almost no priority benefit criteria and/or meets criteria to a minimal degree	High	The action strains community resources significantly; external assistance, which is crucial, is not guaranteed

From these metrics, the planning team developed the BCR. The higher the BCR assigned to an action, the higher that action was prioritized. The prioritized actions can be found in section 4 of this chapter.

5.3 Implementation

Considering implementation as a separate component in the mitigation strategy allows communities to understand more clearly the resources needed to execute actions. This section identifies external funding sources, partnerships, and integration with other plans as crucial components in an action's implementation.

⁵ 2009 Plan, Table 5.2.

The external funding subsection explores the universe of mitigation funding available to the Wagoner county and provides guidance on which funding options can best meet the planning area's priority actions.

5.3.1 Internal Funding

Wagoner County and some of the participating jurisdictions in the County receive revenue through a combination of ad valorem and sales taxes, in addition to accessed fees related to specific services. Some of these activities can be used to cover local cost share for hazard mitigation projects with a federal or state cost share, while other activities cannot. The County's District Commissions collect property taxes, some of which could be used for mitigation activities. In addition to County funding sources, Coweta and the City of Wagoner collect sales taxes for a general fund. The sales tax revenue fund rural fire departments across the County. Portions of these funds could be used for mitigation activities. In addition, School Districts have used bonds for mitigation activities, like safe rooms.

Certain sales taxes, like gasoline, are allocated to state agencies, which assist with transportation and roadway improvements.⁶ These types of projects are considered internal funding sources, since they are invested into local projects; the county does not need to apply or compete for the award. Chapter 3 includes more details on specific funding mechanisms already in place.

5.3.2 External funding and external programs

This section compliments and aggregates the previous section by identifying external funding programs that would allow the participating jurisdictions to pursue funding sources to meeting their highest-priority mitigation goals. This section provides a general overview of major funding programs, highlights their differences, and identifies which programs would best meet the highest-priority mitigation actions in this plan. State agencies in Oklahoma play an important role in the administration and funding of these grants, but these programs are considered federal programs due to the federal government's role in developing the criteria for selection and participation in the selection process.

FEMA Funding Opportunities

FEMA administers programs that provide funding for eligible mitigation planning and projects that reduce disaster losses and protect life and property from future disaster damages. The three largest and most accessible programs are the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Program, and the Building Resilient Infrastructure and Communities Program (BRIC).

- HMGP assists in implementing long-term hazard mitigation planning and projects following a Presidential disaster declaration.
- BRIC provides funds for large scale, resilient infrastructure projects on an annual basis.
- FMA provides funds for planning and projects to reduce or eliminate the risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP) on an annual basis.

HMGP funding is generally 15% of the total amount of Federal assistance provided to a State, Territory, or federally recognized tribe following a major disaster declaration. FMA funding depends

⁶ <https://www.occedb.org/funding.html>

on the amount Congress appropriates each year the program. FEMA can set aside up to 6% of total estimated disaster expenditures associated with each presidential disaster declaration to fund BRIC. Individual homeowners and business owners may not apply directly to FEMA. Eligible local governments may apply on their behalf.

5.4 Hazard Mitigation Actions

The mitigation strategy combines the previous three sections into a cogent and comprehensive approach to mitigating risk in Wagoner County. Each action includes components from the goals, actions, and implementations sections to provide planners with a clear *why*, *what*, *how* template that can drive actions.

The principle(s) component from the goals section provides the most significant reason(s) (the *why*) motivating each action. The action type, priority (determined by the BCR), key lifeline addressed, and hazards addressed highlight the *what* behind each action.⁷ Although they are discussed in Chapter 4, FEMA lifelines are included in the strategy to give the reader an understand of the critical networks that would benefit the most from an action. The Jurisdictions Affected, funding sources, and timeframe components from the implementation section focus on *how* each action will be implemented.

Leads refer to the entities that will take the lead on these initiatives and is not intended to provide a comprehensive list of all entities that can be expected to participate. Some of the titles Jurisdictions Affected have been condensed and abbreviated:

For definitions of jurisdiction, community, and school district and the entities encapsulated within them, see Chapter 1. For a list of the leadership in each entity, see Chapter 6.

Action 1: Develop and fund hazard preparedness, education, information, and awareness programs.	
Principle(s)	Increase public awareness of risk from natural hazards, limit or cease development in high-risk areas, improve building construction
Action Type	Public Information Activity ⁸
Priority (BCR)	Highest
Key Lifelines Addressed	N/a
Hazard(s) Addressed	All
Jurisdictions Affected	All participating jurisdictions, fire departments
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, Local Fire Chiefs, All School District Superintendents
Funding Sources	Local Sources, FEMA HMGP/BRIC, Volunteer services, School District Bonds
Timeframe	2021-2026

Action 2: Evaluate, upgrade, and maintain community-wide outdoor omni-directional voice/siren warning systems.	
Principle(s)	Improve public response to natural hazards

⁷ The planning team has included the CRS activities if communities in Wagoner pursue inclusion into the CRS, when relevant.

⁸ May overlap with CRS activities 330 and 350

Action Type	Emergency Services Activity
Priority (BCR)	Highest
Key Lifelines Addressed	Communications lifeline
Hazard(s) Addressed	Flood, Tornado/High Wind, Dam/ Levee, ⁹ Fire, Hazardous Materials
Jurisdictions Affected	County, Red Bird, Tullahassee
Lead(s)	Wagoner County EM director, Mayors of Red Bird and Tullahassee
Funding Sources	Local Sources, State Economic Development, FEMA HMGP/BRIC
Timeframe	2021-2026

Action 3: Develop an emergency management app to send notifications to citizens about various hazards throughout the County.

Principle(s)	Improve governmental and public response to natural hazards
Action Type	Emergency Services Activity; Preventative Activity ¹⁰
Priority (BCR)	Highest
Key Lifelines Addressed	Communications lifeline
Hazard(s) Addressed	All
Jurisdictions Affected	County
Lead(s)	Wagoner County EM director
Funding Sources	Local Sources; HMGP
Timeframe	2021-2026

Action 4: Bring Wagoner County in alignment with the state-mandated Enhanced 911 (E911) emergency communication service.

Principle(s)	Improve governmental and public response to natural hazards
Action Type	Emergency Services Activity; Preventative Activity ¹¹
Priority (BCR)	Highest
Key Lifelines Addressed	Communications lifeline
Hazard(s) Addressed	All, especially Fire
Jurisdictions Affected	County
Lead(s)	Wagoner County EM director
Funding Sources	Local Sources
Timeframe	2021-2026

Action 5: Construct safe rooms that meet or exceed criteria of FEMA P361 at school facilities.

Principle(s)	Protect Public Health and Safety
Action Type	Structural Project Activity
Priority (BCR)	High
Key Lifelines Addressed	Safety and Security lifeline
Hazard(s) Addressed	Tornado/ High wind
Jurisdictions Affected	All participating schools
Lead(s)	All School District Superintendents

⁹ Not every jurisdiction is affected by a dam/ levee incident. See chapter 4.

¹⁰ May overlap with CRS activities 410 and 440

¹¹ May overlap with CRS activities 410 and 440

Funding Sources	Local Sources, FEMA HMGP/BRIC, State Funding
Timeframe	2021-2026

Action 6: Provide generators or other forms of electrical backup for critical facilities and schools.	
Principle(s)	Protect Public Health and Safety
Action Type	Emergency Services Activity
Priority (BCR)	High
Key Lifelines Addressed	Safety and Security lifeline; Food, Water, and Shelter lifeline; Health and Medical lifeline
Hazard(s) Addressed	All
Jurisdictions Affected	All participating jurisdictions
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, All School District Superintendents
Funding Sources	Local Sources, FEMA HMGP/BRIC, State Funding
Timeframe	2021-2026

Action 7: Improve National Flood Insurance Program (NFIP) compliance	
Principle(s)	Ensure that jurisdictions improve NFIP participation; Minimize property loss/damage from natural hazard events
Action Type	Floodplain Management Regulation ¹²
Priority (BCR)	High
Key Lifelines Addressed	Safety and Security lifeline
Hazard(s) Addressed	Flooding, Dam/ Levee ¹³
Jurisdictions Affected	County, Redbird, Coweta, Okay, Tullahassee
Lead(s)	Wagoner County EM director, Wagoner County Floodplain Administrator, Mayors of Redbird, Coweta, Okay, and Tullahassee
Funding Sources	Local funding
Timeframe	2021-Ongoing

Action 8: Become a member of the National Flood Insurance Program (NFIP).	
Principle(s)	Ensure that jurisdictions improve NFIP participation; Minimize property loss/damage from natural hazard events
Action Type	Floodplain Management Regulation ¹⁴
Priority (BCR)	High
Key Lifelines Addressed	Safety and Security lifeline
Hazard(s) Addressed	Flooding
Jurisdictions Affected	Porter
Lead(s)	Wagoner County Floodplain Administrator, Mayor of Porter
Funding Sources	Local funding
Timeframe	2021-Ongoing

¹² CRS prerequisite¹³ Not every jurisdiction is affected by a dam/ levee incident. See chapter 4.¹⁴ CRS prerequisite

Action 9: Implement a safe room program.

Principle(s)	Minimize property loss/ damage from natural hazard events; Protect Public Health and Safety
Action Type	Structural Project Activity
Priority (BCR)	High
Key Lifelines Addressed	Food, Water, and Shelter lifeline
Hazard(s) Addressed	Tornado/ High Wind
Jurisdictions Affected	County, Coweta, Okay, Porter, Red Bird, Tullahassee
Lead(s)	Wagoner County EM director, Mayors of Coweta, Okay, Porter, Red Bird, and Tullahassee
Funding Sources	Local Sources, State Sources, FEMA HMGP/BRIC
Timeframe	2021-Ongoing

Action 10: When Government or critical facilities are damaged, rebuild with disaster resistant construction techniques and technologies, which can include building codes that exceed the State's requirements.

Principle(s)	Minimize property loss/damage from natural hazard events; Improve building construction
Action Type	Preventative Activity ¹⁵
Priority (BCR)	High
Key Lifelines Addressed	Safety and Security lifeline; Food, Water, and Shelter lifeline
Hazard(s) Addressed	Severe Winter Storm, Tornado/High Wind, Fire, Hail, Earthquake
Jurisdictions Affected	All participating jurisdictions
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, All School District Superintendents
Funding Sources	Local Sources, FEMA 406 Funding
Timeframe	2021-Ongoing

Action 11: Conduct a flood risk analysis of the Verdigris and the Neosho Rivers.

Principle(s)	Continue to assess and update hazard risk for local area
Action Type	Floodplain Management Regulation ¹⁶
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline; Safety and Security lifeline; Transportation lifeline
Hazard(s) Addressed	Flood, Dam/ Levee
Jurisdictions Affected	County
Lead	Wagoner County EM director
Funding Sources	Local Sources, County Sources, FEMA HMGP/BRIC, USACE
Timeframe	2021-2026

Action 12: Conduct a master drainage plan study of Adams Creek, Covington Creek, Renaissance Neighborhood, and other high-risk flood areas in Wagoner County.¹⁵ May overlap with CRS activity 530¹⁶ May overlap with CRS activity 510

Principle(s)	Continue to assess and update hazard risk for local area
Action Type	Floodplain Management Regulation ¹⁷
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline; Safety and Security lifeline; Transportation lifeline
Hazard(s) Addressed	Flood, Dam/ Levee
Jurisdictions Affected	County
Lead	Wagoner County EM director
Funding Sources	Local Sources, County Sources, FEMA HMGP/BRIC
Timeframe	2021-2026

Action 13: Develop Continuity of Operations Plans with utilities and the County to mitigate the effects of all hazards.

Principle(s)	Improve governmental and public response to hazards
Action Type	Preventative Activity ¹⁸
Priority (BCR)	Medium
Key Lifelines Addressed	Safety and Security lifeline; Food, Water, Shelter lifeline; Energy Lifeline
Hazard(s) Addressed	All
Jurisdictions Affected	County, Electric Utility Providers and Rural Water Districts
Lead(s)	Wagoner County EM director, Boards of utility providers and Rural Water Districts
Funding Sources	Local Sources, EODD/INCOG
Timeframe	2021-Ongoing

Action 14: Complete hazard evaluations of schools and retrofit or remodel buildings to make them more disaster resistant.

Principle(s)	Minimize property loss/damage from natural hazard events; Protect Public Health and Safety
Action Type	Preventative Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, Shelter lifeline
Hazard(s) Addressed	All
Jurisdictions Affected	All participating school districts
Lead(s)	Wagoner County EM director, All School District Superintendents
Funding Sources	Local Sources, FEMA HMGP/BRIC
Timeframe	2021-Ongoing

Action 15: Provide and maintain defensible space around structures vulnerable to wildfires, especially within communities.

Principle(s)	Improve disaster prevention; Continue to assess and update hazard risk for local area
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¹⁷ May overlap with CRS activity 510

¹⁸ May overlap with CRS activities 330 and 350

Action Type	Natural Resources Protection Activity; Property Protection Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline
Hazard(s) Addressed	Fire
Jurisdictions Affected	County, Porter, Red Bird, Tullahassee, Coweta School District, Okay School District
Lead(s)	Wagoner County EM director, Mayors of Red Bird and Tullahassee, Coweta and Okay School District Superintendents
Funding Sources	Local sources, FEMA FMAG (following a fire declaration)
Timeframe	2021-2026

Action 16: Mitigate sections of road, including bridges, which are subject to repeated flooding or are at heightened risk of inundation.

Principle(s)	Minimize property loss/damage from natural hazard events
Action Type	Preventative Activity ¹⁹
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline; Transportation lifeline
Hazard(s) Addressed	Flooding, Dam/ Levee
Jurisdictions Affected	County
Lead(s)	Wagoner County EM director, Wagoner County Engineer
Funding Sources	Local Sources, FEMA HMGP/FMA/BRIC, HUD CDBG
Timeframe	2021-Ongoing

Action 17: Develop resources and/ or train staff to manage and implement funding for mitigation activities, on an as-needed basis.

Principle(s)	Improve disaster prevention
Action Type	Preventative Activity; Floodplain Management Regulation ²⁰
Priority (BCR)	Medium
Key Lifelines Addressed	All lifelines
Hazard(s) Addressed	All
Jurisdictions Affected	Red Bird, Tullahassee
Lead(s)	Wagoner County EM director
Funding Sources	Local Sources, County Sources
Timeframe	2021-Ongoing

Action 18: Study water ways to mitigate erosion on County Roads and implement the results of the study.

Principle(s)	Improve governmental and public response to natural hazards
Action Type	Emergency Services Activity; Preventative Activity ²¹
Priority (BCR)	Medium
Key Lifelines Addressed	Communications lifeline

¹⁹ May overlap with CRS activity 530

²⁰ May overlap with CRS activity 510

²¹ May overlap with CRS activities 410 and 440

Hazard(s) Addressed	Flooding, Dam/ Levee
Jurisdictions Affected	County
Lead(s)	Wagoner County EM director, Wagoner County Floodplain Manager
Funding Sources	Local Sources
Timeframe	2021-2026

Action 19: Develop and maintain a web-based resource that identifies access and function needs populations and assets.

Principle(s)	Improve governmental and public response to natural hazards
Action Type	Emergency Services Activity; Preventative Activity ²²
Priority (BCR)	Medium
Key Lifelines Addressed	Communications lifeline
Hazard(s) Addressed	All
Jurisdictions Affected	County
Lead	Wagoner County EM director
Funding Sources	Local Sources
Timeframe	2021-Ongoing

Action 20: Maintain and continue to develop County GIS capabilities.

Principle(s)	Improve governmental and public response to natural hazards
Action Type	Emergency Services Activity; Preventative Activity ²³
Priority (BCR)	Medium
Key Lifelines Addressed	Communications lifeline
Hazard(s) Addressed	All
Jurisdictions Affected	County
Lead	Wagoner County EM director
Funding Sources	Local Sources
Timeframe	2021-Ongoing

Action 21: Construct a multipurpose structure that can serve as a centralized County Emergency Operations Center that meets or exceeds criteria of FEMA P361.

Principle(s)	Protect public health and safety
Action Type	Structural Project Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Safety and Security lifeline; Food, Water, and Shelter lifeline
Hazard(s) Addressed	Severe Winter Storm, Tornado/ High Wind, Fire, Hail, Earthquake, Hazardous Material (Biohazard)
Jurisdictions Affected	County
Lead	Wagoner County EM director
Funding Sources	Local Sources, FEMA HMGP/BRIC, HUD CDBG
Timeframe	2021-Ongoing

²² May overlap with CRS activities 410 and 440

²³ May overlap with CRS activities 410 and 440

Action 22: Elevate, relocate, reconstruct, or acquire and demolish flood-prone properties.

Principle(s)	Limit or cease development in high-risk areas
Action Type	Floodplain Management Regulation ²⁴
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline
Hazard(s) Addressed	Flooding, Dam/ Levee
Jurisdictions Affected	County, Coweta
Lead(s)	Wagoner County floodplain manager, Coweta City Manager
Funding Sources	Local Sources, FEMA HMGP/FMA/BRIC
Timeframe	2021-Ongoing

Action 23: Implement and enforce at least the minimum statewide building codes across all communities.

Principle(s)	Improve disaster prevention
Action Type	Property Protection Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline
Hazard(s) Addressed	Tornado/ High Wind, Fire, Hail, Earthquake
Jurisdictions Affected	County, Okay, Porter, Red Bird, Tullahassee
Lead(s)	Wagoner County EM director, Mayors Okay, Porter, Red Bird, and Tullahassee
Funding Sources	Local Sources, FEMA HMGP/FMA/BRIC
Timeframe	2021-Ongoing

Action 24: Encourage residents and businesses to build to IBHS fortified standards through trainings.

Principle(s)	Improve disaster prevention
Action Type	Property Protection Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline
Hazard(s) Addressed	Tornado/ High Wind, Hail, Earthquake
Jurisdictions affected	All participating jurisdictions
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, All School District Superintendents
Funding Sources	Local Sources, FEMA HMGP/FMA/BRIC
Timeframe	2021-Ongoing

Action 25: Design municipal infrastructure, including roads, water utilities, and electrical utilities, to withstand future hazards more effectively. This design can include building codes that exceed the State's requirements.²⁴ May overlap with CRS 520 and/or 530

Principle(s)	Improve building construction to reduce the dangers of natural hazards
Action Type	Structural Project Activity ²⁵
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline; Transportation lifeline
Hazard(s) Addressed	All
Jurisdictions Affected	All participating jurisdictions
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, All School District Superintendents
Funding Sources	Local Sources, FEMA FMA/BRIC, FEMA 406 Funding, HUD CDBG
Timeframe	2021-Ongoing

Action 26: Harden, strengthen, or bury electrical infrastructure when cost-effective.

Principle(s)	Minimize property loss/ damage from natural hazard events
Action Type	Structural Project Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline; Communications lifeline; Hazardous Materials lifeline
Hazard(s) Addressed	Severe Winter Storm, Tornado/ High Wind, Earthquake
Jurisdictions Affected	County, Utilities
Lead(s)	Wagoner County EM director, Utilities' Boards
Funding Sources	Local Sources, FEMA HMGP/BRIC, HUD CDBG
Timeframe	2021-2026

Action 27: Install lightning detection systems at school facilities and community parks.

Principle(s)	Minimize property loss/ damage from natural hazard events
Action Type	Structural Project Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline; Communications lifeline; Hazardous Materials lifeline
Hazard(s) Addressed	Lightning
Jurisdictions Affected	All participating jurisdictions
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, All School District Superintendents
Funding Sources	Local Sources, FEMA HMGP/BRIC, HUD CDBG
Timeframe	2021-2026

Action 28: Construct lightning rods or air terminals for protection of critical facilities and schools.

Principle(s)	Minimize property loss/ damage from natural hazard events
Action Type	Structural Project Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline; Communications lifeline; Hazardous Materials lifeline

²⁵ May overlap with CRS activity 530

Hazard(s) Addressed	Lightning
Jurisdictions Affected	All participating jurisdictions
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, All School District Superintendents
Funding Sources	Local Sources, FEMA HMGP/BRIC, HUD CDBG
Timeframe	2021-2031

Action 29: Connect Rural Water District 6 and 7 by an emergency water line.

Principle(s)	Improve governmental and public response to hazards
Action Type	Structural Project Activity
Priority (BCR)	Medium
Key Lifelines Addressed	Food, Water, and Shelter lifeline
Hazard(s) Addressed	Severe Winter Storm, Drought, Fire
Jurisdictions Affected	County, RWD 6 & 7
Lead(s)	Wagoner County EM director, RWD 6 and 7 supervisors
Funding Sources	Local Sources, FEMA HMGP/BRIC
Timeframe	2021-2031

Action 30: Enhance debris, snow, and ice removal capabilities.

Principle(s)	Minimize property loss/damage from natural hazard events
Action Type	Emergency Services Activity
Priority (BCR)	Moderate
Key Lifelines Addressed	Safety and Security lifeline; Transportation lifeline
Hazard(s) Addressed	Severe Winter Storm
Jurisdictions Affected	County, Okay, Porter, Red Bird, Tullahassee
Lead(s)	Wagoner County EM director, Mayors of Okay, Porter, Red Bird, and Tullahassee
Funding Sources	Local Sources, REAP
Timeframe	2021-2026

Action 31: Implement tree-trimming capabilities around electrical lines.

Principle(s)	Minimize property loss/damage from natural hazard events
Action Type	Emergency Services Activity
Priority (BCR)	Moderate
Key Lifelines Addressed	Safety and Security lifeline; Energy lifeline
Hazard(s) Addressed	Severe Winter Storm, Tornado/ High Wind
Jurisdictions Affected	Okay, Porter, Red Bird, Tullahassee
Lead(s)	Wagoner County EM director, Mayors of Okay, Porter, Red Bird, and Tullahassee
Funding Sources	Local Sources, REAP
Timeframe	2021-2026

Action 32: Join FEMA's Community Rating System (CRS).

Principle(s)	Improve disaster prevention
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Action Type	Floodplain Management Regulation ²⁶
Priority (BCR)	Low
Key Lifelines Addressed	Food, Water, and Shelter lifeline
Hazard(s) Addressed	Flood, Dam/ Levee
Jurisdictions Affected	Coweta
Lead(s)	Coweta City Manager
Funding Sources	Local Sources, FEMA HMGP/BRIC
Timeframe	2021-2031

Action 33: Construct protected parking for first responder/ government vehicles.	
Principle(s)	Minimize property loss/ damage from natural hazard events
Action Type	Structural Activity; Property Protection Activity
Priority (BCR)	Low
Key Lifelines Addressed	Safety and Security lifeline
Hazard(s) Addressed	Tornado/ High Wind, Hail
Jurisdictions Affected	County
Lead	Wagoner County EM director
Funding Sources	Local sources, EODD/INCOG
Timeframe	2021-Ongoing

Action 34: Maintain natural and beneficial functions of streams and floodplains.	
Principle(s)	Protect public health and safety
Action Type	Natural Resource Protection Activity ²⁷
Priority (BCR)	Low
Key Lifelines Addressed	Hazardous Material lifeline
Hazard(s) Addressed	Flooding, Dam/ Levee
Jurisdictions Affected	County, Coweta, Okay
Lead(s)	Wagoner County EM director, Mayors of Coweta and Okay
Funding Sources	Local Sources, FEMA FMA/BRIC, EPA grants
Timeframe	2021-Ongoing

Action 35: Develop water/ drought management plan for Wagoner County.	
Principle(s)	Protect public health and safety
Action Type	Preventative Activity
Priority (BCR)	Low
Key Lifelines Addressed	Safety and Security lifeline; Food, Water, Shelter Lifeline
Hazard(s) Addressed	Drought
Jurisdictions Affected	County, all participating communities
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions
Funding Sources	Local Sources, OWRB Funding
Timeframe	2021-Ongoing

²⁶ CRS prerequisite²⁷ May overlap with CRS activity 450

Action 36: Implement activities identified in water/drought management plan.	
Principle(s)	Protect public health and safety
Action Type	Preventative Activity
Priority (BCR)	Low
Key Lifelines Addressed	Safety and Security lifeline; Food, Water, Shelter Lifeline
Hazard(s) Addressed	Drought
Jurisdictions Affected	County, all participating communities
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions
Funding Sources	Local Sources, OWRB Funding
Timeframe	2024-Ongoing

Action 37: Install protective film on windows in all County and local government buildings.	
Principle(s)	Minimize property loss/damage from natural hazard events
Action Type	Property Protection Activity
Priority (BCR)	Low
Key Lifelines Addressed	Safety and Security Lifeline
Hazard(s) Addressed	Hail
Jurisdictions Affected	County, all participating communities
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions
Funding Sources	Local Sources, FEMA FMA/BRIC, EPA grants
Timeframe	2021-Ongoing

Action 38: Implement FireWise program.	
Principle(s)	Increase public awareness of risk from natural hazards
Action Type	Public Information Activity
Priority (BCR)	Low
Key Lifelines Addressed	Hazardous Material lifeline
Hazard(s) Addressed	Fire
Jurisdictions Affected	All participating jurisdictions
Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, All School District Superintendents
Funding Sources	Local Sources, FEMA FMA/BRIC, EPA grants
Timeframe	2021-Ongoing

Action 39: Develop Substantial Damage Plan.	
Principle(s)	Minimize property loss/damage from natural hazard events
Action Type	Property Protection Activity ²⁸
Priority (BCR)	Low
Key Lifelines Addressed	Hazardous Material lifeline
Hazard(s) Addressed	Flooding
Jurisdictions Affected	All participating jurisdictions

²⁸ May overlap with CRS Activity 510.

Lead(s)	Wagoner County EM director, Mayors of all participating jurisdictions, All School District Superintendents
Funding Sources	Local Sources, FEMA FMA/BRIC, EPA grants
Timeframe	2021-Ongoing

Targeted Projects

Although Wagoner County intends to execute all the actions listed in the previous section, five actions have been identified as targeted projects due to a combination of their importance, complexity, innovative approach, and expected cost. For this reason, each targeted project receives a high-level road map that outlines the project, its importance to the planning area, and a strategy to execute the project. The strategic elements focus on the funding component of each project. The five projects selected as targeted projects include:

Project 1: Multipurpose Emergency Operations Command Center with mitigation capabilities

Action Number: 21

Project Type: Structural Project

Advance Assistance/ Community and Capacity Building Recommended: Yes

Project Description:

County officials expressed a strong interest to construct a multipurpose structure that would serve as an emergency operations center and have other mitigation and response capabilities. This building would add redundancies to crucial elements in Wagoner County's response chain and add new capabilities to respond to emerging threats. Wagoner Officials would like the proposed structure to include these elements, at least:

- Emergency operations center- *redundancy*
- Storm shelter- *redundancy*
- Recovery shelter- *new*
- Biohazard shelter or incubation area- *new*

Wagoner County's emergency operations center plays a pivotal role in coordinating and directing emergency response units in the County. The current emergency operations center is equipped with specific technologies and communications capabilities, which enable the County Emergency manager to conduct coordination and directing activities, but also make it difficult to relocate the emergency operations center if a hazard makes it unusable. Given the importance of the center to the County's response efforts, it would be best to construct another operations center for redundancy. A storm shelter located at the facility reduces significantly reduces the risk of working onsite during tornadoes or other high wind events, since personnel have a location to shelter.

Although County residents have access to recovery shelters offered by non-governmental organizations, the County does not operate a shelter. The County would benefit from having an additional shelter for residents in the event of an extreme disaster or a disaster during a time where additional residential limitations on shelters may be applied, like Covid-19. Covid-19 caused Wagoner County officials to consider the County's limitations to respond to a biohazard event. The proposed building would have the capability to serve as an area to isolate or inoculate residents who came in contact with a hazardous material.

This project is currently at the most preliminary stage and will require a full scoping process in addition to construction. We recommend that Wagoner County fund the project in two separate

phases: scoping and construction. The scoping phase includes all activities that are required before constructing the proposed structure.

The 75% scoping phase can be funded by FEMA's Building Resilient Infrastructure and Communities (BRIC) program or the Hazard Mitigation Grant Program (HMGP). BRIC offers a sub-program called Community and Capacity Building (C&CB), which would allow Wagoner County to execute the scoping activities required in this phase. Based on historical occurrence and FEMA's public statements, applications for the BRIC program open sometime in September and close in January of the following year. We recommend that Wagoner County aim to submit this project for C&CB funding of 2021-2022 fiscal year. Alternatively, Wagoner County could develop the scoping needed for this project through HMGP's Advance Assistance program. Unlike BRIC, HMGP does not operate on an annual funding cycle and instead is allocated and awarded to Oklahoma following a presidential disaster declaration in the state. We recommend that Wagoner County begin in the 2021 to submit to both funding sources as soon as possible in 2022, which will maximize the County's chances of securing funding.

In order to secure funding for the construction phase of this project, Wagoner County would be best suited to pursue BRIC funding, given its applicability to this project and the potential award size. All BRIC funding operates on a September – January timeframe, so the County will need to determine when to pursue funding, depending on the execution of the scoping phase. Other possible options for funding can be pursued, if the County deems them to be more suitable.

In addition, the County may use other federal funding sources, such as HUD or EPA grants, to supplement the cost of some of this work, if it is determined to be possible.

Project 2 Develop an emergency management app to send notifications to citizens about various hazards throughout the County

Action Number: 3

Project Type: Emergency Services Activity

Estimated Cost: TBD

Advance Assistance Recommended: Not eligible

Given the advancements in technology and the widespread uptake of smartphones in Wagoner County, local officials were most interested in developing an electronic emergency application that would allow them to share electronic updates with residents about hazards in Wagoner County. Additionally, the success of social media and other online communication platforms to interact with residents in the County caused officials to believe that an electronic application system would be superior to other types of warning systems. Subscription to the application would be free and voluntary for citizens in the County. Officials would have the option to send custom or template messages at any time.

This application has two main cost considerations: development and maintenance. Determining these potential costs with any certainty are outside the scope of this plan, as they would require a bid from a contractor. The success of other Counties in Oklahoma, like Tulsa County, with similar applications, however, suggests that Wagoner County could fund the development and maintenance of this application, especially with funding from external sources,

The County is eligible for Emergency Management Performance Grant (EMPG) money to fund this project, but the optimal solution is to pursue funding under the Hazard Mitigation Grant Program (HMGP), under the five-percent initiative. This initiative allows five percent of funding to be allocated for unique or inventive mitigation projects, like this one. FEMA allocates HMGP funding to ODEMHS following a presidential disaster declaration in Oklahoma and awards the funds to ODEMHS sometime thereafter. To secure the highest possible likelihood of receiving funding, Wagoner County should prepare a request for proposal to develop this application before ODEMHS receives funding. Advance preparation for this item will allow Wagoner County to apply for funding under the five-percent initiative once ODEMHS receives HMGP funding from FEMA, shortening the time and increasing the likelihood of implementation.

The County will take the lead on procurement, since this will be a County wide emergency notification application, but it will be helpful to have representatives from all the participating jurisdictions in this plan to take part or be made aware of the procurement process.

Cost Share Considerations:

- Local Sources
- FEMA HMGP
- EMPG

Project 3 Anchor Road Reconstruction Project

Action Number: 16

Project Type: Localized Flood Risk Reduction Projects

Estimated Cost: \$7,500,000

Project Scoping: Yes. The Project has a USDOT discounted benefit cost ratio of 1.98 but needs a FEMA BCA to be prepared.

The Project involves a partnership between the Muscogee Nation and Wagoner County in Oklahoma. The Nation is funding the Project Design and NEPA assessment. Engineering design is completed from Highway 69 to the Railroad and will be underway in late 2021 for the remaining 1.1 miles to Highway 16.

Oklahoma's Rural Functional Class Maps, which use the 1993 National Functional Classification System, designate the Project as a Rural Major Collector Road. The Project connects the towns of Porter, Tullahassee, and Okay as the only collector road between the Verdigris River and the Arkansas River.

Despite its proximity to both the Verdigris River and Arkansas River, the majority of Anchor Road did not flood in 2019. The only exception was shallow flooding above the Highway 16 west ditch at the Anchor Road and OK 16 intersection for most of the several weeks of flooding. This enabled the road to be used for access to Okay and to the Lake Fort Gibson Dam. During that period, flooding of OK 80 prevented access to the east side of Lake Fort Gibson Dam. For most of the flooding's duration, the Dam had to be accessed along the Project roadway because the OK 16 bridge and roadway was flooded along the Arkansas River south of the intersection of OK 16 and Anchor Road. This lasted

until the week that the Arkansas River was so high that it backed up to the intersection and flooded OK 16 north of the intersection.

The Project increases resiliency by providing a stable transportation route for times when surrounding highways are closed due to flooding.

Project 4 Renaissance Neighborhood Flooding, Phase 1

Action Number: 12

Project Type: Localized Flood Risk Reduction Projects

Estimated Cost: \$120,000

Project Scoping Recommended: Yes. The Project needs to be studied to develop hydrology & hydraulics, analyze alternative solutions, prepare a benefit-cost analysis, and make a recommendation.

Project Description: The Project will involve a partnership between Wagoner County and the City of Broken Arrow to solve flooding along 209th E. Ave. near 35th St. South. The Renaissance Neighborhood (**Flooding Area 10**) has a creek channel that drains the Eastborough, Sunrise Estates, Swan Lake, Eagle Ridge, and portions of the Glen Eagle subdivisions. The drainage basin to this channel is approximately 300 acres and is a tributary to Spunky Creek. Upstream from the channel, stormwater is carried by a shallow ditch and the 209th E. Ave. right of way, which can reach a water depth of several feet. This flooding occurs several times a year.

A number of homes on both sides of 209 E. Ave. flood in a 50% to 20% annual chance storm. Phase 1 will provide a drainage study of this tributary to Spunky Creek, including updated hydrology and hydraulics and an alternative analysis. Finished floor elevations will be surveyed to prepare a FEMA benefit-cost analysis. The recommendation will form the basis of the BRIC/HMGP project application for Phase 2.

The County can apply for BRIC C&CB or HMGP Advance Assistance funding for this project (see project 3 for more details on both funding sources). We recommend that Wagoner County pursue BRIC funding during the 2021-2022 funding cycle or HMGP Advance Assistance, as it becomes available.

Project 5: Coweta Public School Safe Room

Action Number: 6

Project Type: Structural Project Activity

Estimated Cost: TBD

Project Scoping Recommended: Yes. The School District is currently planning for development within the district. In preparation for future FEMA BRIC and HMGP funding opportunities, the District could apply for project scoping if they are unable to pay for the design and benefit-cost analysis.

Project Description: Coweta Public School District is growing and constructing new school facilities. The district intends to build safe rooms on-site to protect students, teachers, staff, and visitors from wind speeds of 250mph. FEMA will pay for safe rooms that meet or exceed the criteria of FEMA

Publication 361, April 2021. The District can apply for BRIC C&CB or HMGP Advance Assistance funding for this project (see project 3 for more details on both funding sources). We recommend that the school District pursue BRIC funding during the 2021-2022 funding cycle or HMGP Advance Assistance, as it becomes available. If scoping funds are not needed, the District can apply for implementation of the project and submit costs incurred for design and project scoping as pre-award costs in a future BRIC application cycle.

Chapter 6 Plan Maintenance and Adoption

This chapter includes a discussion of the plan maintenance process and documentation of the adoption of the plan by the Wagoner County Commission and participating communities' councils and public-schools' boards. The Wagoner County Hazard Mitigation Planning Committee will continue to meet to evaluate progress and recommend changes to the plan. Wagoner County Emergency Management will ensure that a regular review and update of the Multi-Hazard Mitigation Plan occurs. The Plan will be updated and resubmitted to the State and FEMA for approval prior to the 5-year approval period expiration, as per FEMA requirements. No priorities for any of the participating jurisdictions have changed since the previous plan's approval (see Chapters 1 and 5 for goal statements).

6.1 Monitoring the Plan

Monitoring of the 2021 Plan will involve county, local, and school representatives tracking the mitigation actions and plan integration that their individual jurisdictions undertake. An annual meeting, open to the public, will allow the planning team to report on progress and discuss future mitigation steps.

Monitoring of the Plan, the Action Plan, and Mitigation Measures is the primarily the responsibility of the Emergency Manager. The Floodplain Administrator, city officials, school officials, and other private and public officials will assist when necessary. Those responsible for implementation of the Action Plan and the Mitigation Measures will create or update Progress Reports on an annual basis, and report to the Planning Committee as a whole on progress and/or impediments of the mitigation measures. A worksheet, similar to Worksheet 7.1 of Appendix A of the *FEMA Local Mitigation Handbook 2013*, will be used to concisely summarize mitigation action progress as the Progress Report. Individual action items will be noted as "Not Started," "Underway," "Ongoing," or "Complete." Any additional planning mechanisms or processes that integrate the mitigation plan will be tracked.

The Wagoner County Emergency Manager will host an annual meeting for participating community representatives and general public to report and comment on plan implementation success and continued challenges. At minimum, this meeting will address recent hazard events, evaluate current the plan's goals and priorities, prioritize mitigation action items for the upcoming year, summarize plan implementation and integration, and discuss plan updates. A draft monitoring meeting schedule is outlined in Table 6-1. These annual meetings should provide an opportunity to summarize the beforementioned progress reports and collaborate on upcoming projects, opportunities, grants, or similar matters.

Table 6-1 Plan Monitoring Schedule

Meeting Year	Topic
2022	Monitor Plan Progress and Hazard Activity
2023	Monitor Plan Progress and Hazard Activity
2024	Monitor Plan Progress, Hazard Activity, and Start Plan Update
2025	2026 Update Planning Process
2026	Adopt Plan Update and Begin Monitoring Process

6.2 Evaluating the Plan

The *Wagoner County Multi-Hazard Mitigation Plan* will be continually evaluated by the Wagoner County Emergency Management Director, and a report will be made to the Planning Committee. This evaluation will assess:

- Adequacy of adopted Goals and Strategy in addressing current and future expected conditions.
- Whether the nature and magnitude of the risks have changed.
- Appropriateness of current resources allocated for implementation of the Plan.
- To what extent the outcomes of the Mitigation Measures occurred as expected.
- Whether agencies, departments and other partners participated as originally anticipated.
- Whether Mitigation Measures have been incorporated into new planning processes.

These programs will continue to be evaluated and updated on an annual basis. The annual monitoring meeting and reports from Planning Team members will provide the information necessary for the County Emergency Manager to evaluate the plan.

6.3 Updating the Plan

The *Wagoner County Multi-Hazard Mitigation Plan* will be updated according to the following schedule:

- **Revise and Update-** Led by the Emergency Manager or another official, the County and participating jurisdictions will incorporate revisions to the plan document identified during the monitoring and evaluation period, as well as items identified in the previous Planning Tool, well before the submission deadline.
- **Submit for Review-** the revised plan will be submitted to OEM and FEMA through the State Hazard Mitigation Officer for review and approval, and to FEMA no later than six (6) months prior to the plan expiration date.
- **Final Revision and Adoption-** if necessary, the plan will be revised per OEM and FEMA remarks, adopted by Wagoner County, and the updated plan sent to FEMA prior to the expiration of the 5-year approval period.

6.4 Public Involvement

Wagoner County and each participating jurisdiction is committed to involving the public directly in updating and maintaining the Plan in the future. Physical copies of the Plan will be maintained and the County Courthouse, and an electronic copy will be maintained on the County's website for access by all participating communities and school districts, and the general public.

The public will be made aware of the Plan update and will be provided an opportunity to comment on the County's website prior to submission. This meeting will be advertised to the general citizenry and will update citizens on the progress that has been made in implementing the Plan and related capital projects. The meeting will also be used to distribute literature and inform and educate citizens as to actions they can take to mitigate natural hazards, save lives, and prevent property damage. Input from the citizens will be solicited as to how the mitigation process can be more effective.

6.5 Incorporating the Multi-Hazard Mitigation Plan

The *Wagoner County Multi-Hazard Mitigation Plan* will be approved and adopted by the Board of County Commissioners as a guide to County mitigation actions. Each participating local jurisdiction will adopt the plan as a guide to their mitigation actions as well. Each jurisdiction is responsible for integrating this plan into appropriate plans, policies, regulations, and actions.

As discussed in section 6-1, the Wagoner County Emergency Management Director is responsible for overseeing the implementation and integration of the Hazard Mitigation Plan at the County level. Planning team members are responsible for integrating the Plan into their local and school planning and capital improvement efforts.

As individual jurisdictions update or adopt new planning mechanisms or other capabilities (as discussed in Chapter 3), it will be the responsibility of their planning team representatives to integrate this Mitigation Plan into those planning efforts.

Implementing the mitigation action items will include:

- Mitigation measures will be assigned to the appropriate departments for planning and implementation
- The responsible department managers will report to the Planning Committee on the progress made on each measure, identifying successes and impediments to their implementation
- Mitigation actions that require adoption will go through the appropriate boards, councils, or commissions for formal adoption
- As other planning processes are initiated, appropriate Planning Committee members will serve as advocates for integrating appropriate mitigation goals into that planning effort. These planning processes could include comprehensive plans, building code updates, zoning/subdivision codes updates, or similar items

Chapter 3 provides a detailed description of existing plans that would integrate with this hazard mitigation update. Chapter 5, section 4 also provides an overview of similar information. As individual jurisdictions update or adopt new planning mechanisms, it will be the responsibility of their planning team representatives to facilitate integrating the Mitigation Plan into those planning efforts.

To be included on the following pages of this Chapter are Resolutions of Adoption of *the Wagoner County Multi-Hazard Mitigation Plan*:

- Wagoner County, Commissioners
- The City of Coweta, Council
- The Town of Okay, Council
- The Town of Porter, Board of Trustees
- The Town of Red Bird, Board of Trustees
- The Town of Tullahassee, Council
- Coweta Public School District, Board of Education
- Okay Public School District, Board of Education
- Porter Public School District, Board of Education
- Wagoner Public School District, Board of Education

Appendix A: Critical Facilities

Table 1 Critical Facilities

Lifeline	Component/Subcomponent	Name	City	Address
Safety and Security	Emergency	Wagoner County Emergency Ops	Unincorporated	16555 S 305th E Ave
Safety and Security	Fire Department	Flat Rock Fire Protection	Unincorporated/Chouteau	31842 E 670 Rd
Safety and Security	Fire Department	Red Bird Community Volunteer Fire Department	Redbird	280 N Main St
Safety and Security	Fire Department	Flat Rock Fire Protection Association Station 2	Unincorporated/Chouteau	65162 S 336 Rd
Safety and Security	Fire Department	Rolling Hills Fire Department	Catoosa	40 S 200th E Ave
Safety and Security	Fire Department	Toppers Fire Department	Unincorporated	72241 S 320 Rd
Safety and Security	Fire Department	Stone Bluff Volunteer Fire Department	Unincorporated/Haskell	19265 US Highway 64
Safety and Security	Fire Department	Broken Arrow Fire Station 4	Broken Arrow	7208 S Busnell Blvd
Safety and Security	Fire Department	Porter Volunteer Fire Department	Porter	617 S Main St
Safety and Security	Fire Department	Okay Fire Department	Okay	410 E 74th St N
Safety and Security	Fire Department	Coweta Fire Department	Coweta	214 N Broadway
Safety and Security	Fire Department	Oakgrove Fire Protection	Unincorporated/Catoosa	395 S 273rd E Ave
Safety and Security	Fire Department	Wagoner Fire Department	Wagoner	807 W Cherokee St
Safety and Security	Fire Department	Taylor Ferry Volunteer Fire Department Station 1	Unincorporated/Wagoner	74654 S 330 Rd
Safety and Security	Fire Department	Tulahassee Volunteer Fire Department	Tulahassee	741 Missouri St
Safety and Security	Fire Department	Whitehorn Cove Fire & Rescue	Unincorporated	69953 S 312 Way

Safety and Security	EMS	Wagoner Emergency Medical Services	Wagoner	300 SE 3rd St
Safety and Security	Police Department	Wagoner County Sheriff	Wagoner	307 E Cherokee St
Safety and Security	Police Department	Coweta Police Department	Coweta	212 N Broadway
Safety and Security	Police Department	Wagoner Police Department	Wagoner	105 S Casaver Ave
Health and Medical	Hospital	Coweta Indian Health Center	Coweta	31870 OK-51
Health and Medical	Hospital	Wagoner Community Hospital	Wagoner	1200 W Cherokee St
Food, Water, and Shelter	Food Distribution	Muscogee Creek Nation Food Distribution	Coweta	<Null>
Health and Medical	Health Services	Wagoner County Health Department	Wagoner	212 N Pierce Ave
Health and Medical	Health Services	Wagoner County Health Department	Coweta	28596 E 141st St S
Safety and Security	Private School	Destiny Family Academy	Wagoner	1450 US-69
Safety and Security	Private School	Lincoln Academy	Wagoner	902 Martin Luther King Blvd
Safety and Security	School	Coweta Heritage Intermediate Grade Center	Coweta	15286 S 297th E Ave
Safety and Security	School	Timber Ridge Elementary	Broken Arrow	3500 Kenosha St
Safety and Security	School	Northwest Elementary School	Coweta	26954 E 131st St S
Safety and Security	School	Okay High School	Okay	8611 N 49th St E
Safety and Security	School	Wagoner Junior High School	Wagoner	500 Bulldog Cir
Safety and Security	School	Wagoner High School	Wagoner	300 Bulldog Cir
Safety and Security	School	Coweta Central Elementary School	Coweta	303 N Broadway
Safety and Security	School	Mission Intermediate Grade Center	Coweta	30123 E 147th St S

Safety and Security	School	Southside Elementary School	Coweta	15289 OK-72
Safety and Security	School	William R Teague Elementary	Wagoner	700 N Story Ave
Safety and Security	School	Oneta Ridge Middle School	Broken Arrow	6800 E Quincy Pl
Safety and Security	School	Park Lane Elementary School	Unincorporated	770 S Shelby Ln
Safety and Security	School	Coweta High School	Coweta	14705 S 305th E Ave
Safety and Security	School	Porter Consolidated Schools	Porter	125 N Main St
Safety and Security	School	Ora Ellington Elementary School	Wagoner	601 SE 6th St
Safety and Security	School	Central Intermediate School	Wagoner	202 N Casaver Ave
Safety and Security	School	Liberty Elementary School	Broken Arrow	4300 S 209th E Ave
Safety and Security	School	Sloat Junior High School	Coweta	700 E Chestnut St
Safety and Security	School	Coweta Intermediate High School	Coweta	S 305th E Ave
Health and Medical	Hospital	Wagoner Community Hospital	Wagoner	1200 W Cherokee St
Safety and Security	Government Building	Wagoner County Clerk	Wagoner	307 E Cherokee St
Safety and Security	Government Building	Municipal Court	Coweta	310 S Broadway
Food, Water, and Shelter	Water Utility	Rural Water District No. 5	Coweta	15078 S 305th East Ave
Food, Water, and Shelter	Water Utility	Rural Water District No. 9	Wagoner	104 N Prairie Ave
Food, Water, and Shelter	Wastewater Utility	Wastewater treatment plant	Wagoner	68474 S 320 Rd
Safety and Security	Government Building	Wagoner City Hall	Wagoner	231 Church St
Food, Water, and Shelter	Water Utility	Rural Water District No. 2	Wagoner	1002 S. McQuarrie Ave
Safety and Security	Government Building	Catoosa City Hall	Catoosa	214 S Cherokee Street

Safety and Security	Government Building	Red Bird Court House	Red Bird	
Safety and Security	Government Building	Porter City Hall	Porter	PO box
Safety and Security	Government Building	Porter Civic Center	Porter	527 Main St
Energy	Gas	Oneta Energy Center Gas Plant OK USA	Broken Arrow	36.0119/-95.6967
Health and Medical	EMS	Coweta Ambulance Service	Wagoner	214 N Broadway Street
Safety and Security	Government Building	Red Bird City Hall	Red Bird	516 S Main St
Safety and Security	Government Building	Okay City Hall	Okay	7420 N 37th E
Lifeline	Component/Subcomponent	Name	City	Address

Table 2 Lifelines

Lifeline	Component/Subcomponent	Name	City	Location
Transportation	Airport	Hefner-Easley Airport	Unincorporated	
Food, Water, and Shelter	Food Bank	Food Distribution Center-Wagoner Community Outreach	Wagoner	7000 SW 13 St
Food, Water, and Shelter	Food Bank/Social Services	Wagoner Area Neighbors Inc	Wagoner	100 NE 8th St
Transportation	Road/Highway	US Highway 69	Especially sections within and proximate to cities/towns	-
Transportation	Road/Highway	State Highway 51	Especially sections within and proximate to cities/towns	-
Transportation	Road/Highway	US Highway 412	Especially sections within and proximate to cities/towns	-
Transportation	Road/Highway	State Highway 64	Especially sections within and proximate to cities/towns	-
Transportation	Road/Highway	State Highway 16	Especially sections within and proximate to cities/towns	-

Transportation	Road/Highway	Oklahoma Creek Turnpike	Especially sections within and proximate to cities/towns	-
Transportation	Port	Oakley's Port 33	Catoosa	328 N 321st East Ave
Transportation	Port	Port of Duncan		
Transportation	Railway	Union Pacific	-	-
Hazardous Materials	Superfund	Okay Welding and Manufacturing	Okay	Intersection of Avenue B And State Highway 16 SH-72
Transportation	Bridge	Lt Col Ernest Childers Hwy Bridge	Coweta	
Health and Medical	Nursing Home	Wagoner Care Center	Wagoner	205 North Lincoln Avenue
Health and Medical	Nursing Home	Coweta Manor Nursing Home	Coweta	30049 E 151st St S
Health and Medical	Nursing Home	Wagoner Health and Rehab	Wagoner	205 N Lincoln Ave
Health and Medical	Health Center	Porter Health Center	Porter	505 S Main St
Communications	Wireless	Cell Tower	Wagoner	HWY 51, 3.0 miles west of Wagoner OK
Communications	Wireless	Cell Tower	Wagoner	605 SW 15TH St
Communications	Wireless	Cell Tower	Porter	Route 51B, 0.5 Miles East of Porter
Communications	Wireless	Cell Tower	Coweta	2 miles north of Coweta
Communications	Wireless	Cell Tower	Coweta	3.5 Miles SW of 193rd and 141st South
Food, Water, and Shelter	Shelter	First United Methodist Church	Wagoner	308 E Church St

Table 3 Cultural Resources

Lifeline	Component/Subcomponent	Name	City	Address
Cultural Resources	Historic Structure	Old Tullahassee Mission/Flipper Davis College	Tullahassee	
Cultural Resources	Historic Structure	Th A. J. Mason Building	Tullahassee	35° 50'20.2"N 95° 26'18.3"W
Cultural Resources	Historic Structure	The Carter G. Woodson School	Tullahassee	
Cultural Resources	Historic Structure	Wagoner Armory	Wagoner	509 E Cherokee St
Cultural Resources	Historic Structure	First Presbyterian Church of Coweta	Coweta	200 S Ave. B
Cultural Resources	Historic Structure	Coweta Mission Site	Coweta	1 mi. S of Cowetah off OK 58B
Cultural Resources	Historic Structure	Jamison Cemetery	Okay	2 mi. S. on OK 16 & 2 mi. W. on Cty. Rd. E0820
Cultural Resources	Historic Structure	Rio Grande Ranch Headquarters Historic District	Okay	OK 251A, 3 mi. E of Okay
Cultural Resources	Historic Structure	Van Tuyl Homeplace	Porter	N of Porter
Cultural Resources	Historic Structure	Miller-Washington School	Red Bird	Market St.
Cultural Resources	Historic Structure	Mason, A. J., Building	Tullahassee	Lincoln St.
Cultural Resources	Historic Structure	Tullahassee Mission Site	Tullahassee	Address Restricted
Cultural Resources	Historic Structure	Cobb Building	Wagoner	203 E. Cherokee St.
Cultural Resources	Historic Structure	First National Bank of Wagoner	Wagoner	114 E. Cherokee St.
Cultural Resources	Historic Structure	Gibson, John W., House	Wagoner	402 S. McQuarrie
Cultural Resources	Historic Structure	McAnally, William, House	Wagoner	702 7th St., SE
Cultural Resources	Historic Structure	McKinney, Collin, House	Wagoner	1106 7th St., SE
Cultural Resources	Historic Structure	Newport Hotel and Restaurant	Wagoner	202 S. Main
Cultural Resources	Historic Structure	Parkinson, Amos, House	Wagoner	601 N. Parkinson

Cultural Resources	Historic Structure	Parkinson, Frederick, House	Wagoner	407 3rd St., NE
Cultural Resources	Historic Structure	Way House	Wagoner	411 2nd St., NE
Cultural Resources	Historic Structure	Saint James Episcopal	Wagoner	303 E Church St
Cultural Resources	Historic Structure	Holy Cross Catholic	Wagoner	708 SW 15th St
Cultural Resources	Historic Structure	First Baptist	Wagoner	401 NE 2nd St
Cultural Resources	Historic Structure	First Christian	Wagoner	415 NE 2nd St
Cultural Resources	Historic Structure	Cobb Building	Wagoner	203 East Cherokee St
Cultural Resources	Historic Structure	Carnegie Library	Wagoner	302 N Main St

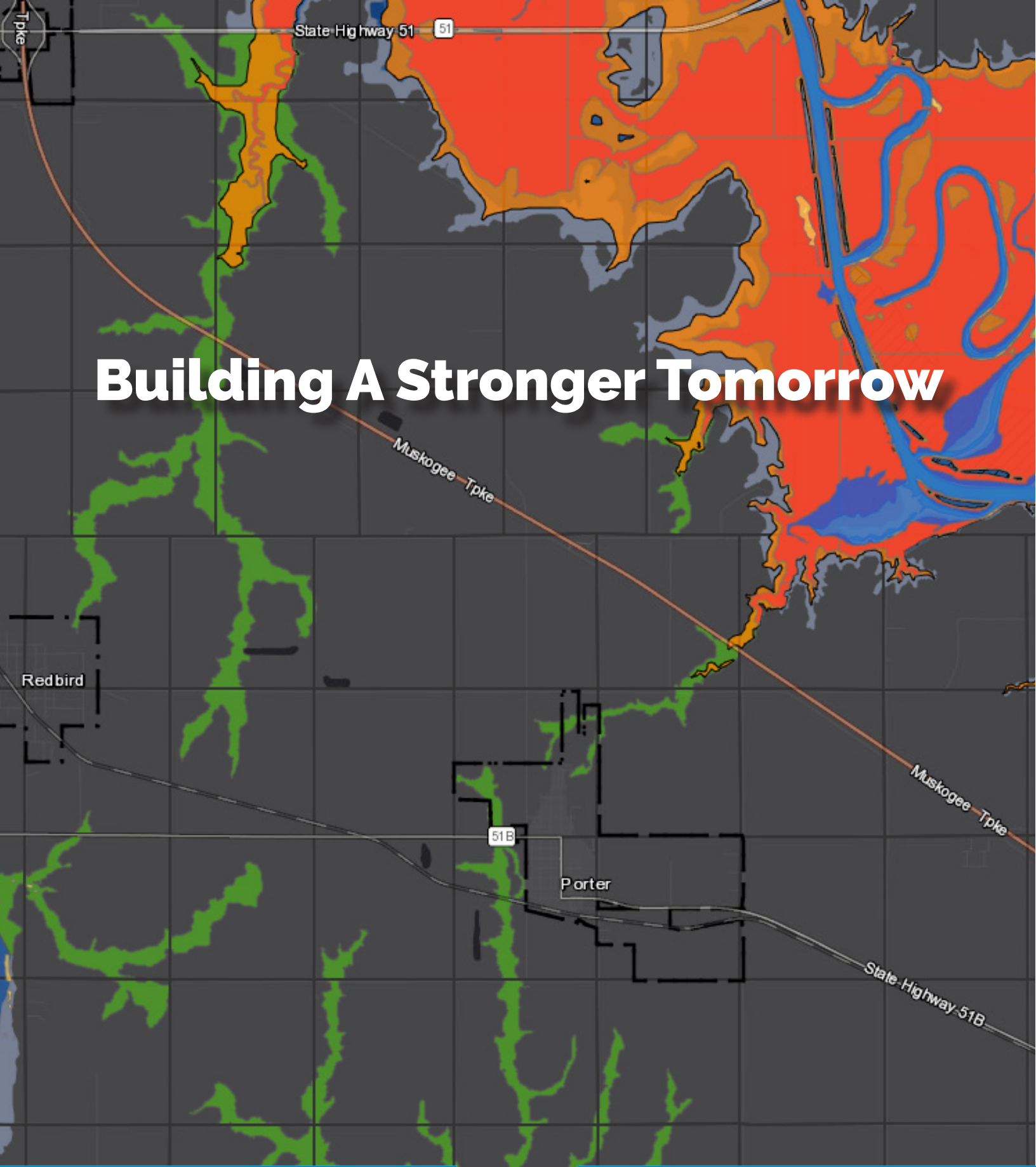
Appendix B. Previous Mitigation Measures

The mitigation action items from the 2009 *Wagoner County Hazard Mitigation Plan* were assessed to determine their status. Items determined to still be operable in reducing Wagoner County's exposure to hazards were incorporated into the 2021 mitigation strategy, Chapter 5.

Item #	Action Description	2021 Status
Flooding (F)		
F1	Elevate At Risk Structures in Flood Plain	Ongoing
F2	Acquisition / Purchase of Repetitive Loss Properties	Ongoing
F3	Countywide Communications System	Ongoing
F4	Raising Low Roads and Erosion Prevention on County Roads	Ongoing
F5	Educate School Age Children in "Survival Techniques"	Ongoing
F6	Enlarging Capacity of Drainage Conduits	Ongoing
F7	Raise and Strengthen Bridges to allow School Buses to Cross	Completed
F8	Public Information and Educational Efforts	Ongoing
F9	Continued Participation in the National Flood Insurance Program (NFIP)	Ongoing
Extreme Cold (EC) and Severe Winter Storm (SWS)		
EC1	Database and Map of Special Needs Population	Ongoing
EC2	Public Education of Dangers Associated With Extreme Cold Events	Ongoing
EC3	Provide equipment to support warming stations to allow citizens to come in out of the cold and warm up	Ongoing
SWS 4	Purchase and Installation of Generators to Power Critical Facilities	Ongoing
SWS 5	Tree Management	Ongoing
Tornadoes (T)		
T1	Develop Emergency Operation Plan for Tornadoes	Completed
T2	Educate the public in the benefits of installing residential and commercial storm shelters and safe rooms	Ongoing
T3	Mobile Communications System	Ongoing
T4	Installation of NOAA Receivers in Public Facilities	Completed
T5	Install residential and commercial storm shelters.	Ongoing
T6	Additional County-Wide Outdoor Warning Devices	Ongoing
T7	Countywide Communications System	Ongoing
T8	Educate Public in "Survival Techniques"	Ongoing
T9	Construct Safe Rooms in County Schools	Not Started
T10	Provide NOAA Weather radios	Completed
Severe Thunderstorms (ST)		
ST1	Additional County-Wide Outdoor Warning Devices	Ongoing
ST2	Countywide Communications System	Ongoing
ST3	Erosion Assistance on County Roads	Ongoing

Item #	Action Description	2021 Status
ST4	Educate Public in "Survival Techniques"	Ongoing
ST5	Enlarge Drainage Conduits	Ongoing
ST6	Installation of NOAA Receivers in Public Facilities	Ongoing
ST7	Tie Down - Mobile Homes & Other Structures Education Program	Ongoing
ST8	Educating the Public about Various Dangers Associated with Natural Hazards	Ongoing
ST9	Review the Wagoner County Severe Weather Response Plan and Warning System on an Annual Basis	Ongoing
ST10	Purchase Lightning Prediction Systems for Wagoner County	Ongoing
ST11	Determine why Lightning has increased in frequency and intensity in Wagoner County	Not Started
ST12	Lightning Suppression Systems At Critical Facilities	Ongoing
ST13	Building Material Awareness - Insurance Agents, Contractors and Citizens	Ongoing
ST14	Educational Program - Crop Insurance, Preventing Losses	Ongoing
ST15	Provide shelters for county owned vehicles to protect from hail damage.	Ongoing
ST16	Protective Film on windows in all county buildings	Ongoing
ST17	Install a steel roof on the Wagoner County Critical Buildings	Ongoing
Wildfires (WF)		
WF1	Purchase of Tanker Fire Trucks - Wildfire Protection	Completed
WF2	Provide Dry Hydrants for Wildfire Protection	Ongoing
WF3	Implement the Fire Wise program to provide Wildfire Protection by making the public aware of the need for defensible spaces.	Ongoing
WF4	Provide Fire Breaks	Ongoing
WF5	Provide Outdoor Message System	Ongoing
Drought (DR)		
DR1	Drill Additional Water Wells	Not Started
DR2	Water Management and Drought Planning	Ongoing
DR3	Build Reservoirs	Ongoing
DR4	Public Education	Ongoing
Extreme Heat (EH)		
EH1	Database and Map of Special Needs Population	Ongoing
EH2	Public Education of Dangers Associated With Extreme Temperature Events.	Ongoing
EH3	Provide cooling stations to allow citizens to come in out of the heat to cool down.	Ongoing
Dam Failure (DF)		
DF1	Identify vulnerable structures susceptible flooding from dam failures.	Ongoing
	Creation of Flood Inundation Maps for the county	Ongoing
	Provide dam monitoring equipment	Ongoing
	Additional County-Wide Outdoor Warning Devices	Ongoing
	Countywide Communications System	Ongoing
	Public Education	Ongoing

Item #	Action Description	2021 Status
Hazardous Materials Events (HME)		
HME1	Education, Equipment, & Protective Clothing	Ongoing



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Mémorandum

To: Honorable Mayor and Members of the City Council/Trustees of the Public Works Authority
From: Roger Kolman, City Manager
Re: 2022 Series Sales Tax Revenue Note
Date: 3/07/22

BACKGROUND

The accompanying resolution and other documentation is the first move toward securing financing for the largest of the four One For Coweta projects identified by the City Council in October of 2021. The proposed financing will be for around \$12.5 M and is intended to fund the costs of the Public Safety Center and the 111th Street project. The funding structure is designed around maximum annual debt service obligations of approximately \$1M, leaving an unencumbered revenue stream to fund work on the smaller One For Coweta projects each year.

STAFF RECOMMENDATION

Staff recommends adoption of Resolution 2022-06 and Resolution 2022-07.

ATTACHMENTS

Resolution 2022-06
Resolution 2022-07
Projected Financing Information

RESOLUTION NO. 2022-06

A RESOLUTION OF THE CITY OF COWETA, OKLAHOMA (THE "CITY") APPROVING THE INCURRENCE OF INDEBTEDNESS BY THE COWETA PUBLIC WORKS AUTHORITY (THE "AUTHORITY") ISSUING ITS SALES TAX REVENUE NOTE, SERIES 2022 (THE "NOTE"); PROVIDING THAT THE ORGANIZATIONAL DOCUMENT CREATING THE AUTHORITY IS SUBJECT TO THE PROVISIONS OF THE NOTE INDENTURE, AUTHORIZING THE ISSUANCE OF SAID NOTE; WAIVING COMPETITIVE BIDDING WITH RESPECT TO THE SALE OF SAID NOTE AND APPROVING THE PROCEEDINGS OF THE AUTHORITY PERTAINING TO THE SALE OF SAID NOTE; APPROVING AND AUTHORIZING A SALES TAX AGREEMENT BY AND BETWEEN THE CITY AND THE AUTHORITY PERTAINING TO THE YEAR-TO-YEAR PLEDGE OF CERTAIN SALES AND USE TAX REVENUE; AND CONTAINING OTHER PROVISIONS RELATING THERETO.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF COWETA, OKLAHOMA:

SECTION 1. INDEBTEDNESS AUTHORIZED. The Coweta Public Works Authority (the "Authority") is hereby authorized to incur an indebtedness by the issuance of its Sales Tax Revenue Note, Series 2022 in the amount of not-to-exceed \$12,500,000.00 (the "Note"), all according to the terms Note Indenture by and between the Authority and BOKF, NA, as Trustee (the "Note Indenture"), provided that said Note shall never constitute a debt of the City of Coweta, Oklahoma (the "City").

SECTION 2. ORGANIZATIONAL DOCUMENT SUBJECT TO NOTE INDENTURE. The organizational document creating the Authority, is hereby made subject to the terms of the Note Indenture authorizing the issuance and securing the payment of the Note as more fully described in Section 1 hereof.

SECTION 3. WAIVING COMPETITIVE BIDDING; APPROVAL OF SALE PROCEEDINGS. The waiving of competitive bidding for the sale of the Note and the sale of said Note by the Authority to a financial institution (referred to herein as the "Purchaser"), at a price of par, is hereby approved. The Authority shall designate the Purchaser of the Note in its Certificate of Determination to be executed at or prior to closing of the Note.

SECTION 4. SALES TAX AGREEMENT. The City hereby approves and authorizes the execution of a Sales Tax Agreement by and between the City and the Authority (the "Sales Tax Agreement"), which Sales Tax Agreement pertains to a year-to-year pledge of certain sales tax and use tax revenue as security for the Note.

SECTION 5. AUTHORIZING EXECUTION. The Mayor or Vice Mayor and City Clerk or Deputy City Clerk of the City representing the City at the closing of the above-referenced note issue are hereby authorized to approve and make any changes to the documents approved by the Resolution, for and on behalf of the City, the execution and delivery of such documents being

conclusive as to the approval of any changes contained therein by the City and to execute and deliver on behalf of the City any and all certifications and documentation necessary or attendant to the delivery of the Note, as directed by Bond Counsel.

[Remainder of Page Left Blank Intentionally]

PASSED AND APPROVED THIS 7TH DAY OF MARCH, 2022.

CITY OF COWETA, OKLAHOMA

(SEAL)

By: _____
Evette Young, Mayor

ATTEST:

By: _____
Julie Casteen, City Clerk

APPROVED AS TO FORM:

By: _____
Ronald D. Cates, City Attorney

CERTIFICATE
OF
CITY COUNCIL ACTION

I, the undersigned, hereby certify that I am the duly qualified and acting City Clerk of the City of Coweta, Oklahoma.

I further certify that the City Council of the City of Coweta, Oklahoma, held a Regular Meeting at 6:00 o'clock P.M., on March 7, 2022, after due notice was given in full compliance with the Oklahoma Open Meeting Act.

I further certify that attached hereto is a full and complete copy of a Resolution that was passed and approved by said City Council at said meeting as the same appears in the official records of my office and that said Resolution is currently in effect and has not been repealed or amended as of this date.

I further certify that below is listed those Council members present and absent at said meeting; those making and seconding the motion that said Resolution be passed and approved; and those voting for and against such motion:

PRESENT:

ABSENT:

MOTION MADE BY:

MOTION SECONDED BY:

AYE:

NAY:

WITNESS MY HAND THIS 7TH DAY OF MARCH, 2022.

CITY OF COWETA, OKLAHOMA

(SEAL)

City Clerk