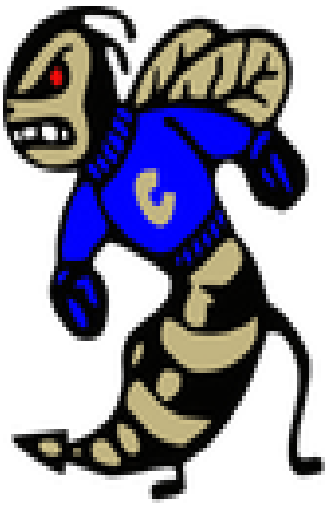
2023-
2028

Choctaw-Nicoma Park Public School Hazard Mitigation Plan



Lauree Beth Marshall
L.E. Marshall Consulting, LLC

HAZARD MITIGATION PLAN ADOPTION RESOLUTION

(Name of Jurisdiction) Choctaw-Nicoma Park Public Schools (CNPPS)

(Governing Body) School Board

(Address) 12880 N.E. 10th Street Choctaw, OK 73020

RESOLUTION

WHEREAS, Choctaw-Nicoma Park Public Schools, with assistance from the Hazard Mitigation Plan Team, has gathered information and prepared the Choctaw-Nicoma Park Public Schools Hazard Mitigation Plan; and

WHEREAS, the Hazard Mitigation Plan has been prepared in accordance with the provisions of 44 CFR § 201.6 - Local Mitigation Plans; and

WHEREAS, Choctaw-Nicoma Park Public Schools 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, Choctaw-Nicoma Park Public Schools has reviewed the Plan and affirms that the Plan will be updated no less than every five years;

NOW THEREFORE BE IT RESOLVED by the Choctaw-Nicoma Park Public School Board, that Choctaw-Nicoma Park Public Schools adopts the Choctaw-Nicoma Park Public Schools Hazard Mitigation Plan as this jurisdiction's Natural Hazard Mitigation Plan.

ADOPTED this 13th day of February, 2023 at the regular meeting of the Choctaw-Nicoma Park School Board.

Superintendent

Board President

Board Clerk

INDEPENDENT SCHOOL DISTRICT NO. 4 OFFICIAL SEAL OKLA. CO. OKLAHOMA

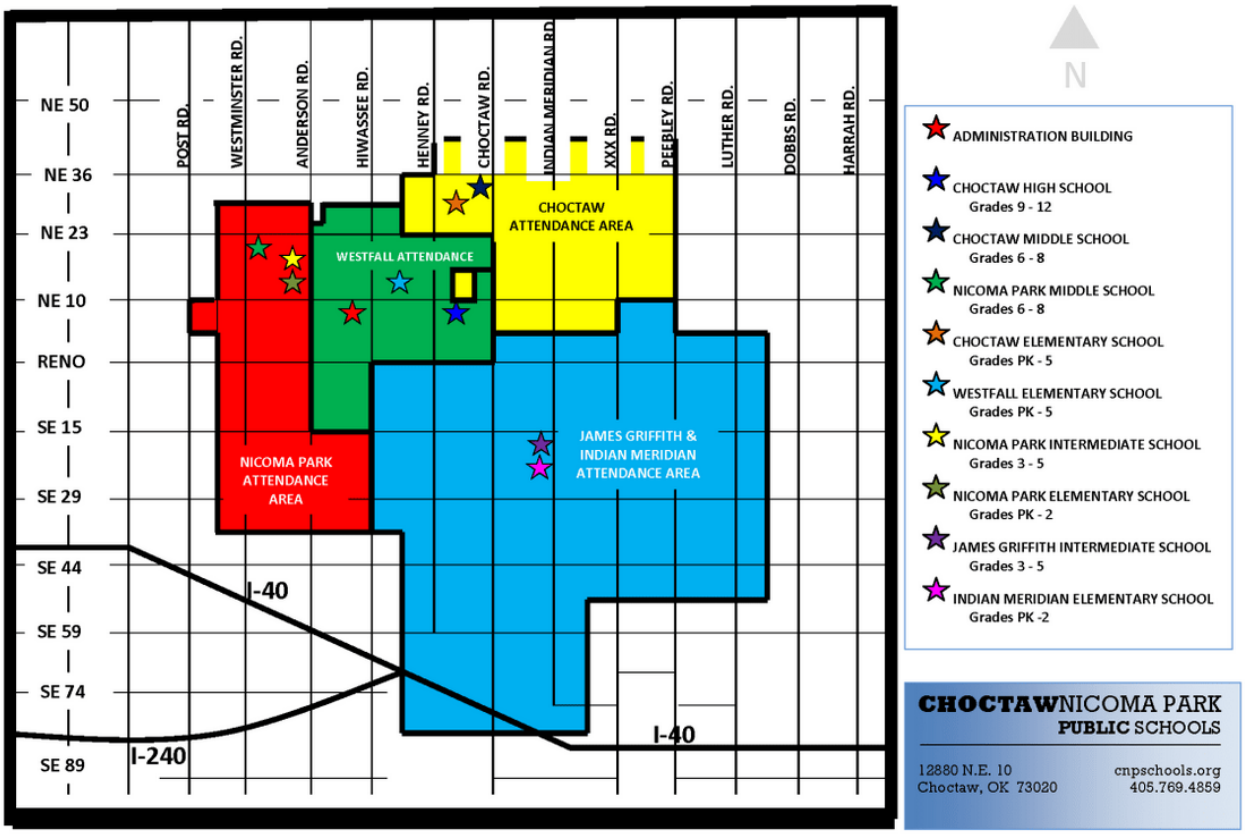
Contents

Chapter I: Introduction

1.1 Introduction and Overview

Choctaw-Nicoma Park Public Schools (hereafter referred to as CNPPS) is located within Oklahoma County, Oklahoma. The CNPPS district encompasses 58.5 square miles and has approximately 5,700 students enrolled, between Pre-K and 12th grade. CNPPS employs 400 certified faculty and 350 support staff.

Choctaw-Nicoma Park Public School District Map



Over the past 20 years, CNPPS has seen an increase in enrollment; in 2001, the enrollment was approximately 4,000 students. The current enrollment total has grown to approximately 5,816 as of October 2022. As the Oklahoma City metro continues to expand eastward, the CNPPS school district expects to continue expanding as well.

In accordance with Oklahoma state law, the academic year requires 1,080 hours of instruction per year, with "snow days" and regular breaks being the designated times when school is closed. The academic year also includes hours devoted to professional development for teachers and staff.

The student body is housed on 10 sites, as shown on the maps found in Appendix A. The number of students per site fluctuates throughout the school year, and these fully accredited schools are:

- Choctaw Elementary (PreK-5th), 441 students
- Choctaw Middle School (6th-8th), 725 students
- Choctaw High School (9th-12th), 1,813 students
- Nicoma Park Elementary (PreK-2nd), 441 students
- Nicoma Park Intermediate (3rd-5th), 366 students
- Nicoma Park Middle School (6th-8th), 622 students
- The Indian Meridian Elementary/James Griffiths Intermediate, Unified Campus (PreK-5th) Hereafter referred to IME/JGI, 1,054 students total. (These two schools are in close proximity to each other and is considered a unified campus. IME is Prek-2nd; it has 560 students. JGI is 3rd-5th; it has 494 students.)
- Westfall Elementary (PreK-5th), 448 students

The CNPPS critical infrastructure also includes:

- VoAg site
- Administration Building
- Transportation Office (The bus and maintenance barn on the same site as the Administration Building)

Future plans for consolidation, building new sites, and new safe rooms are currently being developed at the time of writing this Hazard Mitigation Plan (HMP). New Elementary Schools East and West will be both PreK-5th. Nicoma Park Intermediate will close upon Elementary West being completed.

The above mentioned facilities are the focus of this hazard mitigation plan and the natural hazard affecting them. These campuses lie within the jurisdictions of the City of Choctaw and the City of Nicoma Park, OK.

1.2 Participating Jurisdiction

The school district extends into the cities of Choctaw and Nicoma Park, Oklahoma, and the school district is the only participant of this HMP.

Choctaw became the oldest chartered town in Oklahoma Territory in 1893, and became incorporated in 1904. The community was known as a trading post near William McClure's 7C Ranch.

Nicoma Park began as a poultry colony in 1926. As production grew, eggs were shipped as far as New York and California. The Great Depression and a poultry disease devastated the community. It began to thrive again throughout the 1940s, and became incorporated in 1959.

The communities are mostly suburban towns to the Oklahoma City metro area with some rural areas.

Plan Primary Point of Contact

The primary point of contact for this plan is the school's chief of financial officer. The alternate points of contact are the safety/security officer. The HMP will be maintained and annually updated (each January) by the safety director to maintain the five-year update cycle with FEMA in compliance with the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

Primary Contact:
Kevin Berry, Chief Financial Officer
CNPPS
12880 NE 10th Street
Choctaw, OK 73020
O: 405.350.5501
E: finance@cnpschools.org

Alternate Contacts:
Todd Dilbeck
CNPPS
12880 NE 10th Street
Choctaw, OK 73020
O: 405.627.9875
E: tdilbeck@cnpschools.org

1.3 Purpose

The purpose of this HMP is to establish a structure for assessing, monitoring, and building upon hazard mitigation activities as a school district. The purpose of the development of the CNPPS HMP is to provide data and information that will complement the CNPPS's existing safety protocols and other manuals, specify mitigation goals and projects, and designate the necessary personnel who will be responsible for managing the hazard mitigation activities and information.

1.4 Authority

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by the Disaster Mitigation Act of 2000, provides the legal basis for state, tribal, and local governments to undertake risk-based approaches to reducing natural hazards risks through mitigation planning. Specifically, the Stafford Act requires state, tribal, and local governments to develop and adopt FEMA-approved hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance. This plan was written in accordance with all plan requirements per Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5165, and Title 44 Code of Federal Regulations (CFR) Part 201.

Chapter II: Planning Process

2.1 Overview of Planning Process

The CNPPS school board and administrators have recognized the need for additional funding for building adequate safe rooms at all school sites as the district continues expanding. This realization prompted administrators to explore additional possibilities of securing the funding needed to fund these major construction projects related to the safety and security of the students and staff of the district.

One option for the district is to pursue more grant funding opportunities, but this option also requires the school to participate in a multi-jurisdictional HMP or have their own. As participating in a multi-jurisdictional HMP was not available, the CNPPS Chief Financial Officer/Treasurer contacted L.E. Marshall Consulting, LLC about writing a hazard mitigation plan for the school district. After receiving proposals, the CNPPS school board voted to contract with L.E. Marshall Consulting, LLC (hereafter referred to as "the planner") to write a new hazard mitigation plan.

The planning process began on July 5, 2022 and took 4 months. The initial planning meeting was scheduled for July 14, 2022. On that day, the planner met with school administrators and private contractors who regularly work with the school on construction projects. The discussion centered around the school's most vulnerable school sites, and the needs of the school in general. The chief financial officer and the safety/security officer met with the planner to focus on the vulnerability and impacts from each hazard profile on October 12, 2022. Due to the small scope of a single-jurisdiction plan, the planning team was able to discuss and finalize the HMP goals, identify and prioritize action items quickly. Follow-up emails and phone calls occurred regularly to clarify details.

Since the planning process began during the summer, the planning team decided that the best way to involve the public, parents, and guardians of the student body was an online survey. The public online survey was available for one month. The link was provided to everyone who opts into the school's mass notification program. More details of this part of the process and the survey results can be found in Section 2.4.

Another option is for the district to secure additional funding through bonds by a vote of the people. A bond of $282 million over 20 years was voted on by the communities of Choctaw and Nicoma Park in July 2022 and the bond passed. The funds secured through this bond will finance the major construction projects necessary for the renovations and new construction necessary to improve the safety and security of all campuses.

2.2 Planning Committee Members

The names of the planning committee members are below. Primary jurisdictional representatives are noted by an asterisk (*).

Name	Organization/Title	Contribution to the Process
Kevin Berry*	CNNPS-Chief Financial Officer	Provided institutional information; coordinated meetings with staff and stakeholders
Ron Renfrow	CWA Group	Provided information on grants for the school
Tom Barczak	CWA Group-Engineering	Provided information on the engineering aspect of the safe rooms
Todd Dilbeck	CNNPS-Director of Bonds, Safety, & Security	Provided institutional information
David Reid	CNNPS-Superintendent	Provided institutional information

2.3 Other Stakeholders

These organizations and agencies were contacted and participated in discussions that related to any topics that would have had jurisdictional overlap. Additional neighboring agencies were contacted throughout the planning process and did not respond to phone calls or emails.

Local Agency

Name, Title	Agency Represented	How Agency Was Invited	Contribution to the HMP
Greg Whitworth, Resource Specialist	Oklahoma County Emergency Management	Phone call	Provided information relevant to Oklahoma County, Choctaw, and Nicoma Park
Susan, Receptionist	Choctaw Fire Department	Phone call	Provided information relevant to City of Choctaw regarding wildfire

State and Federal Agencies Contacted

Name, Title	Agency Represented	Contribution to the HMP
Matthew Rollins, State Hazard Mitigation Officer	Oklahoma Dept. of Emergency Management & Homeland Security (OKEMDHS)	Provided guidance on the OEM Planning Process
Kim Jenson, State Planning Lead	Oklahoma Dept. of Emergency Management & Homeland Security	Provided guidance on the OEM Planning Process

The Hazard Mitigation staff at OKEMDHS were contacted and provided guidance throughout the planning process by phone calls and emails.

2.4 Public Involvement

CNPPS chose to solicit public involvement by using social media, the school's website, and the school's text messaging capability to send a survey link to all parents, guardians, staff, teachers, and students. The survey was available from July 7, 2022 to August 6, 2022. The survey had 1,249 respondents.

The purpose of the survey was to learn which natural hazards are experienced by residents within the school district, and learn of any broader concerns related to natural hazards.

The results of this survey were incorporated into the CNNPS HMP to demonstrate that over the past five (5) years the most commonly experienced natural hazards were Winter Storm, High Winds, and Extreme Heat.

This insight into residents' experience will be used to assist the prioritization of the Action Items and guide the school district's discussions on prioritizing future projects that will best mitigate these hazards, while planning for the occurrence of severe natural hazards that do not occur as often.

The results of this survey revealed that Winter Storm and High Winds have had a more widespread effect upon residents than other natural hazards. These results also show the vulnerabilities associated with Winter Storm were consistent with residents' experiences during two (2) notable Winter Storm events that occurred on October 26-28, 2020 and February 14-16, 2021. Details of these events will be discussed further under the "Vulnerability and Impact" section of **Winter Storm** in this HMP.

The planning team believed that these responses were representative of residents within the school district. Soliciting public input via online survey proved be an effective means of gaining insight for the HMP and hear from the parents, teachers, and community who have a vested interest in the school district.

The results of the CNNPS Hazard Mitigation Survey are as follows:

Question 1: In the last five years, which natural hazards have directly impacted you? Please select all that apply.

Hazard	Number of Responses	Hazard	Number of Responses
Tornado	417	Hail	576
Flooding	312	Winter Storms	1,023
High Wind	772	Extreme Heat	729
Lightning	277	Drought	291
Wildfire	63	Earthquake	84
Dam Failure	5		

Question 2: Do you frequently deal with any natural disasters not listed in question 1?

- Yes: 35
- No: 1,212

Question 3: What concerns you most about these disasters?

Concern	Number of Responses	Concern	Number of Responses
Loss of Life	771	Loss of property/ homelessness	635
Property Damage	893	Inconvenience	431
Lack of personal preparedness	261	A concern your community is not prepared to deal with cleanup	459

Several respondents added comments that expressed a concern that the school did not have adequate safe rooms and a lack of training and preparedness for teachers and students.

Question 4: Do you feel prepared to deal with natural disasters?

- Not at all prepared: 105
- Somewhat prepared: 959
- Yes, I am prepared: 193

Question 5: Would you attend preparedness related meetings if or when they become available?

- Yes: 271
- No: 159
- I would consider it: 839

Question 6: What do you believe are the most urgent needs of the school district as it relates to preparedness for natural disasters?

Most Urgent Needs	Number of Responses
School Shelters	1,144
Additional disaster preparedness training for school staff	658
Reinforced windows (tornado, high winds, hail)	732
Other	107

The "Other" responses were a broad range of comments, not always pertaining to natural hazards. The most relevant comments elaborated on the concern for each school site to have adequate storm shelters for all students and staff.

Question 7: What is your zip code?

Zip Code	Number of Responses	Zip Code	Number of Responses
73020	849	73130	232
73110	6	74857	29
73071	1	73141	13
73045	30	73013	1
73066	3	73150	33
73120	2	73127	1
73149	1	73145	2
73054	3	74801	1
73049	4	74855	2
73026	1	74851	2
74881	2	73084	5
		Skipped	6

Only one response was disregarded as the zip code provided was a non-existent zip code.

2.5 Literature, Resources, and Plans Reviewed

To ensure a basic understanding of natural hazard within the planning area, the following tables list the articles, plans, studies, and reports referenced and/or used in research for this HMP.

Literature and Resources

Agency/Document	Relevant Information Incorporated into Plan
SCIPP Simple Planning Tool by SCIPP NOAA RISA	Weather related data for Oklahoma County
A Guide to F-Scale Damage Assessment by U.S. Dept. of Commerce, NOAA, NWS	Context and general information for how F-Scale is assessed
Comprehensive Fault Database and Interpretive Fault Map of Oklahoma by Stephen Marsh and Austin Holland.	Provides comprehensive earthquake data and explanations of how the data was compiled and how it can be used.
Seismicity and tectonic Relationships of the Nemaha Uplift in Oklahoma-Part III by Kenneth V. Luza and James E Lawson, Jr.	Provided context for better understanding why planning area does not have as many earthquakes as neighboring counties; provided context for why Oklahoma has as many earthquakes as it does
Nemaha Strike-Slip Fault Zone by William McBee, Jr.	Provides a clear description of the geology underlying Oklahoma.
Oklahoma Drought Management Plan prepared by the Oklahoma Drought Management Team	Provided context regarding drought management in Oklahoma
Changing Fire Regimes and Management Strategies by Southern Climate Impacts Planning Program by Darrian Bertrand (SCIPP)	Provided a general overview of the threshold conditions that allow for burn days in Nebraska, Oklahoma, Kansas, and Texas
2018 One-Year Seismic Hazard Forecast for the Central and Eastern United States from Induced and Natural Earthquakes by Mark D. Petersen, et. Al	Provided explanations of how seismicity within Oklahoma has changed in since 2015 and detailed explanations of the causes of Oklahoma earthquakes
"Geomorphic and Hydrologic Assessment of Erosion Hazards at the Norman Municipal Landfill, Canadian River Floodplain, Central Oklahoma" by Jennifer A. Curtis and John W. Whitney	Provided context into local, historical events within planning area
"*Geologic Hazards in Oklahoma*" by Kenneth V. Luza and Kenneth S. Johnson	Provided context into local, historical events within planning area
Vaisala Annual Lightning Reports 2009-2018, 2019, 2020, 2021	Provided data regarding lightning strikes
Dam-Breach Analysis and Flood Inundation Mapping for Selected Dams in Oklahoma City, Oklahoma, and near Atoka prepared by the USGS and City of Oklahoma City	Provides dam breach and inundation information for Lake Overholser

Emergency Management Plans

Document and Agency	Relevant Information Incorporated into the HMP
Oklahoma County Hazard Mitigation Plan 2019	The school district lies within Oklahoma County; the Oklahoma County HMP does not include any school districts; information related to the cities of Choctaw and Nicoma Park is incorporated into this HMP.
Oklahoma State Hazard Mitigation Plan Update, 2019	General guidance specific to Oklahoma
C-NP Schools Emergency Procedures	District wide emergency procedures
Emergency Plan -Indian Meridian Elementary & James Griffith Intermediate Schools	Emergency procedures for this consolidated school site
CE Procedures Handbook	General guide for teachers and administrators on emergency protocols and various non-emergency procedures
Nicoma Park Elementary Emergency Procedures	Emergency procedures for this school site
Choctaw Middle School Site Crisis Plan	Emergency procedures for this school site
Nicoma Park Intermediate Emergency Procedures	Emergency procedures for this school site
Nicoma Park Middle School Fire Drill	Emergency fire drill protocol for this school site
Westfall Elementary & Choctaw High School Protocol	Emergency protocol for these school sites

2.6 Continued Public Involvement

Continued public participation and involvement will primarily take place through the regular school board meetings and additional public meetings that will discuss the implementation of hazard mitigation action items. CNNPS is a large school district and disseminating online surveys is a frequently used tool to collect input from the school district's teachers, staff, students, parents, and guardians. The public input will be reviewed by the school board and incorporated as it is consistent to the HMP goals and implementation of action items.

When future mitigation projects are funded through bonds, public discussion at school board meetings will occur. Additional public meetings will be held to answer all questions regarding bonds issued to pay for any hazard mitigation action items. Future hazard mitigation action items will be added to the monthly agenda under "Public Discussion."

2.7 Plan Monitoring, Evaluating, and Updating

Monitoring the Plan

The CNNPS District Safety/Security Director will be the designated personnel who will monitor the CNNPS HMP. He/she will be responsible for:

- Documenting any natural hazard events that affect any of the school's infrastructure;
- Documenting any damages;
- Documenting if CNNP encountered any implementation problems as action projects were initiated.

These findings will be compiled in an annual assessment that the Safety/Security Director provides to and reviews with the School Superintendent each January. After the Safety/Security Director and the Superintendent review it, the annual assessment will be presented to the School Board during their regular January meeting.

Evaluating the Plan

The documentation of the annual assessment will help the Safety/Security Director and the Superintendent evaluate the effectiveness of the mitigation actions. The Safety/Security Director and the Superintendent will use these objectives for evaluating the findings of the annual assessment. The objectives will determine:

- If any magnitudes of risk have changed;
- If current resources are appropriate for implementing the mitigation projects;
- If any problems were encountered in the implementation of any projects;
- If there are changes in prioritization per the social, economic, and political conditions;
- If coordinating agencies' (stakeholders) participation was effective (if a factor);
- If mitigation actions and outcomes occurred as expected:
    - Was the intended purpose of the original mitigation action met?
    - Was the mitigation action met in the proposed timeline?
    - Did the listed agencies participate and follow through on any commitments?
    - Did the mitigation action stay within the proposed budget?

This evaluation will be prepared, along with the annual assessment, by the Safety/Security Director, and reviewed with the Superintendent. This evaluation will be presented to the school board at the same time as the annual assessment. The school board and any members of the community can and will be encouraged to offer input on any of the information as it relates to prioritizing the hazard mitigation action items.

Updating the Plan

The Safety/Security Director will update the HMP by adding the finding s of the annual assessment and evaluation to the HMP each January. Any changes to the action items will be submitted as addendums to FEMA if needed between the standard five-year update.

Every five years this HMP will undergo the standard five-year update and submitted to OEM and FEMA. Making the annual updates ensures continuity of the HMP so there is no lapse of any grant funding and eligibility. The planning process will begin 18 months prior the HMP expiration at minimum. Once the CNNPS Planning Team has finalized it, then the HMP will be submitted to OEM and FEMA for approval.

Chapter III: Hazard Identification and Risk Assessment

3.1 List of Identified Hazards

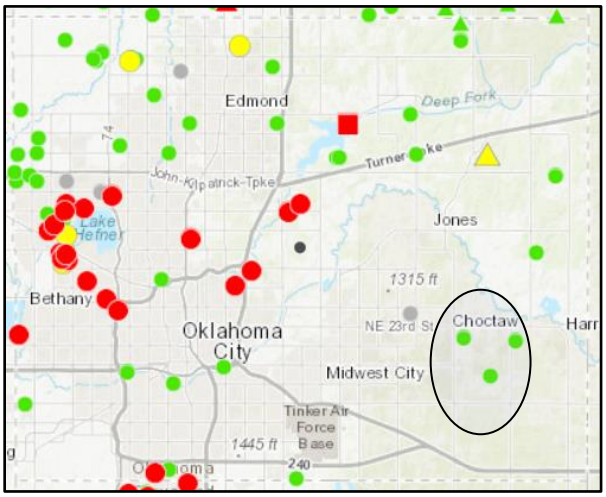
The hazards affecting CNPPS is consistent with the list found in the 2019-2024 Oklahoma State Hazard Mitigation Plan Update (hereafter referred to as the OSHMPU) and the Oklahoma County Hazard Mitigation Plan Update 2019 (hereafter referred to as the County HMP).

Table 3.1 lists the hazards which affect the planning area.

Table 3.1 Identified Hazards

Hazard
Drought
Earthquake
Extreme Heat
Flood
Hail
High Winds
Lightning
Tornado
Wildfire
Winter Storm

Note regarding Dam Failure: The planning area considered adding Dam Failure to this HMP, as the Oklahoma State HMP Update 2019-2024 and the Oklahoma County HMP Update 2019-2024 includes Dam Failure; however, upon further research, the planning team decided not to include Dam Failure in this HMP. The school district, including its bus routes, do not lie within the inundation areas of any high hazard potential dams. The map below shows the approximate location of the school district on the OWRB map. As shown by the oval, there are no high-hazard dams within the school district.

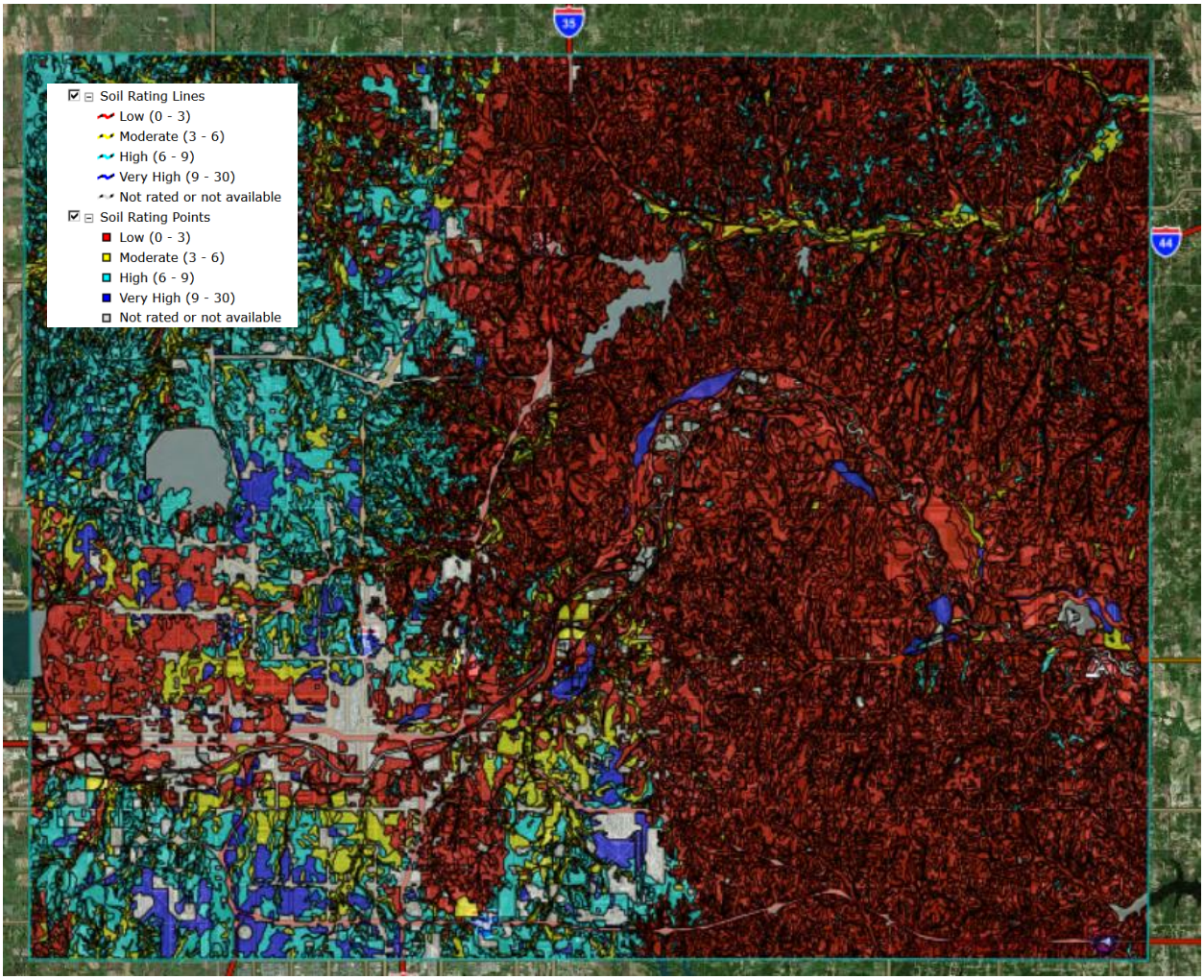


There has been no occurrence of dam failure upstream that has affected the planning area. Neither Lake Overholser nor Canton Lake Dam, both upstream from the school district, have had any occurrences of dam failure between 2011-2021. The school district is not at risk from any dam failure within the greater geographical area.

Note regarding Expansive Soils: The planning area considered adding Expansive Soils to this HMP, as the Oklahoma State HMP Update 2019-2024 and Oklahoma County HMP Update 2019-2024 includes Expansive Soils; however, upon further research, the planning team decided not to include Expansive Soils in this HMP. The school district has not experienced damages due to expansive soils and does not expect to experience any damages from expansive soils in the future.

The Oklahoma State HMP, Oklahoma County HMP and NRCS data confirmed that the geologic area where the planning area lies is within an area that has Low Potential (0-3) for shrink-swell. The NRCS soil map following shows the abundance of expansive soils in the planning area indicated by the symbol. The school district lies within an area of Oklahoma County that has a Low (0-3) rating for expansive soil potential.

Using NRCS data, a linear extensibility up to 72 inches was used to make this determination for the planning area. The following graphic shows the USDA's Web Soil Survey map that provides a visual representation of the soil composition of Oklahoma County. The school district lies approximately within the area highlighted by the yellow oval.



According to the Oklahoma County HMP Update 2019-2024, The City of Choctaw and Town of Nicoma Park decided to remove their jurisdictions from the list of affected jurisdictions as it pertains to expansive soils based on NRCS data. Based on this rationale, the CNPPS planning team decided to not include Expansive Soils in this HMP with the caveat that at each five-year update, the planning team will assess if the risk has changed in any way.

Another consideration is that any disasters related to Expansive Soils have never been declared by the State of Oklahoma nor FEMA, as shown in Section 3.2.

3.2 Disaster History

Since the CNPPS school district lies within Oklahoma County, disaster history will be focus on those disasters that included Oklahoma County. Between 2011 and 2022, Oklahoma County has been part of these federally declared disasters listed in the table below. This list reflects the information provided on the FEMA Declared Disasters website.

Federally Declared Disasters between 2011 and 2022

Disaster Number	Declaration Date	Incident Type
EM-3316	February 2, 2011	Severe Winter Storm
FM-2868	March 11, 2011	Wildfire
FM-2869	March 11, 2011	Wildfire
FM-2883	April 6, 2011	Wildfire
FM-2938	July 15, 2011	Wildfire
FM-2945	August 4, 2011	Wildfire
FM-2954	August 11, 2011	Wildfire
FM-2951	August 30, 2011	Wildfire
FM-5001	August 3, 2012	Wildfire
DR-4222	May 26, 2015	Tornadoes, Flooding, Straight line winds, Severe Storms
EM-3555	February 15, 2021	Severe Winter Storms
DR-4587	February 24, 2021	Severe Winter Storms

The Oklahoma Department of Homeland Security and Emergency Management has listed the severe weather events that affected Oklahoma and which events were deemed a state of emergency. The events listed on the next page include Oklahoma County; any event that did not list Oklahoma County is not listed in this HMP. The table on the next page gives the date and type of event.

State Emergency Declarations between 2011 and 2022

Declared Emergency Date	Incident Type
February 1-8, 2011	Winter storm
March 11, 2011	Wildfires
April 9-10, 2011	Wildfires
May 25, 2011	Tornadoes and Severe Storms
August 30-31, 2011	Wildfires
November 5-6, 2011	Earthquake, Severe Storms, Tornadoes
April 15, 2012	Tornadoes
April 28, 2012	Flooding and Severe Weather
May 29-30, 2012	Hail and Severe Weather
July 28, 2012	Drought, Wildfire
February 25, 2013	Winter Weather
May 19, 2013	Tornadoes, Straight-line Winds, Flooding
December 5, 2013	Winter Weather
May 5, 2014	Drought, Wildfires
March 25, 2015	Severe Weather
May 19, 2015	Flooding, Tornadoes, Severe Storms, Straight-line Winds
November 25, 2015	Flooding, Winter Storms
December 28, 2015	Freezing Rain, Ice, Sleet, Flooding, Winter Storms
February 18, 2016	Drought, Wildfire
April 26, 2016	High Winds, Severe Weather
January 12, 2017	Winter Weather
April 12, 2018	Drought, Wildfires
December 6, 2018	Winter Weather
April 30-May 1, 2019	Severe Storms, Straight-line Winds, Tornadoes, Flooding
May 18-20, 2019	Severe Weather, Flooding
April 22, 2020	Tornado, Severe Weather
October 26, 2020	Freezing Rain, Snow
February 12, 2021	Extreme Cold, Freezing Rain, Snow
February 1, 2022	Winter Weather

3.3 Hazard Probability and Vulnerability Rating

Each hazard has its own probability of affecting the planning area.

Probabilities for the identified hazards can be determined by calculating the:

$$\frac{\text{Total number of events}}{\text{Total number of years}} = \text{Probability \% of event occurring each year}$$

Based on the above calculation, probability is quantified as follows:

High	=	75 – 100%
Medium	=	50 – 74%
Low	=	25 – 49%
Very Low	=	0 – 24%

Hazard	Probability Rating
Drought	High
Earthquake	High
Extreme Heat	High
Flood	Low
High Winds	High
Severe Thunderstorms (incl. Hail, Lightning)	High
Tornado	Medium
Wildfire	Very Low
Winter Storm	High

3.4 Profiled Hazards

The following narratives detail how each natural hazard affects the planning area. The hazard profiles are listed in alphabetical order.

3.4.1 Drought

Description

A drought is a period of drier-than-normal conditions. Drought conditions worsen as temperatures remain high and precipitation levels remain below normal averages, though it should be noted that drought conditions can occur any time of year. Extreme heat exacerbates the effects of drought, but equally dry conditions can occur with the cold temperatures of winter.

Location

The entire planning area is affected by drought.

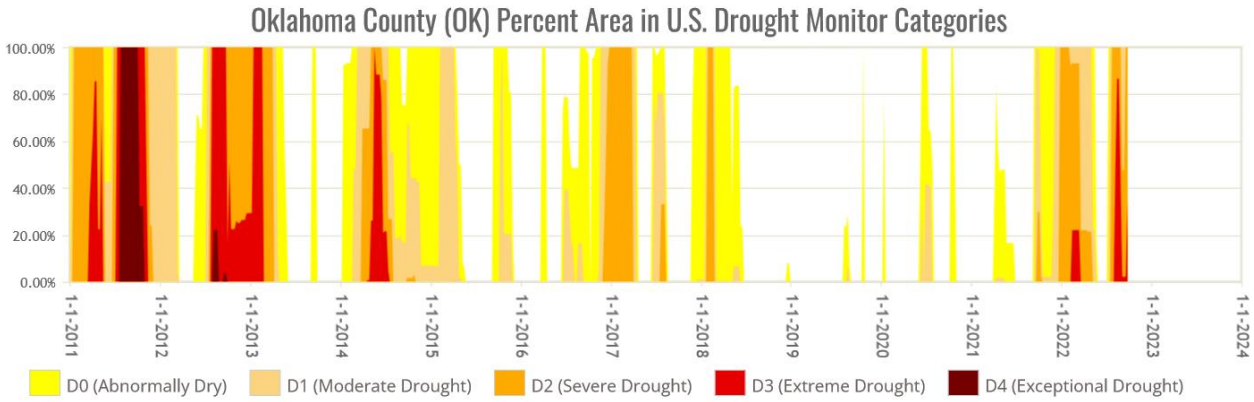
Extent

The Planning Area uses this Drought Severity Classification from the U.S. Drought Monitor to classify drought conditions. The Planning area can and has experienced any category on the index. It is expected that the Planning Area will continue to experience the full range of these categories in the future.

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

Previous Occurrences

This graph from the U.S. Drought Monitor shows the drought cycles that the planning area has experienced since January 1, 2011 to September 30, 2022. As shown on the graph, the planning area experienced Exceptional Drought (D4) levels were reached within the planning area during this timeframe.



The above graph provides a visualization of the narrative following. According to the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI), there were 43 months of drought events documented between January 1, 2011 and September 30, 2022. Consecutive months are listed together in the following table that further details the extent of drought throughout the planning area.

Drought Events, January 1, 2011 to September 30, 2022

Date	Description
January 2011-November 2011	The year began at Severe Drought (D2) drought conditions. Lack of precipitation continued and farm ponds dried up and crops were lost. Extreme drought (D3) conditions improved to Moderate Drought (D1) levels in late May. D2 conditions returned in June, worsening to Exceptional Drought (D4) by the end of July. Rainfall levels were 12" below normal by August. D4 conditions continued into November when drought lessened to D2.
July 2012-April 2013	Persistently dry conditions developed to D3 conditions. September had enough rainfall to lessen the drought to D2 conditions which continued through to January. At the end of January, drought conditions worsened to D3, and fluctuated from D3 to D2 to D3 until sufficient rainfall brought drought conditions to D0.
March 2014-July 2014	As spring progressed into summer, D2 conditions persisted throughout March, April, and worsened to D3 conditions by the end of May. D3 conditions persisted until the end of July and improved to D2. Sufficient rainfall kept drought levels between D0-D1 until May 2015. May 2015 brought sufficient rainfall to break the drought.
December 2016	D0-D1 levels of drought returned to Oklahoma County, and subsided until March 2016.
February 2017-April 2017	D2 drought conditions persisted between this timeframe. Adequate rain eliminated drought from the planning area.
July 2017-August 2017	D2 drought conditions developed in mid-July and persisted through August.
January 2018-February 2018	D2 drought conditions persisted during this timeframe.
August 2018-September 2018	D2 drought developed to D3 drought conditions and sufficient rainfall eliminated drought in the planning area.
September 2021	Lack of precipitation caused expanding drought conditions across the planning area, but sufficient rainfall eliminated drought by the end of the month.
December 2021-May 2022	D1 drought levels worsened to D2 throughout December. D3 drought levels were reached in March, and lessened to D2 in April. The Storm Events Database had no data past May 2022.

Note: The Time Series graph from the U.S. Drought Monitor shows that drought conditions persisted throughout the planning area beyond April 2022. The planning area had a brief reprieve from drought conditions between the end of May 2022 through early July 2022. Record high temperatures and a lack of precipitation brought drought levels from D0 to D3 by mid-August 2022 through September 2022.

Probability

The probability of the planning area experiencing drought is high. As shown by the graph under Previous Occurrences, drought has a cyclical nature. If the cycles were to shorten and the periods of drought and greenness were to occur within shorter periods, it could present a problem for the school's water supply and related infrastructure, both the quality and quantity if extreme (D4) level droughts were to occur more frequently. Conversely, if the cycles of drought and greenness were to lengthen, the water supply and related infrastructure would not age as quickly.

Vulnerability & Impact

The CNPPS District is susceptible to the effects of drought, though it is unlikely to experience the effects of drought to the extent that a municipality or county would. Since CNPPS campuses extend throughout the city limits of Choctaw and Nicoma Park, the school district would adhere to any policies either city would initiate to combat severe drought conditions.

Indian Meridian Elementary and James Griffiths Intermediate Schools are surrounded on the east side and south side by wildland. **Westfall Elementary** is surrounded by wildland in all four cardinal directions at the time of writing this HMP. The **Administration Building and the Bus Barn** also have wildland surrounding the south and southeast corner of the property. The school owns the land that the water tower is on. The **water tower** is owned by City of Choctaw and leases land from the school; it is also surrounded by wildland areas, especially on the south. The **VoAg site** is completely surrounded by undeveloped wildland. The VoAg site includes a greenhouse, shop, and a few classrooms, in addition to the livestock pens and barn. These properties will have the most impact from drying vegetation during times of drought that will increase the chances for wildfire if a loose spark or fire ignites the brush in the area. Further wildland hazards will be discussed under "Wildfire."

CNPPS allows students to house their livestock for participation in Future Farmers of America (FFA) competitions if students do not have their own accommodations for their steers, sheep, and hogs. Livestock is located at the VoAg site year-round. These animals could be compromised or lost during times of excessive drought if their access to water is not maintained. This potential for loss would result in an economic loss for those students, as well as potential emotional loss.

During times of extreme, prolonged drought, the CNPPS water supply could become promised. CNPPS relies on the municipal water utilities of the City of Choctaw and City of Nicoma Park and private wells.

Choctaw Elementary, Choctaw Middle, IME/JGI, and Westfall Elementary have water supplied by the City of Choctaw. **Choctaw High School** has two water supplies; most of the High School site has water supplied by the City of Choctaw and has wells to supply water for the gym and sports fields. At the time of writing the HMP, the **Administration Building** currently has a well for its water supply and the process starting to move the Administration Building to being serviced by the City of Choctaw for its main water supply. The Administration Building will then have the capability to switch to the well water supply should a water outage from the City of Choctaw occur. **Nicoma Park Middle School, Nicoma Park Intermediate, and Nicoma Park Elementary** are on Nicoma Park utilities and the City of Nicoma Park provides the main water supply.

TheVoAg site has their own well for their respective water supply. As mentioned above, the **Administration Building** will have two capabilities of receiving their water supply by the end of 2022. Overall, however, the school district does not have alternate water supply options for all sites.

In extreme cases, should the municipal water supplies decrease due to the severity of drought in the area, it would be expected that the CNPPS water supply would be compromised as well, as a lack of alternative water supply is currently available. CNPPS needs to develop an alternate plan for having an alternate water supply for the staff and students. There are plans in the process of building a new school site where in particular, lies within an area where water wells are prohibited due to surface contamination of chemicals being dumped in the area. The prospect of having a backup water well is not an option at this time for this site, and an alternate water supply needs and alternate water supply plans are being developed.

3.4.2 Earthquake

Description

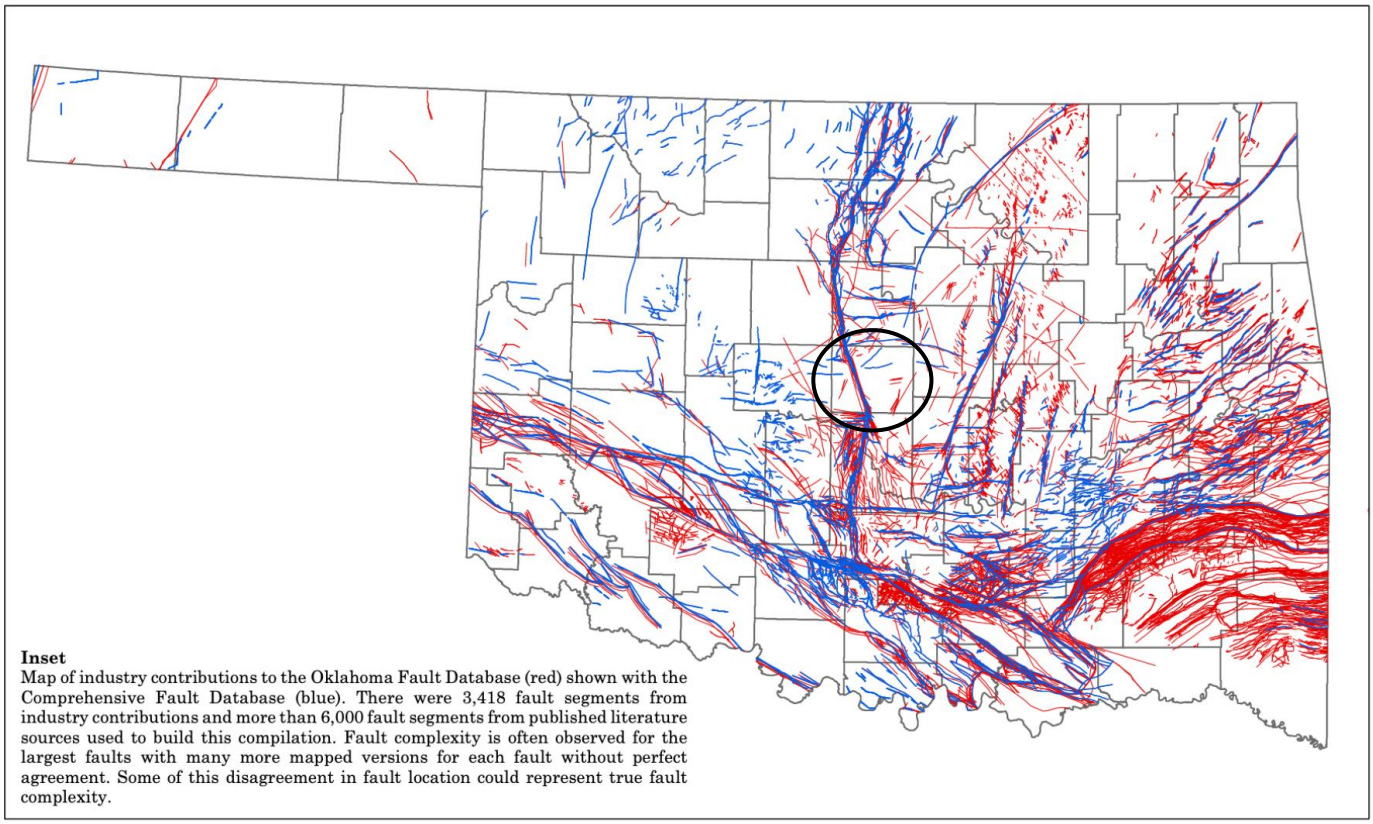
An earthquake occurs when two blocks of geological plates suddenly slip past one another as the result of slowly accumulating pressure underground near a geological fault or a plate boundary. The surface where they slip is called the fault or fault plane. The location below the earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the earth is called the epicenter.

Location

The planning area is affected by minor earthquakes. The planning area is located on this map within the oval. Oklahoma Geological Survey (OGS) created this map, showing oil and gas industry contributions and naturally induced earthquakes, and recorded to the Oklahoma Fault Database. The Comprehensive Fault Database is shown by the red lines. The industry induced earthquakes are shown in blue. Since the planning area lies within the geographic boundaries of Oklahoma County, the entire county is shown here for reference only.

As shown on the map, Oklahoma has several fault lines beneath its surface. They are:

- The Meers Fault in southwest Oklahoma,
- The Nemaha Ridge Zone from southeastern Nebraska, through Kansas into central Oklahoma,
- The Wilzetta Fault extends from Pottawatomie County, northeast through Lincoln County and Creek County.



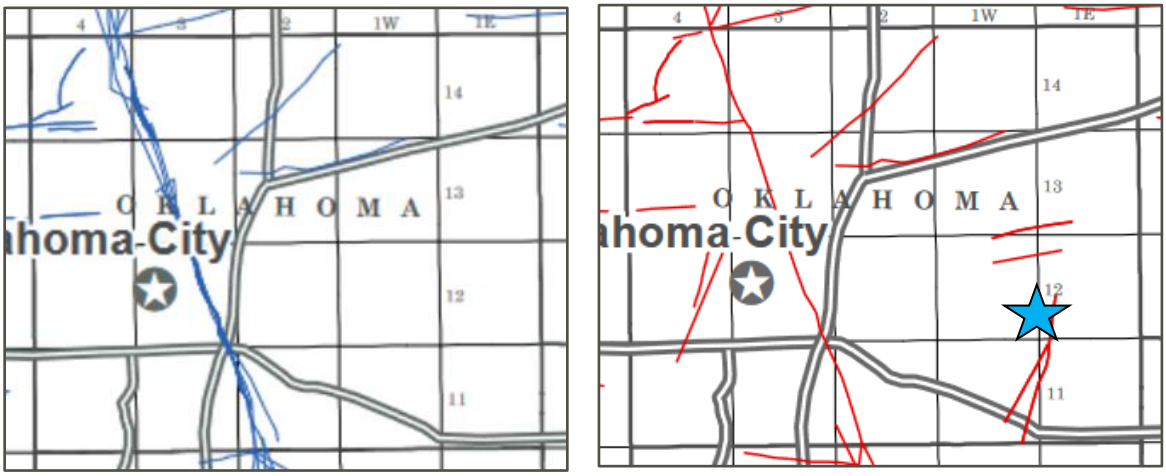
Inset
Map of industry contributions to the Oklahoma Fault Database (red) shown with the Comprehensive Fault Database (blue). There were 3,418 fault segments from industry contributions and more than 6,000 fault segments from published literature sources used to build this compilation. Fault complexity is often observed for the largest faults with many more mapped versions for each fault without perfect agreement. Some of this disagreement in fault location could represent true fault complexity.

The New Madrid fault zone in central Missouri was the source of several large earthquakes in the early 1800s that were widely felt in the region, including Oklahoma.[1]

The Wilzetta Fault caused a 5.7 earthquake in November 6, 2011 near Prague, Oklahoma. This particular earthquake was within close proximity to several wastewater disposal wells. Both state and federal science agencies such as OGS and the United States Geological Survey (USGS) have linked large volume wastewater injection wells to an increase in earthquake frequency and an increase in the occurrence of damaging earthquakes from 2008-2015.

However, a significant decrease in earthquake activity since 2015 has been driven by market forces and regulatory actions within Oklahoma.

For comparison, here is a close-up map of industry induced earthquakes in blue and naturally occurring earthquakes in red. The approximate location of the school district is indicated by the blue star.



[1] http://ogs.ou.edu/docs/openfile/OF1-2016.pdf

Extent

The planning area uses this table to classify the extent of Earthquakes.

The Modified Mercalli Scale with Richter Magnitude Approximations[2]

Richter Magnitude	Mercalli	Description	Earthquake Effects
1-2	I	Instrumental	Not felt except by a very few under especially favorable conditions.
2-3	II	Feeble	Felt only by a few persons at rest, especially on upper floors of buildings.
3-4	III	Slight	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
4	IV	Moderate	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
4-5	V	Rather Strong	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5-6	VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
6	VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
6-7	VIII	Destructive	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
7	IX	Ruinous	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
7-8	X	Disastrous	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
8	XI	Very Disastrous	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
8+	XII	Catastrophic	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Based on the data provided in the "Previous Occurrences", the planning area has experienced a range of 1.0 to 4.5 (Mercalli I to Mercalli V) between 2011 and 2022. During that timeframe, the planning area experienced the strongest earthquake of a magnitude 4.5 (Mercalli V) on December 7, 2013. The second strongest earthquakes occurred on June 16, 2014 and December 29, 2015 and both were a 4.3 (Mercalli IV-V). The third strongest earthquakes occurred on January 1, 2016 and August 3, 2017 and both were a 4.2 (Mercalli IV-V). Most of the earthquakes, 1,474 total, recorded by OGS during that timeframe ranged between 2.0-2.9; 229 earthquakes ranged between 3.0-3.9, and 5 ranged between 4.0-4.5.

For planning purposes, the planning area expects a range of magnitude between 2.0 to 4.0 in the future.

[2] http://earthquake.usgs.gov/learn/topics/mercalli.php

Previous Occurrence

The planning area reported no verifiable damage at any facilities due to any earthquakes.

The details of the earthquake events recorded by the Oklahoma Geological Survey (OGS) in this table below; CNPPS lies within Oklahoma County. The earthquake data provided reflects what Oklahoma County has experienced since 2011. Oklahoma County has seen a sharp decrease of earthquake activity since 2017 due to regulatory and industry changes that occurred since 2017.

Earthquakes Recorded in Oklahoma County between 2011-2022

Year	Number of earthquakes greater than 2.0	Range of magnitude recorded	Year	Number of earthquakes greater than 2.0	Range of magnitude recorded
2011	223	2.0-3.7	2017	85	2.0-4.2
2012	116	2.0-3.2	2018	78	2.0-3.7
2013	293	2.0-4.5	2019	16	2.0-3.5
2014	341	2.0-4.3	2020	7	2.0-2.8
2015	210	2.0-4.3	2021	7	2.0-2.8
2016	321	2.0-4.2	2022	TBD 2, as of Sept. 30	2.0-3.3

Probability

The probability of the planning area experiencing earthquakes between 2.0 and 5.0 (Mercalli II-Mercalli V) is high. Considering the sharp decrease of earthquakes since 2017, this probability will likely continue to decrease in the future. The probability will continue to be evaluated to determine if this decrease is consistent over time. Based on historical data, the likelihood of a major earthquake occurring within the planning area is low; however, central Oklahoma has major fault lines under the surface and the possibility of a major earthquake could occur, though it is unlikely.

Vulnerability & Impact

The planning area is vulnerable to the impact of earthquakes; however, based on the data above, the planning area has seen a significant decrease of minor earthquakes since 2017. To date, CNPPS has not reported or experienced any structural damages due to past earthquakes.

If the average magnitude were to increase, as well as the occurrence, the vulnerability of the school's infrastructure would likely increase. Based on the evidence above, if an earthquake greater than magnitude of 5.0 (Mercalli V) occurred, older structures would be more vulnerable as they do not have the structural reinforcement to withstand strong earthquakes. None of the sites have reinforced shelving to prevent shelves from falling debris from the ceiling or walls. Should the planning area experience an earthquake strong enough to cause structural damage, any students, staff and faculty could be injured by falling debris and falling items from the unstable shelving.

Based on the existing procedures and protocols the school system maintains, another vulnerability is an inconsistent inclusion of Earthquake protocols within emergency procedures. Westfall and Choctaw High School, and Nicoma Park Intermediate have an earthquake protocol within their emergency manuals. The other school sites do not have any earthquake protocol within their emergency manuals. While major earthquakes are not an overwhelming concern, staff and students are at risk for being unaware of basic earthquake safety should a major earthquake occur. An Action Item to create a consistent earthquake protocol within all schools' emergency procedures can be found in Section 4.4.

3.4.3 Extreme Heat

Description

FEMA describes extreme heat as a "long period (2-3 days) of high heat and humidity with temperatures above 90 degrees." (All degrees will in this text will be in Fahrenheit.) Heat waves combined with a lack of precipitation create drought and increase the potential for wildfires.

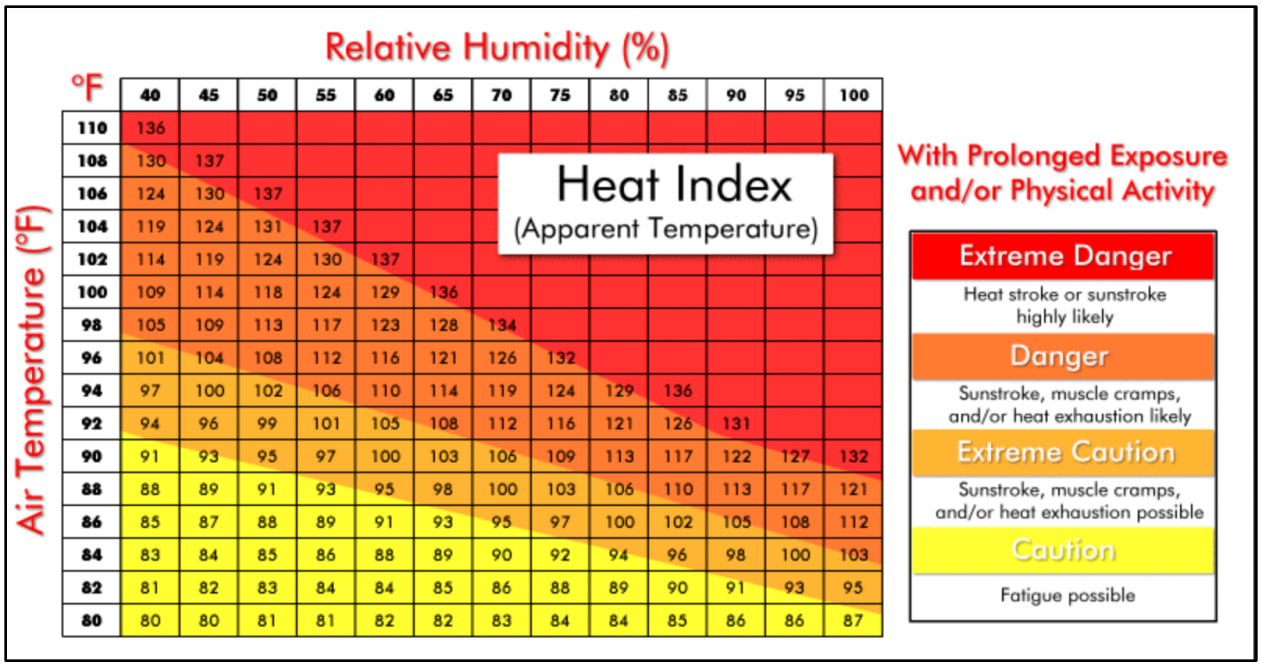
Location

The planning area experiences extreme heat.

Extent

The planning area uses the Relative Humidity Heat Index to categorize Extreme Heat. This chart shows how varying levels of heat and humidity affect humans, particularly during times of prolonged exposure and/or physical activity. The planning area can experience any value on this chart up to the middle Danger (orange) range. (heat index temperatures between 110-118 degrees)

If the conditions of high temperatures and relative humidity were conducive, the planning area has the potential to experience heat indices above 117 degrees.



°F	40	45	50	55	60	65	70	75	80	85	90	95	100
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	97	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	97	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

Previous Occurrence

The planning area experiences extreme heat annually and expects an annual average of 86 days of extreme heat. This table lists how many days between January 1, 2011- September 27, 2022 that the planning area experienced maximum heat indices over 90 degrees. CNPPS reported no injuries or deaths related to extreme heat.

Year	Number of Days of Extreme Heat	Year	Number of Days of Extreme Heat
2011	106	2017	75
2012	91	2018	96
2013	75	2019	95
2014	67	2020	83
2015	85	2021	82
2016	91	2022	88

The highest heat index between January 1, 2011 to September 27, 2022 was 113.76 degrees, recorded on July 11, 2020. The second highest heat index was 111.82 degrees, recorded August 26, 2019. A heat index of 110 was reached several times: 110.75 on August 7, 2015; 110.44 on August 19, 2019; 110.15 on August 3, 2011; 110.12 on July 20, 2018; and 110.0 on July 1, 2020. The NCEI NOAA database shows 33 heat events between January 1, 2011 and September 27, 2022 for Oklahoma County, which includes 15 deaths and 409 injuries from heat related illnesses. This data was included to demonstrate that the school district lies within an area where extreme heat is a regular seasonal occurrence.

Probability

The probability of the planning area experiencing extreme heat is high. Considering the data above, the annual number of days with extreme heat varies minimally. If conditions were to drastically change, and temperatures increase further, the vulnerability does not change. The effects of the impact could be reached in a shorter time frame; however, the overall impacts would remain consistent as discussed below. Conversely, if the average number of days experiencing extreme heat were to decrease, it would be expected that the stressors on vegetation and livestock would decrease as well. People of all ages would not be as vulnerable to the effects of extreme heat, and infrastructure likewise would experience a lessened effect of extreme heat.

Vulnerability & Impact

The entire planning area is vulnerable to the effects of extreme heat.

At the time of writing this HMP, the planning area expects the urban expansion from the Oklahoma City metro area to continue spreading toward the towns of Choctaw and Nicoma Park where the school district lies. The "urban heat island" effect could increase temperatures from 1.8 to 5.4 degrees higher than the less developed areas outside the respective city limits. Since the planning area already experiences an average 86 days annually of heat indices over 90 degrees, it is reasonable to anticipate that average could increase over the next few years.

With that in mind, the school district is concerned about the vulnerability of the student population to extreme heat. Anyone at CNNPS can suffer from heat related illnesses if their bodies do not have the ability to compensate and properly cool itself through sweating as high humidity levels prevent sweat from evaporating efficiently. Children do not always monitor their levels of exertion during recess or sporting events, making it even more critical that teachers, coaches, and administrators area understand and recognize the symptoms of heat-related illnesses. CNPPS staff annually attends state required heat exhaustion training. In very extreme cases, loss of life could result if any students playing sports overexert themselves.

As mentioned previously under the Drought hazard profile, CNPPS houses students' livestock for Future Farmers of America (FFA) competitions if students do not have their own accommodations for their steers, sheep, and hogs. Livestock could be compromised during times of extreme heat if their access to water or shade is not maintained. These livestock require water and shade as they are in small areas instead of being in a large pasture where they could freely roam to find water and shade. If livestock had no access to water for an extended period of time during extreme heat waves, livestock would be lost. Any loss of these livestock is an economic loss to the student(s), as well as a mental and emotional loss.

Structural damage is unlikely to occur, though roads and bridges along the bus routes have the potential to buckle and expand. In extreme cases, the pavements/asphalt surfaces could see some cracking.

3.4.4 Flooding

Description

Various types of flooding can affect the planning area. The types of flooding are:

- Riverine flooding occurs when a river or stream rises above the banks and inundates the surrounding land.
- Low-lying areas and floodplains can experience when there is excessive runoff from rainfall or melting snow.
- Flash flooding can result from extremely heavy rainfall from thunderstorms. Flash flooding can begin within 3 to 6 hours of heavy rainfall. Flash flooding can also occur after a dam or levee break.
- Sheet flooding results when excessive rainfall exceeds the drainage capabilities.

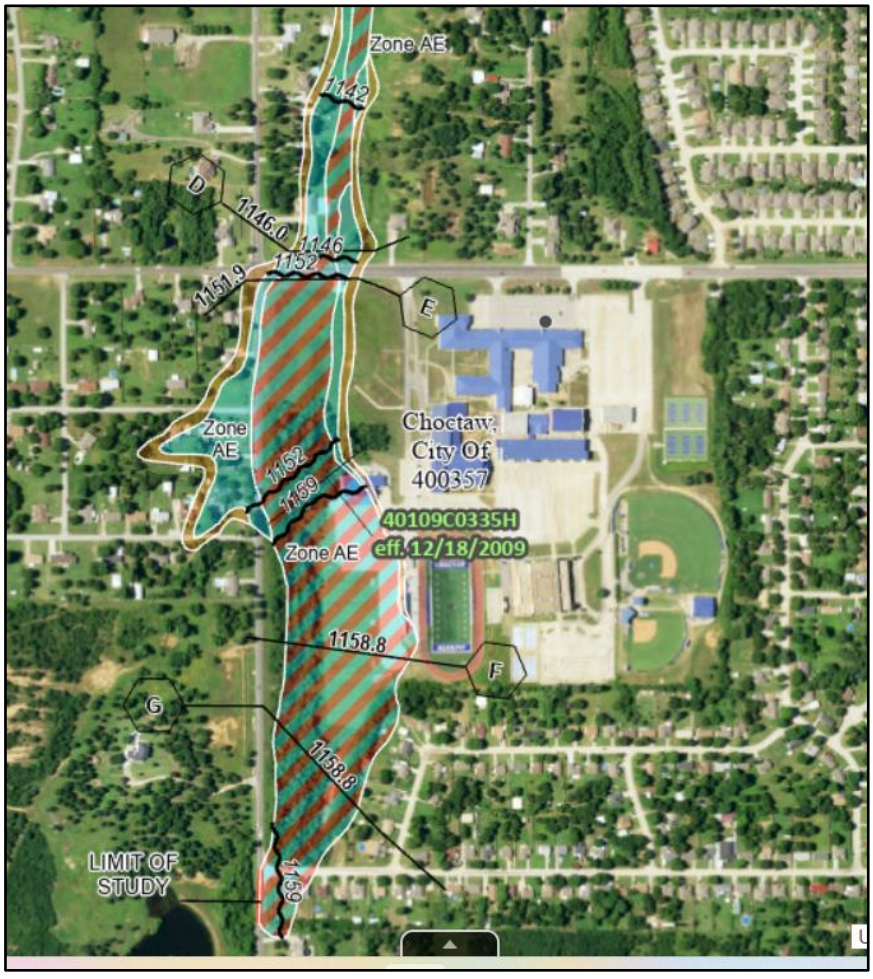
Factors that contribute to the severity of the flooding include the existing saturation of local soils, the local terrain, land use, and vegetation type and density.

Location

CNPPS is affected by flooding.

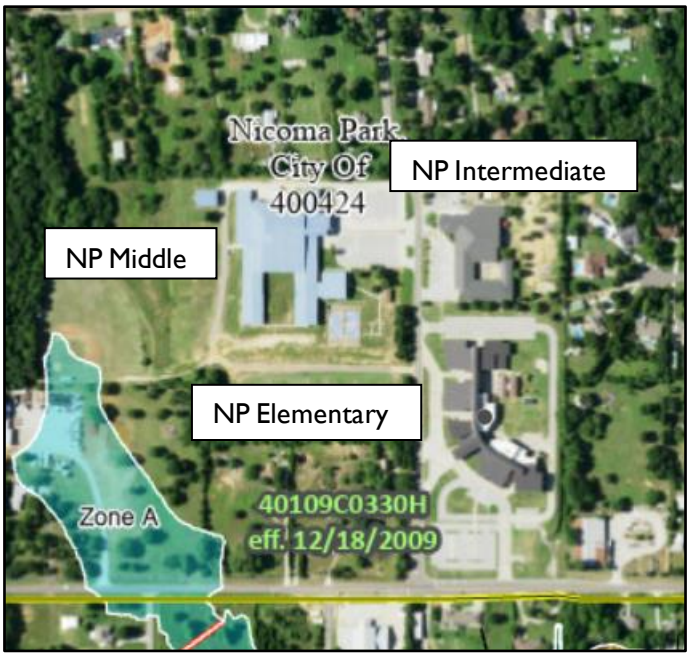
The following FIRM maps show each school site and their respective proximities to the flood plain areas.

This FIRM map shows the Choctaw High School; as shown, only a minimal portion of this campus lies within the flood plain area. The west parking lot of the football stadium and the maintenance building lie within the regulatory floodway shown by the blue and red diagonal area.



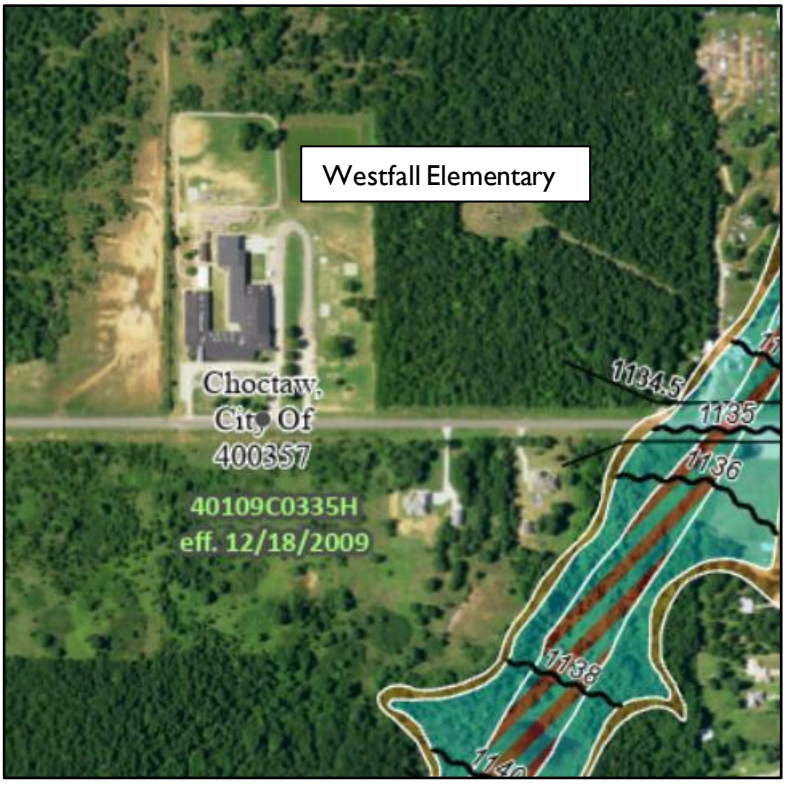
This FIRM map shows Choctaw Elementary and Middle School campuses and none of the school buildings lie within a flood zone.

This FIRM map shows Nicoma Park Elementary, Intermediate, and Middle Schools and none of the buildings lie within the flood zone area, though it is in fairly close proximity.



This FIRM map shows IME-JGI Schools. None of the school buildings lie within a flood plain area.

This FIRM map shows Westfall Elementary School and none of the buildings lie within a floodplain.



This FIRM map shows the Administration Building and the Transportation Building; none of the buildings lies within a floodplain area.

Extent

CNPPS uses the FEMA Flood Damage Categories and Criteria to assess flood depth. The levels are described as follows:

FEMA Flood Damage Categories and Criteria	
Affected	0-6 inches of water inside the structure; minimal damage to the exterior and/or contents of the home
Minor	6-18 inches of water inside structures; encompasses a wide range of damage that does not affect the structural integrity of the residence
Major	18-48 inches of water inside the structure; structure sustains significant structural damage and will require extensive repairs
Destroyed	48+ inches of water inside the structure; structure is a total loss and repair is unfeasible

The planning area has the potential to experience the entire range of these flood levels, though the most likely range is from "Affected" to "Minor".

Previous Occurrence

The planning area has experienced flash flooding along with the larger communities of Choctaw and Nicoma Park. Between January 1, 2011 and September 30, 2022, these municipalities were included in flash flood events within Oklahoma County as reported by NCEI. The flash flooding event on June 1, 2013 was reported to have caused $8,000 in damages to the community. The school reported no damages to school buildings from flooding between 2011 and 2022.

Flash Flooding Events in Choctaw and Nicoma Park 2011-2022

Date	Jurisdiction	Flood Type
June 1, 2013	Choctaw	Flash Flood
July 30, 2014	Choctaw	Flash Flood
May 23, 2015	Choctaw	Flash Flood
June 27, 2021	Nicoma Park	Flash Flood

Between 2011 and 2022, the main flooding issues occur along the school's bus routes, particularly along 23rd Street in the City of Choctaw, which is a main highway through the school district. Rainfall over 2" or a fast downpour can cause major flooding that causes buses to take detour routes to and from the schools. Twenty-third Street experiences nuisance flooding at least once a month due to it being a low-lying street, and excess water from residents' sprinklers, light rain, heavy rain, flash flooding, or slow, steady rain over a period of several hours can cause water to pool, and/or potentially cover the street.

Probability

The probability of the school district experiencing flooding is low. The probability of this hazard increasing or decreasing is not particularly relevant as the infrastructure affected is owned by the City of Choctaw and Nicoma Park. However, if the streets that regularly experience significant flooding were built up, it would reduce the occurrence of necessary detours during flooding to ensure the safety of students.

Vulnerability & Impact

The main flooding vulnerability in the planning area are the bus routes, particularly along 23rd Street. This area is flood prone and buses must detour during significant rain storms. The main impact of these detours results in delays bringing students to class on time, possibly missing classroom hours or taking longer to get them safely home.

The street is low-lying and flood prone, but the flooding is exacerbated by deficient bridges in the area. On sunny days, some of these bridges cannot be utilized as they cannot handle a bus load crossing. This is even more critical on rainy days when the bridges are further compromised by the rushing waters flowing over and under the bridges.

While the municipalities and the Oklahoma Department of Transportation and the City of Choctaw are aware of these flooding problems, the school is not aware of any immediate plans to build up the road to reduce the flooding risk along bus routes.

3.4.5 High Winds

Description

Wind is the movement of air relative to the earth's surface. The NWS issues wind advisories when sustained winds of 40 mph or greater occur. High winds can occur during severe thunderstorms and on extraordinarily windy days without any other accompanying natural hazard.

High winds can be classified as:

- "Straight-line," with speeds reaching 58 mph or more;
- Downdraft winds, small columns of air that sink quickly to the ground;
- Microbursts (less than 4 kilometers wide); and
- Macrobursts (more than 4 kilometers wide).

Location

The planning area is affected by high winds.

Extent

The planning area uses the Beaufort Scale below as a guide to measure winds, and CNPPS can experience wind speeds of any value on this scale.

Beaufort Number	Wind Speed (miles/hour)	Wind Speed (km/hour)	Wind Speed (knots)	Description	Wind Effects on Land
0	< 1	< 1	< 1	Calm	Calm. Smoke rises vertically.
1	1-3	1-5	1-3	Light Air	Wind motion visible in smoke.
2	4-7	6-11	4-6	Light Breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	12-19	7-12	Gentle Breeze	Leaves and smaller twigs in constant motion.
4	13-18	20-28	11-16	Moderate Breeze	Dust and loose paper are raised. Small branches begin to move.
5	19-24	29-38	17-21	Fresh Breeze	Small trees begin to sway.
6	25-31	39-49	22-27	Strong Breeze	Large branches are in motion. Whistling is heard in overhead wires. Umbrella use is difficult.
7	32-38	50-61	28-33	Near Gale	Whole trees in motion. Some difficulty experienced walking into the wind.
8	39-46	62-74	34-40	Gale	Twigs and small branches break from trees. Cars veer on road.
9	47-54	75-88	41-47	Strong Gale	Larger branches break from trees. Light structural damage.
10	55-63	89-102	48-55	Storm	Trees broken and uprooted. Considerable structural damage.
11	64-72	103-117	56-63	Violent Storm	Widespread damage to structures and vegetation.
12	> 73	> 117	> 64	Hurricane	Considerable and widespread damage to structures and vegetation. Violence.

Previous Occurrence

CNPPS had major wind damage at Choctaw Middle School and the football field on August 26, 2019, resulting in $10,045.00 in repairs. The Middle School roof blew off into the field and damaged the turf and the press box. The school district had no other occurrences of significant wind damage to school property between 2011 to 2022 at the time of writing this HMP.

The planning area was included in numerous high wind warnings, advisories, and watches between January 1, 2011 and September 30, 2022. The NWS issued 5 High Wind Warnings on:

- December 20, 2012
- June 24, 2018
- March 13, 2013
- May 14 and 18, 2020

The NWS issued 1 High Wind Watch on March 13, 2013. The planning area was included in 140 Wind Advisories between January 1, 2011 and September 30, 2022. The table below shows the dates of the advisories to demonstrate that the planning area can experience high winds year-round; red flag advisories and wind chill advisories will be included under the hazard profiles Wildfire and Winter Weather respectively.

Dates of Wind Advisories in Oklahoma County 2011-2022					
2011	**2012**	**2013**	**2014**	**2015**	**2016**
March 11, 22	January 1, 11, 12, 22	January 11	January 12, 27	January 25	February 8, 18, 23
April 3, 10, 15, 17, 29	February 20, 23	March 10, 24	February 27, 20	February 1, 4, 26	March 6, 22
May 30	March 6	May 2	March 11, 16, 26	March 25	April 5
June 16, 20	April 14	November 22	April 13, 16, 27	April 3	October 17
November 2, 5, 12, 18, 26	May 23		May 11	November 11, 21	November 17
	September 7		October 13	December 20	December 16, 25
	October 17		November 11, 23		
	November 10		December 25		
	December 20				
2017	**2018**	**2019**	**2020**	**2021**	**2022**
January 24	January 11, 22	January 19, 21, 23	March 20	January 14, 15, 30	January 15, 19
February 12	March 5, 6	February 13, 23	April 12, 29	February 4	February 16, 17
March 6, 23, 24	April 3, 13, 14	March 9, 14	June 9	March 9, 10, 17	March 5, 17, 22 29, 30
April 30	May 11	April 10, 13	September 27	April 4, 7, 8, 26	April 6, 7, 19, 22, 29
May 17	November 25	November 11, 26, 30	October 12, 29	October 28	May 30
October 15, 27	December 13		November 14, 15	December 6, 10, 15	
November 18			December 23		

The Oklahoma Mesonet recorded maximum wind speeds in miles per hour (mph) and the following table provides the year and the number of days with sustained wind speeds over 20 mph. Based on the data provided by the Oklahoma Mesonet, the planning area experiences an **average of 32 days annually with high winds of 20 mph or above**. The planning area also regularly experiences days with maximum wind gusts well over 30 mph; the strongest wind gust recorded between January 1, 2011 and September 30, 2022 occurred on August 26, 2019 reached 57.44 mph. The second highest wind gust reached 56.06 mph on March 31, 2015, and the third highest wind gust reached 53.78 mph on May 31, 2013.

Days with Sustained Winds over 20 MPH in Oklahoma County							
Year	**Wind Speed Range (MPH)**	**Number of Days**	**Max gust recorded each year**	**Year**	**Wind Speed Range (MPH)**	**Number of Days**	**Max gust recorded each year**
2011	20.11-30.98	42	46.91 mph April 15	**2017**	20.00-27.04	28	45.52 mph, July 3
2012	20.0-31.92	34	53.13 mph, April 15	**2018**	20.04-31.81	35	50.71 mph, July 30
2013	20.22-41.92	26	53.78 mph, May 31	**2019**	20.00-45.16	19	57.44 mph, August 26
2014	20.09-27.34	49	46.77 mph, June 12	**2020**	20.11-31.45	35	49.26 mph, July 10
2015	20.02-36.6	34	56.06 mph, March 31	**2021**	20.02-32.75	34	47.71 mph, April 24
2016	20.00-26.33	24	44.65 mph, February 8	**2022**	20.18-31.12	34	49.39 mph, April 5

Probability

The probability of the planning area experiencing high winds is high. If the range of wind speeds or maximum wind gusts were to become stronger than the listed ranges above, the planning area could expect more damages to school infrastructure and/or vegetation debris from broken limbs on the periphery of the wildland areas of the school district. If the occurrence of high winds were to decrease, it would result in an economic savings for the school.

Vulnerability & Impact

The school district is vulnerable to the impact of high wind events.

Only 6 school buildings have adequate safe rooms for students and staff; those buildings are Nicoma Park Elementary and Middle Schools, Westfall Elementary, the Administration Building, Choctaw Middle School, and the Transportation office. The buildings that do not have adequate safe rooms for students and staff are **Choctaw Elementary, Nicoma Park Intermediate, JGI/IME, and the VoAg site.** The students and staff currently shelter in place during high wind events. This is not ideal as blowing debris from broken glass and vegetation could penetrate the areas.

The **Choctaw High School** does have a shelter area in the Activity Center that is partially underground, under concrete stands, and deemed safe for sheltering. However, it is inadequate considering the distance required for students to walk or run from the opposite side of the campus. Walking across the campus to the sheltering area requires a 5-7 minute walk on sunny days. Students with disabilities or special needs could need more time depending on their mobility. Covered walkways are not a feasible option considering the distance and proximity of the buildings to each other. An additional saferoom in another part of the High School campus would provide the necessary shelter to safely house all students and staff during a high wind event.

In addition to the lack of adequate safe rooms, **none of the buildings** have windows with shatterproof or protective film to diminish the potential for airborne broken glass. Airborne shattered glass has the potential to harm anyone and presents an additional hazard during high wind events.

3.4.6 Severe Thunderstorms (Including Hail, Lightning)

*For hazard mitigation planning purposes, the planning team decided to place Hail and Lightning with **Severe Thunderstorms** as it is likely a severe thunderstorm will include hail and lightning activity, if conditions are conducive. **High Winds** will remain separate hazard profiles as High Winds can occur any time of year, and not dependent on Severe Thunderstorm conditions. **Tornadoes** will also remain separate as severe thunderstorm conditions do not guarantee the development of tornadic events.*

Descriptions

Severe Thunderstorms are dangerous storms that can include hail and lightning. If conditions are conducive, these storms can develop into tornado events. Based on the National Weather Service's (NWS) definition, "A thunderstorm that produces a tornado, winds of at least 58 mph, and/or hail at least 1" in diameter. A thunderstorm wind equal to or greater than 40 mph and/or hail of at least ½" is defined as approaching severe."

Hail can accompany severe thunderstorms. Hail is a frozen form of precipitation that occurs when precipitation gets swept back into the clouds by an updraft. Hailstones larger than the size of a quarter can result with powerful updrafts, and can accompany supercell storms with a sustained rotating updraft. Once the updraft cannot support the weight of the hailstone, it falls to the ground.

The National Severe Storms Laboratory defines **lightning** as, "a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges build up enough, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that we know as lightning. The flash of lightning temporarily equalizes the charged regions in the atmosphere until the opposite charges build up again." As shown in the Vaisala Lightning Report 2021, Oklahoma ranks 4th in the United States for the number of cloud-to-ground strikes. In the Vaisala Lightning Report 2020, Oklahoma ranked 3rd. It should be noted that there are two types of lightning: in-cloud lightning and cloud-to-ground lightning.

Location

CNPPS is located in central Oklahoma, and is affected by severe thunderstorms with accompanying hail and lightning.

Extent

According to the NWS, Severe Thunderstorms must have either winds exceeding 58 mph or produce hail of 1" or larger. Thunderstorms generally include lightning, either in-cloud pulses or cloud-to-ground strikes.

The planning team used this NWS Hail Estimate Chart to define hail and provide general guidelines describing the extent of damage to be expected from various sizes of hailstones. Hail can vary in size from small pea size pieces of ice that do little to no damage to very large stones that can destroy crops, vegetation, homes, cars, and trees. It is possible that any size of hail described on this

chart could occur within the planning area, but the expected range of hail is between ¼" to 3". For planning purposes, any hail over 1" in diameter is considered a threat and could harm anyone caught outdoors and/or cause damage to vehicles, structures, livestock, and crops.

NWS Hail Estimate Chart	
Hail Diameter (inches)	**Size Description**
¼"	Pea; no damage
½"	Penny or large marble; slight damage to vegetation
¾"	Penny or large marble; significant damage to vegetation and crops
7/8"	Nickel; severe damage to crops, damage to glass, plastic structures, paint and wood scoring
1"	Quarter; severe damage to crops, damage to glass, paint and wood scoring
1 ¼"	Half dollar; widespread glass damage to tile roofs, significant risk of injury
1 ½"	Walnut or ping-pong ball; widespread glass damage and vehicle body damage
1 ¾"	Golf ball; destruction of glass, damage to tile roofs, significant risk of injury
2"	Hen's egg; aircraft body dented, brick wall pitted
2 ½"	Tennis ball; severe roof damage, risk of serious injury
2 ¾"	Baseball; severe damage to aircraft bodywork
3"	Teacup size; severe damage to aircraft bodywork
4"	Grapefruit; extensive structural damage, risk of severe or fatal injury to people in the open
4 ½"	Softball; extensive structural damage, risk of severe or fatal injuries to people out in the open

Lightning is particularly difficult to mitigate as it is extremely dangerous as well as incredibly unpredictable. Lightning can strike up to 10 miles from the main thunderstorm, which is within hearing distance of the storm itself.

The planning area also uses the Lightning Activity Level Scale to categorize Lightning Extent. The planning area can expect to experience any level on the Lightning Activity Level Scale shown on the right.

Lightning Activity Level (LAL)	
Is a scale which describes lightning activity. Values are labeled 1-6:	
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater then 15 cloud to ground strikes in a 5 minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Previous Occurrences

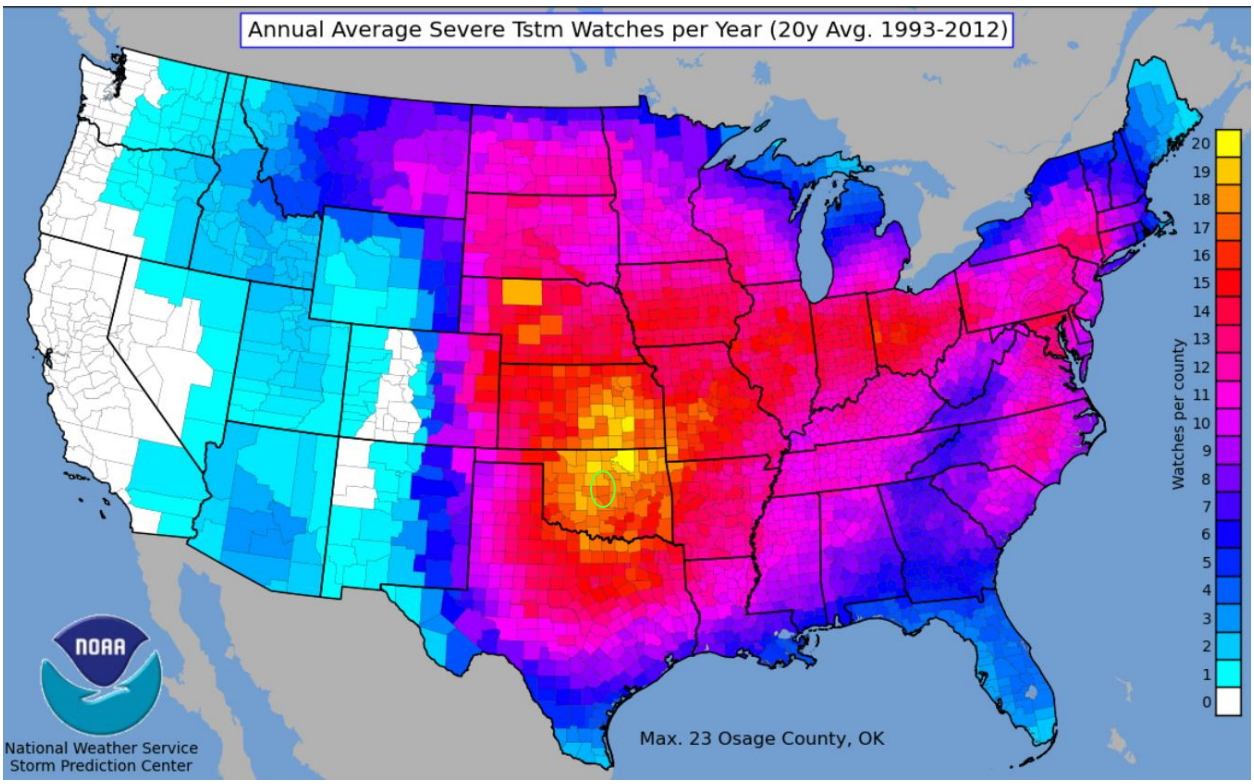
The planning area experiences severe thunderstorms along with the greater geographic area as storms form and cross Oklahoma.

The planning area reported damages to school buildings in 2015 and 2017. Details are below.

The planning area reported no damages or events due to lightning.

Thunderstorms

The planning area is regularly included in thunderstorm watches and warnings. This graphic shows the 20-year average for the annual number of Thunderstorm Watches nationwide. Oklahoma County is highlighted by the oval where the planning area lies. According to the legend on the right of the graphic, Oklahoma County experienced an average of 16 thunderstorm watches per year between 1993-2012.



The Iowa State University Mesonet maintains a database that lists the number of various storm warnings and advisories issued by the NWS. According to their documentation, the planning area experienced the following number of Severe Thunderstorm Warning annually between 2011-2022. The annual average of severe storm warnings issued remained 16 between 2011-2022.

Dates of Severe Thunderstorm Warnings in Oklahoma County 2011-2022					
2011	**2012**	**2013**	**2014**	**2015**	**2016**
20	15	26	10	14	16
2017	**2018**	**2019**	**2020**	**2021**	**2022**
22	19	24	18	13	15

Hail Events

The NCEI Storm Events Database reported 78 days between January 1, 2011 and September 30, 2022 that had hail events. No events resulted in a loss of life.

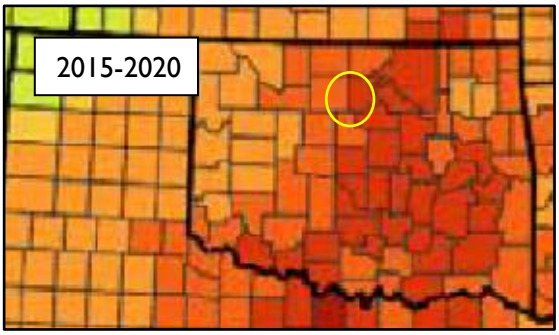
Year	Number of Hail Events	Year	Number of Hail Events
2011	9	2017	10
2012	6	2018	4
2013	11	2019	12
2014	4	2020	4
2015	4	2021	5
2016	6	2022 (Jan-Sept)	2

Within the geographic area of Oklahoma County, the largest hailstones reported to the NCEI occurred on May 29, 2012 and two areas of the county reported a 2 ¾" and 3" hailstone. The next largest hailstones fell during a thunderstorm event on May 19, 2013 and they measured 2 ¾" and 2 3/5".

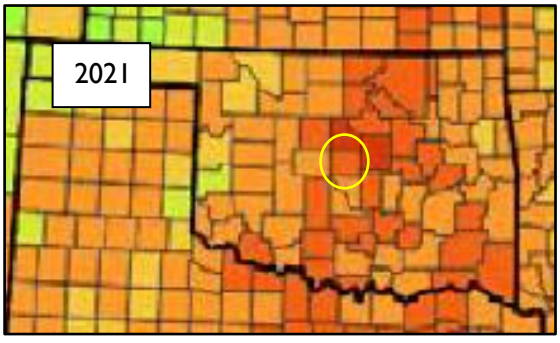
CNPPS reported that multiple buildings had $1,043,751.39 in damages on March 25, 2015. Roofing also experienced minor damages on May 6, 2015. Another hail event on March 26, 2017 resulted in $993,761.39 in damages to school roofs. Not all hail events result in damages to school infrastructure.

Lightning Events

This upper graphic shows the total lightning density for Oklahoma County from 2015-2020. The planning area experienced a total lightning density of 96-128 lightning events per square kilometer annually during that time frame.



This lower graphic shows the total lightning density for Oklahoma County for 2021. The planning area experienced a total lightning density of 64-96 lightning events per square kilometer.

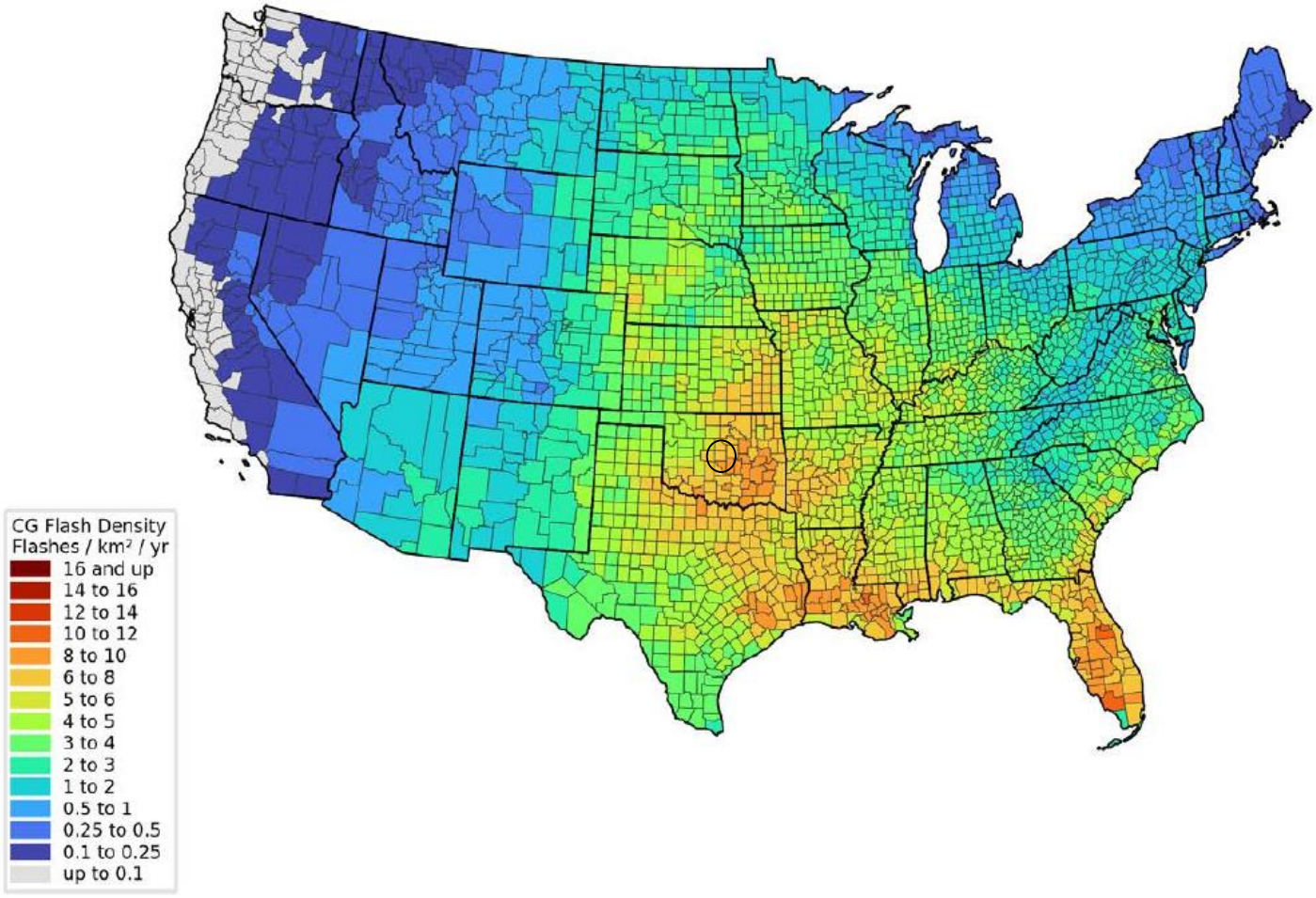


*Note: All lightning graphics are from the Vaisala Lightning Reports that can be found on their website.

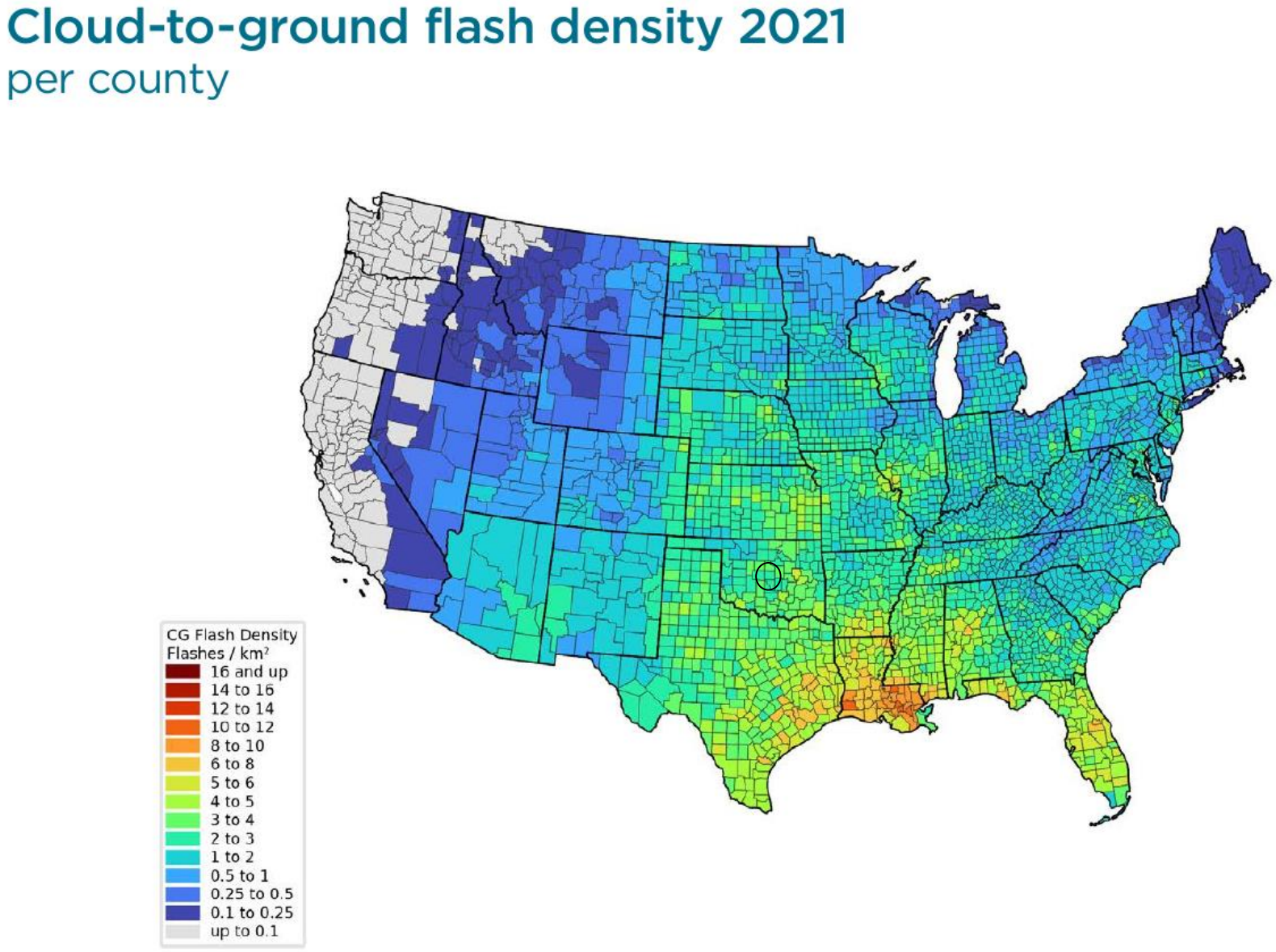
The Vaisala Lightning Report 2021 shows that Oklahoma County as a whole experiences 64-96 cloud-to-ground strikes annually. The planning area expects that it will continue to experience the that range of cloud-to-ground strikes annually.

For planning purposes, it is assumed the planning area refers to the cloud-to-ground strikes that are more likely to affect the CNPPS infrastructure. This graphic shows that CNPPS lies within a geographic area that experienced 6-8 cloud-to-ground strikes annually between 2015-2020.

Cloud-to-ground flash density 2015–2020
per county



This graphic for 2021 shows the cloud-to-ground strikes decreased in Oklahoma County where CNPPS lies to 2-3 strikes.



Probability

The probability of CNPPS experiencing a severe thunderstorm event is high. It is expected that the planning area will continue to experience the same frequency of events based on historical data.

The probability of CNPPS experiencing a hail event is high. It is expected that the planning area will continue to experience the same frequency of hail events according to historical data.

The probability of CNPPS experiencing a lightning event is high. As the data showed from these reports, 2021 saw a slight decrease in the number of lightning events from the number of events recorded between 2015-2020. It is expected that the planning area will continue to experience at

least that amount (64-96 events) of lightning activity in the future, if not more. There is not enough long-term data available to determine if this change is due to anything other varying weather patterns over the short-term.

If any of these types of events were to increase in frequency, it is anticipated that the school district would experience more associated economic loss from the damages.

If any of these events were to decrease, it would result in the school retaining funds that might otherwise be spent on associated storm related repairs. Other projects could be completed with these extra funds or saved for future events.

Vulnerability & Impact

CNPPS could experience thunderstorms with associated hail and lightning at any time due to the strong storm systems that develop and pass through the planning area. April through June typically produces the most violent storms in central Oklahoma; however, violent storms can form any time of year if conditions are conducive.

The most vulnerable objects to severe thunderstorms are the CNPPS transportation fleets, roofing, and windows.

CNPPS has limited covered parking for fleet vehicles and employee vehicles. Some fleet vehicles can be parked in the school's warehouse and under awnings on the administration building. The VoAg shop also has limited parking for the vehicles at that site. However, this limited covered parking is not adequate to keep the entire transportation fleet at all school sites from experiencing hail damage during significant hail events. This results in an economic loss for the school and disrupts operations if a bus requires extensive repairs.

The roofing on all school buildings is hail resistant as all buildings now have metal roofing. However, none of school sites have shatterproof glass or protective window film on any of the windows. Severe damage to school buildings in extreme hail events could warrant alternate classroom locations to conduct school if multiple windows area shattered through the impact of hail.

Occasionally, severe thunderstorms develop in the area without advanced warning. In such situations, any students caught outdoors are vulnerable to potential injury from hail, though loss of life is unlikely.

Rapidly developing storms without warning also present the threat of lightning strikes up to10 miles from the actual storm cell. Any staff, students, or administrators caught outdoors is susceptible to possible injury or loss of life due to the unpredictable nature of lightning.

If the severe thunderstorm develops without advance warning, anyone attending sporting or outdoor events are vulnerable to the lightning strikes that can often precede a storm. Coaches and game officials do have handheld lightning detection devices and/or apps on their phones to assist with weather monitoring during outdoor events. However, the unpredictable nature of lightning, strikes can occur with no warning.

Lightning strikes can cause power outages, significant damage to electrical power systems, poles, and any structure improperly grounded. CNPPS has taken measures to properly ground electrical systems, the security cameras, electronics, and computer systems, but they are still vulnerable to lightning strikes. Older structures do not have UPS backups on computers and servers. CNPPS does not have generators that would supply enough energy to keep refrigerators and freezers on and preserve food supplies for ongoing cafeteria services. The school district does not have any school buildings connected to generators. The high school as a couple of portable generators, but none of these generators could sustain the entire building.

Lightning strikes could also ignite wildland areas surrounding the VoAg site, IME-JGI, the east side of Westfall Elementary, the southwest corner of the High School Campus, and the northwest corner of Nicoma Park Intermediate school sites, resulting in damages to school buildings. A loss of these school structures could result in a disruption to classes until an alternate location can be opened to students.

3.4.7 Tornado

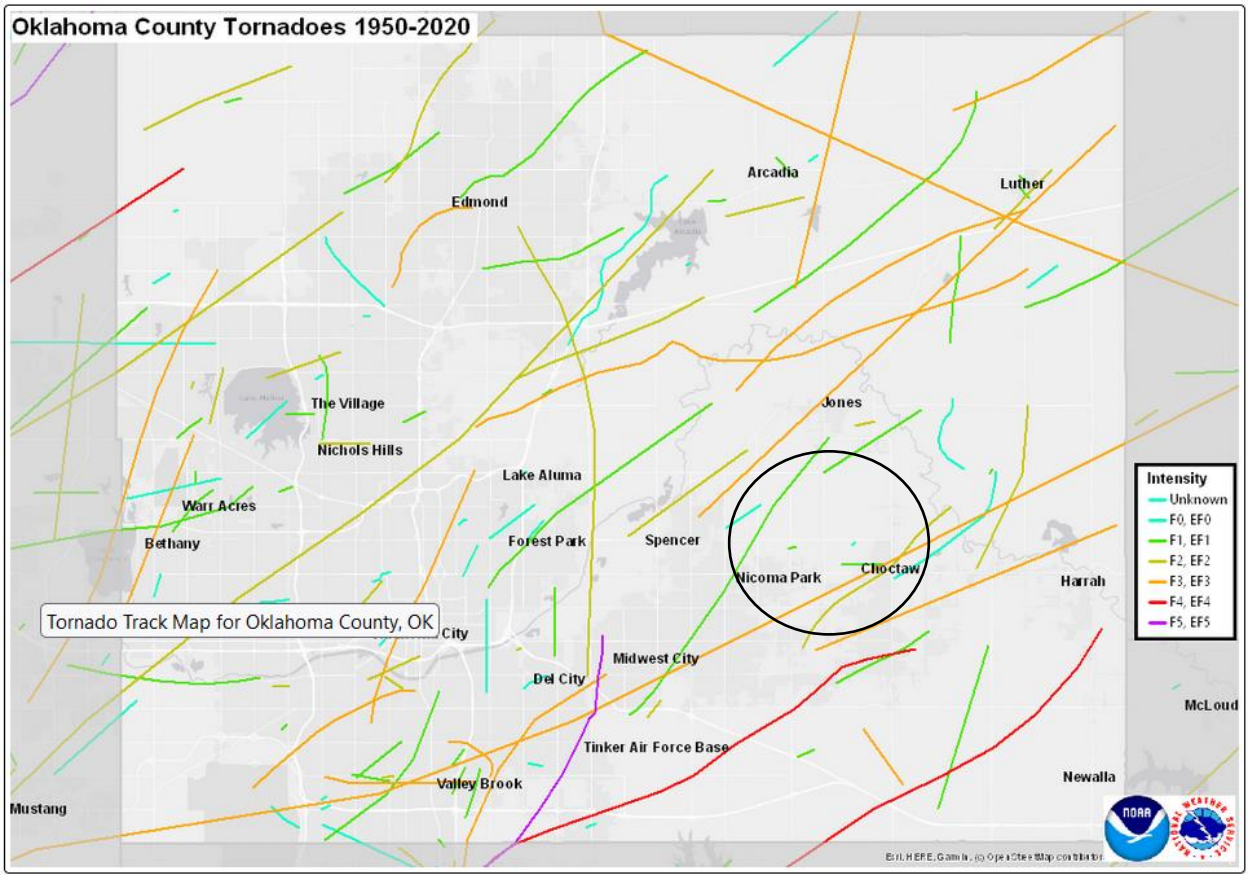
Description

When warm air collides with a cool front, tornadoes can result as a rotating column of air, varying in appearance from thin rope-like columns to large wedge shapes more than a mile wide. Tornadoes often accompany supercell thunderstorms, but the presences of a thunderstorm does not guarantee the development of a tornado. Tornadoes might last a few seconds or more than an hour.

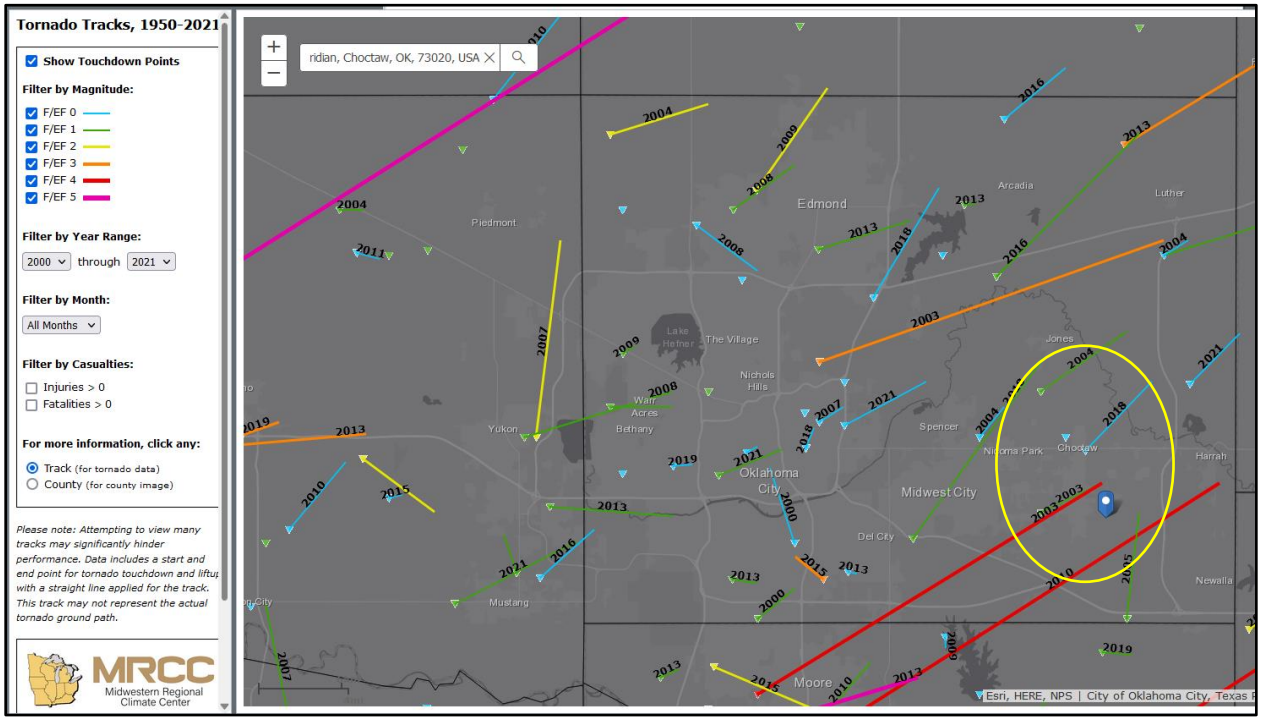
These violently rotating columns can vary in size and do not necessarily correlate with its wind speed. Within the planning area, most tornadoes occur between 3pm and 9pm, between March and May. However, doe to the extremely variable weather in central Oklahoma, tornadoes can and have occurred any time of year if the wind shear, life, atmospheric instability, and moisture are present.

Location

The planning area is affected by tornadoes. This map shows the tornado paths that have crossed Oklahoma County. The oval indicates the approximate location of the school district, and the school buildings lie within close proximity to the tornado paths that have occurred between 1950-2020.



This map of tornado tracks from MRCC shows a blue marker for JGI/IME schools. in proximity to the tornado tracks that have occurred within the planning area since 2000. (JGI/IME is the most central school site within the school district. The surrounding oval represents the approximate boundaries of the school district.



Extent

The planning area uses the Enhanced Fujita Scale to categorize Tornadoes and the school district has experienced the range from EF0 to EF1 since 2011, but could experience any range of EF values on this scale. The NWS has recorded EF2 to EF5 strength tornadoes throughout the history of Oklahoma County. It is expected that the planning area will continue to experience the same range of tornadic events in the future.

EF Rating	Wind Speeds (MPH)	Expectations
EF-0	65-85	Minor damage: Shingles blown off roofing, damage to gutters/siding, broken tree branches, shallow rooted trees blown over
EF-1	46-110	Moderate damage: More significant roof damage, broken windows, exterior doors damaged or lost, mobile homes damaged or overturned
EF-2	111-135	Considerable damage: Roofing torn off well-constructed homes, homes shifted on foundation, mobile homes destroyed, large trees snapped or uprooted, cars tossed
EF-3	136-165	Severe damage: Entire stories of well-constructed homes damaged or destroyed, significant damage to large buildings, homes with weak foundations blown away, trees losing bark
EF-4	166-200	Extreme damage: well-constructed homes leveled, cars thrown significant distances, top story exterior walls of masonry buildings likely to collapse
EF-5	>200	Massive/incredible damage: well-constructed homes swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain structural damage, trees completely debarked, stripped and snapped branches

Previous Occurrence

The school district infrastructure has sustained no damages from tornadoes between 2011 to 2022 at the time of writing this HMP. This table is from the NWS gives the specific locations under the "Path" column of the tornado events that included the planning area since 2011. The events that overlap with the school district are highlighted in yellow.

Date	Time (CST)	Path Length (miles)	Path Width (yards)	F-Scale	Killed	Injured	County	Path
05/19/2013	1522-1530	5	900	EF1	0	0	Oklahoma	Edmond (near 33rd St/S Boulevard - 0.3 NE 15th/E Air Depot)
05/19/2013	1533-1534	0.5	200	EF1	0	0	Oklahoma	1 SW Arcadia
05/19/2013	1541-1624	21	1200	EF3	0	4	Oklahoma/ Logan/ Lincoln	3 NW Luther - Carney (SE portion) - 3 SE Tryon
05/31/2013	1751-1809	6	600	EF1	0	0	Canadian/ Oklahoma	5 SE Yukon (NW of SW 15th/Morgan) - W Oklahoma City (near SW 15th/Meridian)
05/31/2013	1835-1837	0.5	200	EF0	0	0	Oklahoma	Oklahoma City (0.3 NNE SE 59th/Bryant)
05/31/2013	1853-1855	1.1	300	EF1	0	8	Oklahoma	Oklahoma City (near SW 59th/Penn - SW 59th/Western)
12/14/2014	1709	0.2	50	EF0	0	0	Oklahoma	4 SW Arcadia
03/25/2015	1729	0.2	30	EF0	0	0	Oklahoma	Oklahoma City (south of NW 10th/Rockwell)
05/06/2015	1941-1948	2	700	EF3	0	12	Oklahoma	Oklahoma City (near SE 56th/Eastern - just W of SE 44th/I-35)
04/26/2016	1908-1912	4	50	EF0	0	0	Canadian/ Oklahoma	1 NE Mustang (near SW 59th/Sara - SW Oklahoma City (NE of SW 29th/County Line Road)
04/26/2016	1943-1953	10	150	EF1	0	0	Oklahoma	4 NW Jones - 3 NNW Luther
04/26/2016	1949-1953	4	100	EF0	0	0	Oklahoma/ Logan	3 N Arcadia - 7 SSW Meridian
10/09/2018	0724-0725	1	10	EF0	0	0	Oklahoma	Oklahoma City (near NE 23rd/Kelley - near NE 30th/Prospect)
10/09/2018	0728-0746	10	20	EF1	0	0	Oklahoma	2 SSW Midwest City (near SE 29th and Town Center Drive) - 1 SW Jones
10/09/2018	0733-0742	6	70	EF0	0	0	Oklahoma	Oklahoma City/Edmond (SE of NE 122nd/I-35 - SE of Danforth/Midwest)
10/09/2018	0742	5	20	EF0	0	0	Oklahoma	Choctaw (just S of NE 23rd/Choctaw) - 5 NE Choctaw
05/25/2019	2146-2147	0.9	50	EF0	0	0	Oklahoma	Oklahoma City (NW 11th Terrace and Warren Place to NW12th and Portland)
05/25/2019	2149-2150	0.7	50	EF0	0	0	Oklahoma	Oklahoma City (NW20th/Blackwelder to NW24th/Western)
05/25/2019	2153	0.5	30	EF0	0	0	Oklahoma	Oklahoma City (near NE 42nd and Kelley)
05/25/2019	2157	0.2	30	EF0	0	0	Oklahoma	Oklahoma City (near NE 63rd and Interstate 35)
08/26/2019	1955-2001	3.4	500	EF1	0	0	Logan/ Oklahoma	2 SSW Seward - 5 NNW Edmond
10/10/2021	1921-1926	3	250	EF0	0	0	Oklahoma/ Lincoln	3 NNW - 5.5 NNE Harrah
10/13/2021	0415-0419	3	75	EF1	0	0	Oklahoma	Oklahoma City (SE of NW 10th Street and May Avenue - SE of NE 23rd Street and Interstate 235)
10/13/2021	0422-0428	4	50	EF0	0	0	Oklahoma	Forest Park (near NE 36th Street and Bryant Ave) - northeast Oklahoma City (NW of NE 63rd Street and Midwest Boulevard)

Probability

The probability of the planning area experiencing a tornado is medium.

Vulnerability & Impact

The school district is vulnerable to the impact of a tornado event.

Only 6 school buildings have adequate safe rooms for students and staff; those buildings are Nicoma Park Elementary and Middle Schools, Westfall Elementary, the Administration Building, Choctaw Middle School, and the Transportation office. The buildings that do not have adequate safe rooms for students and staff are **Choctaw Elementary, Nicoma Park Intermediate, JGI/IME, and the VoAg site.** The students and staff currently shelter in place during tornado events. This is not ideal as blowing debris from broken glass and vegetation could penetrate the areas.

The **Choctaw High School** does have a shelter area in the Activity Center that is partially underground, under concrete stands, and deemed safe for sheltering. However, it is inadequate considering the distance required for students to walk or run from the opposite side of the campus. Walking across the campus to the sheltering area requires a 5-7 minute walk on sunny days. Students with disabilities or special needs could need more time depending on their mobility. Covered walkways are not a feasible option considering the distance and proximity of the buildings to each other. An additional saferoom in another part of the High School campus would provide the necessary shelter to safely house all students and staff during a high wind event.

In addition to the lack of adequate safe rooms, **none of the buildings** have windows with shatterproof or protective film to diminish the potential for airborne broken glass. Airborne shattered glass, debris, and tree branches have the potential to harm anyone and presents an additional hazard during tornado events. The lack of shatterproof film on CNPPS windows makes students, faculty, and staff vulnerable to debris of even small proportions if it came in contact with school building windows.

3.4.8 Wildfire

Description

Wildfire is an uncontrolled fire in a rural of wilderness area; wildfires can also extend into wildland-urban interface (WUI) areas. Dry vegetation, low levels of precipitation, and high winds create the conditions for wildfires to begin by a loose spark, a discarded cigarette, or other source of ignition. These fires can quickly spread due to strong winds that ignite brush, trees, and other structures.

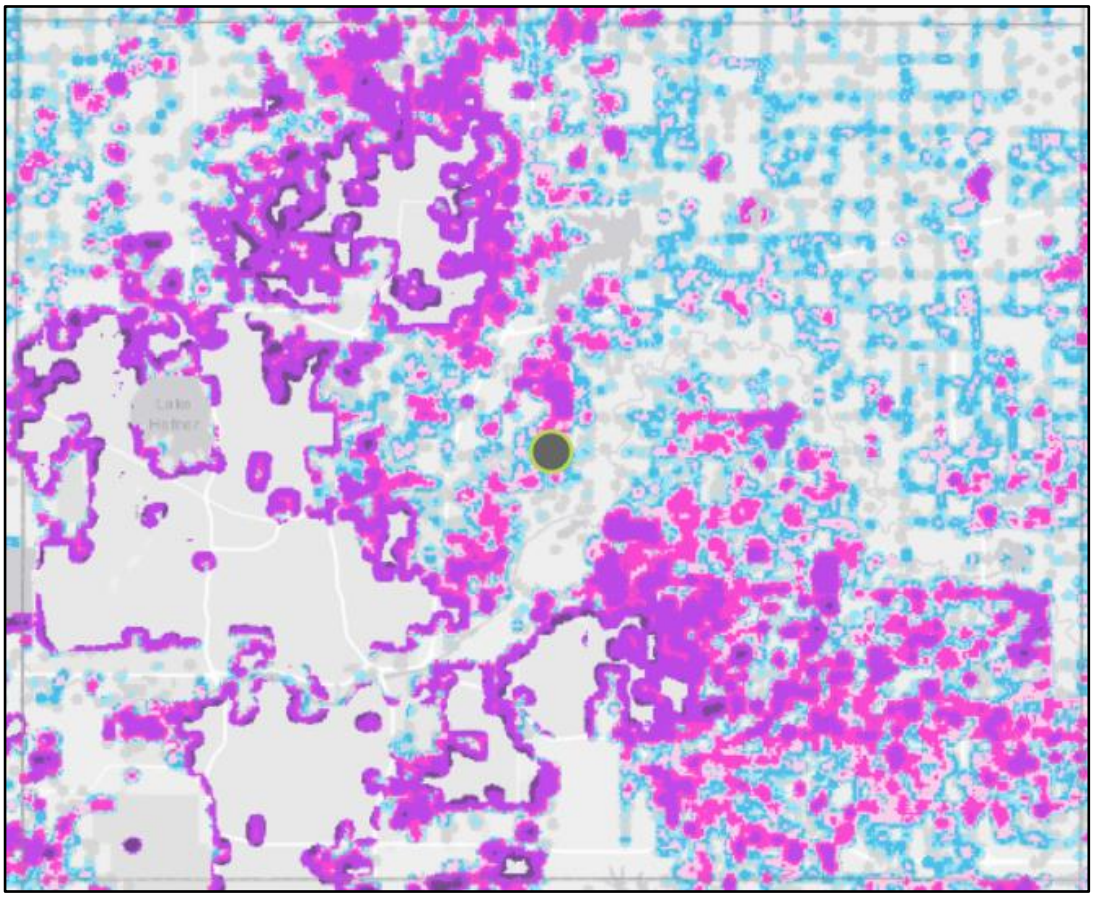
There are three different classes of wildfires:

- A surface fire is common in grasslands, or areas with open vegetation spreads quickly.
- A ground fire is a dense, very hot fire that has a thick fuel source and significantly damages the soil health where it occurs.
- Crown fires move by embers and flames jumping along the tops of trees.

Location

The planning area is affected by wildfire.

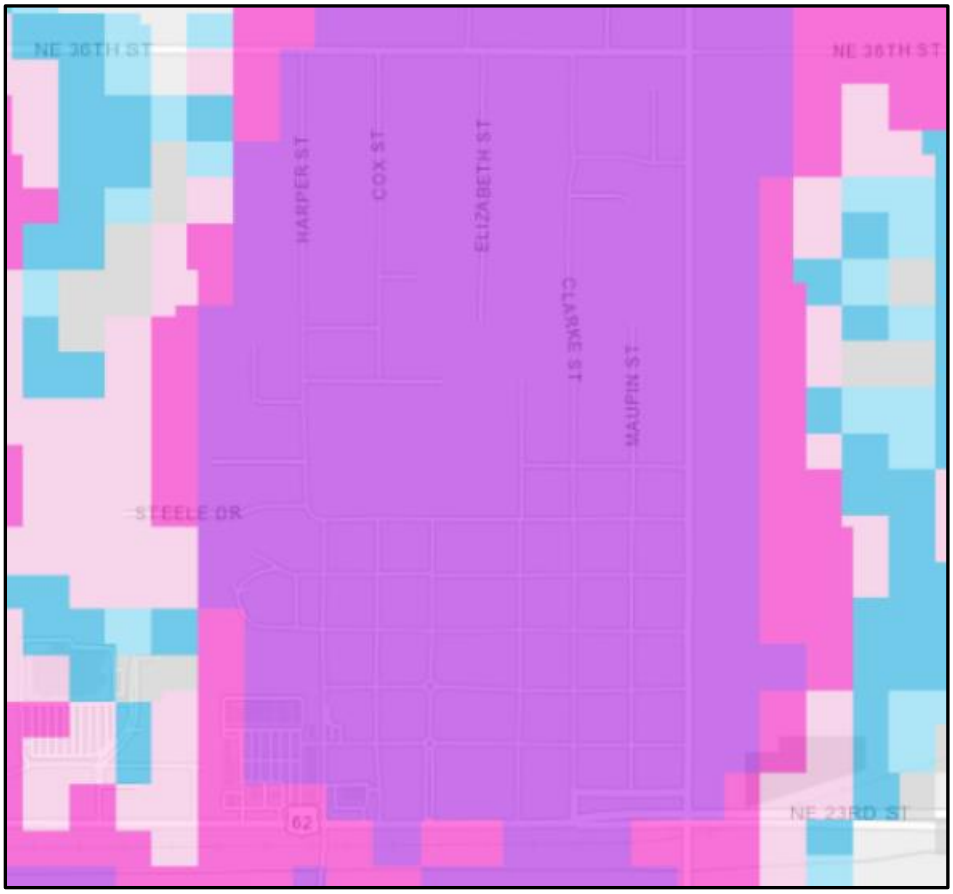
Each campus has a different level of wildfire risk, depending on its proximity to wildland areas. Urban sprawl from Oklahoma City, Midwest City, and Del City keeps extending eastward to the smaller municipalities of Choctaw and Nicoma Park, and beyond. Wildfires could spread into the WUI where urban and rural areas meet. As this county-wide WUI map shows, the school district is spread throughout the area shown by the oval.



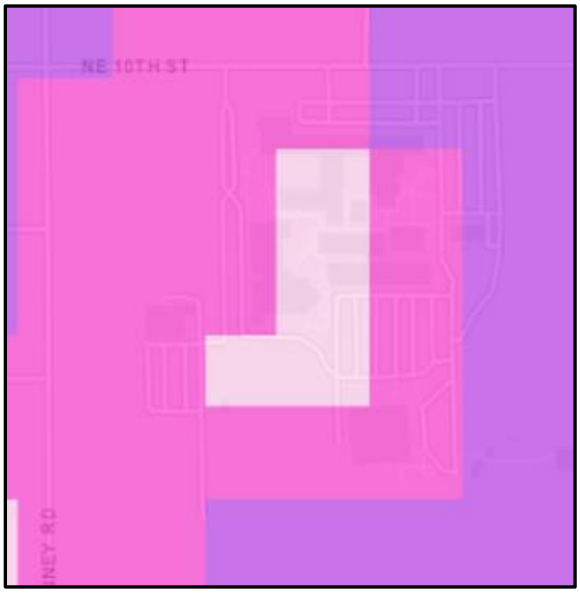
The darkest purple areas signify the areas with the most housing density (3 houses per acre), with lighter purple (1 house per 2-3 acres), magenta (1 house per 2-5 acres), light pink (1 house per 5-10 acres), blue (1 house per 10-20 acres), light blue (1 house per 20-40 acres) areas having less housing density. The lightest grey areas show the areas with the least amount of housing density (1 house per 40+ acres). The greater the housing density, the greater the impact on the population being affected by a wildland fire.

The following graphics will show each campus and the wildland urban interface (WUI) surrounding each one. Each campus will be indicated by a star. Any green circles can be disregarded as they are the location point provided by the Southern Wildfire Risk map; the star symbols provide a more precise location of the campuses.

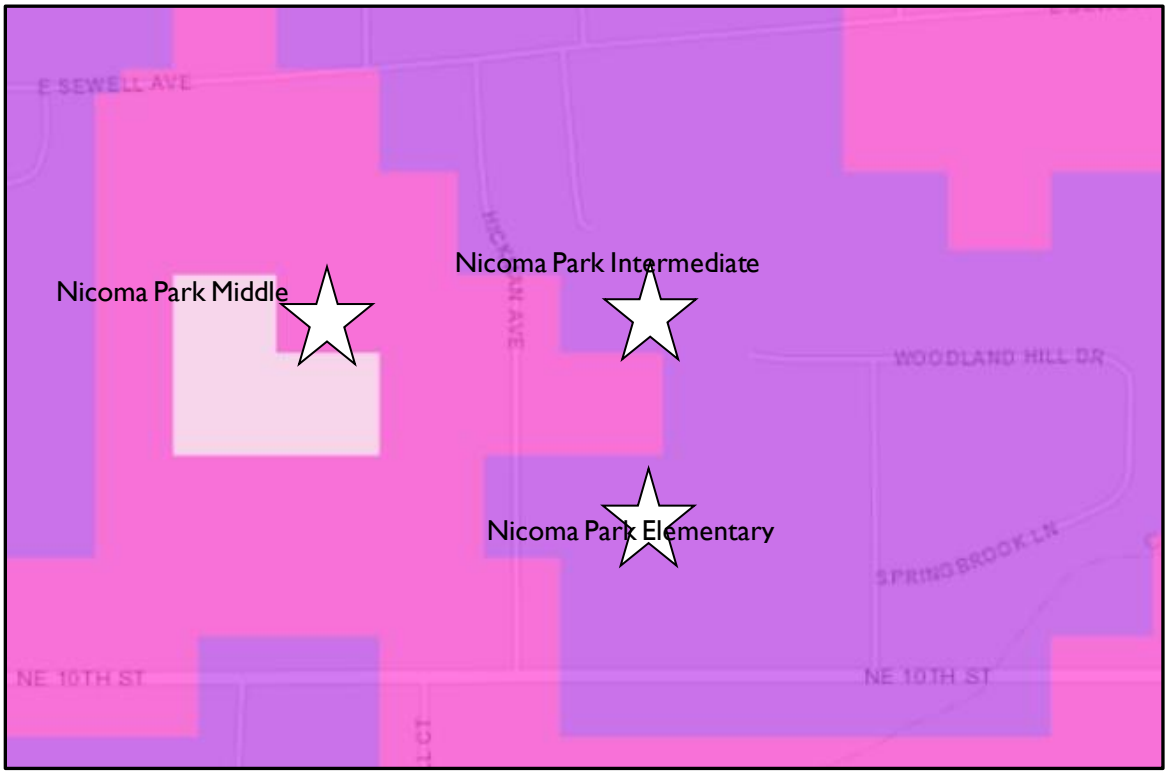
This WUI map shows **Choctaw Elementary and Choctaw Middle Schools**. All school buildings for both campuses lie within a WUI of 1 house per 2-3 acres. (lighter purple)



This map shows **Choctaw High School** campus. The central part of the campus has a WUI of 1 house per 5-10 acres (light pink). Beyond the center, the campus has a WUI of 1 house per 2-5 acres (dark pink) and 1 house per 2 acres to 3 houses per acre (light purple).

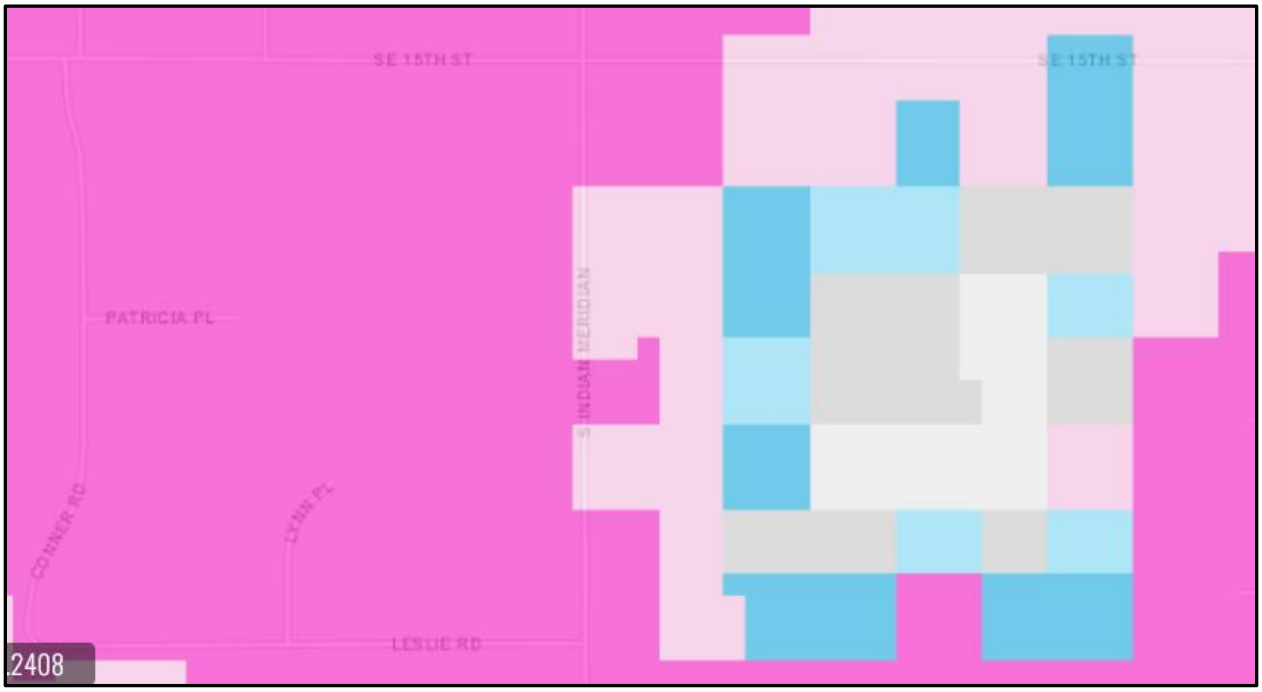


This map shows the WUI for **Nicoma Park Elementary, Intermediate, and Middle Schools**.

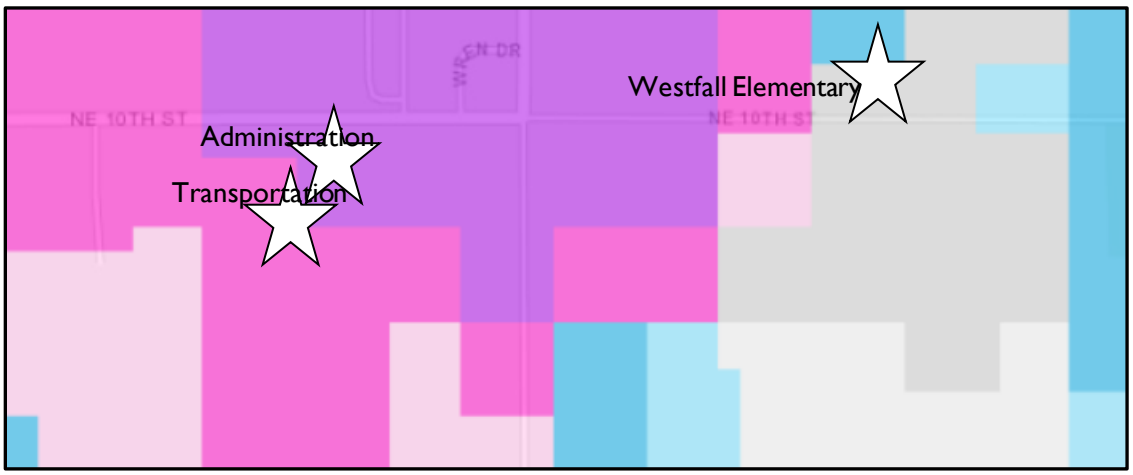


As the WUI shows, the campus buildings lie within a range of housing densities, from 1 house per 5-10 acres (lighter pink) to 1 house per 2-5 acres (magenta), to 1-3 houses per 1-2 acres (lighter purple).

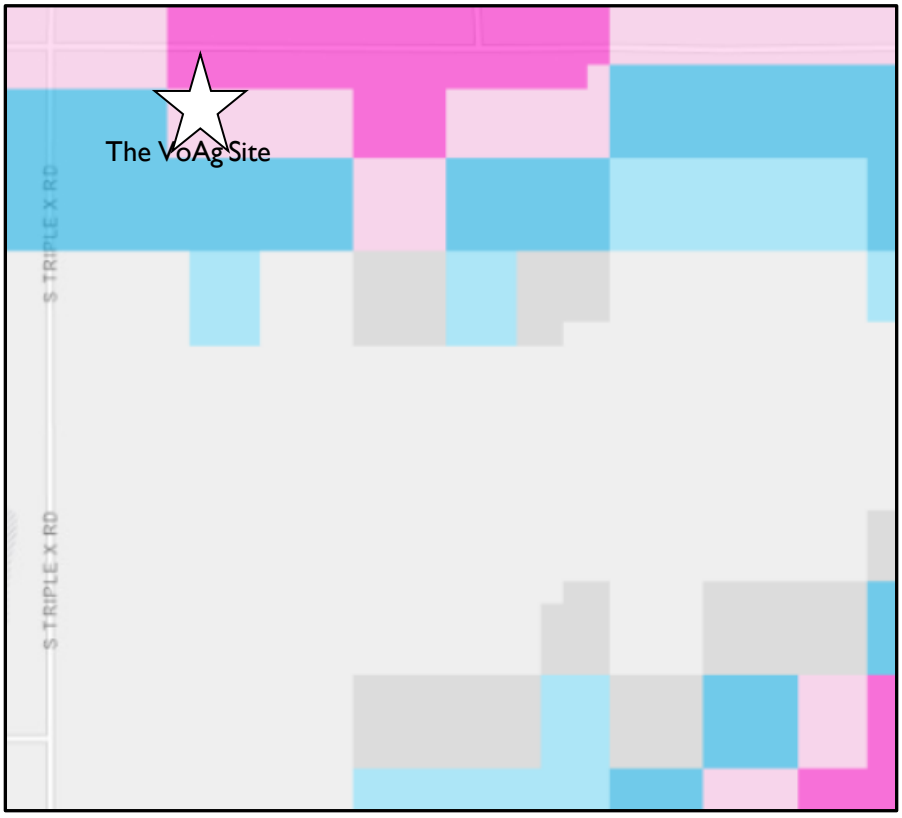
This map shows the WUI for **IME-JGI schools**. The entire campus lies within a WUI of 1 house per 2-5 acres (magenta). Across the street from the school buildings is wildland area as indicated by the mix of WUI.



This map shows the WUI for the **Administration Building and Transportation office**. School property lies within a WUI of 1 house per 2-5 acres (magenta) to 1-3 houses per 1-2 acres (light purple). Further eastward on 10th Street, Westfall Elementary lies within a WUI of 1 house per 20-40 acres (light blue and light grey).



This map shows the WUI for **the VoAg site**. The VoAg building is surrounded by wildland on all side. As this map shows, school property lies within a WUI of 1 house per 5-10 acres (light pink.)



Extent

The planning area uses the Keetch-Byram Drought Index (KBDI) to identify and categorize the extent of dryness across the planning area. The planning area can experience all ranges of dryness on this index.

The Keetch-Byram Drought Index with Fire Danger Rating Data Incorporated	
0 – 200	Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.
200 - 400	Fires more readily burn and will carry across an area with no gaps. Heavier fuels will still not readily ignite and burn. Also, expect smoldering and the resulting smoke to carry into and possibly through the night.
400 - 600	Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
600 - 800	Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn thorough the night and heavier fuels will actively burn and contribute to fire intensity

Previous Occurrence

As mentioned above in Section 3.2, the geographic area of Oklahoma County was included in 8 wildfire disasters between 2011 and 2022. Wildfires in 2007/2008 burned up to the turf fields at the High School sports complex. Behind IME-JGI, wildfires have burned in the wildland behind the campus periodically, though none of the school property has been damaged or destroyed. Between 2011 and 2022, no wildfires have occurred on school property.

The Choctaw Fire Department reported that it responds to an average of 51 wildfire calls annually, and this average was based on the number of calls received between 2011 to 2022. This data is included as Choctaw Fire Department would be one of the responding agencies if CNPPS reported a wildfire within the school district. Other fire districts were contacted and no other information was given to the planning team.

Probability

The probability of the planning area experiencing wildfire is very low. Due to the high probability of drought combined with the high probability of extreme heat that accelerates drying out vegetation, the planning area expects to continue having a high potential for wildfires around the school sites, particularly IME-JGI, Nicoma Park Middle School, and the perimeter of the High School due to the wildland that surrounds these sites.

Vulnerability & Impact

The planning area is vulnerable to wildfire. The southern side of the school district has areas of wildland where the bus routes travel and buses would need to be redirected and detour if a wildfire occurred in these areas. As with all wildfire events, smoke can also cause visibility issues for those fighting the fires and those traveling in the path of the smoke. Loss of property and loss of life can also occur with wildfires, particularly if the wind shifts significantly and changes the course of the fire.

The school district relies on the fire departments of Nicoma Park and Choctaw to respond to any fires that might threaten the schools' campuses. The school does not have any water trucks to use during times of severe drought that could be filled and used for refilling any fire trucks that respond to any fires on any of the campuses. The main campuses are spread out from each other, and it would take time for fire departments to arrive to the campuses. Should these fire departments be already deployed to other fires across the area, response times could take even longer.

3.4.9 Winter Storm

Description

Winter storms can be incredibly difficult to predict since they usually involve any combination of precipitation, including snow, sleet, and freezing rain. A severe winter storm can range from freezing rain or sleet to moderate snow over a few hours, or it might develop into blizzard conditions and extremely cold temperatures that last several days. The effects of a winter storm can also widely vary depending on the ground temperatures and atmospheric conditions. The following definitions are from the NWS.

Snow is "precipitation in the form of ice crystals, mainly of intricately branched, hexagonal form and often agglomerated into snowflakes, formed directly from the freezing [deposition] of the water vapor in the air." Snow can vary in winter storms from powdery flakes that drift and blow easily to wetter, denser flakes that create a layer on the ground and does not as readily drift.

Sleet is "pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Heavy sleet is a relatively rare event defined as an accumulation of ice pellets covering the ground to a depth of a ½" or more."

Freezing Rain is "rain that falls as a liquid but freezes into glaze upon contact with the ground."

Wind Chill is usually a "reference to the **Wind Chill Factor**; increased wind speeds accelerate heat loss from exposed skin, and the wind chill is a measure of this effect. No specific rules exist for determining when wind chill becomes dangerous. As a general rule, the threshold for potentially dangerous wind chill conditions is about -20°F."

Location

The planning area experiences winter storm and the associated variety of precipitation, wind chills, and cold temperatures.

Extent

The planning area uses several resources to categorize the severity of winter storms. As shown by the data, the types of winter storms (and/or precipitation) vary from year to year, but it can be expected that the planning area can experience a combination of at least two types of winter weather annually. For example, extremely cold wind chill and snow, snow and ice, freezing rain and high winds, etc. The severity of each winter storm depends on climatological factors and winter storms vary greatly year to year.

Snow: The following snow tables are based on data collected from 1960-1961 to 2017-2018 and show the average 1-Day and 3-Day snow totals for the Oklahoma City Area. As shown by both tables, the planning area experiences the most snowfall from December to February annually. The amount of snowfall varies from year to year depending on the overall climatological conditions.

This data is included to show that the expected snowfall varies greatly each year. The planning area expects a range of .1" to 15" annually, though if conditions were conducive, more snowfall could occur.

Snow Climatology: Average number of 1-Day Snow Totals for

Oklahoma City Area

	≥ 0.1"	≥ 1.0"	≥ 2.0"	≥ 3.0"	≥ 4.0"	≥ 6.0"	≥ 8.0"	≥ 12.0"	≥ 18.0"	≥ 24.0"
All Months	6.2	2.7	1.4	0.8	0.4	0.2	0.1	0	0	0
January	1.7	0.7	0.4	0.2	0.1	0.1	0	0	0	0
February	1.8	0.8	0.4	0.2	0.1	0.1	0	0	0	0
March	0.7	0.3	0.2	0.1	0.1	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0	0	0
November	0.4	0.2	0.1	0.1	0.1	0	0	0	0	0
December	1.6	0.6	0.3	0.2	0.1	0	0	0	0	0

Period of Record used: Snow Years 1960-61 to 2017-18

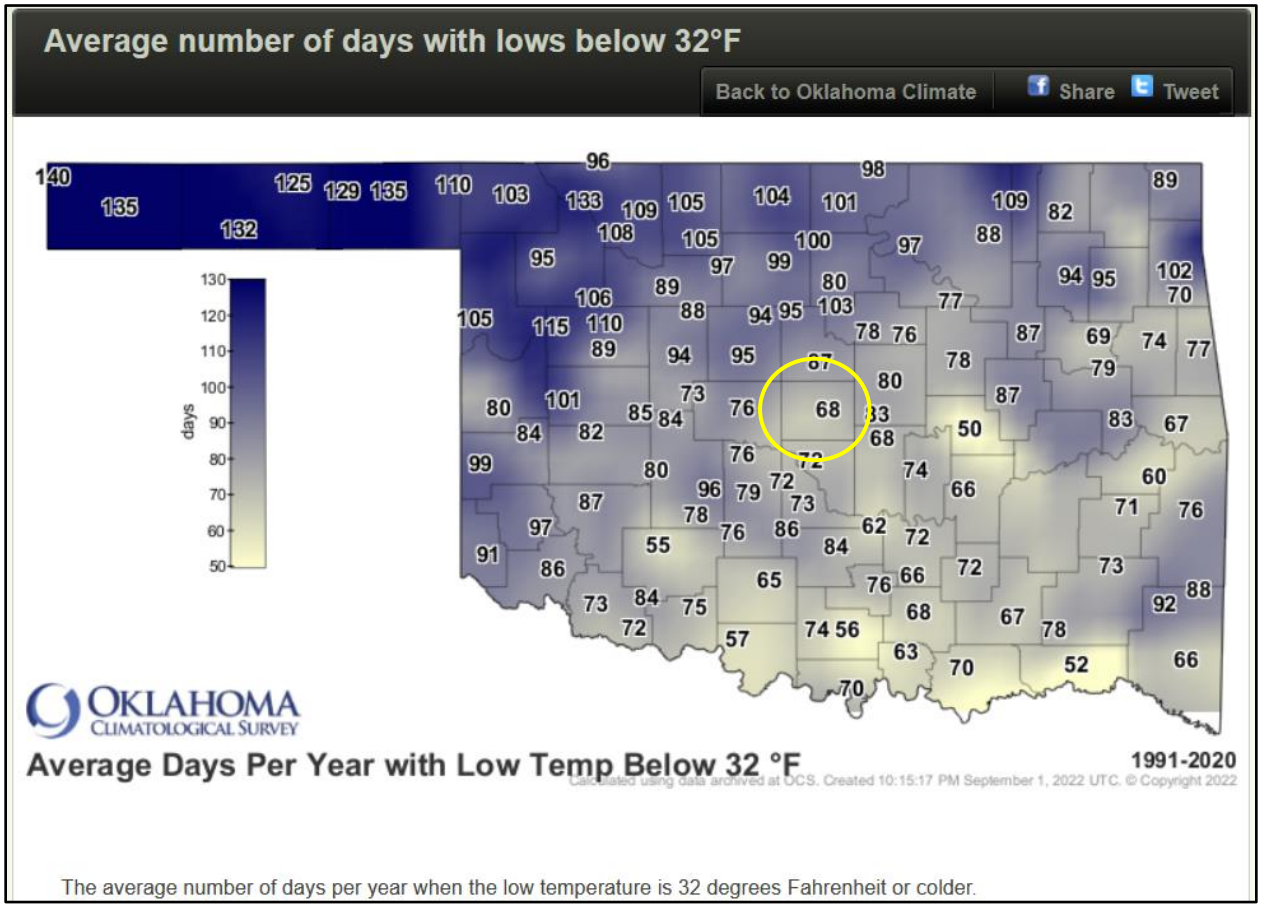
Snow Climatology: Average number of 3-Day Snow Totals for

Oklahoma City Area

	≥ 0.1"	≥ 1.0"	≥ 2.0"	≥ 3.0"	≥ 4.0"	≥ 6.0"	≥ 8.0"	≥ 12.0"	≥ 18.0"	≥ 24.0"
All Months	15.1	7.5	4.3	2.6	1.7	0.6	0.3	0.1	0	0
January	4.1	2	1.2	0.8	0.5	0.2	0.1	0	0	0
February	4.2	2.1	1.3	0.7	0.5	0.2	0.1	0	0	0
March	2	1	0.6	0.4	0.3	0.1	0	0	0	0
April	0.1	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0	0	0
November	1	0.5	0.3	0.2	0.1	0	0	0	0	0
December	3.7	1.8	0.9	0.6	0.3	0.1	0.1	0.1	0	0

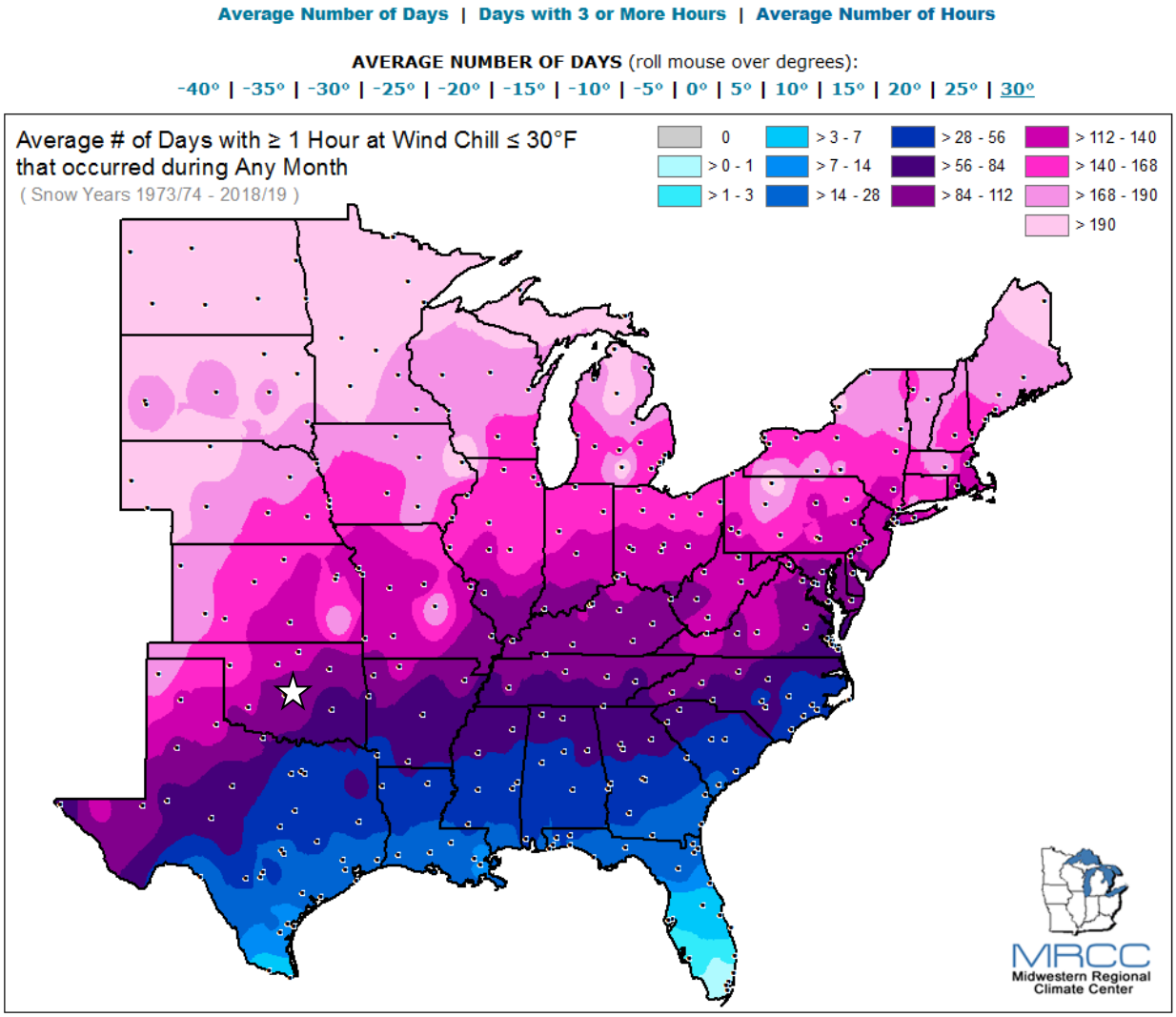
Period of Record used: Snow Years 1960-61 to 2017-18

Extreme Cold: The planning area can experience extreme cold temperatures. Based on the data collected between 1991-2020 by the Oklahoma Climatological Survey, Oklahoma County averages 68 days below 32 degrees annually, though this can vary from year to year. The planning area expects to continue experiencing an average of 68 days of 32-degree weather or colder annually. While extreme cold temperatures dropped to -14.64 degrees on February 16, 2021, temperatures this low are rare, and the expected range of cold temperatures is between 0- and 32-degrees F.

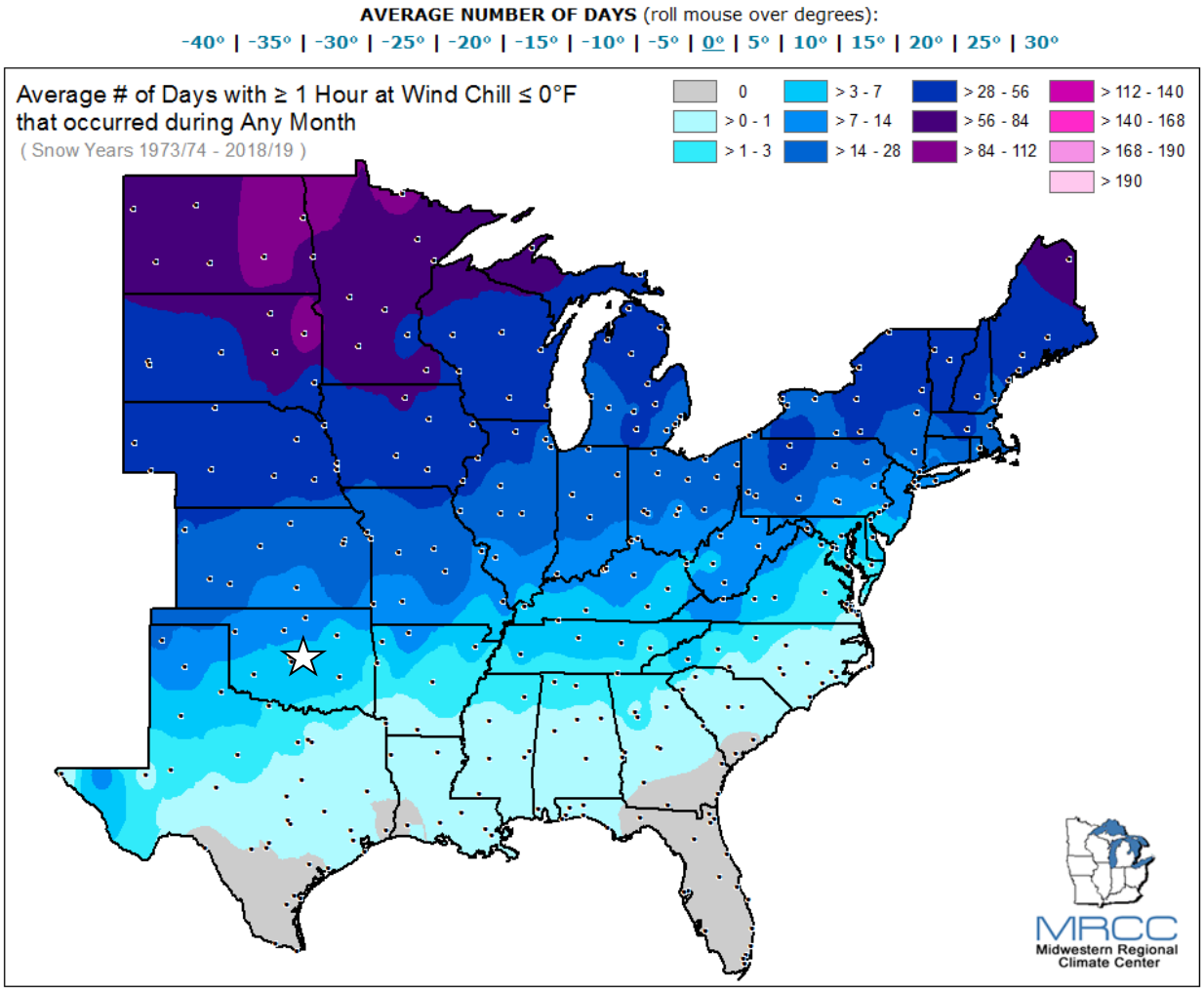


Wind Chill: The following maps provide a visual of the number of days at 30 degrees and at 0 degrees. The approximate location of the school district is indicated by a white star on both maps.

According to the Midwestern Regional Climate Center, the planning area experiences typically between 84-112 days annually with wind chill temperatures of 30 degrees. The planning area expects to continue experiencing this range of days annually with wind chill temperatures of 30 degrees.



Data from the Midwest Regional Climate Center shows that the planning area experiences typically between 3-7 days annually with wind chill temperatures of 0 degrees Fahrenheit. The planning area expects to continue experiencing this range of days annually with wind chill temperatures of 0 degrees.



Between January 1, 2011 and September 30, 2022, records from the Oklahoma Mesonet show that the planning area experienced wind chill temperatures as low as -26.5 degrees, which occurred on February 15, 2021; wind chills this low are extremely rare in this region. The lowest temperature recorded during this time frame occurred on February 16, 2021; on this day, the temperature reached a low of -14.64 degrees and a wind chill of -21.42 degrees.

Based on these maps, the expected range of wind chill temperatures is between 0- and 32-degrees F.

Ice: The planning area uses the Sperry-Piltz Ice Accumulation or "SPIA Index" to gauge how much ice damage has occurred during ice events. The planning area has experienced the entire range of levels on this index and expects that the entire range could occur in the future. Ice events are detailed below in "Previous Occurrences."

The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009

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.

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

Previous Occurrence

Between January 1, 2011 and September 30, 2022, the planning area has experienced 25 winter weather events as documented by the NCDC/NOAA. Events that occurred over the course of several days will be listed as one event below.

Date	Precipitation/Event Details
January 31-February 1, 2011	Light freezing rain, sleet, and snow began on the evening of January 31 and most of the precipitation fell on February 1. Wind gusts of 30 mph increased overnight.
February 4, 2011	8" to 12" of snow fell across Oklahoma County during this winter event. Wind gusts up to 50 mph occurred and blowing snow reduced visibility.
February 8, 2011	Central OK had 1 ½" to 2" of snow.
February 12, 2013	Central OK had 1 ½" to 2" of snow.
February 21, 2013	Oklahoma County reported 1" to 3" of snow.
February 25, 2013	This winter event had little snow accumulation in central Oklahoma.
December 5-6, 2013	Wintry mix precipitation occurred throughout this event, including light freezing rain, sleet, and snow. 4" to 5" of snow accumulated across Oklahoma County.
December 20-21, 2013	Freezing rain prevailed and widespread accumulation of ice ranged from 1/3-1/2" that coated tree, power lines, and elevated surfaces. Sporadic power outages occurred throughout Oklahoma County.
January 4, 2014	Snowfall across Oklahoma County ranged from .1" to 1"
December 27, 2014	Snow accumulated between the morning and ended by noon. 2.5" to 3" of snow accumulated on the eastern half of Oklahoma County.
February 22-23, 2015	Snowfall across Oklahoma County ranged from 2" to 4.5"
February 27-28, 2015	Snow fall accumulation was reported around 2" across Oklahoma County.
March 4, 2015	Light freezing rain, sleet, and snow fell over the course of this event. The snowfall ranged from 2" to 3" across Oklahoma County.
November 27-29, 2015	Ice accumulation measured ¾". Temperatures hovered below and at freezing.
December 27-28, 2015	Sleet transitioned to freezing rain and up to ½" of ice accumulation was reported.
January 13-15, 2017	Up to ¼" of ice accumulation was reported. Temperatures hovered around freezing.
February 20-22, 2018	Freezing rain and sleet fell and 1/2" of sleet/ice accumulated, resulting in many accidents across Oklahoma County.
January 3, 2019	Up to 6" of snowfall across the county
February 5, 2020	4" to 6" snowfall across Oklahoma County
October 26-28, 2020	Historic ice event and ice accumulations ranged between .3" To 1" in Oklahoma County; damage estimates across the county were over $8.2 million. Power outages ranged from a few hours to 2 weeks across the county.
December 13-15, 2020	Up to 7" fell across Oklahoma County during this winter event.
December 31, 2020-January 1, 2021	Freezing rain fell across the county and ice accumulation ranged from .25" to .35".
February 14-16, 2021	Below zero wind-chills, coldest wind chills ranged -20 to -35 degrees. The planning area recorded wind chills of -21.42 and -26.5.
February 2-3, 2022	Snowfall across the county ranged from 3" to 5"
February 23, 2022	Up to 1" of sleet accumulated with a glaze of freezing rain.

Due to the extremely cold temperatures that occurred on February 14-16, 2021, 4 school sites had frozen pipes that burst and caused flooding damage. The offices at IME/JGI and Nicoma Park Elementary flooded. The freshman center at Choctaw High School and Choctaw Middle School had the most extensive flood damage as the sprinkler heads broke off in the extreme cold temperatures. The damages resulted in an economic loss of $100,000.00.

Probability

The probability of the planning area experiencing winter weather/winter storms is high. If the planning area were to see an increase of winter weather, the school could experience more days of remote school if bus routes are impassable due to freezing rain, ice, and sleet. If the planning area were to experience a decrease in winter weather events, it would result in fewer days of class missed, and fewer monetary resources spent on projects other than repairs due to winter weather.

Vulnerability & Impact

Winter storms are of significant concern due to the direct and indirect costs associated with these events. Bus routes can be delated or cancelled due to the severity of the snowfall and ice on the roads. CNPPS depends on Oklahoma County Commissioners, the cities of Choctaw, Nicoma Park, Midwest City, and Del City to clear the roads for the bus routes. Classes could be cancelled due to the severity of the snowfall and ice on the roads.

Depending on the amount of snow, ice, and high winds associated with a winter storm event, the planning area could expect a power outage if utility poles, transformers, transmission lines, and other utility infrastructure failures. The planning area might experience power outages originating from adjacent jurisdictions. During power outages, CNPPS does not have adequate backup generators to keep freezers and refrigerators running or to keep security cameras on at all sites. At the time of writing this HMP, the Administration Building has adequate generators to keep freezer and refrigerators on and preserve the food supplies. During extended power outages, food must be transported from other school sites and stored at the Administration Building until power has been restored at the other sites. An extended loss of power would result in a loss of perishable items needed for school lunch operations. A loss of security camera power diminishes the staff's ability to provide adequate surveillance of school property when the facilities are not in use.

Chapter IV: Mitigation Strategy

4.1.1 School District Capability Assessment

Overview

The Oklahoma Department of Education oversees public K-12 education and public libraries in Oklahoma. The school districts are funded through local Ad Valorem taxes and from the allocations from the State of Oklahoma's General Funds and Federal Allocations. The school districts are governed by locally elected school boards and superintendents.

Capabilities

CNPPS has 12 separate sites throughout the school district; the capabilities listed here apply to all sites.

Jurisdiction	Capital Improvement Plan	Ways to raise funds through public partnerships, corporate donations etc	Budget to raise funds for mitigation (bond)	Emergency Management Plan and/or procedures in place.	Designated emergency manager (even as a secondary position)	Training for teachers/coaches to ensure consistency in evaluating lightning	Training for teachers to practice natural hazard response	PTO/PTA	Post-Disaster Recovery Plan
Choctaw-Nicoma Park Public Schools	√	√	√	√	√	√	√	√	No

The school district has a capital improvement plan that includes all of the individual sites. The school board and administration prioritize the needs of the district based on funds available, the needs of the district, and the socio-political influences of the community. The school has the ability to issue bonds by a vote of the people and can raise funds through donations and/or partnerships.

Emergency procedures and plans are in effect for all sites, though two sites do not have formal plans written down. They are annually updated by the safety resource officer and approved by the school board. The safety resource officer is the emergency manager for the school and some responsibilities are also designated to the school district superintendent.

The lower elementary grades have parent-teacher organizations that work with the school district administration.

Teachers and staff attend required annual safety training and coaches attend required lightning evaluation trainings as required by the state.

4.1.2 Existing Plans

As this is the first HMP that the school has had, there is no previous HMP data to incorporate. The school district has emergency procedures for these sites on file:

- Choctaw Elementary
- Choctaw Middle School
- Choctaw High School
- Nicoma Park Elementary
- Nicoma Park Intermediate
- Nicoma Park Middle School
- Westfall Elementary
- Indian Meridian Elementary/James Griffith Intermediate

Various fire, tornado, and lockdown drills and procedures are practiced regularly as required by state requirements and are practiced by all sites. The manuals listed above include those protocols for fire and tornado. The school district can use the hazard mitigation plan data to create new protocols for the sites that do not have formal plans in written form, in addition to updating all plans to include a consistent protocol for all sites. Administration Building uses the district wide emergency procedures as the basis for their drills.

An action item for creating new plans and updating existing plans is included in Section 4.4.

The school district does not have a separate Emergency Operations Plan (EOP) that identifies and assigns responsibilities of each administrator in the event of a disaster. The EOP would provide procedures for the CNPPS officials and identify outside agencies that would be most likely to work with the school in disasters. Identifying these protocols would create a consistent procedure for teachers and administrators to ensure the welfare and safety of students and staff.

Once these manuals and EOP have been updated and created accordingly, a designated staff member needs to be responsible to ensure these protocols are maintained, reviewed, and updated on an annual basis.

The school district also needs to formalize Safe Room/Shelter Operations Plans. An action item for this project is included in Section 4.4 as well.

4.1.3 Long-Range Growth and Post-Disaster Redevelopment

CNPPS relies on Oklahoma County primarily for emergency services; the cities of Choctaw and Nicoma Park do not provide any emergency services. In the event that a catastrophic event occurs, the school district might receive services from the surrounding jurisdictions of Midwest City, Del City, and Oklahoma City, if they are available. It is expected that should a catastrophic disaster impact the area, there is adequate infrastructure to warrant redevelopment of the school district.

In evaluating the CNPPS's existing authorities, policies, programs and resources, abilities, and capabilities, the planning team used the "Capability Assessment Worksheet."

4.1.4 Additional Capabilities Information

1. **Has your school district had positive responses to bond issues?**
   Yes, the school district has had positive responses to bond issues.

2. **Based on population, is the school district population growing or declining?**
   Growing; recovering student population from covid closures. The east side of Oklahoma County where the school district is located is growing as the greater Oklahoma City metro area is expanding eastward.

3. **How will you integrate the requirements of your HMP into other plans and policies?**
   The data contained within the HMP will be used to enhance existing protocols and procedures to ensure that all sites have consistent natural hazard responses.

4. **How can the school district build upon their capabilities in the future?**
   There are several aspects that the school could build upon their capabilities. Firstly, the school can improve upon its capabilities by ensuring that all sites have a regularly updated emergency procedure manual. Additionally, the school administration might consider officially designating a teacher or administrator as a deputy emergency manager who would assist the district safety resource officer in ensuring that each sites' emergency procedures are reviewed and updated annually.

   Adequate safe rooms for all students and staff is also a particular need for the school. Plans for new safe rooms have begun and the process of securing funding through bonds, as well as exploring grant funding options. The school will begin construction as soon as funding is secured and available.

   Finally, efforts have been initiated to build stronger relationships with the county emergency management and sheriff's office as the county would likely be the main agencies to respond during natural disasters and emergencies.

4.2 NFIP Participation

Public Schools do not qualify for participation in the National Flood Insurance Program. However, the City of Choctaw (400357), the Town of Nicoma Park (400424), and Oklahoma County (400466) are participants and listed in the NFIP Community Status Book.

4.3 Mitigation Goals

The planning team discussed, reviewed, and agreed upon the following hazard mitigation goals:

1 Protect lives and property.
2 Build safe rooms adequate to protect all students, faculty, and administrators during severe weather events.
3 Explore mitigation actions for new construction or retrofit existing structures that would improve long-term resilience.
4 Work with Oklahoma County, Choctaw, and Nicoma Park to resolve road hazards along bus routes.
5 Improve communications with students, parents, and guardians before, during, and after a natural hazard affects the school district.
6 Educate the parents and guardians on mitigation and prevention activities.

The planning team believes these goals will assist the school administrators and school board in prioritizing hazard mitigation related activities and projects.

4.4 Action Items

The Action Items are listed in order of their priority as the planning team discussed. This prioritization results from the multiple discussions that occurred with the planning team and the needs of the jurisdiction.

Action Item 1	**Install Safe Rooms**
Hazard(s) Addressed	High Wind, Severe Thunderstorm, Tornado
Mitigation Action Type	Local Plans and Regulations | **Structure and Infrastructure Projects** | Natural Systems Protection | Education and Awareness Programs | 5% Projects
Action	Build safe rooms at Choctaw Elementary, Nicoma Park Intermediate, IME-JGI, Choctaw High School, and the VoAg site adequate for protecting students, staff, and visitors from high winds and tornado.
Estimated Project Timeline	Within the first year as funding becomes available
Cost	Variable with size and needs
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property. Goal 2: Build safe rooms adequate to protect all students, faculty, and administrators during severe weather events.
Responsible Party	CNPPS School board

Action Item 2	**Emergency Generator**
Hazard(s) Addressed	Extreme Heat, High Wind, Severe Thunderstorm, Tornado, Winter Storm
Mitigation Action Type	Local Plans and Regulations | Structure and Infrastructure Projects | Natural Systems Protection | Education and Awareness Programs | **5% Projects**
Action	Install emergency generators in critical facilities on school property, particularly in the buildings that provide food service and/or shelter during hazardous weather events
Estimated Project Timeline	As funding becomes available
Cost	Variable with facility, installation fees, and size
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property.
Responsible Party	CNPPS School Board

Action Item 3	Shatterproof Window Film
Hazard(s) Addressed	Earthquake, High Wind, Tornado, Severe Thunderstorm
Mitigation Action Type	Local Plans and Regulations; **Structure and Infrastructure Projects**; Natural Systems Protection; Education and Awareness Programs; 5% Projects
Action	Install window film to make windows more resilient in times of impact due to debris generated by severe storms, high winds, straight-line winds, or tornado. Film helps maintain building temperatures during extreme heat.
Estimated Project Timeline	As funding becomes available
Cost	TBD
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property. Goal 3: Explore mitigation actions for new construction or retrofit existing structures that would improve long-term resilience.
Responsible Party	CNPPS School Board, Maintenance Dept.

Action Item 4	Reinforced (Metal) Roofing
Hazard(s) Addressed	High Wind, Severe Thunderstorm, Tornado
Mitigation Action Type	Local Plans and Regulations; **Structure and Infrastructure Projects**; Natural Systems Protection; Education and Awareness Programs; 5% Projects
Action	Install hail impact resistant roofing to school buildings to mitigate damage from hail, high winds, and tornado.
Estimated Project Timeline	As funding becomes available, grant programs
Cost	Variable according to the size of each facility
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property. Goal 3: Explore mitigation actions for new construction or retrofit existing structures that would improve long-term resilience.
Responsible Party	CNPPS School Board

Action Item 5	Implement Consistent Earthquake Protocol in all Emergency Procedure Manuals				
Hazard(s) addressed	Earthquake				
Mitigation Action Type	Local Plans & Regulations	Structure/ Infrastructure Projects	Natural Systems Protection	Education/ Awareness Programs	5% Projects
Action	Review existing emergency procedures and create or add earthquake protocols into any emergency procedures lacking an earthquake protocol.				
Responsible Party	CNNPS Safety/Security Director, Site Principals				
Estimated Timeline	2023-2024 school year				
Cost	None				
Potential Funding Sources	NA				
Goals Addressed	Goal 1: Protect lives and property. Goal 6: Educate the students, parents, and guardians on mitigation and prevention activities.				
Responsible Party	CNPPS Safety Director, CNPPS principals				

Action Item 6	Implement Consistent Flooding Protocol in all Emergency Procedure Manuals				
Hazard(s) addressed	Flooding				
Mitigation Action Type	Local Plans & Regulations	Structure/ Infrastructure Projects	Natural Systems Protection	Education/ Awareness Programs	5% Projects
Action	Review existing emergency procedures and create or add flooding protocols into any emergency procedures lacking a flooding protocol.				
Estimated Timeline	2023-2024 school year				
Cost	None				
Potential Funding Sources	NA				
Goals Addressed	Goal 1: Protect lives and property. Goal 6: Educate the students, parents, and guardians on mitigation and prevention activities.				
Responsible Party	CNPPS Safety Director, CNPPS principals				

Action Item 7	Expand bus driver training to include broader situational awareness as it pertains to natural hazards
Hazard(s) Addressed	Flooding, Wildfire, Winter Storm
Mitigation Action Type	Local Plans and Regulations | Structure and Infrastructure Projects | Natural Systems Protection | **Education and Awareness Programs** | 5% Projects
Action	Expand training to bus drivers to recognize problematic situations pertaining to natural hazards so that they will adequately report roads that are becoming hazardous for bus travel. Act on those reports by notifying responsible party (county, city, state). This will ensure greater cooperation between the school district and adjacent jurisdictions.
Estimated Project Timeline	As identified and reported
Cost	None
Potential Funding Sources	None
Goal Addressed	Goal 1: Protect lives and property.
Responsible Party	CNPPS Safety Director, CNPPS principals

Action Item 8	Additional Water Wells or Water Lines
Hazard(s) Addressed	Drought, Extreme Heat, Severe Thunderstorm, Winter Storm
Mitigation Action Type	Local Plans and Regulations | **Structure and Infrastructure Projects** | Natural Systems Protection | Education and Awareness Programs | 5% Projects
Action	Dig new wells or have new water lines put in as secondary water sources for individual school sites so that if any water outages occur from the main water supplies that come from the City of Choctaw, the school will have a backup water supply.
Estimated Project Timeline	As funding becomes available, grant programs
Cost	Unknown
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 3: Explore mitigation actions for new construction or retrofit existing structures that would improve long-term resilience. Goal 4: Work with Oklahoma County, Choctaw, and Nicoma Park to resolve road hazards along bus routes.
Responsible Party	CNPPS School Board

Action Item 9	Vegetation Management
Hazard(s) Addressed	Wildfire
Mitigation Action Type	Local Plans and Regulations; Structure and Infrastructure Projects; **Natural Systems Protection**; Education and Awareness Programs; 5% Projects
Action	Encourage and assist in the removal and control of wild land growth to control water consumption and wildfire fuel to create defensible space around critical facilities
Estimated Project Timeline	As areas are identified and funding becomes available
Cost	Variable per location and vegetation control measures needed
Potential Funding Sources	HMGP, forestry, county, city, school budgets, USDAFS grant
Goal Addressed	Goal 1: Protect lives and property.
Responsible Party	CNPPS Maintenance Department

Action Item 10	Xeriscaping
Hazard(s) Addressed	Drought, Flooding, Wildfire
Mitigation Action Type	Local Plans and Regulations; Structure and Infrastructure Projects; **Natural Systems Protection**; Education and Awareness Programs; 5% Projects
Action	Replace existing landscaping with plants whose natural requirements are appropriate to the local climate recommended to withstand drought
Estimated Project Timeline	Continuing with future landscaping needs
Cost	Variable
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property.
Responsible Party	CNPPS School Board, CNPPS Maintenance Department

Action Item 11	Surge Protectors
Hazard(s) Addressed	Extreme Heat, High Wind, Severe Thunderstorm, Tornado, Winter Storm
Mitigation Action Type	Local Plans and Regulations; Structure and Infrastructure Projects; Natural Systems Protection; Education and Awareness Programs; 5% Projects
Action	Install surge suppression and non-interruptible power supplies on critical electronics equipment to prevent damage from power surges or loss of critical information and services during brief power outages
Estimated Project Timeline	As funding becomes available, grant programs
Cost	$500.00 per location
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property. Goal 3: Explore mitigation actions for new construction or retrofit existing structures that would improve long-term resilience.
Responsible Party	CNPPS School Board, CNPPS IT Department

Action Item 12	Hurricane Clips
Hazard(s) Addressed	Earthquake, High Wind, Tornado, Severe Thunderstorm
Mitigation Action Type	Local Plans and Regulations; Structure and Infrastructure Projects; Natural Systems Protection; Education and Awareness Programs; 5% Projects
Action	Retrofit any roofing to withstand impact of earthquake, high winds, and tornadoes and/or install clips at the time of any new building structures
Estimated Project Timeline	Within the second year as funding becomes available
Cost	Unknown
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property. Goal 3: Explore mitigation actions for new construction or retrofit existing structures that would improve long-term resilience.
Responsible Party	CNPPS School Board, CNPPS Maintenance Department

Action Item 13	Additional Lightning Detection System and/or Devices
Hazard(s) Addressed	Severe Thunderstorm
Mitigation Action Type	Local Plans and Regulations | Structure and Infrastructure Projects | Natural Systems Protection | Education and Awareness Programs | 5% Projects
Action	Purchase and install additional lightning detection system and/or devices to provide early warning for students, staff, and citizens attending outdoor events of possible lightning strikes.
Estimated Project Timeline	As funding becomes available, grant programs
Cost	Variable according to location and need
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property.
Responsible Party	CNPPS School Board, CNPPS Safety Director

Action Item 14	Mass Notification System
Hazard(s) Addressed	Earthquake, Extreme Heat, Flood, High Wind, Severe Thunderstorm, Tornado, Wildfire, Winter Storm
Mitigation Action Type	Local Plans and Regulations | Structure and Infrastructure Projects | Natural Systems Protection | Education and Awareness Programs | 5% Projects
Action	Implement an automated mass notification system to all students, parents, guardians, staff, and administration of any emergency message related to any natural hazard response
Estimated Project Timeline	As funding becomes available, grant programs
Cost	$6.00 per household
Potential Funding Sources	HMGP, School Funds
Goal Addressed	Goal 1: Protect lives and property Goal 5: Improve communications with students, parents, and guardians before, during, and after a natural hazard affects the school district. Goal 6: Educate the parents, students, and guardians on mitigation and prevention activities
Responsible Party	CNPPS School Board, CNPPS Safety Director

Action Item 15	Update Intercom System
Hazard(s) Addressed	Flood, High Wind, Severe Thunderstorm, Tornado, Wildfire
Mitigation Action Type	Local Plans and Regulations | Structure and Infrastructure Projects | Natural Systems Protection | Education and Awareness Programs | 5% Projects
Action	Install outdoor/indoor intercom devices as needed to ensure adequate warning to students, staff, and visitors during an impending hazardous event.
Estimated Project Timeline	As funding becomes available, grant programs
Cost	$12,500.00
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Goal 1: Protect lives and property. Goal 5: Improve communications with students, parents, and guardians before, during, and after a hazard occurs.
Responsible Party	CNPPS School Board, IT Department

Action Item 16	Contact managing agencies regarding inundation areas around the N. Canadian River Basin to educate school administrators on the extent of flooding that could affect the school district
Hazard(s) Addressed	Flooding
Mitigation Action Type	Local Plans and Regulations | Structure and Infrastructure Projects | Natural Systems Protection | Education and Awareness Programs | 5% Projects
Action	Contact the USACE as the managing agency for Lake Canton Dam and request an EAP for reference. Contact the Oklahoma City Emergency Management Department and request information on Lake Overholser. Contact City of Choctaw and Town of Nicoma Park for additional information regarding the inundation areas around the N. Canadian River Basin and Choctaw Creek.
Estimated Project Timeline	1 year
Cost	None
Potential Funding Sources	OWRB grant
Goal Addressed	Goal 1: Protect lives and property. Goal 4: Work with Oklahoma County, Choctaw, and Nicoma Park to resolve road hazards along bus routes.
Responsible Party	CNPPS Safety Director

Action Item 17	Conduct an in-depth assessment with local emergency management regarding natural hazards that affect the bus routes
Hazard(s) Addressed	Flooding and Wildfire
Mitigation Action Type	Local Plans and Regulations; Structure and Infrastructure Projects; Natural Systems Protection; **Education and Awareness Programs**; 5% Projects
Action	Coordinate with Oklahoma County, City of Choctaw, and Town of Nicoma Park to thoroughly assess how dam failure of Lake Canton Dam and Lake Overholser Dam could affect the school's bus routes, as well as flooding, and wildfire.
Estimated Project Timeline	2 years
Cost	Variable, if hiring an engineering firm for a study is agreed upon.
Potential Funding Sources	OWRB grant
Goal Addressed	Goal 1: Protect lives and property. Goal 4: Work with Oklahoma County, Choctaw, and Nicoma Park to resolve road hazards along bus routes.
Responsible Party	CNPPS Safety Director

Action Item 18	Snow Guards
Hazard(s) Addressed	Winter Storms
Mitigation Action Type	Local Plans and Regulations; **Structure and Infrastructure Projects**; Natural Systems Protection; Education and Awareness Programs; 5% Projects
Action	Install snow guards on building roofs directly above all entrance/exit points to mitigate risk of injury to students, staff, and visitors from accumulated snow falling from the roof.
Estimated Project Timeline	As funding becomes available, grant programs
Cost	$3,500.00
Potential Funding Sources	HMGP, PDM, REAP, School Funds
Goal Addressed	Protect lives and property
Responsible Party	CNPPS School Board, Maintenance Department

Action Item 19	Build reinforced fences around the perimeter of school grounds
Hazard(s) Addressed	High Winds, Severe Thunderstorm, Winter Storm
Mitigation Action Type	Local Plans and Regulations; **Structure and Infrastructure Projects**; Natural Systems Protection; Education and Awareness Programs; 5% Projects
Action	Build fences around the perimeter of school grounds to help mitigate blowing snow and debris generated from high winds and/or tornado
Estimated Project Timeline	Variable
Cost	Variable
Potential Funding Sources	School funding
Goal Addressed	Goal 1: Protect lives and property.
Responsible Party	CNPPS Safety Director

Action Item 20	Bury Power Distribution Lines
Hazard(s) Addressed	High Wind, Severe Thunderstorm, Winter Storm, Tornado
Mitigation Action Type	Local Plans and Regulations; **Structure and Infrastructure Projects**; Natural Systems Protection; Education and Awareness Programs; 5% Projects
Action	Collaborate with local utility provider about burying power distribution lines near new structures
Estimated Project Timeline	Dependent upon school campus construction schedule, as well as the utility company
Cost	Unknown
Potential Funding Sources	HMGP, local power utility
Goal Addressed	Goal 1: Protect lives and property. Goal 3: Explore mitigation actions for new construction or retrofit existing structures that would improve long-term resilience.
Responsible Party	Utility Company

4.5 Action Item Prioritization

School budgets are directly tied to state funding and schools rely on the authorization and support of the respective school boards to complete HMP Action Items. The hazard mitigation planning team discussed how these projects would be prioritized and implemented. The determining factors in prioritizing projects for the schools will be:

- The cost-benefit analysis for each project; and/or,
- The availability of local, state, and federal funding. Occasionally, CNPPS might choose to pursue specific grant opportunities (whether through private or public funding) for one-time hazard mitigation projects. (Example: federal funding for a storm shelter, or local bonds for emergency generators.) and/or
- The social, political, and public factors driving individual projects.

The cost-benefit analysis concluded that Action Item 1 will complete the first and second goals enumerated in Section 4.3. The benefit of saving lives exceeds the economic cost it will require to install the safe rooms, shatterproof window film, and metal roofing. The benefit of improving the structures will enhance long-term resilience of existing structures and plan for new construction.

The planning team has identified the action items and prioritized them in order, with 1 being first priority, and so forth. CNPPS anticipated that Action Items 1-6 will be evaluated annually to see how the implementation and completion can be achieved. It is not anticipated that these completions will occur simultaneously but will occur individually as funding become available. For action items 7-16, and 20, completion of these items is contingent upon funding availability and as coordination occurs with other agencies. CNPPS does not expect to have the funds to execute action items 17 or 18, but they are included to fulfill FEMA's "comprehensive range" of action items needed for successful plan approval and will be implemented only as funding is available and after other action items have been accomplished. Action items 19 is completely contingent upon cooperation of the utility company, and would typically relate only to new construction in the future.

As funding becomes available, the STAPLEE evaluation table, in addition to the cost-benefit analysis for each project will be used. This provides a framework to evaluate the feasibility of alternative considerations, and the respective limitations and impacts. It is included on the following page.

Example STAPLEE Evaluation for future reference

Evaluation Category	Sources of Information S.T.A.P.L.E.E.
Social	Members of the HazMit Planning Team had input throughout the planning process. The team included government officials, school administrators, emergency response/emergency management personnel, business owners, and professionals Discussions included those among the school population who are most vulnerable during times of hazardous events.
Technical	Community officials, the Oklahoma Water Resources Board (OWRB), and the Oklahoma Department of Emergency Management (ODEM), and other subject matter experts were consulted about technical aspects of the projects and hazards.
Administrative	Administrative staff will be responsible for the implementation of action projects as funding becomes available.
Political	Officials and members of the governing boards were part of the planning process.
Legal	Legal questions will be presented to the respective legal counsels to ensure compliance and that no legal issues would arise with project implementation.
Economic	As anticipated, CNPPS does not currently have funds to implement all action projects. The main focus of the HazMit Planning Team are the Action Items 1-6. All other projects will undergo a cost-benefit analysis to inform the public if any bonds are initiated to generate revenue for future projects.
Environmental	Agencies such as the Oklahoma Department of Environmental Quality (ODEQ), Oklahoma Forestry Service (OFS), and the OWRB, among others have been consulted regarding the technical details of hazards and their impacts upon the jurisdiction(s).

4.6 Integration of Data, Goals, and Action Items into Other Planning Mechanisms

Integration of Data:

The requirements and data of the HMP can be integrated into the schools' existing plans, listed below:

- The Choctaw Elementary School Procedures Handbook
- Nicoma Park Elementary Emergency Procedures
- Choctaw-Nicoma Park Crisis Management Plan
- Nicoma Park Intermediate Emergency Procedures
- Nicoma Park Fire Drill Procedures
- Westfall and Choctaw High School Emergency Procedures

These manuals are site specific, and they are reviewed annually by principal at each site. After making the annual review and pertinent changes, the manuals are submitted to the district-wide safety-security director, and if necessary, the school board for approval. The data gathered within the HMP, particularly in the capability assessment, will be used as a starting point to update procedure manuals currently in need of updating.

Once new safe rooms and subsequent Safe Room/Shelter Operations Plans are drafted, these plans will also be included in the Safety Coordinator's review. These new plans will include Choctaw Elementary, Nicoma Park Intermediate, IME-JGI, and the VoAg Site.

Integration of Goals

The goals of the HMP can be used to guide the discussions, policies, and budgetary decisions as they relate to prioritizing the completion of hazard mitigation action items.

Additionally, the site principals, safety/security director, and superintendent can use the HMP goals as guidance for any protocol changes in the school's emergency procedures when they conduct their annual review that occurs each June. As outlined in Section 2.7, the safety/security director coordinator will conduct annual risk assessments to determine if any risks have increased or decreased since the previous risk assessment. The risk assessments can be used to make any modifications to existing protocols outlined in the emergency procedures. Once the Safety/security director superintendent determine any changes are necessary, the safety/security director will coordinate with the site principals to make these additions.

Integration of Action Items

Currently, the superintendent and school board have a Capital Improvement Plan that guides the prioritization of budget items. The CNPPS HMP planning team prioritized the HMP action items according to the most pressing needs of the school. The superintendent and the school board have the authority to distribute the school's funds that is intrinsically linked to the allotments from the state. The school board also has the authority to issue bonds. These bonds are filed with the county and voted on by the public for approval. Major construction projects must be funded through bonds approved by a vote of the people.

Appendix

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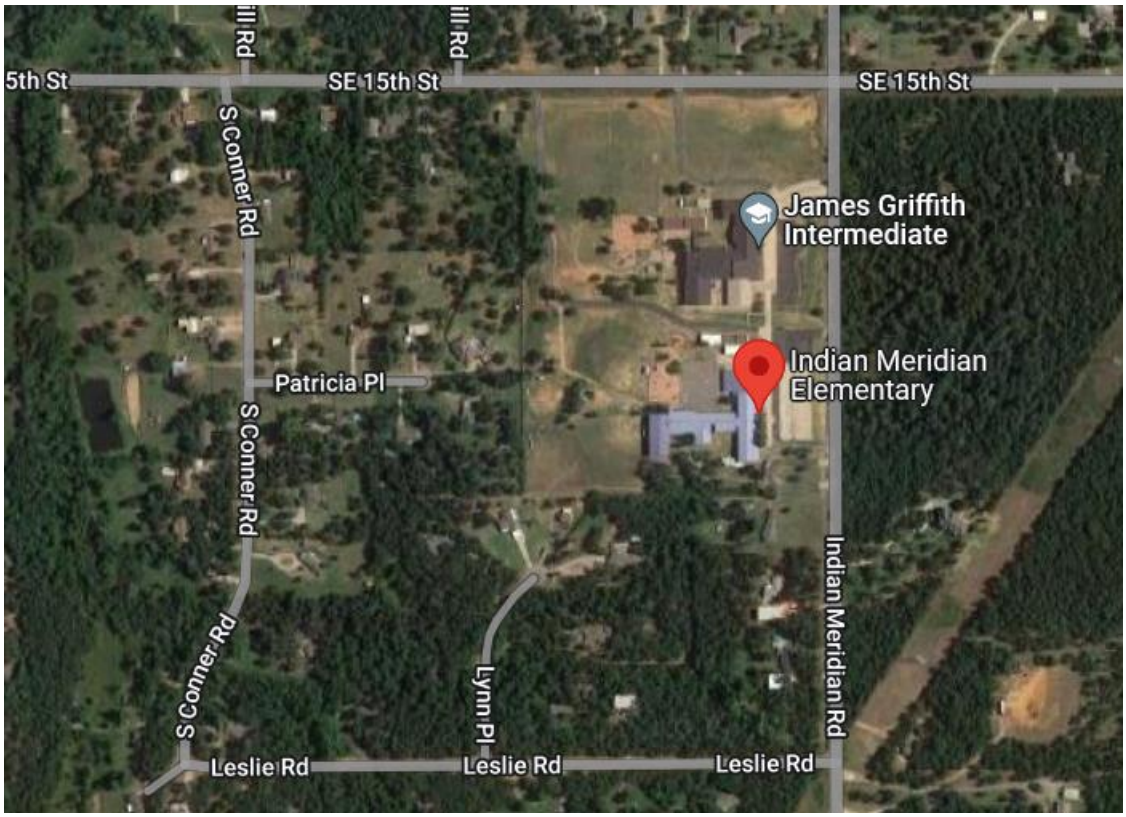
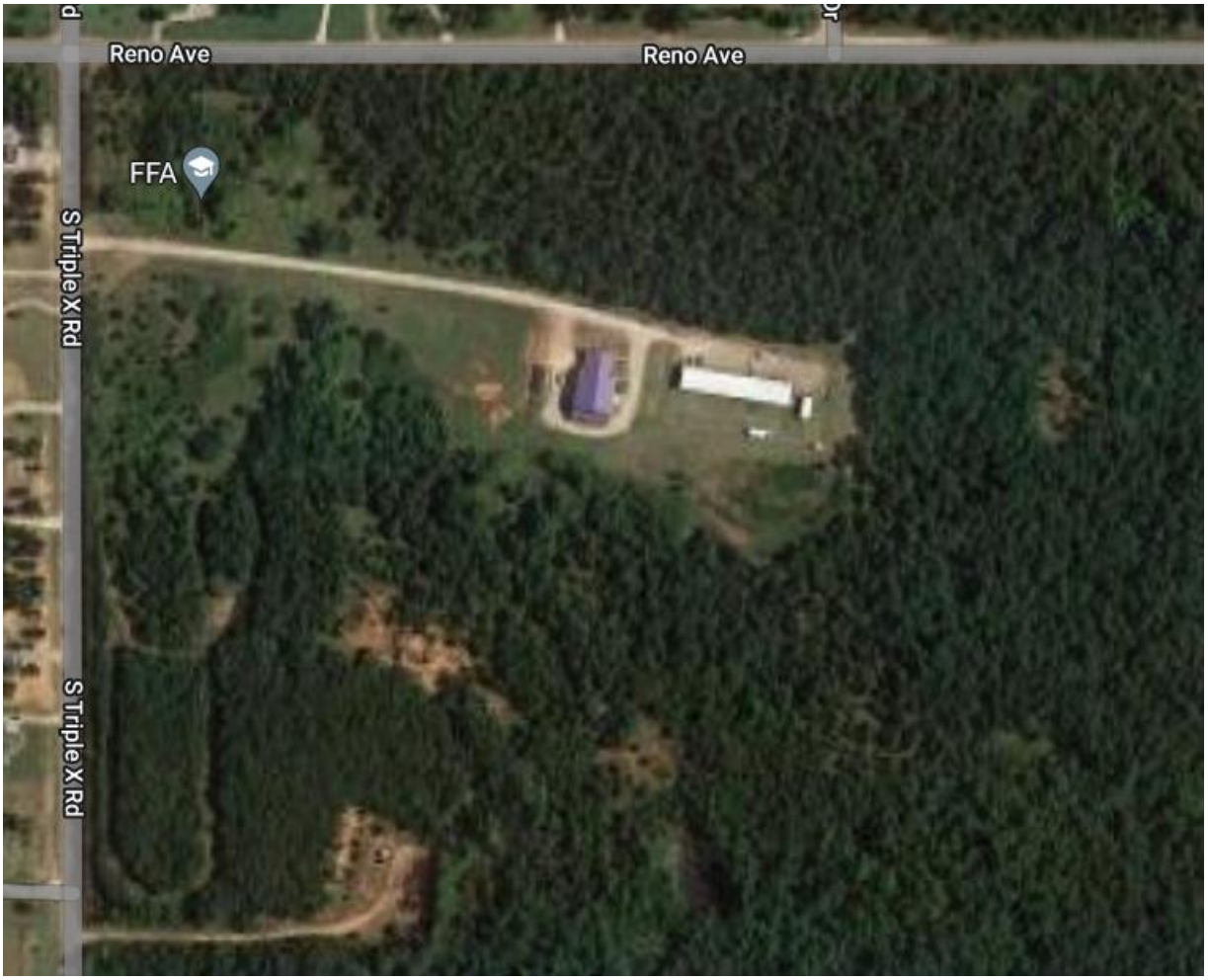
These maps are for official use only and are included as reference for the hazard profiles.

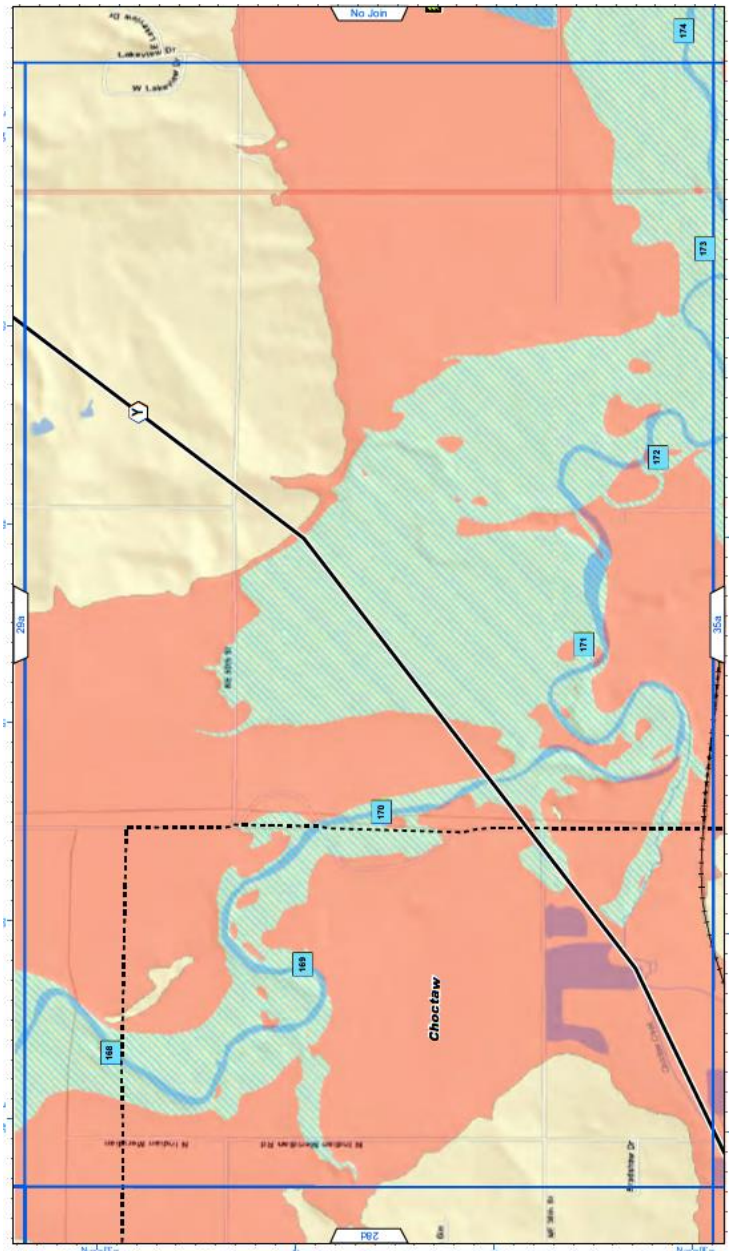
Aerial view of Indian Meridian Elementary/James Griffith Intermediate



Aerial view of Westfall Elementary, the Administration Building, Bus Barn

Aerial view of the VoAg Site. This area is also the proposed area where new school buildings will be constructed adjacent to the existing VoAg site.

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Choctaw
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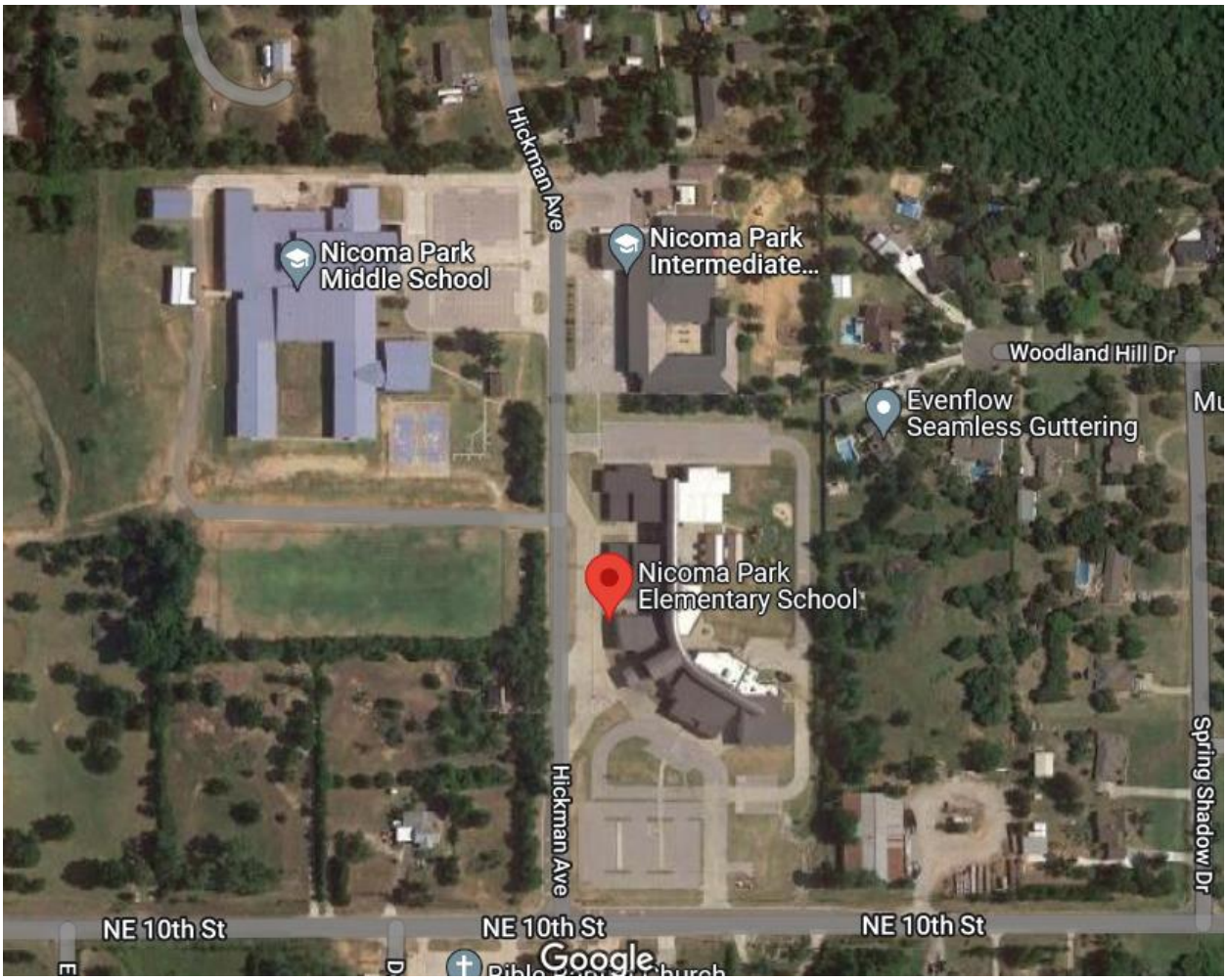
Choctaw
Nicoma Park
Spencer
Midwest City
N Indian Meridian
Ten Acres Park
Choctaw Creek Park
Choctaw High School
Choctaw Creek Golf Course
Nicoma City Park
N Henney Rd
N Hiwassee Rd
N Anderson Rd
N Westminster Rd
N Post Rd
28
35

Aerial view of Choctaw Elementary and Choctaw Middle Schools

Aerial view of Choctaw High School

Aerial View of Nicoma Park Elementary, Intermediate, and Middle Schools


Hickman Ave
Nicoma Park
Middle School
Nicoma Park
Intermediate...
Woodland Hill Dr
Evenflow
Seamless Guttering
Nicoma Park
Elementary School
Hickman Ave
Spring Shadow Dr
NE 10th St
NE 10th St
NE 10th St
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