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County Profile

Polk County

Central Platte NRD
Hazard Mitigation Plan Update

2022

Local Planning Team

Polk County's local planning team for the hazard mitigation plan are listed in the table below along with the meetings attended. All participant worksheets were filled out and returned by the county.

Table PLK.1: Polk County Local Planning Team

Name	Title	Jurisdiction	R1 Meeting	R2 Meeting
Dan Theis	Highway Superintendent	Polk County	Central City – Virtually	Lexington - Virtually
Bob Carey	Ex-Emergency Manager	Polk County	Grand Island	-
Dwaine Ladwig	Sheriff	Polk County	-	-
Debra Girard	County Clerk	Polk County	-	-
Chris Hays	County Surveyor/Floodplain Administrator	Polk County	-	-
Logan Watts	Emergency Manager	Polk County	-	-

Location and Climate

Polk County is located in east-central Nebraska and is bordered by Butler, York, Hamilton, Merrick, and Platte Counties. The total area of Polk County is 441 square miles. Major waterways within the county include the Platte River, the Big Blue River, Clear Creek, Davis Creek, and Prairie Creek. Most of Polk County lies in the plains and valleys topographic region, with the vast majority of the county's land characterized by agricultural fields.

Climate

The average high temperature in Polk County for the month of July is 85.7 degrees and the average low temperature for the month of January is 12.3 degrees. On average, Polk County receives over 29 inches of rain and 29.3 inches of snowfall per year. The table below compares climate indicators with those of the entire state. Climate data is helpful in determining if certain events are higher or lower than normal. For example, if the high temperatures in the month of July are running well into the 90s, high heat events may be more likely which could impact vulnerable populations.

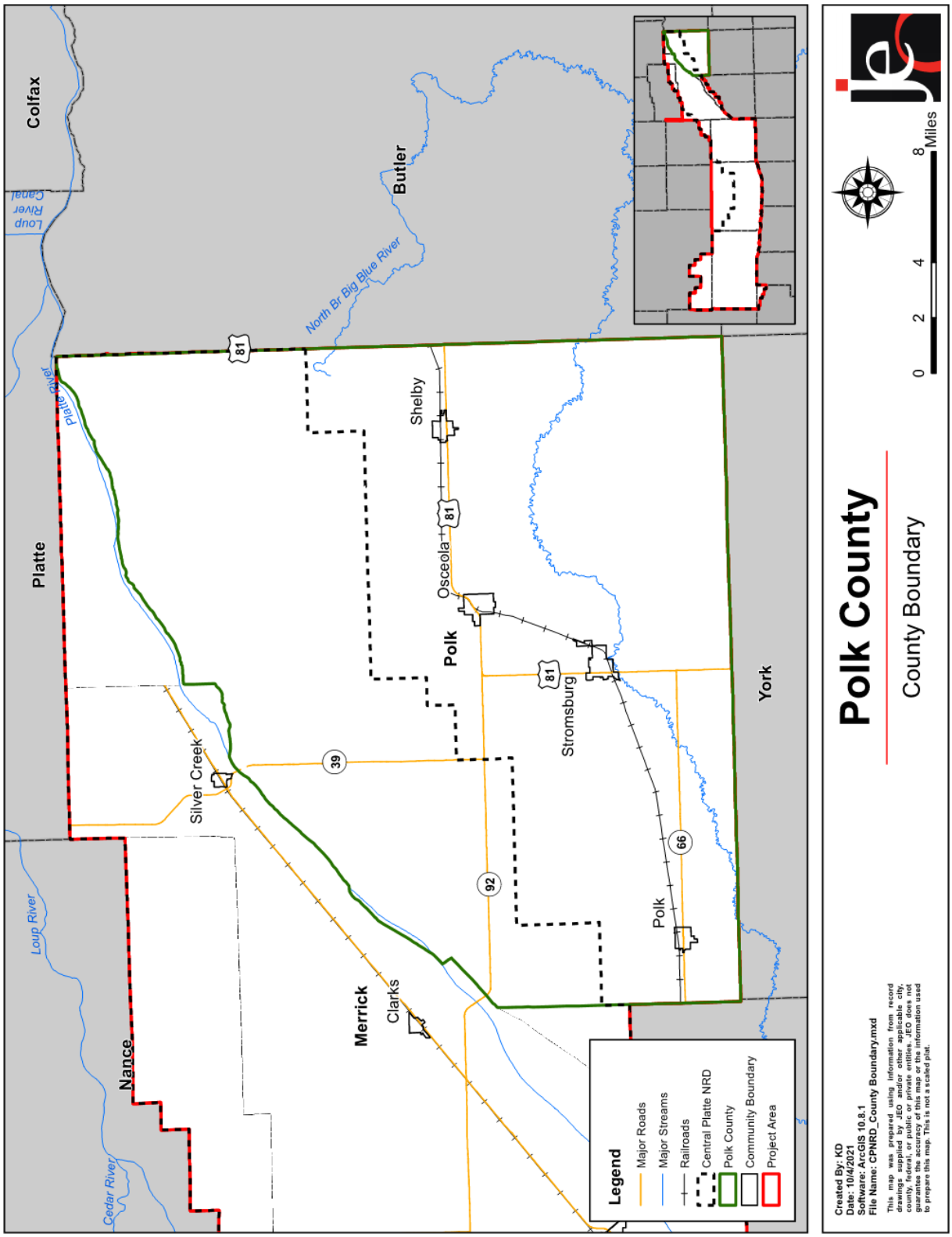
Table PLK.2: Polk County Climate

	Polk County	State of Nebraska
July Normal High Temp[1]	85.7°F	87.4°F
January Normal Low Temp[1]	12.3°F	13.8°F
Annual Normal Precipitation[2]	29"	23.8"
Annual Normal Snowfall[2]	29.3"	25.9"

Source: NCEI 1981-2010 Climate Normals[1], High Plains Regional Climate Center, 1981-2010[2]
Precipitation includes all rain and melted snow and ice.

1 National Centers for Environmental Information. "1981-2010 U.S. Climate Normals." Accessed June 2021. https://www.ncdc.noaa.gov/cdo-web/datatools.
2 High Plains Regional Climate Center. "Monthly Climate Normals 1981-2010 –Osceola, NE." Accessed June 2021. http://climod.unl.edu/.

Figure PLK.1: Polk County

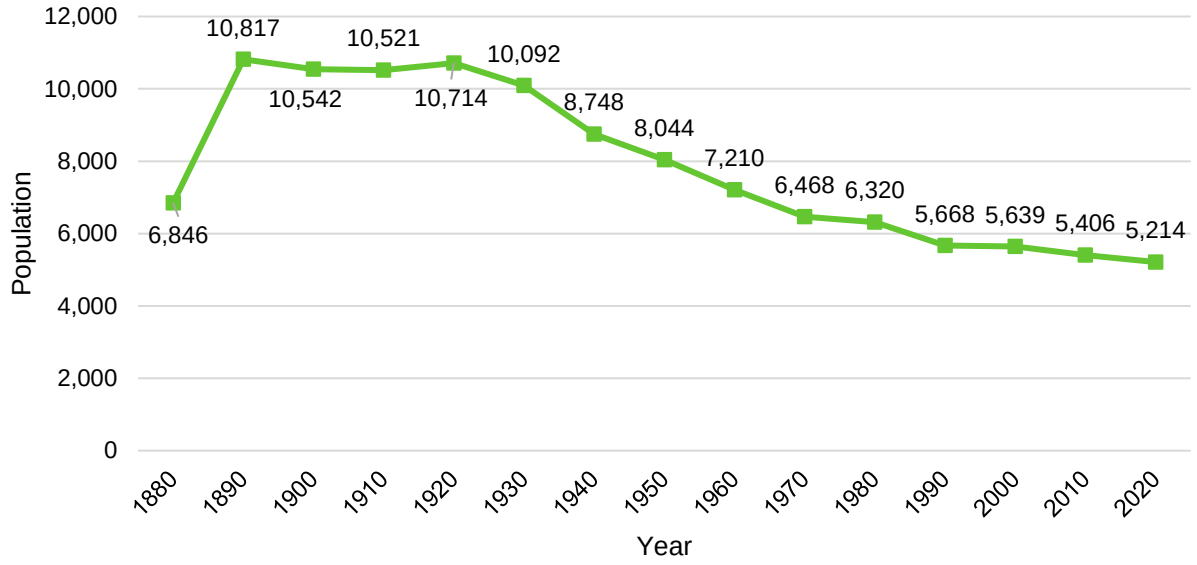


Demographics, Economics, Housing, and Employment

Demographics

The following figure displays the historical population trend from 1880 to 2020. This figure indicates that the population of Polk County has been decreasing since 1920 to 5,214 people in 2020.[3] A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the county, which could make implementation of mitigation projects more fiscally challenging. Polk County's population accounted for 0.3% of Nebraska's population in 2020.

Figure PLK.2: Population 1880 - 2020



Source: U.S. Census Bureau

The following table indicates Polk County has a higher percentage of people between the ages of five and 64. This is relevant to hazard mitigation because the very young and elderly populations may be at greater risk from certain hazards than others. For a more elaborate discussion of this vulnerability, please see *Section Four* | *Risk Assessment*.

Table PLK.3: Population by Age

Age	Polk County	State of Nebraska
<5	5.1%	6.9%
5-64	73.1%	77.7%
>64	21.7%	15.4%
Median	45.1	36.5

Source: U.S. Census Bureau[4]

3 United States Census Bureau. "2020 Decennial Census: P1: DEC Redistricting Data." https://data.census.gov/cedsci/.
4 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Economics and Housing

The following table indicates that median household income for the county is higher than the State of Nebraska. Per capita income, median home value and rent are lower than the rest of the state. These economic indicators are relevant to hazard mitigation because they indicate the relative economic strength compared to the state as a whole. Areas with economic indicators which are relatively low may influence a county's level of resilience during hazardous events.

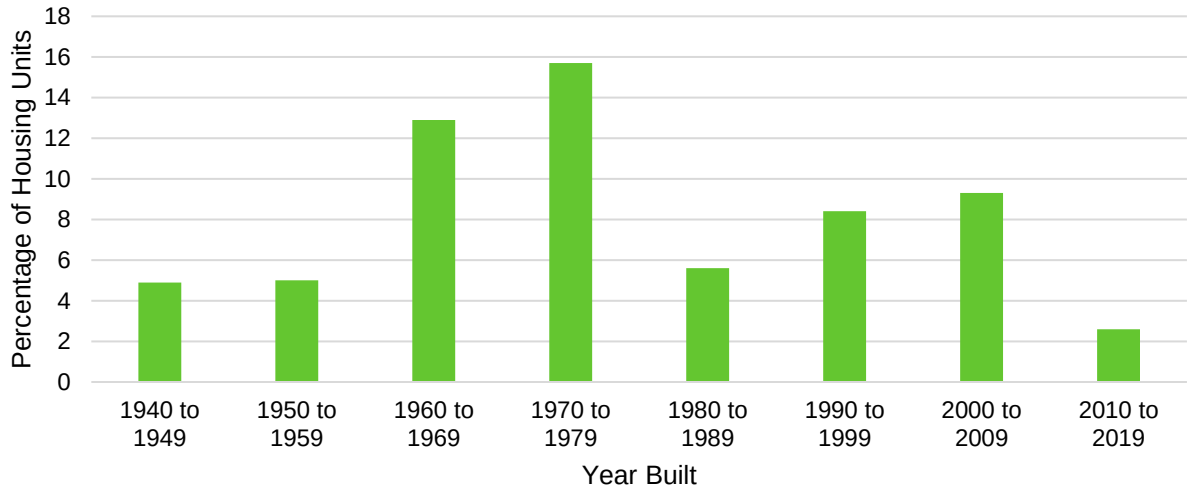
Table PLK.4: Housing and Income

	Polk County	State of Nebraska
Median Household Income	$67,719	$61,439
Per Capita Income	$30,234	$32,302
Median Home Value	$107,300	$155,800
Median Rent	$584	$833

Source: U.S. Census Bureau[5,6]

The following figure indicates that most of the housing in Polk County was built between 1960 and 2009 (51.9%). Housing age can serve as an indicator of risk, as structures built prior to the development of state building codes may be at greater risk. The State of Nebraska first adopted building codes in 1987, with the International Building Code adopted in 2010. The current edition of the IBC was updated in 2018. According to the 2019 American Community Survey, the county has 2,751 housing units with 74.6 percent of those units occupied. There are approximately 193 mobile homes in the county. Counties with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly.

Figure PLK.3: Housing Units by Year Built



Source: U.S Census Bureau[5]

5 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

6 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

Table PLK.5: Housing Units

Jurisdiction	Total Housing Units				Occupied Housing Units			
	Occupied		Vacant		Owner		Renter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Polk County	2,052	74.6%	699	25.4%	1,705	83.1%	347	16.9%
Nebraska	759,176	90.7%	78,300	9.3%	501,679	66.1%	257,497	33.9%

Source: U.S. Census Bureau[5]

Employment

According to 2018 Business Patterns Census Data, Polk County had 140 business establishments. The following table presents the number of establishments, number of paid employees, and the annual payroll in thousands of dollars.

Table PLK.6: Business in Polk County

	Total Businesses	Number of Paid Employees	Annual Payroll (In Thousands)
Total for All Sectors	140	932	$29,602

Source: U.S Census Bureau [7]

Agriculture is important to the economic fabric of the State of Nebraska. Polk County's 432 farms cover 251,028 acres of land, about 89% of the county's total area. Crop and livestock production are the visible parts of the agricultural economy, but many related businesses contribute to agriculture by producing, processing and marketing farm products. These businesses generate income, employment and economic activity throughout the region.

Table PLK.7: Agricultural Inventory

	Agricultural Inventory
Number of Farms with Harvested Cropland	432
Acres of Harvested Cropland	251,028

Source: USDA Census of Agriculture, 2017[8]

Governance

The county's governmental structure impacts its capability to implement mitigation actions. Polk County is governed by a three-member board of supervisors. The county also has the following offices and departments:

- County Clerk
- County Treasurer
- County Engineer
- Emergency Management
- Highway Superintendent
- Roads Department
- Planning and Zoning
- Sheriff's Department
- Surveyor/Floodplain Administrator
- Polk County Health Department

7 United States Census Bureau. 2018. "County Business Patterns and 2018 Nonemployer Statistics" [database file]. https://factfinder.census.gov.

8 U.S. Department of Agriculture. "2017 Census of Agriculture." https://www.nass.usda.gov/Publications/AgCensus/2017/.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the county's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

County funds are sufficient to pursue new capital projects with a large portion of funds not already dedicated to a specific project. Funds have increased slightly over recent years.

Table PLK.8: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes – State Code
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	Central Platte Community Wildfire Protection Plan
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess County's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	-
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	No
	Awarded a grant in the past	No
	Authority to levy taxes for specific purposes such as mitigation projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	No
	Development Impact Fees	No

Survey Components/Subcomponents		Yes/No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	-
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Other (if any)	-

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Moderate
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

Polk County has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The county will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code (2018)

The building code sets standards for constructed buildings and structures. The county does not have its own building code but follows the State of Nebraska Building Codes based on the 2018 International Building Codes.

Central Platte Community Wildfire Protection Plan (2019)

The purpose of the Central Platte Community Wildfire Protection Plan (CWPP) is to help effectively manage wildfires and increase collaboration and communication among organizations who manage fire. The CWPP discusses county-specific historical wildfire occurrences and impacts, identifies areas most at risk from wildfires, discusses protection capabilities, and identifies wildfire mitigation strategies. Wildfire projects and concerns from the 2017 HMP were included in the CWPP and wildfire projects in the current HMP will included during the next CWPP update. This document is updated every five years.

Comprehensive Plan (2014)
The comprehensive plan is designed to guide the future actions and growth of the county. It directs development away from the floodplain and encourages clustering of development in sensitive areas. It also encourages the preservation of wetlands, wood areas, and waterways and that land use impacts should be minimized within the floodplains.

Polk County Local Emergency Operations Plan (2020)
The Polk County Local Emergency Operations Plan (LEOP) establishes standardized policies, plans, guidelines, and procedures for emergency resources and governmental entities to respond and recover when a disaster event occurs. It contains information regarding direction and control, communications and warning, damage assessment, emergency public information, evacuation, fire services, health and human services, law enforcement, mass care, protective shelters, and resource management. Flooding and dam failure information from the LEOP was incorporated into this HMP update. This plan is updated every five years.

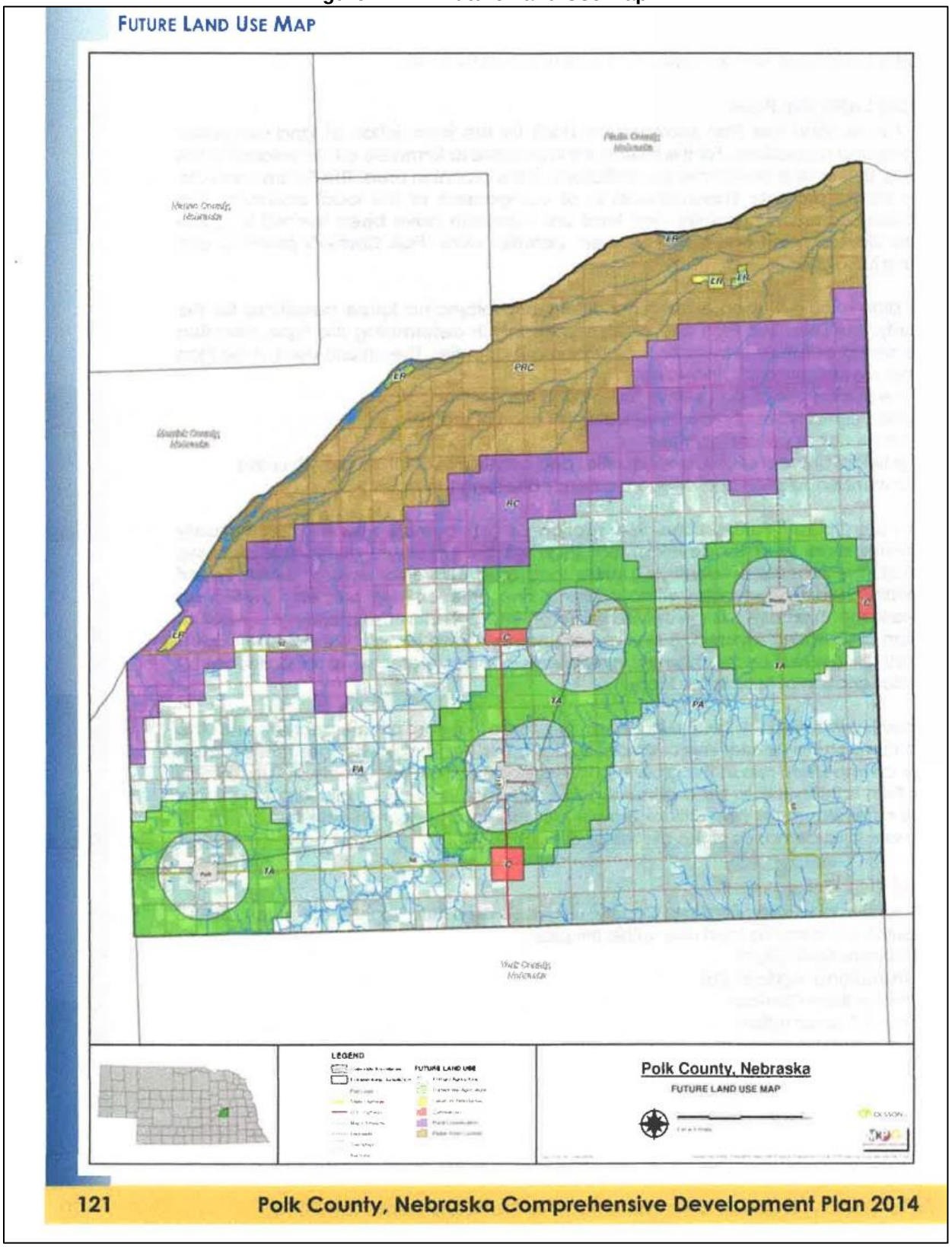
Zoning Ordinance (2000), Subdivision Regulations, and Floodplain Ordinance
The county's zoning ordinance, subdivision regulations, and floodplain ordinance outline where and how development should occur in the future. These documents discourage development in the floodplain. They also require at least one foot of elevation above base flood elevation in the floodplain, discourages development near chemical storage sites, and limits population density in the floodplain.

Future Development Trends
Over the past five years there have only been very minor changes in development within the county. Any new developments were built outside the floodplain or other known hazardous areas. In the next five years, there is a planned housing development on the southeast side of Osceola. The future land use map (Figure PLK.4) for the county shows commercial areas located on highways near communities and with agriculture making up the largest area in the county.

Community Lifelines
Transportation
Polk County's major transportation corridors include US Highway 81 and Nebraska State Highways 39, 66, 69, and 92. The most traveled route is Highway 81 with an average of 3,985 vehicles daily, 615 of which are trucks.[9] A Nebraska Central Railroad Company rail line runs north to south through the county. Fuel and farm chemicals are regularly transported throughout the county. No reported spills or major accidents have occurred from transported chemicals. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors, as well as areas more at risk of transportation incidents.

9 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34.

Figure PLK.4: Future Land Use Map



Hazardous Materials

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of 12 chemical storage sites throughout Polk County which house hazardous materials (listed below). The local planning team identified two other chemical sites in the county. In the event of a chemical spill, the local fire departments and emergency response may be the first to respond to the incident.

Table PLK.9: Chemical Storage Sites

Name	Address	Located in Floodplain?
Central Valley Ag	450 Polk Ave, Polk, NE	N
Central Valley Ag	340 E Oak St, Shelby, NE	N
Central Valley Ag	214 Railroad St, Stromsburg, NE	N
Central Valley Ag	M Rd, Stromsburg, NE	N
Central Valley Ag Cardtrol	465 Park Ave, Polk, NE	N
Creston Fertilizer Co Inc	12731 U Rd, Shelby, NE	Y (1%)
Frontier Cooperative	1030 Central, Osceola, NE	Y (1%)
Harless Oil Company	320 Polk Ave, Polk, NE	N
Harless Oil Company	Railroad St, Stromsburg, NE	N
NDOT Osceola Yard	521 N Kimmel St, Osceola, NE	Y (1%)
Osceola Terminal	1705 131st Rd, Osceola, NE	N
Red Star*	210 Ridge, Polk, NE	N
Sapp Bros Petroleum Inc	12355 M Rd, Stromsburg, NE	N
VRBKA Ag Solutions*	13256 S Rd, Shelby, NE 68662	N

Source: Nebraska Department of Environment and Energy[10]
**Identified by the Local Planning Team*

Health and Medical Facilities

The following medical and health facilities are located within the county.

Table PLK.10: Health and Medical Facilities

Name	Type of Facility	Address	Number of Beds
Good Samaritan Society - Ridgeview Heights	Assisted Living Facility	631 Ridge St Osceola, NE 68651	13
The Plaza	Assisted Living Facility	615 East 9th St Stromsburg, NE 68666	31
Annie Jeffrey Memorial County Health Center	Hospital	531 Beebe St Osceola, NE 68651	16
Good Samaritan Society - Osceola	Long Term Care Facility	600 Center Dr Osceola, NE 68651	47
Midwest Covenant Home	Long Term Care Facility	615 East 9th St Stromsburg, NE 68666	51

Source: Nebraska Department of Health and Human Services[11,12,13,14]

10 Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed June 2021. https://deq-iis.ne.gov/tier2/tier2Download.html.
11 Department of Health and Human Services. 2021. "State of Nebraska: Assisted Living Facilities." https://dhhs.ne.gov/licensure/Documents/ALF%20Roster.pdf.
12 Department of Health and Human Services. 2021. "State of Nebraska Roster: Hospitals." https://dhhs.ne.gov/licensure/Documents/Hospital%20Roster.pdf.
13 Department of Health and Human Services. 2021. "State of Nebraska Roster: Long Term Care Facilities." https://dhhs.ne.gov/licensure/Documents/LTCRoster.pdf.
14 Department of Health and Human Services. 2021. "State of Nebraska Roster: Rural Health Clinic." https://dhhs.ne.gov/licensure/Documents/RHC_Roster.pdf.

Critical Facilities

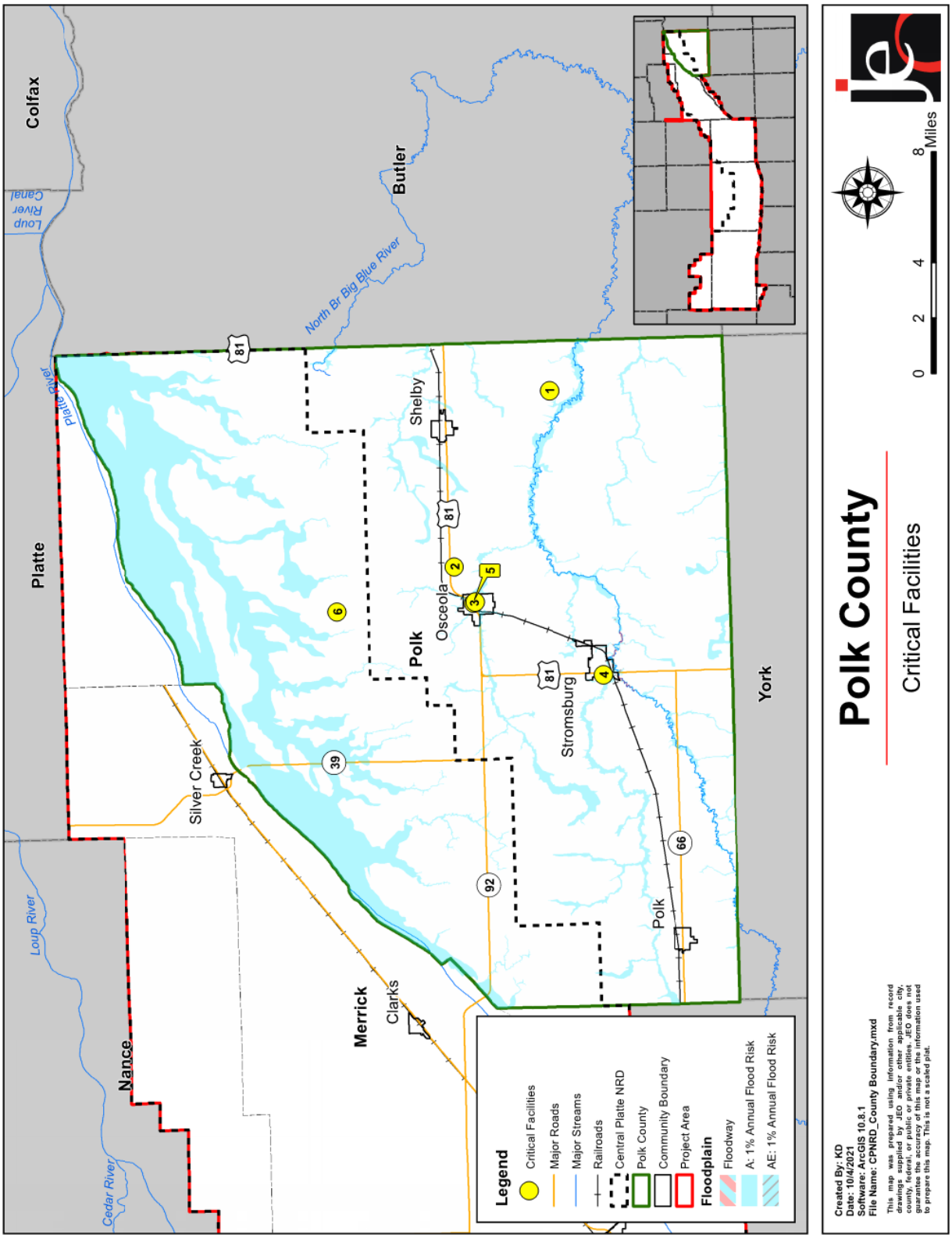
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table PLK.11: Critical Facilities

CF Number	Name	Mass Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Dairy Farm South of Shelby	N	N	N
2	Gas Storage and Pipeline	N	N	N
3	Polk County Courthouse	N	N	N
4	Polk County Rural Electric Association (R.E.A.)	N	Y	N
5	Polk County Sheriff's Communication Tower and Office	N	Y	N
6	State Communication Tower	N	Y	N

Figure PLK.5: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table PLK.12: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
3,143	$284,566,436	846	$71,993,788	26.9%

Source: County Assessor, 2021

Historical Occurrences

The following table provides a statistical summary for hazards that have occurred in the county. The property damages from the NCEI Storm Events Database (January 1996 – June 2021) should be considered only as broad estimates. Crop damages reports come from the USDA Risk Management Agency for Polk County between 2000 and 2020.

Table PLK.13: County Hazard Loss History

Hazard Type		Count	Property Damage	Crop Damage[2]
Animal & Plant Disease	Animal Disease[1]	16	80 animals	N/A
	Plant Disease[2]	3	N/A	$13,055
Dam Failure[5]		0	N/A	N/A
Drought[6]		444 of 1,513 months	$0	$22,966,861
Earthquakes[12]		0	$0	N/A
Extreme Heat[7]		Avg. 3 Days a Year	N/A	$3,289,430
Flooding[8]	Flash Flood	12	$325,000	$364,853
	Flood	6	$540,000	
Grass/Wildfires[9]		114	672 acres	$108,089
Hazardous Materials Release	Fixed Site[3]	2	$0	N/A
	Transportation[4]	0	$0	N/A
Levee Failure[11]		0	$0	N/A
Public Health Emergency		2	N/A	N/A
Severe Thunderstorms[8] *1 Injury*	Thunderstorm Wind Range: 50-80 Average: 56	55	$2,688,000	$11,577,952
	Hail Range: 0.75-2.75 Average: 1.20	92	$1,732,000	
	Heavy Rain	30	$0	
	Lightning	0	$0	
Severe Winter Storms[8]	Blizzard	10	$25,000	$446,017
	Extreme Cold/Wind Chill	3	$0	
	Heavy Snow	4	$0	
	Ice Storm	7	$545,000	

Hazard Type		Count	Property Damage	Crop Damage[2]
	Winter Storm	44	$175,000	
	Winter Weather	28	$15,000	
Terrorism[10]		0	$0	N/A
Tornadoes and High Winds[8]	Tornadoes Range: EF0-EF3 Average: EF0	9	$5,900,000	$1,400,000
	High Winds Range: 55-66 Average: 50	21	$1,214,080	$1,680,674
Total		**458**	**$13,159,080**	**$41,846,930**

N/A: Data not available
1 - NDA, 2014 – April 2021
2 - USDA RMA, 2000 – 2020
3 - NRC, 1990 – February 2020
4 - PHSMA, 1971 – June 2021
5 – DNR Communication, July 2021
6 - NOAA, 1895 – January 2021
7 - NOAA Regional Climate Center, 1878 – June 2021
8 - NCEI, 1996 – June 2021
9 - NFS, 2000 - 2020
10 - University of Maryland, 1970-2018
11 – USACE NLN, 1900 – June 2021
12 – USGS, 1900 – June 2021

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the county. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the county's capabilities. For more information regarding regional hazards, please see *Section Four* | *Risk Assessment*.

Animal and Plant Disease

Agriculture, including livestock, is a significant economic driver in the county, therefore, a large agricultural animal disease outbreak would have significant economic impacts across the region. Hogs, poultry, and dairy farms are the primary animal populations of concern. It is unknown where destroyed animals would be placed in the event of a large-scale cull. There have not been any large-scale agricultural disease outbreaks in the county. The Nebraska Department of Agriculture has educational material for farmers and the public.

Flooding

Flooding poses a threat to Polk County as the county has various streams and rivers meandering through it. Waterways in the county include the Platte River, which forms the northern boundary of the county, Davis Creek, Clear Creek, and the Big Blue River. Clear Creek Watershed in Polk County encompasses 75,700 acres & has a long history of flooding. A feasibility report for flood prevention and watershed protection was completed in 1978, which lead to the construction of 15 flood control structures completed in the watershed. Funds from the Natural Resources Development Fund were received on five of the larger structures. Polk County provided funds to construct additional smaller structures including road structures.

County flood events, including riverine and flash flooding, have the potential to damage structures, down power lines, damage roads or bridges, and damage crops. Specific areas of concern include roads and bridges along the Big Blue River and areas along Clear Creek. On September 9, 2014, waves of rain and thunderstorms crossed the county, which lead to flooding of Davis Creek. A portion of Highway 81-92 near Osceola was covered in a few inches of water. Traffic was hindered and only one vehicle was allowed to pass at a time through this section. Then on May 10, 2017, a heavy rain event upstream caused flooding along the Big Blue River and caused $75,000 in damages. The March 2019 floods caused roads to be overtopped, washed out roads, and resulted

in livestock loss. The event resulted in $500,000 in property damages. Since then, many culverts have been repaired or replaced. For community specific concerns and damages from these events, see the individual community participant sections.

Polk County is a member of the NFIP, and the county's Floodplain Administrator (Chris Hays) will oversee the commitments and requirements of the NFIP. The initial FIRM for the county was delineated in 8/19/2008 and the current effective map date is 8/19/2008. Nearly 27% of parcel improvements are located in the 1% annual flood risk area (see table in the Parcel Improvements and Valuation section). As of October 31, 2021, there are 26 policies in-force covering $2,833,300. Polk County does not currently have any repetitive loss or severe repetitive loss structures.

The southern portion of Polk County has gone through the Risk Mapping, Assessment, and Planning (MAP) process. Risk MAP is a FEMA program that provides communities with flood information and additional flood risk data (e.g., flood depth grids, percent chance grids, areas of mitigation interest, etc.). As part of that process, a HAZUS analysis was performed for the Risk MAP areas. The figure below shows the HAZUS analysis results for Polk County.

Figure PLK.6: Estimated Potential Losses for Flood Event Scenarios

Type	Inventory Estimated Value	% of Total	10% (10-yr) Dollar Losses[1]	10% Loss Ratio[2]	2% (50-yr) Dollar Losses[1]	2% Loss Ratio[2]	1% (100-yr) Dollar Losses[1]	1% Loss Ratio[2]	0.2% (500-yr) Dollar Losses[1]	0.2% Loss Ratio[2]	Annualized Losses[1] ($/yr)	Ann. Loss Ratio[2]
Residential Building & Contents	$152,300,000	99%	$300,000	0%	$700,000	0%	$900,000	1%	$1,300,000	1%	$40,000	0%
Commercial Building & Contents	$200,000	0%	$0	0%	$0	0%	$0	0%	$0	0%	$0	0%
Other Building & Contents	$600,000	1%	$0	0%	$0	0%	$0	0%	$0	0%	$0	0%
Total Building & Contents[3]	$153,100,000	100%	$300,000	0%	$700,000	0%	$900,000	1%	$1,300,000	1%	$40,000	0%
Business Disruption[4]	N/A	N/A	$0	0%	$0	0%	$0	0%	$0	0%	$0	0%
TOTAL[5]	**$153,100,000**		**$300,000**	**0%**	**$700,000**	**0%**	**$900,000**	**1%**	**$1,300,000**	**1%**	**$40,000**	**0%**

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

[1]Losses shown are rounded to nearest $10,000 for values under $100,000 and to the nearest $100,000 for values over $100,000.
[2]Loss ratio = Dollar Losses ÷ Estimated Value. Loss Ratios are rounded to the nearest integer percent.
[3]Total Building and Contents = Residential Building and Contents + Commercial Building and Contents + Other Building and Contents.
[4]Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.
[5]Total = Total Building and Contents + Business Disruption

The figures in this table only represent information within the Upper Big Blue Watershed.

Source: FEMA[15]

Severe Thunderstorms

Severe thunderstorms are a common occurrence in the region and have caused damage to property and crops due to the combination of hail, high winds, and heavy rainfall. In 2013, a severe thunderstorm with high winds caused roof damage to many homes near Osceola. In the spring of 2021, a hailstorm damaged crops and roofs in Osceola and Stromsburg. There is concern that high winds could damage the communication towers in the county, but the communication towers do have backup power generators. Weather radios have also been distributed to critical facilities. Mitigation actions for severe thunderstorms include improving warning systems, improving communication systems, and providing backup power generators to critical facilities in need.

15 FEMA. September 2017. "Flood Risk Report: Upper Big Blue, 10270201".

Severe Winter Storms

Heavy snow, blowing and drifting snow, and ice accumulation can cause road closures, the need for rescuing stranded motorists, power outages, and property damages. The Christmas Blizzard of 2009 dumped approximately 12 inches of snow across the county. The combination of heavy snow and high winds lead to white-out conditions, causing numerous roadway closures. It took nearly two weeks for the county to completely recover from this winter storm. More recently, extremely cold temperatures in February 2021 resulted in some losses to livestock. In total, $760,000 in property damages have occurred from severe winter storms since 1996. The local planning team indicated that very few primary powerlines are below ground, leaving the county at an increased risk of power loss. Mitigation actions include obtaining backup power generators for critical facilities, improving warning systems, and improving emergency communication systems.

Tornadoes and High Winds

Nine tornadoes have been reported in Polk County since 1996 resulting in $5.9 million in property damages. The most destructive tornado occurred on June 20, 2011, in rural Polk County between the Villages of Polk and Stromsburg. The EF3 tornado damaged several homes, which suffered from roof and window damage. A semi-truck was knocked over onto its side on Highway 66, and an irrigation pivot was also overturned. Additional tree damage occurred, and outbuildings and power poles were destroyed. Mitigation actions include constructing public safe rooms, improving warning systems and emergency communication systems, and obtaining backup power generators for critical facilities.

Mitigation Strategy

Kept Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Identify and evaluate current backup and emergency generators; obtain additional generators based on identification and evaluation; provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities and shelters.
Hazard(s) Addressed	All Hazards
Estimated Cost	$20,000 - $75,000+ per generator
Local Funding	General Fund, Inheritance Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Sheriff's Office, Board of Supervisors
Status	REA and Sheriff's Office have generators. However, the sheriff's office generator may need to be replaced. There is also a need for one at the courthouse.

Mitigation Action	Evaluate Stream Channelization / Bank Stabilization
Description	Evaluate current stream bed and bank stabilization needs; implement stream bed and bank stabilization improvements including grade control structures, rock rip rap, vegetative cover, etc.
Hazard(s) Addressed	Flooding
Estimated Cost	$25,000 - $500,000+
Local Funding	General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	County Roads Department
Status	Updating plan of action reports on scour critical bridges annually.

Mitigation Action	Improve Emergency Communication System
Description	Develop Emergency Communication Action Plan; implement Emergency Communication Action Plan; obtain/upgrade emergency communication equipment.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+
Local Funding	General Fund
Timeline	2-5 Years
Priority	High
Lead Agency	Sheriff's Office
Status	Not Started

Mitigation Action	Improve Flood and Stormwater Detention/Retention Capacity
Description	Evaluate current stormwater and flood water capacity; implement measures to improve flood water and stormwater capacity.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies
Local Funding	General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	County Roads Department
Status	Clearing debris from bridges as required.

Mitigation Action	Improve Warning Systems
Description	Evaluate current warning systems (defined as alert sirens, weather radios, and television, telephone, and radio warning systems, etc.); improve warning systems/develop new warning system; obtain/upgrade warning system equipment and methods; conduct evaluation of existing alert sirens for replacement or placement of new sirens; identify location of weather warning radios; improve weather radio system; obtain/upgrade weather radios.
Hazard(s) Addressed	All Hazard
Estimated Cost	$15,000 - $50,000
Local Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Emergency Manager
Status	Not Started

Mitigation Action	Reduce Bottlenecks / Flow Restrictions
Description	Evaluate current bottlenecks/flow restrictions; implement measures to reduce bottlenecks/flow restrictions including silt removal.
Hazard(s) Addressed	Flooding
Estimated Cost	$5,000
Local Funding	General Fund
Timeline	Ongoing
Priority	High
Lead Agency	County Engineer
Status	Removal of silt and debris at culverts and structures as needed.

Mitigation Action	Reduce Water Demand and Improve Drought Education
Description	Conduct water use study to evaluate/implement methods to conserve water/reduce consumption; evaluate/implement water use restriction ordinance; identify/evaluate current/additional potable water sources; develop or obtain drought education materials to conduct multi-faceted public education and awareness program.
Hazard(s) Addressed	Drought
Estimated Cost	$6,000+
Local Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Board of Supervisors, Planning and Zoning
Status	Not Started

Mitigation Action	Storm Shelter / Safe Room
Description	Identify and evaluate existing safe rooms and/or storm shelters; improve and/or construct safe rooms and/or storm shelters; design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, etc. Possible location would be the county fairgrounds.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	$150 square ft for retrofit; $300 square ft for new construction
Local Funding	General Fund, Local Community Funds
Timeline	5+ Years
Priority	Low
Lead Agency	County Engineer
Status	Not Started

Removed Mitigation Actions

Mitigation Action	Wind Breaks Studies
Description	Conduct a study to identify areas in need of "shelter belts" or wind breaks; maintain windbreak areas.
Hazard(s) Addressed	Drought
Status	Removed. Many shelter belts are being removed due to farming practices.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside county planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The Board Chairman, the Sheriff, and the Emergency Manager will be responsible for reviewing and updating the plan annually in the future. The public will be notified through the county website and the board minutes, which are published online and in the newspaper.

Community Profile

City of Osceola

Central Platte NRD
Hazard Mitigation Plan

2022

Local Planning Team

The City of Osceola's local planning team for the hazard mitigation plan are listed in the table below along with the meetings attended. All participant worksheets were filled out and returned by the community.

Table OSC.1: Osceola Local Planning Team

Name	Title	Jurisdiction	R1 Meeting	R2 Meeting
Jay Colson	Water Operator	City of Osceola	Lexington – Virtually	Lexington – Virtually
Renee Johansen	Clerk / Treasurer	City of Osceola	-	Lexington - Virtually

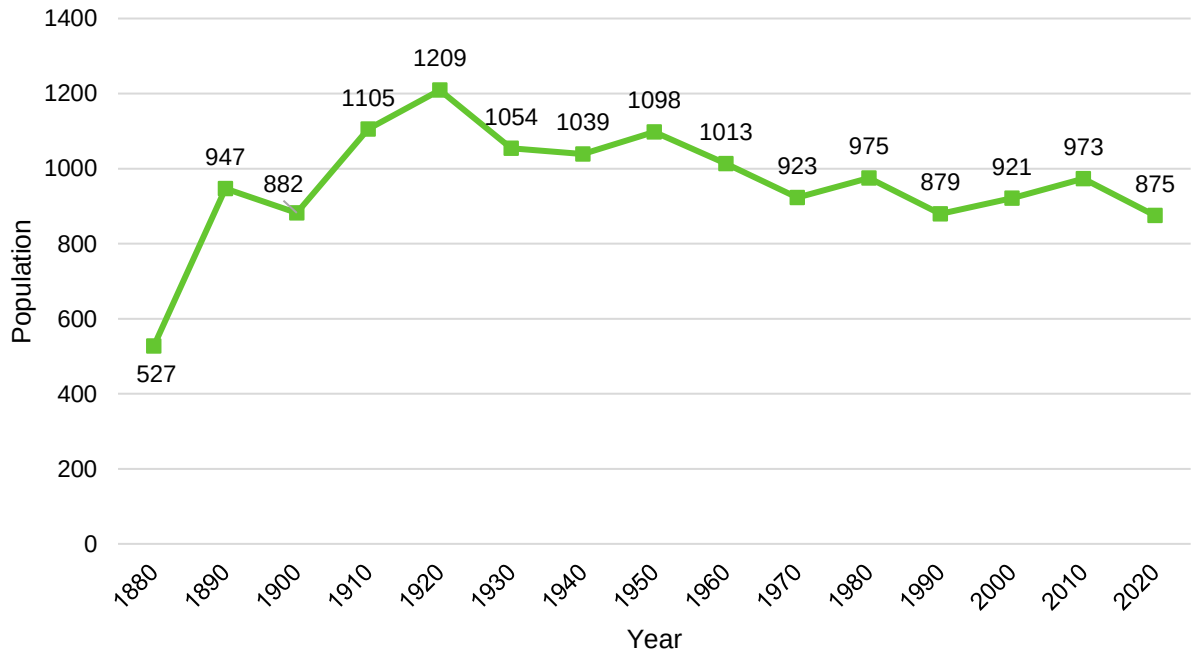
Location and Geography

The City of Osceola is in central Polk County and covers an area of 0.92 square miles. Davis Creek flows east west through the center portion of the community. Osceola is the county seat for Polk County.

Demographics

The following figure displays the historical population trend for the City of Osceola. This figure indicates that the population of Osceola has been declining since 2010 to 875 people in 2020. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging. Osceola's population accounted for 16.8% of Polk County's population in 2020.[16]

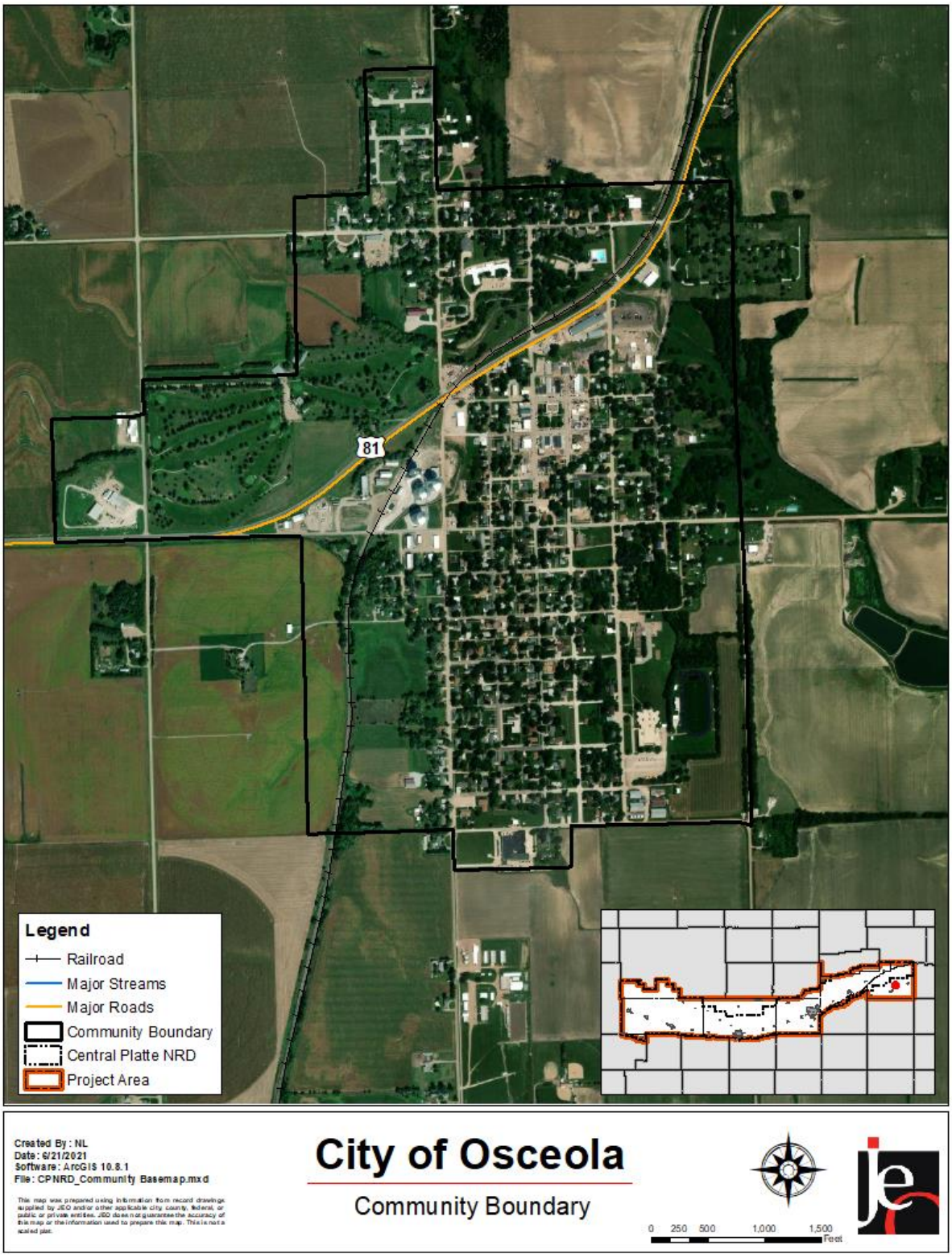
Figure OSC.1: Population 1880 - 2020



Source: U.S. Census Bureau

16 United States Census Bureau. "2020 Decennial Census: P1: DEC Redistricting Data." https://data.census.gov/cedsci/.

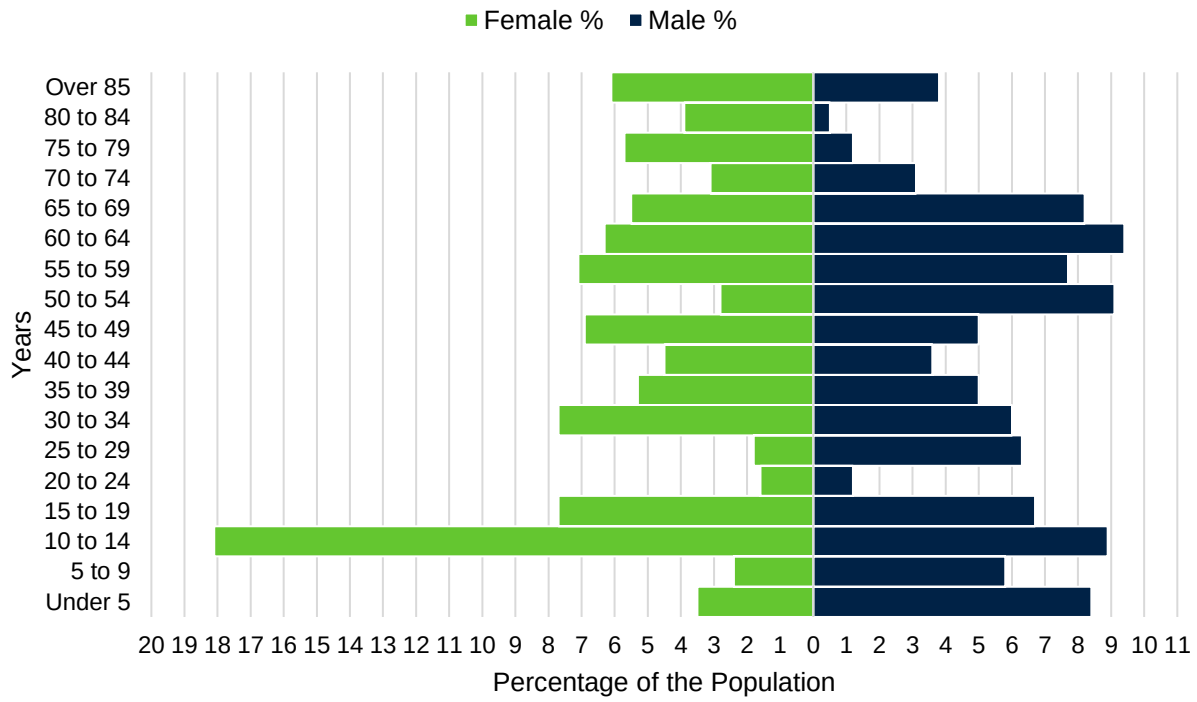
Figure OSC.2: City of Osceola



The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Osceola's population:

- **6.2% is non-white.** Since 2010, Osceola grew more ethnically diverse. In 2010, 2.2% of the Osceola's population was non-white. By 2019, 6.2% was non-white.[17]
- **41.6 median age.** The median age of Osceola was 41.6 years in old 2019. The population grew younger since 2010, when the median age was 45.3.[18]

Figure OSC.3: Osceola's Population Pyramid



The figure above shows Osceola's population percentage broken down by sex and five-year age groups. Osceola's population is likely to decline in the coming years with a higher percentage of the population above 50.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Osceola's population has:

- **7.5% of people living below the poverty line.** The poverty rate (7.5%) in the City of Osceola was slightly higher than the state's poverty rate (7.2%) in 2019.[19]
- **$59,000 median household income.** Osceola's median household income in 2019 ($59,000) was $2,439 lower than the state ($61,439).[19]

17 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.
18 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.
19 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

- **3.6% unemployment rate.** In 2019 Osceola had a higher unemployment rate (3.6%) when compared to the state (2.3%).[19]
- **28.5% of workers commuted 30 minutes or more to work.** Less workers in Osceola commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (28.5% compared to 52.4%).[20]

Major Employers

The major employers in Osceola are Tonniges Chevrolet, Annie Jeffrey Hospital, Polk County, Pinnacle Bank, Osceola Public Schools, John Deere, Frontier Co-op, Osceola Implement, and Nebraska Department of Roads. In addition, some residents commute to York or Columbus for work.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Those houses and vacant housing may be more vulnerable to hazard events if they are poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards. Osceola's housing stock has:

- **80.9% of housing built prior to 1970.** Osceola has a larger share of housing built prior to 1970 than the state (80.9% compared to 46%).[21]
- **11% of housing units vacant.** Since 2010, Osceola's vacancy rate grew. In 2010 the vacancy rate was 6.6%. By 2019, 11% of housing units were vacant.[21]
- **2% mobile and manufacture housing.** The City of Osceola had a smaller share of mobile and manufactured housing (2.0%) compared to the state (3.3%).[21] Osceola Trailer Court is located at 159 Central Street.
- **20.9% renter-occupied.** The rental rate of Osceola was 20.9% in 2019. The percentage went down since 2010, when renter occupied housing was at 31.2%.[21]

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Osceola is governed by a four-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Clerk/Treasurer
- Streets/Parks Commissioner
- Planning Commission
- Housing Authority
- Water and Sewer Department
- Volunteer Fire Department

20 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

21 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

- Utility Superintendent
- Park Board
- Board of Health
- Drought Monitoring
- Osceola Community Action Group

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are sufficient to pursue new capital projects; however, a large portion of funds is already dedicated to a new subdivision project, water tower project, and a new well. Funds have stayed the same over recent years.

Table OSC.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	Wellhead Protection Plan, Water System Emergency Response Plan
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	No
	Chief Building Official	Yes
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	-
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes

Survey Components/Subcomponents		Yes/No
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	Yes
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	-
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	-

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

Osceola has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code (2009)

The building code sets standards for constructed buildings and structures. The city has adopted the 2009 International Building Codes with no amendments made.

Comprehensive Plan (2014)

The comprehensive plan is designed to guide the future actions and growth of the city. It directs development away from the floodplain, directs housing away from chemical storage facilities, encourages infill development, directs housing and vulnerable populations away from major

transportation routes, encourages elevation of structures located in the floodplain, and encourages the preservation of open space. The comprehensive plan will be updated in 2024.

Floodplain Ordinance (2021), Subdivision Regulations (2021), and Zoning Ordinance (2021)

The city's floodplain ordinance, zoning ordinance, and subdivision regulations outline where and how development should occur in the future. These documents discourage development in the floodplain, limit population density in the floodplain, restrict the subdivision of land within the floodplain, and require more than one foot of elevation above Base Flood Elevation for new structures built in the floodplain.

Polk County Local Emergency Operations Plan (2020)

Osceola is an annex in the Polk County Local Emergency Operations Plan (LEOP). The LEOP establishes standardized policies, plans, guidelines, and procedures for emergency resources and governmental entities to respond and recover when a disaster event occurs. It contains information regarding direction and control, communications and warning, damage assessment, emergency public information, evacuation, fire services, health and human services, law enforcement, mass care, protective shelters, and resource management. This plan is updated every five years.

Water System Emergency Response Plan (2021)

A water system emergency response plan serves as a guideline for water operators and city administration to minimize the disruption of normal services to consumers and to provide public health protection during an emergency event. The document identifies several natural and human-caused events and discusses the water system's response during those events.

Wellhead Protection Plan (2013)

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area and managing the potential contaminant sources.

Future Development Trends

Over the past five years, the city has added 12 blocks of new paved roads and demolished 11 houses. In the next five years, the Fox Run Subdivision is planned to be completed. Osceola's future land use map (Figure OSC.4) shows residential housing on the southern and far northern portions of the community. Commercial development is located along Highway 81 and the railroad.

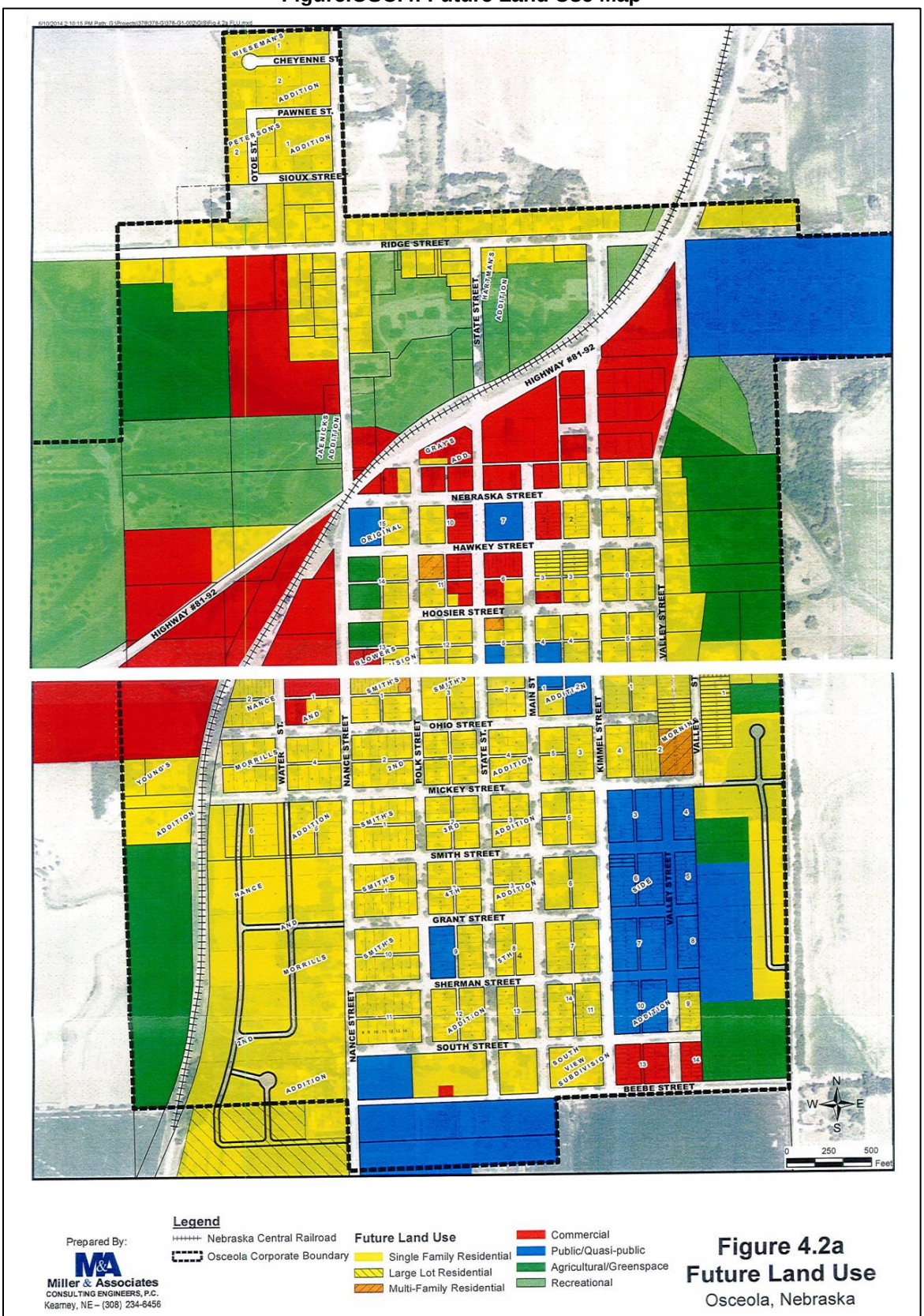
Community Lifelines

Transportation

Osceola's major transportation corridor includes US Highway 81. It is traveled by an average of 3,970 vehicles daily, 615 of which are trucks.[22] The city has one Nebraska Central Railroad Company line traveling north to south through the center of the community. No chemical spills or other significant transportation events have occurred locally. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

22 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34.

Figure.OSC.4: Future Land Use Map



Hazardous Materials

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are three chemical storage sites within or near Osceola which house hazardous materials (listed below). In addition, the local planning team identified Red Star as housing agricultural fertilizers. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table OSC.3: Chemical Storage Sites

Name	Address	Floodplain (Y/N)
NDOT Osceola Yard	521 N Kimmel St	Y (1%)
Osceola Terminal (Nustar)	1705 131st Rd	N
Frontier Cooperative	1030 Central	Y (1%)

Source: Nebraska Department of Environment and Energy[23]

Health and Medical Facilities

The following medical and health facilities are located within the community.

Table OSC.4: Health and Medical Facilities

Name	Type of Facility	Address	Number of Beds
Annie Jeffrey Memorial County Health Center	Hospital	531 Beebe St	16
Good Samaritan Society – Ridgeview Heights	Assisted Living Facility	631 Ridge St	13
Good Samaritan Society – Osceola	Long Term Care Facility	600 Center Dr	47

Source: Nebraska Department of Health and Human Services[24,25,26,27]

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

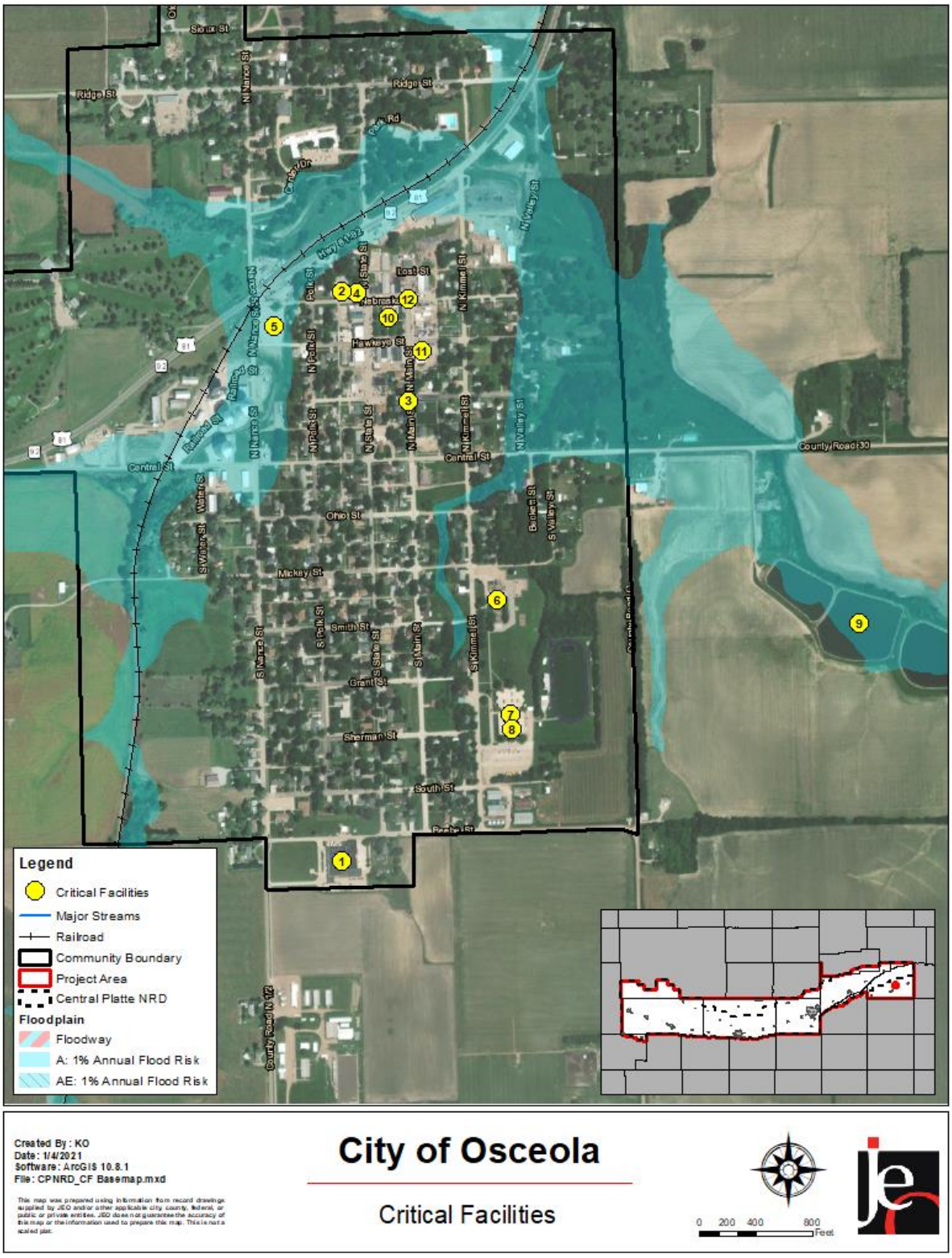
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

23 Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed June 2021.
24 Department of Health and Human Services. 2021. "State of Nebraska: Assisted Living Facilities." https://dhhs.ne.gov/licensure/Documents/ALF%20Roster.pdf.
25 Department of Health and Human Services. 2021. "State of Nebraska Roster: Hospitals." https://dhhs.ne.gov/licensure/Documents/Hospital%20Roster.pdf.
26 Department of Health and Human Services. 2021. "State of Nebraska Roster: Long Term Care Facilities." https://dhhs.ne.gov/licensure/Documents/LTCRoster.pdf.
27 Department of Health and Human Services. 2021. "State of Nebraska Roster: Rural Health Clinic." https://dhhs.ne.gov/licensure/Documents/RHC_Roster.pdf.

Table OSC.5: Critical Facilities

CF Number	Name	Mass Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Anne Jeffrey's Hospital	N	Y	N
2	City Office	N	N	N
3	City Shop and Well 721	N	Y	N
4	Civic Center	N	N	N
5	Fire Station	N	Y	Y (1%)
6	Grade School	Y	N	N
7	High School	Y	N	N
8	High School Auditorium	Y	N	N
9	Lift station and Wastewater Treatment Center	N	Y	Y (1%)
10	Polk County Courthouse	N	N	N
11	Polk County Sheriff's Office	N	Y	N
12	Well 2011	N	Y	N

Figure OSC.5: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table OSC.6: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
451	$32,127,456	79	$5,963,899	17.5%

Source: County Assessor, 2021

Historical Occurrences

See the Polk County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries. Larger scale and more damaging events that impacted the community are discussed under Hazard Prioritization.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

The flood risk areas of concern for the City of Osceola are located in the north, west, and eastern portions of the city. A large portion of the city is impacted by these flood risk areas, particularly Valley Street and other areas along the creek. David Creek is the closest body of water concerning Osceola. Major flooding in 2008 from heavy rains covered the highway in all four directions with a few inches of water. In 2010, a flood compromised asphalt in the community, and flooded a lift station. The flooding of David Creek has become more frequent, with three floods occurring in the summer of 2011, and another flood in 2014 caused by heavy rain. Country roads and portions of the Highway have been covered in water during these events. In March 2019 flooding damaged roads, bridges, and the sewer plant pumps. The city has installed inflow dishes on manhole covers to try and help prevent sewer plant flooding.

Osceola is a member of the NFIP, and the city's Floodplain Administrator (Christopher Hays) will oversee the commitments and requirements of the NFIP. The initial FIRM for the city was delineated in 7/2/1987 and the current effective map date is 8/19/2008. Over 17% of parcel improvements in the city are located in the 1% annual flood risk area (see table in the Parcel Improvements and Valuation section). As of October 31, 2021, there are two NFIP policies in-force with $73,000 in total coverage. Osceola does not currently have any repetitive loss or severe repetitive loss structures.

The City of Osceola has gone through the Risk Mapping, Assessment, and Planning (MAP) process. Risk MAP is a FEMA program that provides communities with flood information and additional flood risk data (e.g., flood depth grids, percent chance grids, areas of mitigation interest, etc.). As part of that process, a HAZUS analysis was performed for the Risk MAP areas. The figure below shows the HAZUS analysis results for Osceola.

Figure OSC.6: Estimated Potential Losses for Flood Event Scenarios

Type	Inventory Estimated Value	% of Total	10% (10-yr) Dollar Losses[1]	10% Loss Ratio[2]	2% (50-yr) Dollar Losses[1]	2% Loss Ratio[2]	1% (100-yr) Dollar Losses[1]	1% Loss Ratio[2]	0.2% (500-yr) Dollar Losses[1]	0.2% Loss Ratio[2]	Annualized Losses[1] ($/yr)	Ann. Loss Ratio[2]
Residential Building & Contents	$159,600,000	62%	$600,000	0%	$1,100,000	1%	$1,300,000	1%	$1,700,000	1%	$90,000	0%
Commercial Building & Contents	$51,000,000	19%	$300,000	1%	$700,000	1%	$800,000	1%	$1,000,000	2%	$50,000	0%
Other Building & Contents	$48,100,000	19%	$50,000	0%	$200,000	0%	$200,000	0%	$300,000	1%	$10,000	0%
Total Building & Contents[3]	$258,700,000	100%	$950,000	0%	$2,000,000	1%	$2,200,000	1%	$3,000,000	1%	$200,000	0%
Business Disruption[4]	N/A	N/A	$0	0%	$0	0%	$0	0%	$0	0%	$0	0%
TOTAL[5]	**$258,700,000**		**$950,000**	**0%**	**$2,000,000**	**1%**	**$2,200,000**	**1%**	**$3,000,000**	**1%**	**$200,000**	**0%**

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

[1]Losses shown are rounded to nearest $10,000 for values under $100,000 and to the nearest $100,000 for values over $100,000.
[2]Loss ratio = Dollar Losses ÷ Estimated Value. Loss Ratios are rounded to the nearest integer percent.
[3]Total Building and Contents = Residential Building and Contents + Commercial Building and Contents + Other Building and Contents.
[4]Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.
[5]Total = Total Building and Contents + Business Disruption

The figures in this table only represent information within the Upper Big Blue Watershed.

Source: FEMA[28]

Drought

The planning team is concerned about the potential for over irrigation during times of drought to drop the city's well water levels. All commercial and residential buildings have been metered, and well meters were added in 2011. Well levels are monitored daily by the City Maintenance Department. The community does not have a drought monitoring board or a drought response plan. The city water supply has never reached critical levels, but the levels have been threatened previously by drought. Since agricultural farming is one of the main trades in the region, economic losses would be felt throughout the area. The category D3 extreme drought of 2012-2013 was one such occasion where crop irrigation made Osceola's municipal water supply vulnerable to shortages and produced economic strains on residents reliant on crop output.

Severe Winter Storms

A blizzard in February 2016 lead to an accumulating of 12 inches of snow and severely impacted travel. Extremely cold temperatures in February 2021 caused power outages across the city. The community is concerned with the impacts on fire and rescue response during large snow events. The main streets in the city are designated snow routes but the community does not use snow fences. The utility superintendent is responsible for snow removal. A new payloader was purchased in 2015 and recently a new snowplow truck and bobcat attachments were purchased making snow removal equipment capacity sufficient. Severe winter storm hazard mitigation plans include providing backup generators for the City Office and City Shop.

Tornadoes and High Winds

There is one report of tornadoes since 1996 in the City of Osceola that caused $100,000 dollars in damages. This tornado hit a house on Ridge Street and tore the porch off the house. Critical facilities have not been damaged by tornadoes and municipal records are backed up on a computer. The community does have a siren and it is tested monthly. There are no storm shelters available in the city. The only options for citizens seeking shelter are in the courthouse and in the jail basement. In the event of a disaster, Osceola has a mutual aid agreement with Stromsburg. The city plans to mitigate the hazards associated with tornadoes by providing backup generators to the City Office and City Shop.

[28] FEMA. September 2017. "Flood Risk Report: Upper Big Blue, 10270201".

Mitigation Strategy

Kept Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Identify and evaluate current backup and emergency generators; obtain additional generators based on identification and evaluation; provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities and shelters. City Office and City Shop need generators.
Hazard(s) Addressed	All Hazards
Estimated Cost	$20,000 - $75,000+ per generator
Local Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Utility Superintendent
Status	Generators have been installed at the lift and one of the two operating wells. City office and city shop projects have not been started yet.

Mitigation Action	Develop a Drought Management Plan
Description	Work with relevant stakeholders to develop a drought management plan; identify water monitoring protocols; outline drought responses; identify opportunities to reduce water consumption; establish the jurisdictional management procedures.
Hazard(s) Addressed	Drought
Estimated Cost	$2,500+
Local Funding	General Fund, Water Sustainability Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Utility Superintendent, City Council
Status	Not Started

Mitigation Action	Emergency Exercise: Hazardous Spill
Description	Utilize exercise to prepare for potential explosions or hazardous spills; ensure that nearby businesses and residents have appropriate plans in place.
Hazard(s) Addressed	Hazardous Materials Release
Estimated Cost	$5,000+
Local Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	City Administration, Fire Department, County Emergency Management
Status	Not Started

Mitigation Action	Public Awareness/Education
Description	Obtain or develop hazard education materials to be posted on the City Website and fliers around town; conduct scheduled siren/warning system tests; prepare and distribute educational materials listing safe rooms and shelters; purchase equipment such as overhead projectors and laptops to facilitate presentation of information.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+
Local Funding	General Fund
Timeline	1 Year
Priority	Medium
Lead Agency	Clerk, IT Innovations
Status	Currently do monthly tornado siren testing throughout the year. Have purchased a Samsung flipboard and attached computer to present information to a large group.

Mitigation Action	Reduce Bottlenecks / Flow Restrictions
Description	Evaluate current bottlenecks/flow restrictions; implement measures to reduce bottlenecks/flow restrictions including silt removal.
Hazard(s) Addressed	Flooding
Estimated Cost	$5,000
Local Funding	General Fund
Timeline	5+ Years
Priority	Medium
Lead Agency	Utility Superintendent
Status	Davis Creek has been cleaned and a box culvert bridge on Ridge Street has been replaced. Cleaning of Davis Creek will be an ongoing issue with debris and silt continuing to be a problem.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The Mayor, City Council, and Zoning Administrator will be responsible for reviewing and updating the plan in the future. These individuals will review the plan bi-annually during a public city council meeting.

Community Profile

Village of Polk

Central Platte NRD
Hazard Mitigation Plan

2022

Local Planning Team

The Village of Polk's local planning team for the hazard mitigation plan are listed in the table below along with the meetings attended. All participant worksheets were filled out and returned by the community.

Table POL.1: Polk Local Planning Team

Name	Title	Jurisdiction	R1 Meeting	R2 Meeting
Scott Umberger	Village Maintenance	Village of Polk	Central City	Recording
Bill Carlstrom	Village Maintenance	Village of Polk	Central City	-
Kathie Carlstrom	Clerk/Treasurer	Village of Polk	Lexington – Virtually	-

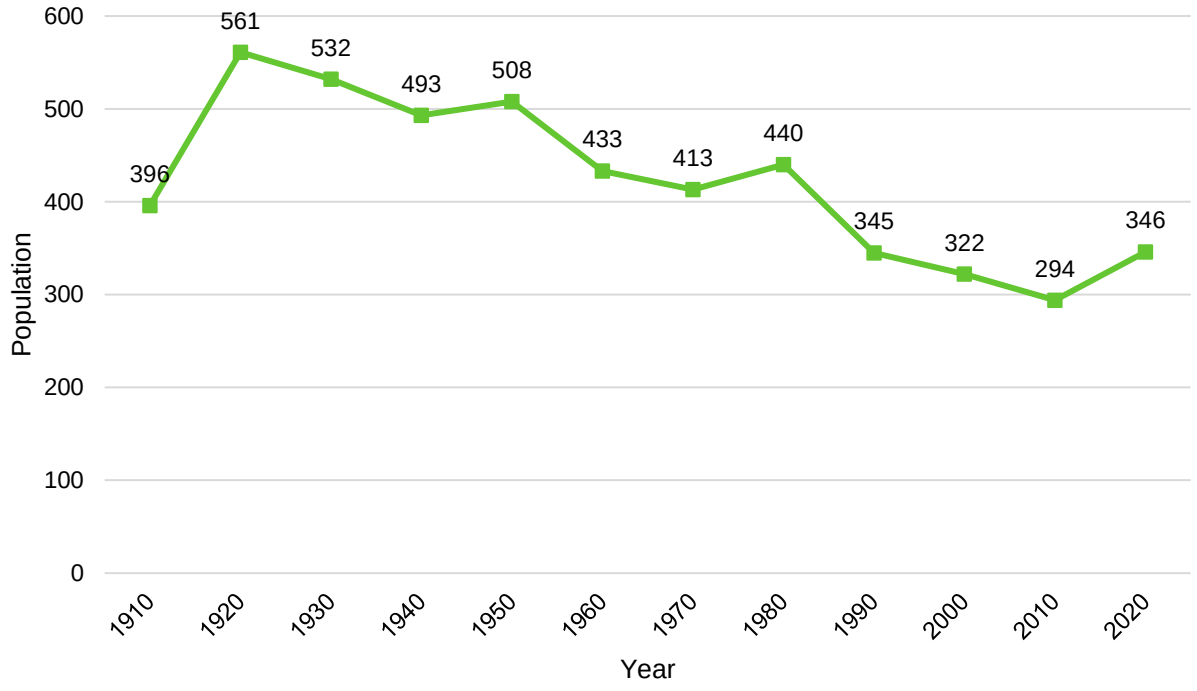
Location and Geography

The Village of Polk is in southwestern Polk County and covers an area of 0.49 square miles. There are no major waterways in the area.

Demographics

The following figure displays the historical population trend for the Village of Polk. This figure indicates that the population of Polk has been increasing since 2010 to 346 people in 2020. Increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. Polk's population accounted for 6.6% of Polk County's population in 2020.[29]

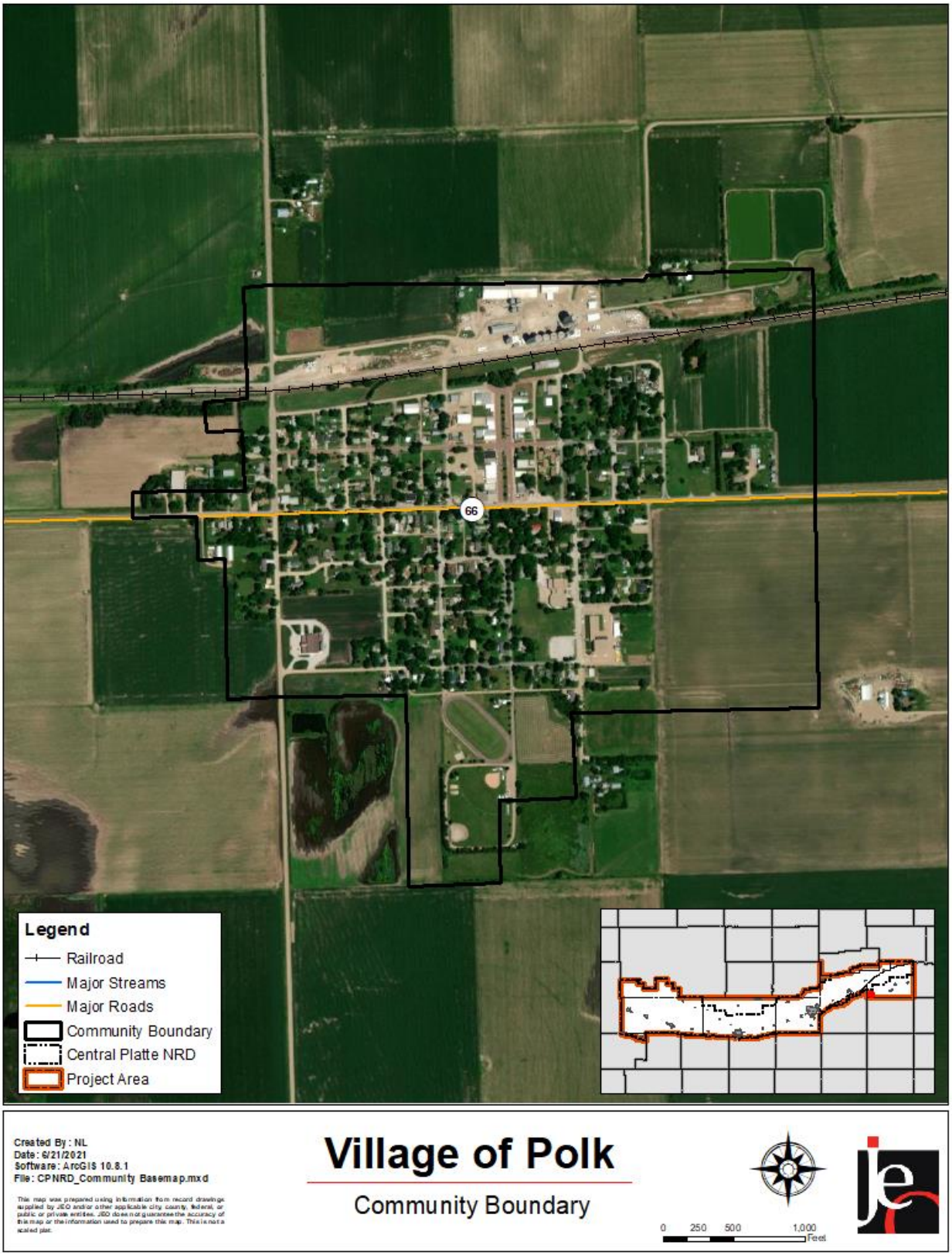
Figure POL.1: Population 1910 - 2020



Source: U.S. Census Bureau

29 United States Census Bureau. "2020 Decennial Census: P1: DEC Redistricting Data." https://data.census.gov/cedsci/.

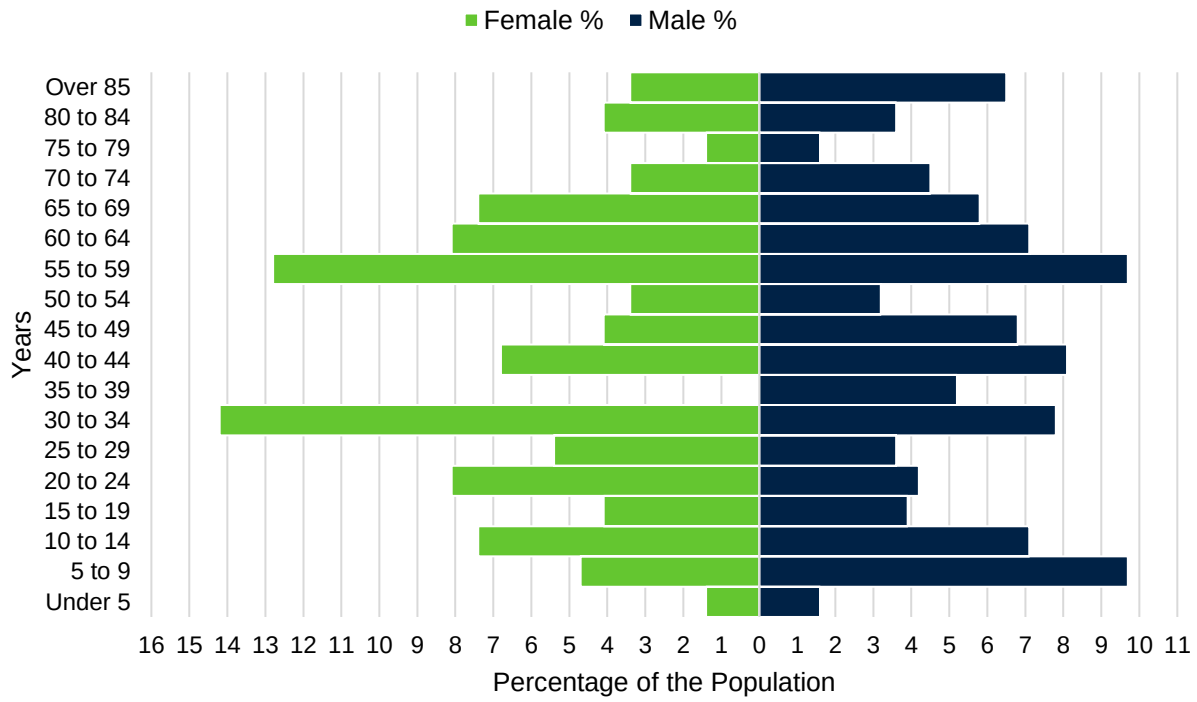
Figure POL.2: Village of Polk



The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Polk's population:

- **4.5% is non-white.** Since 2010, Polk grew more ethnically diverse. In 2010, 0% of the Polk's population was non-white. By 2019, 4.5% was non-white.[30]
- **44.3 median age.** The median age of Polk was 44.3 years in old 2019. The population grew younger since 2010, when the median age was 49.[31]

Figure POL.3: Polk's Population Pyramid



The figure above shows Polk's population percentage broken down by sex and five-year age groups. Polk's population is likely to stay steady in the years to come with a similar amount of the population below 40 as above.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Polk's population has:

- **9.5% of people living below the poverty line.** The poverty rate (9.5%) in the Village of Polk was higher than the state's poverty rate (7.2%) in 2019.[32]
- **$36,944 median household income.** Polk's median household income in 2019 ($36,944) was $24,495 lower than the state ($61,439).[32]

30 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.
31 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.
32 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

- **2.0% unemployment rate.** In 2019 Polk had a slightly lower unemployment rate (2.0%) when compared to the state (2.3%).[32]
- **42.6% of workers commuted 30 minutes or more to work.** More workers in Polk commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (42.6% compared to 30.6%).[33]

Major Employers

The major employer in the community is the High Plains School. A large percentage of residents commute to Grand Island, York, and Aurora for work.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Those houses and vacant housing may be more vulnerable to hazard events if they are poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards. Polk's housing stock has:

- **73.2% of housing built prior to 1970.** Polk has a larger share of housing built prior to 1970 than the state (73.2% compared to 46%).[34]
- **31.8% of housing units vacant.** Since 2010, Polk's vacancy rate grew. In 2010 the vacancy rate was 11.8%. By 2019, 31.8% of housing units were vacant.[34]
- **1.3% mobile and manufacture housing.** The Village of Polk had a smaller share of mobile and manufactured housing (1.3%) compared to the state (3.3%).[34]
- **23.7% renter-occupied.** The rental rate of Polk was 23.7% in 2019. The percentage went up since 2010, when renter occupied housing was at 14.2%.[34]

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The Village of Polk is governed by a village board, while other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Clerk/Treasurer
- Planning Commission
- Housing Authority
- Water and Sewer Department
- Street Department
- Volunteer Fire Department
- Electrical Department
- Zoning Department

33 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

34 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are limited to maintaining current facilities and systems. A large portion of funds are already dedicated to updating water meters. Funds have stayed the same over recent years.

Table POL.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	No
	Building Codes	Yes
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	Water System Emergency Response Plan, Wellhead Protection Plan
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	No
	Mutual Aid Agreement	No
	Other (if any)	-
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No

Survey Components/Subcomponents		Yes/No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	-
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	-

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

Polk has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The village will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code (2021)

The building code sets standards for constructed buildings and structures. The village has adopted the 2018 International Building Codes and 2017 National Electrical Code with no amendments made.

Capital Improvements Plan (2008)

The capital improvements plan outlines projects the village would like to pursue and provides a planning schedule and financing options. Projects include upsizing of culverts and drainage structures, installing water meters, installing emergency generators, constructing a community storm shelter, and constructing a new water treatment facility. Projects identified in the hazard mitigation plan are reviewed for inclusion in the capital improvements plan.

Comprehensive Plan (2008)

The comprehensive plan is designed to guide the future actions and growth of the village. It contains goals aimed at safe growth, directs housing away from chemical storage facilities, and identifies areas that need emergency shelters. There is currently no timeline to update the plan.

Polk County Local Emergency Operations Plan (2020)

Polk is an annex in the Polk County Local Emergency Operations Plan (LEOP). The LEOP establishes standardized policies, plans, guidelines, and procedures for emergency resources and governmental entities to respond and recover when a disaster event occurs. It contains information regarding direction and control, communications and warning, damage assessment, emergency public information, evacuation, fire services, health and human services, law enforcement, mass care, protective shelters, and resource management. This plan is updated every five years.

Water System Emergency Response Plan (2015)

A water system emergency response plan serves as a guideline for water operators and village administration to minimize the disruption of normal services to consumers and to provide public health protection during an emergency event. The document identifies several natural and human-caused events and discusses the water system's response during those events.

Wellhead Protection Plan (2015)

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area and managing the potential contaminant sources.

Zoning Ordinance and Subdivision Regulations (2008)

The village's zoning ordinance and subdivision regulations outline where and how development should occur in the future. These documents contain floodplain maps, include well setback requirements, and include the ability to implement water restrictions. There is no plan to update these documents at this time.

Future Development Trends

Over the past five years, older buildings and homes have been demolished. No new housing or businesses were added. In the next five years, there are no planned housing or business developments at this time. Polk's future land use map shows residential housing on the southern half of the community, with the northern half being residential multifamily, commercial, and industrial.

Community Lifelines

Transportation

Polk's major transportation corridors include US Highway 30, which has an average of 6,490 vehicles daily, 475 of which are trucks.[35] Anhydrous ammonia and other agricultural chemicals are transported on all local roadways. No chemical spills or other significant transportation events have occurred in the past. The village has one Union Pacific line traveling southwest to northeast on the southern edge of the community. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

35 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. https://gis.ne.gov/portal/apps/webappviewer/indePolk.html?id=bb00781d6653474d945d51f49e1e7c34.

Hazardous Materials

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are three chemical storage sites within or near Polk which house hazardous materials (listed below). In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table POL.3: Chemical Storage Sites

Name	Address	Floodplain (Y/N)
Harless Oil Company	320 Polk Ave	N
Central Valley Ag	450 Polk Ave	N
Central Valley Ag Cardtrol	465 Park Ave	N

Source: Nebraska Department of Environment and Energy[36]

Health and Medical Facilities

There are no medical and health facilities located within the community.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

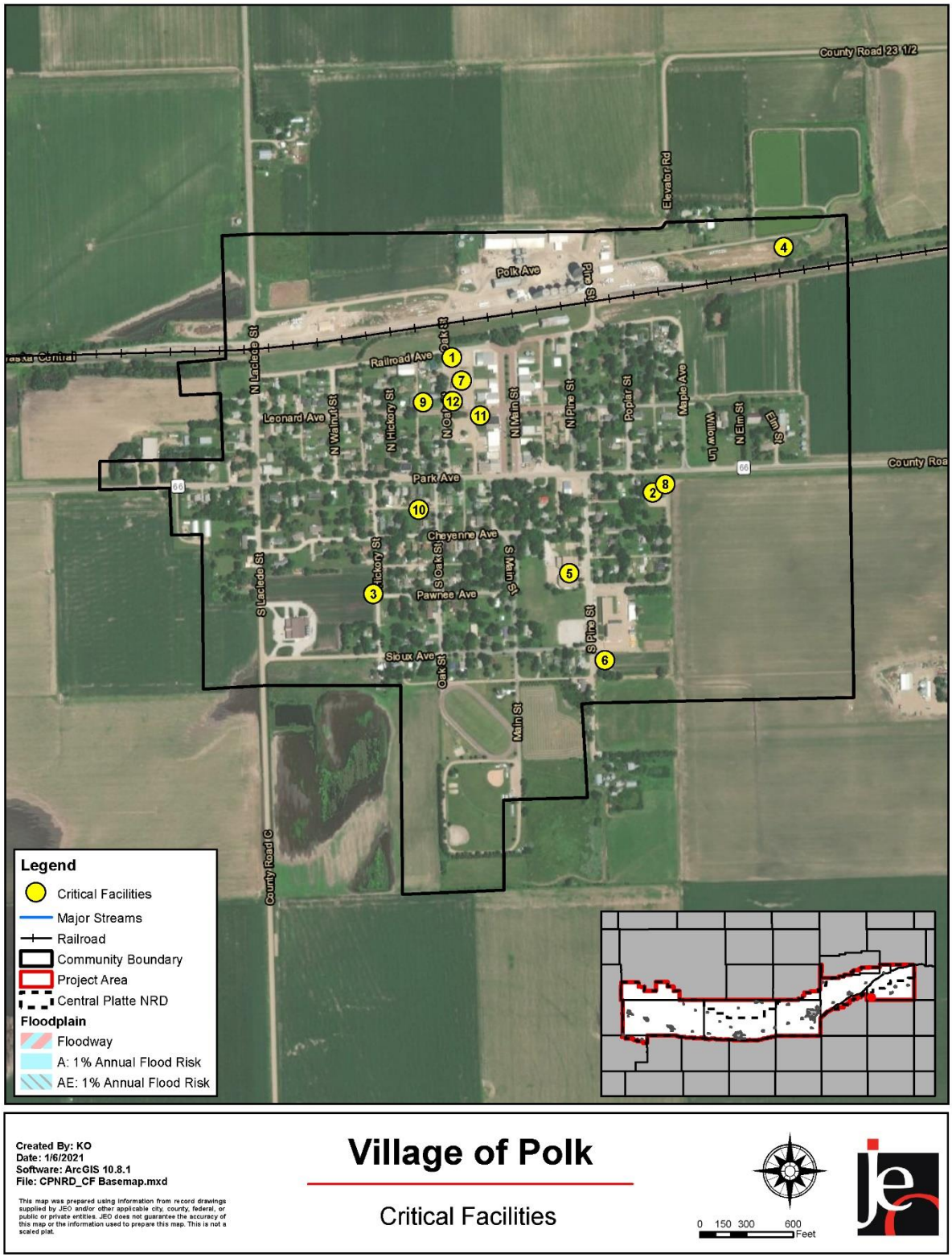
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table POL.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Fire Station	N	Y-portable	N
2	First Baptist Church	N	N	N
3	Lift Station 1	N	N-portable pump	N
4	Lift Station 2	N	N-portable pump, can be bypassed by gravity	N
5	Polk Elementary School	Y	N	N
6	Polk-Hordville High School	Y	N	N
7	Senior Center	N	N	N
8	Trinity Lutheran Church	N	N	N
9	Village Hall	N	Y-portable	N
10	Well 1	N	N	N
11	Well 2	N	N	N
12	Well 3	N	Y	N

36 Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed June 2021.

Figure POL.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table POL.5: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
207	$8,967,320	0	$0	0%

Source: County Assessor, 2021

Historical Occurrences

See the Polk County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries. Larger scale and more damaging events that impacted the community are discussed under Hazard Prioritization.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

Polk has concerns about flooding because the basin south of the village allows water to flow into their sanitary system. This basin also makes the south and southwest sides of the village prone to flooding. On the west side of the community near Sioux Avenue there is a pond that also floods and impacts the village. There were four flooding events in 2011 beginning with ice jams in the winter and continuing through the summer because of heavy rain. These floods covered many roads in the area with water. Damages from the March 2019 flooding was minimal. Road flooding occurs about once every three years in the northeast portion of Polk because of poor drainage. The village continues to work on and improve drainage across the community. However, to eliminate the problem a mile and a half of drainage improvements is needed and getting right-of-way permission is unlikely. The Village of Polk does not participate in the NFIP.

The Village of Polk has gone through the Risk Mapping, Assessment, and Planning (MAP) process. Risk MAP is a FEMA program that provides communities with flood information and additional flood risk data (e.g., flood depth grids, percent chance grids, areas of mitigation interest, etc.). As part of that process, a HAZUS analysis was performed for the Risk MAP areas. The figure below shows the HAZUS analysis results for the Village of Polk.

Figure POL.5: Estimated Potential Losses for Flood Event Scenarios

Type	Inventory Estimated Value	% of Total	10% (10-yr) Dollar Losses[1]	10% Loss Ratio[2]	2% (50-yr) Dollar Losses[1]	2% Loss Ratio[2]	1% (100-yr) Dollar Losses[1]	1% Loss Ratio[2]	0.2% (500-yr) Dollar Losses[1]	0.2% Loss Ratio[2]	Annualized Losses[1] ($/yr)	Ann. Loss Ratio[2]
Residential Building & Contents	$69,300,000	68%	$10,000	0%	$10,000	0%	$20,000	0%	$20,000	0%	$0	0%
Commercial Building & Contents	$9,400,000	9%	$0	0%	$0	0%	$0.00	0%	$0	0%	$0	0%
Other Building & Contents	$23,600,000	23%	$0	0%	$0	0%	$0	0%	$0	0%	$0	0%
Total Building & Contents[3]	$102,300,000	100%	$10,000	0%	$10,000	0%	$20,000	0%	$20,000	0%	$0	0%
Business Disruption[4]	N/A		$0	0%	$0	0%	$0	0%	$0	0%	$0	0%
TOTAL[5]	**$102,300,000**		**$10,000**	**0%**	**$10,000**	**0%**	**$20,000**	**0%**	**$20,000**	**0%**	**$0.00**	**0%**

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

[1]Losses shown are rounded to nearest $10,000 for values under $100,000 and to the nearest $100,000 for values over $100,000.
[2]Loss ratio = Dollar Losses ÷ Estimated Value. Loss Ratios are rounded to the nearest integer percent.
[3]Total Building and Contents = Residential Building and Contents + Commercial Building and Contents + Other Building and Contents.
[4]Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.
[5]Total = Total Building and Contents + Business Disruption

The figures in this table only represent information within the Upper Big Blue Watershed.

Source: FEMA[37]

Severe Thunderstorms

Community concerns about thunderstorms include damage to property, trees, and power lines. Severe thunderstorms occur yearly in Polk and are often accompanied by power outages and structural damage from hail. Critical municipal records are backed up. Only approximately 1% of power lines are buried which leaves the village vulnerable to power outages from downed trees and limbs. There are many trees in the village that need maintenance. Some village funds are being directed at implementing a tree maintenance program to address this. A new portable backup generator is needed for the list stations. All critical facilities have weather radios, and mitigation plans involve further improving the citizen warning system. There are also plans in place to provide adequate storm shelters for the community. Critical facilities have been fitted with hail resistant building materials.

Severe Winter Storms

Several winter storms of note have occurred in Polk. In February of 2001 an ice storm made untreated roads impassable and caused sporadic power outages. Ice storms in December of 2006 and 2007 caused $500,000 and $50,000 in property damage throughout the area when half-inch of ice deposits caused tree and power line damage. A blizzard in December of 2012 brought 8-inches of snow accumulation, causing difficult travel conditions and many vehicular accidents. There are no official snow routes in the village, but routes with heavy traffic are prioritized during snow clearing efforts. There are no snow fences in use. The Maintenance Department is responsible for snow removal, but the village is very low on equipment. Currently, Polk only has one vehicle to remove snow due to a lack of blades and damaged vehicles.

Tornadoes and High Winds

Damage to trees, power lines, and property are Polk's top concerns related to tornadoes and high winds. The most significant high wind event to occur in Polk was in 1999 when 50mph winds caused residential structure damages from downed tree limbs and destroyed the concession stand and power poles on the Polk baseball field. An EF3 tornado just missed Polk in 2001 but caused large of amounts of damages nearby. There are no community safe rooms, so residents must utilize private basements for storm shelter. The community has adequate warning sirens

[37] FEMA. September 2017. "Flood Risk Report: Upper Big Blue, 10270201".

that are activated by the Fire Department, but they are very old and need to be replaced. The schools and county do some community education, mostly tornado drills and response training. In the event of a disaster, there are mutual aid agreements in place with Stromsburg, Osceola, Chapman, Palmer, and Shelby, and an energy mutual aid agreement with North Platte County.

Mitigation Strategy

Completed Mitigation Actions

Mitigation Action	Reduce Damages from Floods, Stormwater, and Heavy Precipitation Events
Description	Conduct stormwater drainage study; evaluate and implement recommendations or comparable measures to improve drainage; evaluate and improve stormwater system.
Hazard(s) Addressed	Flooding
Status	The village owns the necessary equipment to combat stormwater flooding within reason.

New Mitigation Actions

Mitigation Action	Purchase Snow Removal Equipment
Description	Currently Polk only has one vehicle to remove snow. Purchase additional snow removal vehicles and equipment.
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	$50,000+
Local Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Maintenance Department
Status	Not Started

Kept Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Identify and evaluate current backup and emergency generators; obtain additional generators based on identification and evaluation; provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities and shelters.
Hazard(s) Addressed	All Hazards
Estimated Cost	$20,000 - $75,000 per generator
Local Funding	Bonds
Timeline	1 Year
Priority	Medium
Lead Agency	Water and Sewer Department
Status	A new generator has been installed in the primary well house. Village needs will continue to be evaluated.

Mitigation Action	Improve Construction Standards and Building Survivability
Description	Evaluate building standards/codes/requirements; implement new or improved building standards/codes/requirements; educate construction companies on building standards; promote use of higher codes and standards, such as fortified for Safer Living Standard, to provide greater protection for any new construction or building retrofits.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+
Local Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board
Status	Building and electrical codes are up to date. Education is still needed.

Mitigation Action	Improve Electrical Service
Description	Evaluate hardening, retrofitting, looping and/or burying of power lines and related infrastructure and/or comparable protection measures; provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails; implement measures to improve electrical service; bury power lines for future construction.
Hazard(s) Addressed	Severe Thunderstorms, Tornadoes and High Winds, Severe Winter Storms
Estimated Cost	$2,000,000 per mile
Local Funding	General Budget
Timeline	5+ Years
Priority	Medium
Lead Agency	Street Department, Electrical Department, Public Power District
Status	Underground wiring is not cost effective and purchasing equipment has a long lead time. If the primary transformer goes down, the village can be without power for several months.

Mitigation Action	Improve Emergency Communication Systems
Description	Develop emergency communication action plan; implement emergency communication action plan; obtain/upgrade emergency communication equipment.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+
Local Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board
Status	Firehall and village work closely together. Communication will continue to be monitored. No identifiable discrepancies found.

Mitigation Action	Improve Warning Systems
Description	Evaluate current warning systems (defined as alert sirens, weather radios, and television, telephone, and radio warning systems, etc.); improve warning systems/develop new warning system; obtain/upgrade warning system equipment and methods; conduct evaluation of existing alert sirens for replacement or placement of new sirens; identify location of weather warning radios; improve weather radio system; obtain/upgrade weather radios.
Hazard(s) Addressed	All Hazards
Estimated Cost	$50 per radio; $5,000 - $50,000 for broadcast system; $15,00 - $50,000 for sirens
Local Funding	General Budget and FEMA Aid
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board, Fire Department
Status	Fire and tornado sirens need to be replaced. The fire department has stopped using the whistle at noon to preserve it and the tornado siren is at the end of its life per the fire department.

Mitigation Action	Reduce Tree Damage and Damage from Trees
Description	Conduct tree inventory; develop tree maintenance/trimming program; implement tree maintenance/trimming program; remove hazardous limbs and/or trees.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Winter Storms, Severe Thunderstorms, Grass/Wildfire
Estimated Cost	Varies
Local Funding	General Budget
Timeline	Ongoing
Priority	High
Lead Agency	Street Department, Electrical Department
Status	Trees and vegetation are monitored to prevent water/sewer/electrical problems.

Mitigation Action	Storm Shelter / Safe Room
Description	Identify and evaluate existing safe rooms and/or storm shelter; improve and/or construct safe rooms and/or storm shelters; design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, etc.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	$150 square ft for retrofit; $300 square ft for new construction
Local Funding	Bonds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board
Status	Not Started

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The Village Maintenance and Village Clerk will be responsible for reviewing and updating the plan in the future. These individuals will review the plan annually. The public will be notified using the county newspaper and during board meetings.

Community Profile

Village of Shelby

Central Platte NRD
Hazard Mitigation Plan

2022

Local Planning Team

The Village of Shelby's local planning team are listed in the table below along with the meetings attended. All participant worksheets were filled out and returned by the community.

Table SHE.1: Shelby Local Planning Team

Name	Title	Jurisdiction	R1 Meeting	R2 Meeting
Deanna Party	Clerk/Treasurer	Village of Shelby	-	Viewed Recording

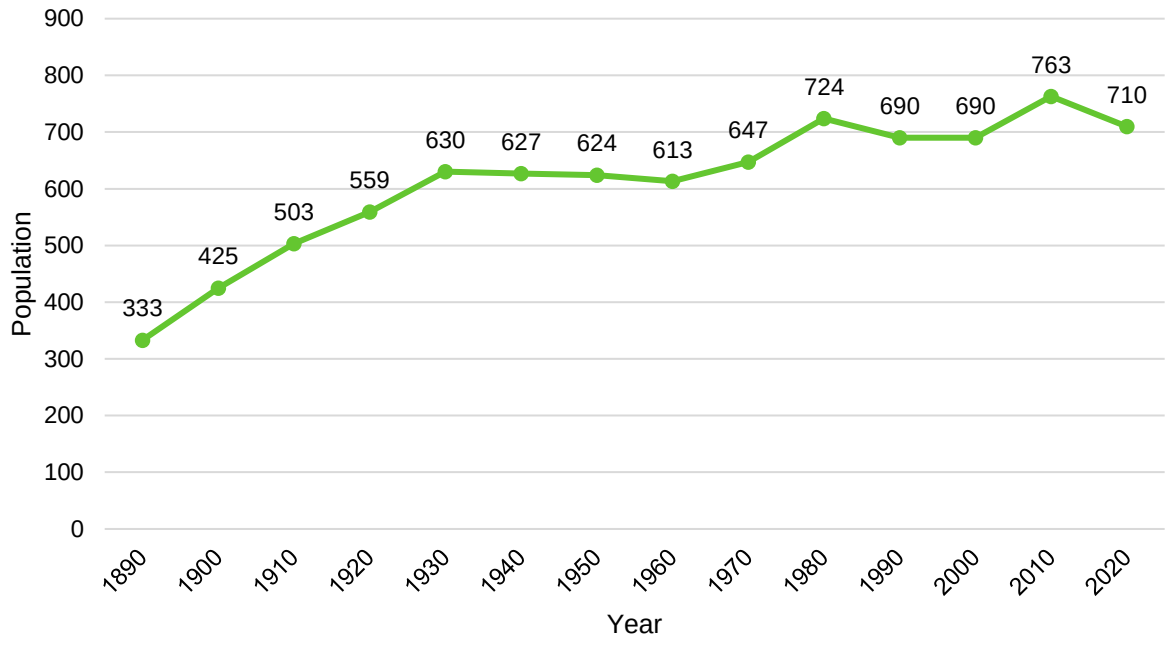
Location and Geography

The Village of Shelby is located in eastern Polk County and covers an area of 0.56 square miles. The major waterway in the area is the Big Blue River.

Demographics

The following figure displays the historical population trend for the Village of Shelby. This figure indicates that the population of Shelby has been declining since 2010 to 710 people in 2020. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging. Shelby's population accounted for 6.6% of Polk County's population in 2020.[38]

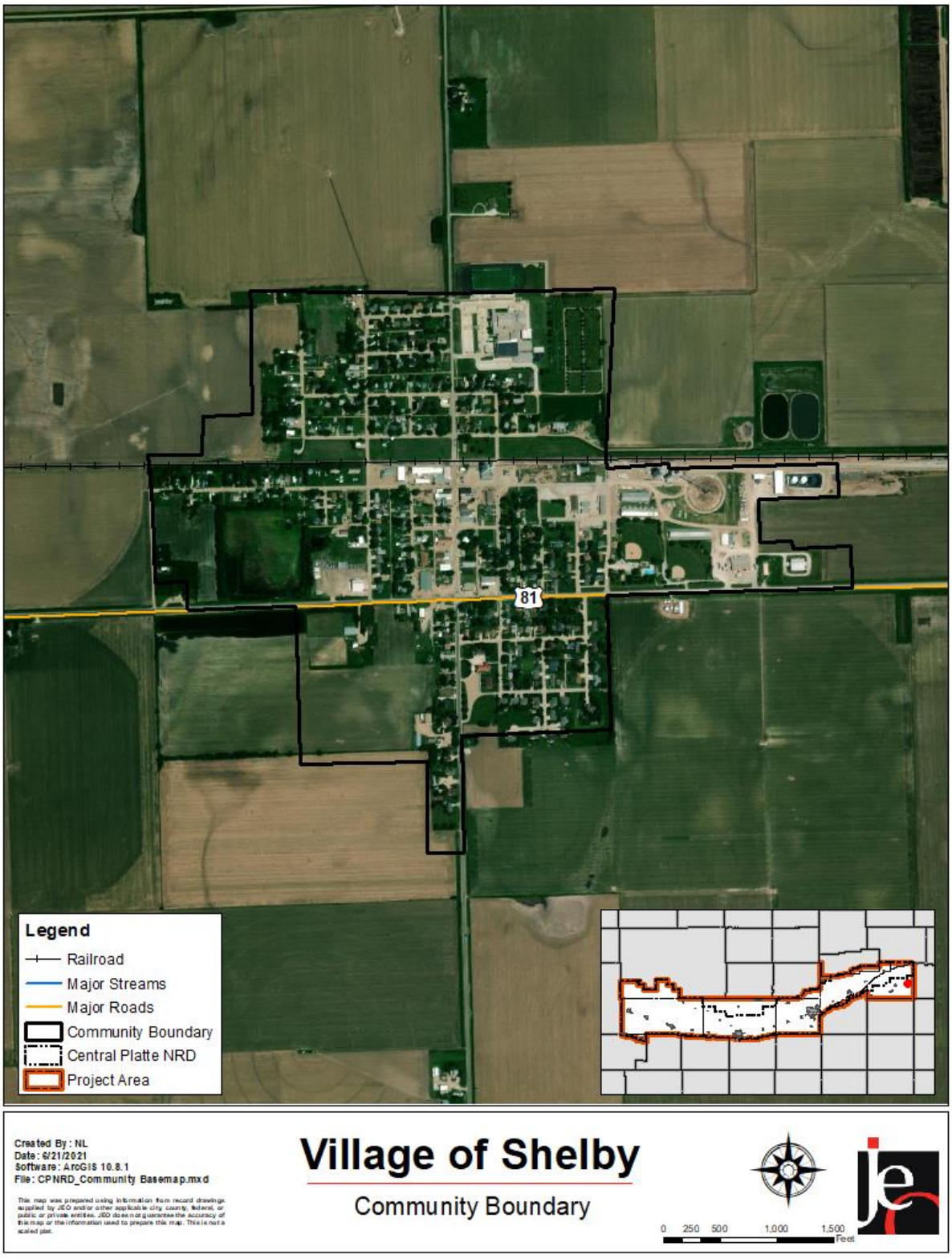
Figure SHE.1: Population 1890 - 2020



Source: U.S. Census Bureau

38 United States Census Bureau. "2020 Decennial Census: P1: DEC Redistricting Data." https://data.census.gov/cedsci/.

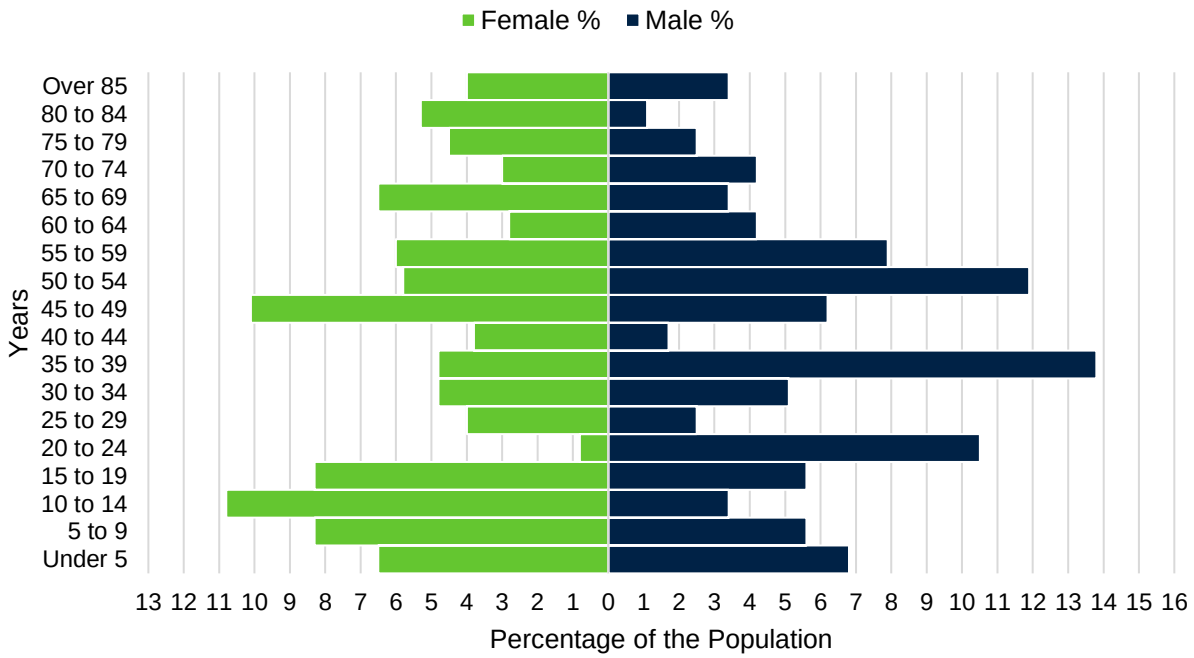
Figure SHE.2: Village of Shelby



The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Shelby's population:

- **3.1% is non-white.** Since 2010, Shelby grew less ethnically diverse. In 2010, 8.3% of the Shelby's population was non-white. By 2019, 3.1% was non-white.[39]
- **Younger median age.** The median age of Shelby was 39.6 years in old 2019. The population grew younger since 2010, when the median age was 40.[40]

Figure SHE.3: Shelby's Population Pyramid



The figure above shows Shelby's population percentage broken down by sex and five-year age groups. Shelby's population is younger with a much higher percentage of the population below 40 years of age. This likely indicates a growing population in the years to come.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Shelby's population has:

- **5.9% of people living below the poverty line.** The poverty rate (5.9%) in the Village of Shelby was lower than the state's poverty rate (7.2%) in 2019.[41]
- **$73,472 median household income.** Shelby's median household income in 2019 ($73,472) was $12,000 higher than the state ($61,439).[41]
- **3.1% unemployment rate.** In 2019 Shelby had a higher unemployment rate (3.1%) when compared to the state (2.3%).[41]

39 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.
40 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.
41 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

- **26.2% of workers commuted 30 minutes or more to work.** Fewer workers in Shelby commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (26.2% compared to 46%).[42]

Major Employers

The major employers in the community are Shelby Lumber Yard, Cubby's, Central Valley Coop, and Shelby Public Schools. A large percentage of residents commute to Columbus for work.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Those houses and vacant housing may be more vulnerable to hazard events if they are poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards. Shelby's housing stock has:

- **72.2% of housing built prior to 1970.** Shelby has a larger share of housing built prior to 1970 than the state (72.2% compared to 46%).[43]
- **5.7% of housing units vacant.** Since 2010, Shelby's vacancy rate declined. In 2010 the vacancy rate was 11.7%. By 2019, 5.7% of housing units were vacant.[43]
- **1.6% mobile and manufacture housing.** The Village of Shelby had a smaller share of mobile and manufactured housing (1.6%) compared to the state (3.3%).[43]
- **20.2% renter-occupied.** The rental rate of Shelby was 20.2% in 2019. The percentage went down since 2010, when renter occupied housing was at 25.7%.[43]

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The Village of Shelby is governed by a chairperson and a four-member Village Board; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Clerk/Treasurer
- Streets/Parks Commissioner
- Planning Commission
- Housing Authority
- Water and Sewer Department
- Volunteer Fire Department
- Chamber of Commerce
- Betterment Corporation

42 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

43 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Shelby's municipal funds are sufficient to pursue new capital projects and a large portion of funds are not already dedicated to a specific project. Funds have increased over recent years.

Table SHE.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	No
	Building Codes	Yes - State
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	-
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	No
	GIS Capabilities	Yes - County
	Chief Building Official	No
	Civil Engineering	Yes - Contractor
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes - Contractor
	Mutual Aid Agreement	Yes
	Other (if any)	-
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No

Survey Components/Subcomponents		Yes/No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	-
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	-

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Moderate
Staff/expertise to implement projects	Moderate
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited

Plan Integration

Shelby has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. In addition, Shelby has a comprehensive plan, zoning ordinance, and subdivision regulations that have not been integrated due to the age of the documents. The village would like to integrate the plans when they are next updated.

Building Code

The village does not have their own building codes but uses the State of Nebraska Codes, which are based on the 2018 International Building Codes.

Polk County Local Emergency Operations Plan

Shelby is an annex in the Hall County Local Emergency Operations Plan (LEOP). The LEOP establishes standardized policies, plans, guidelines, and procedures for emergency resources and governmental entities to respond and recover when a disaster event occurs. It contains information regarding direction and control, communications and warning, damage assessment, emergency public information, evacuation, fire services, health and human services, law enforcement, mass care, protective shelters, and resource management. This plan is updated every five years.

Future Development Trends

Over the past five years, a few new homes were built. None of the new structures were built in the floodplain or other known hazardous areas. In the next five years, there are no planned housing or business developments at this time.

Community Lifelines

Transportation

Shelby's major transportation corridors include Nebraska Highway 69 and U.S. Highway 81. Nebraska Highway 69 runs north to south and is located south of the village. On average, there are 980 vehicles per day on Highway 69 with 85 of those vehicles being heavy commercial vehicles. U.S. Highway 81 runs east to west through the middle of the village. The average daily vehicle load for U.S. Highway 81 through Shelby is 4,345 with 625 of those being heavy commercial vehicles. Shelby has one rail line that runs east to west through the northern portion of the city, a Nebraska Central Railway Company line. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are two chemical storage sites within or near Shelby which house hazardous materials (listed below). In addition, the local planning team identified Vrbka Ag Solutions as another chemical storage site. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table SHE.3: Chemical Storage Sites

Name	Address	Floodplain (Y/N)
Central Valley Ag	340 E Oak St	N
Creston Fertilizer Co Inc	12731 U Rd	Y (1%)

Source: Nebraska Department of Environment and Energy[44]

Health and Medical Facilities

The local planning team identified Prairie Creek Family Medicine as a medical and urgent care facility in the community.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

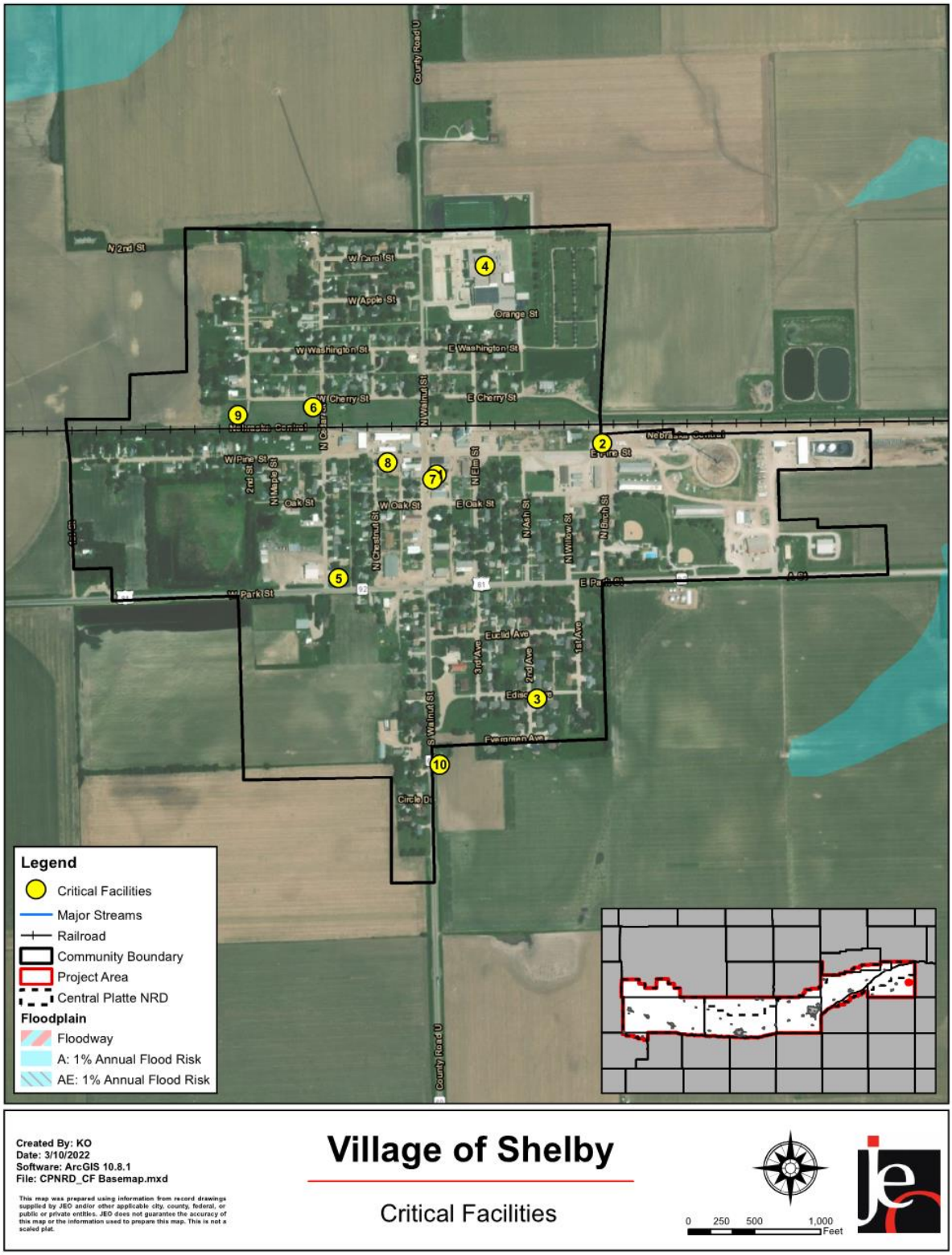
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

44 Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed June 2021.

Table SHE.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Fire Hall	N	N	N
2	Lift Station	N	N	N
3	Lift Station	N	N	N
4	Shelby Public Schools	N	N	N
5	Substation	N	N	N
6	Treatment Plant/Water Tower	N	N	N
7	Village Office/Shelby Senior Center	N	N	N
8	Village Shop	N	N	N
9	Well	N	N	N
10	Well 91-1	N	N	N

Figure SHE.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table SHE.5: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
350	$28,115,461	0	$0	0%

Source: County Assessor, 2021

Historical Occurrences

See the Polk County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries. Larger scale and more damaging events that impacted the community are discussed under Hazard Prioritization.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Drought

The local planning team is most concerned about water shortages and public property degradation during a drought. Past droughts have caused potholes in the community due road cracking and dry ground. The village water supply was described as being sufficient by the local planning team. However, this could change dramatically during an extreme drought that extends many months or years. When water supply gets low, the village has alerts in place to warn the community. Water is metered in the community so that the village can track water usage. Since agricultural farming is one of the main trades in the region, economic losses would be felt throughout the area. Shelby plans to mitigate the hazards associated with drought with a public education campaign on possible mitigation actions.

Flooding

While not identified by the local planning team as a hazard of top concern, localized drainage flooding could occur. Shelby is not a member of the NFIP and there are no 1% annual flood risk areas in the community. The Village of Shelby has gone through the Risk Mapping, Assessment, and Planning (MAP) process. Risk MAP is a FEMA program that provides communities with flood information and additional flood risk data (e.g., flood depth grids, percent chance grids, areas of mitigation interest, etc.). As part of that process, a HAZUS analysis was performed for the Risk MAP areas. The figure below shows the HAZUS analysis results for Shelby.

Figure SHE.5: Estimated Potential Losses for Flood Event Scenarios

Type	Inventory Estimated Value	% of Total	10% (10-yr) Dollar Losses[1]	10% Loss Ratio[2]	2% (50-yr) Dollar Losses[1]	2% Loss Ratio[2]	1% (100-yr) Dollar Losses[1]	1% Loss Ratio[2]	0.2% (500-yr) Dollar Losses[1]	0.2% Loss Ratio[2]	Annualized Losses[1] ($/yr)	Ann. Loss Ratio[2]
Residential Building & Contents	$117,000,000	79%	N/A	N/A	$10,000	0%	$10,000	0%	$20,000	0%	$10,000	0%
Commercial Building & Contents	$9,900,000	7%	N/A	N/A	$0	0%	$0	0%	$0	0%	$0	0%
Other Building & Contents	$20,600,000	14%	N/A	N/A	$0	0%	$0	0%	$0	0%	$0	0%
Total Building & Contents[3]	$147,500,000	100%	N/A	N/A	$10,000	0%	$10,000	0%	$20,000	0%	$10,000	0%
Business Disruption[4]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL[5]	**$147,500,000**		**N/A**	**N/A**	**$10,000**	**0%**	**$10,000**	**0%**	**$20,000**	**0%**	**$10,000**	

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

[1]Losses shown are rounded to nearest $10,000 for values under $100,000 and to the nearest $100,000 for values over $100,000.
[2]Loss ratio = Dollar Losses ÷ Estimated Value. Loss Ratios are rounded to the nearest integer percent.
[3]Total Building and Contents = Residential Building and Contents + Commercial Building and Contents + Other Building and Contents.
[4]Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.
[5]Total = Total Building and Contents + Business Disruption

The figures in this table only represent information within the Upper Big Blue Watershed.

Source: FEMA[45]

Severe Thunderstorms

NCEI reported 64 thunderstorm and hail events since 1996, causing $2,563,000 dollars in damages. The most damaging was a thunderstorm wind event that cause $1,000,000 in property damage in June 2003. Shelby's main concern regarding severe thunderstorms is alerting residents of the hazard during late evening and damage from hail. Alert Sense was recently put in to help with this issue. Residents that sign up can get severe weather warnings on their phones. The community does backup critical municipal records. Only ten percent of Shelby's power lines are buried, which leaves them at an increased risk of power loss. Critical facilities are insured but are not fitted with hail resistant building materials. Shelby plans to provide adequate public safe rooms, improve emergency communication systems, provide backup generators to all critical facilities, harden, and reduce tree damage with a tree maintenance program to mitigation thunderstorm hazards.

Severe Winter Storms

The local planning team is concerned about not informing residents of the impending storm in time and not knowing if their communication methods have reached the residents. Alert Sense was recently put in to help with this issue. The village does not have designated snow routes and does not use snow fences. The Utility Superintendent, Village Board, and the local Coop are responsible for removing snow for Shelby. Current removal resources are sufficient and new snowplows were recently purchased. If needed, the village can get assistance with snow removal from local farmers. Severe winter storm hazard mitigation plans include providing backup generators to all critical facilities, hardening and looping the electrical system, and reducing tree damage with a tree maintenance program.

Tornadoes and High Winds

There are no reports of tornadoes since 1996 in the Village of Shelby. The planning team reported that the community has municipal records backed up and has copies taken out of the Village Office each night. The community has new warning sirens, sounded by the Fire Department. The only storm shelter available to residents is the Fire Hall. Mitigation plans include providing more

[45] FEMA. September 2017. "Flood Risk Report: Upper Big Blue, 10270201".

public safe rooms and improving the emergency communication system. Shelby has Mutual Aid agreements in place with Osceola, Stromsburg, and Rising City.

Mitigation Strategy

Kept Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Identify and evaluate current backup and emergency generators; obtain additional generators based on identification and evaluation; provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities and shelters.
Hazard(s) Addressed	All Hazards
Estimated Cost	$20,000-$75,000 per generator
Local Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board
Status	One backup generator has been purchased but another generator is still needed.

Mitigation Action	Improve Electrical Service
Description	Evaluate hardening, retrofitting, looping and/or burying of power lines and related infrastructure and/or comparable protection measures; provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails; implement measures to improve electrical service; bury power lines for future construction.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies
Local Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Village Board, Public Power District
Status	Not Started

Mitigation Action	Improve Emergency Communication Systems
Description	Develop Emergency Communication Action Plan; implement Emergency Communication Action Plan; obtain/upgrade emergency communication equipment.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+
Local Funding	General Fund, E911 Funds
Timeline	5+ Years
Priority	Low
Lead Agency	Village Board, Fire Department
Status	Alert Sense is used but additional improvements are needed.

Mitigation Action	Improve Warning Systems
Description	Evaluate current warning systems (defined as alert sirens, weather radios, and television, telephone, and radio warning systems, etc.); improve warning systems/develop new warning system; obtain/upgrade warning system equipment and methods; conduct evaluation of existing alert sirens for replacement or placement of new sirens; identify location of weather warning radios; improve weather radio system; obtain/upgrade weather radios.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies
Local Funding	General Fund
Timeline	2-5 Years
Priority	Low
Lead Agency	Village Board, Fire Department
Status	Not Started

Mitigation Action	Public Awareness/Education
Description	Obtain or develop hazard education materials; conduct multi-faceted public education; distribute fact sheets or maps at community events, public schools, other venues and to public and private communication systems; conduct scheduled siren/warning system tests; prepare educational materials listing safe rooms and shelters and evacuation plans; distribute educational materials listing safe rooms and shelters; purchase equipment such as overhead projectors and laptops to facilitate presentation of information.
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000+
Local Funding	General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	Village Board
Status	This is an ongoing action.

Mitigation Action	Reduce Damages from Floods, Stormwater, and Heavy Precipitation Events
Description	Conduct stormwater drainage study; evaluate and implement recommendations or comparable measures to improve drainage; evaluate and improve stormwater system.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000-$100,000+
Local Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board
Status	In Progress

Mitigation Action	Reduce Tree Damage and Damages from Trees
Description	Conduct tree inventory; develop tree maintenance/trimming program; implement tree maintenance/trimming program; remove hazardous limbs and/or trees.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Winter Storms, Severe Thunderstorms, Grass/Wildfires
Estimated Cost	$50+ per tree
Local Funding	General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	Streets/Parks Commissioner
Status	Tree maintenance is an ongoing action when issues are identified.

Mitigation Action	Storm Shelter / Safe Room
Description	Identify and evaluate existing safe rooms and/or storm shelters; improve and/or construct safe rooms and/or storm shelters; design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, etc.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	$150 square ft for retrofit; $300 square ft for new construction
Local Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Village Board
Status	Not Started

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

Shelby last reviewed their section of the HMP in 2017 during the plan update. The Village Chairman, Fire Chief, and Sheriff will be responsible for reviewing and updating the plan in the future. These individuals will review the plan annually during council meetings. The public will be notified through the village's website and letters.

Community Profile

City of Stromsburg

Central Platte NRD
Hazard Mitigation Plan

2022

Local Planning Team

The City of Stromsburg's local planning team for the hazard mitigation plan are listed in the table below along with the meetings attended. All participant worksheets were filled out and returned by the community.

Table STR.1: Stromsburg Local Planning Team

Name	Title	Jurisdiction	R1 Meeting	R2 Meeting
Nancy Bryan	Clerk/Treasurer	City of Stromsburg	Central City – Virtually	Lexington – Virtually
Pat Powell	City Utilities	City of Stromsburg	Central City	-
Lenard Schaefer	Public Works Director	City of Stromsburg	-	-

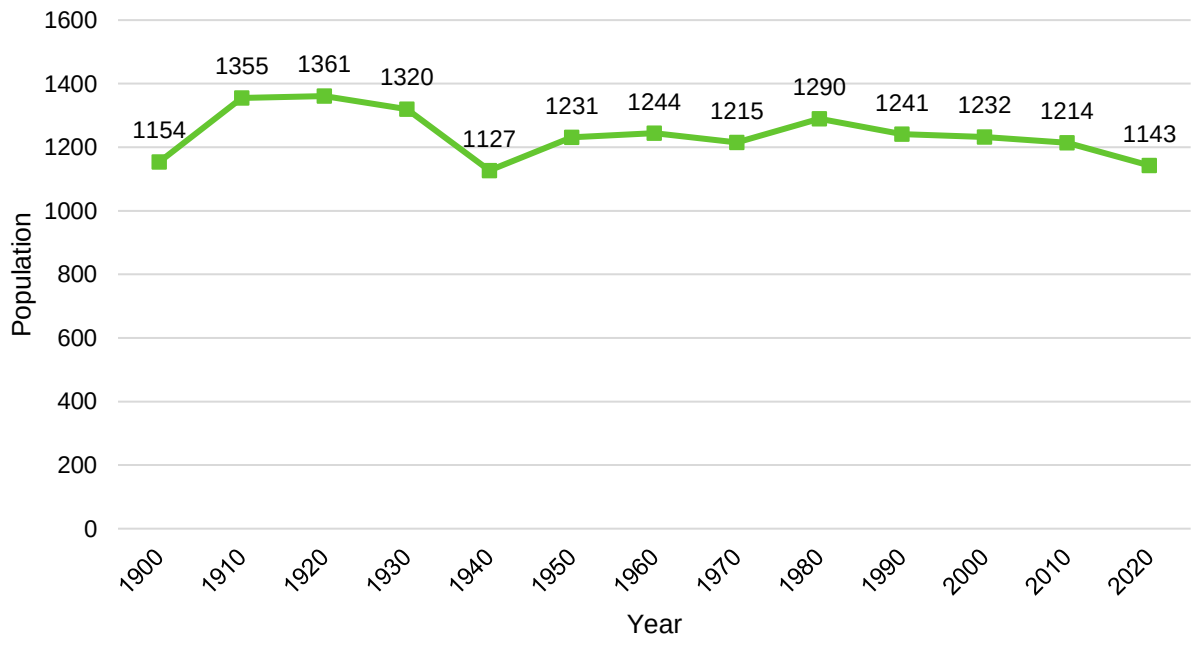
Location and Geography

The City of Stromsburg is in southern Polk County and covers an area of 1.03 square miles. Major waterways in the area include the Big Blue River and Prairie Creek.

Demographics

The following figure displays the historical population trend for the City of Stromsburg. This figure indicates that the population of Stromsburg has been declining since 1980 to 1,143 people in 2020. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging. Stromsburg's population accounted for 22% of Polk County's population in 2020.[46]

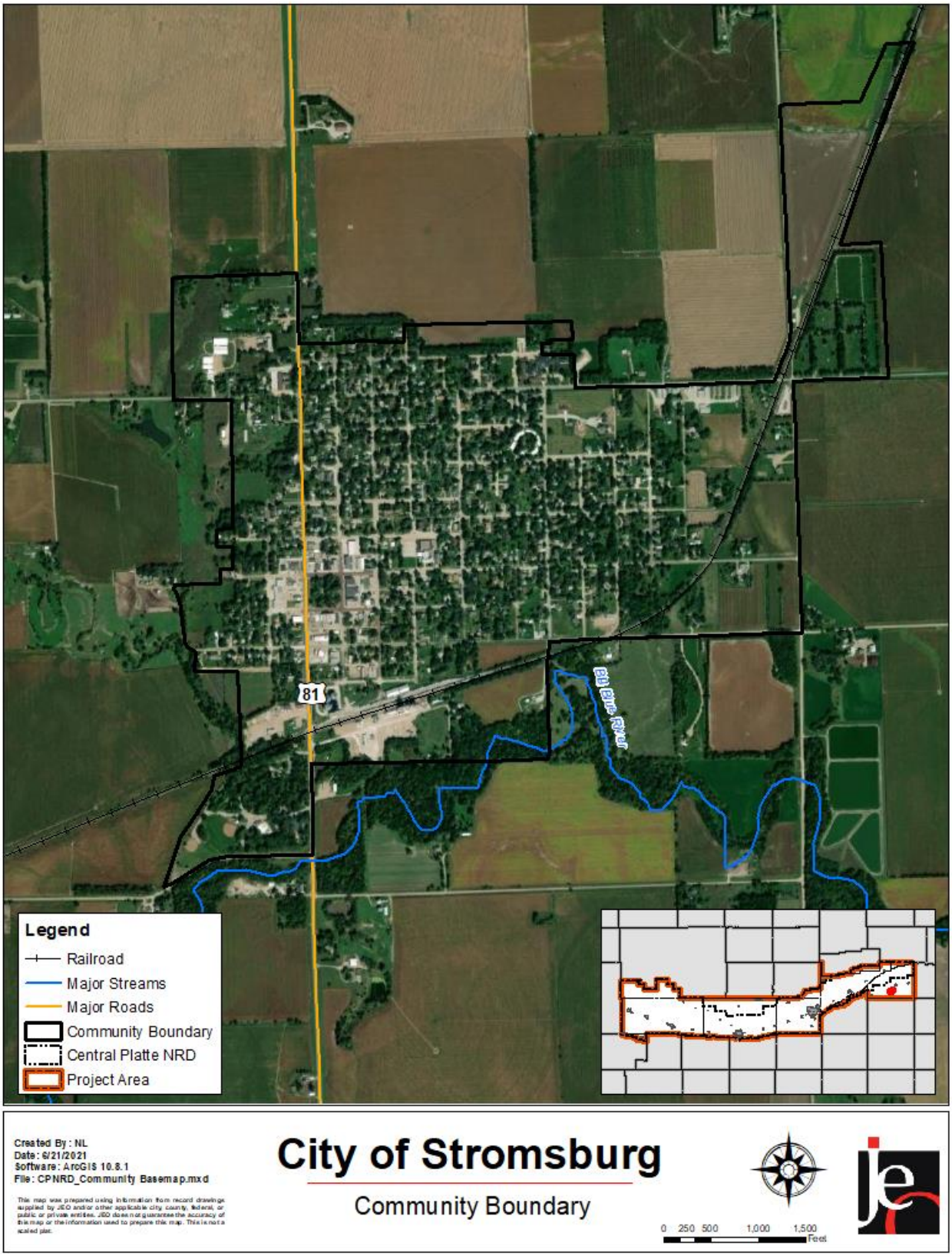
Figure STR.1: Population 1890 - 2020



Source: U.S. Census Bureau

46 United States Census Bureau. "2020 Decennial Census: P1: DEC Redistricting Data." https://data.census.gov/cedsci/.

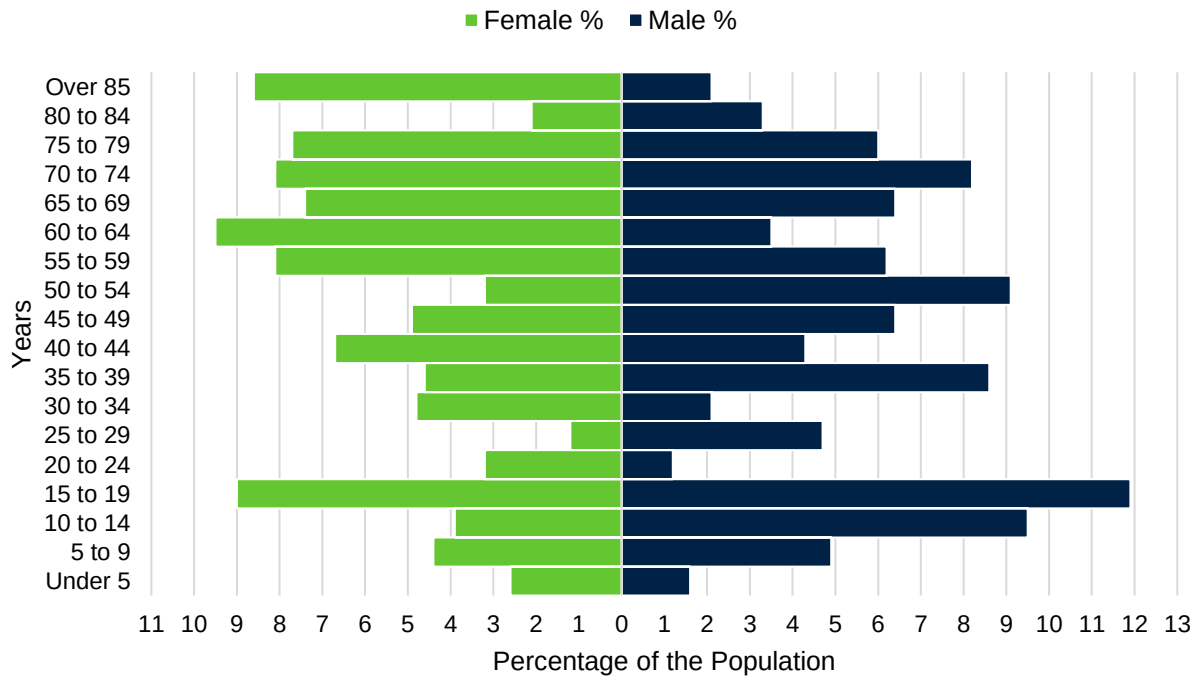
Figure STR.2: City of Stromsburg



The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Stromsburg's population:

- **0.8% is non-white.** Since 2010, Stromsburg grew less ethnically diverse. In 2010, 3% of the Stromsburg's population was non-white. By 2019, 0.8% was non-white.[47]
- **50.2 median age.** The median age of Stromsburg was 50.2 years in old 2019. The population grew older since 2010, when the median age was 45.8.[48]

Figure STR.3: Stromsburg's Population Pyramid



The figure above shows Stromsburg's population percentage broken down by sex and five-year age groups. Stromsburg's population is aging with a much higher percentage of the population above 50 years of age. This indicates an aging population in the years to come.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Stromsburg's population has:

- **1.4% of people living below the poverty line.** The poverty rate (1.4%) in the City of Stromsburg was lower than the state's poverty rate (7.2%) in 2019.[49]
- **$61,635 median household income.** Stromsburg's median household income in 2019 ($61,635) was slightly higher than the state ($61,439).[49]
- **1.3% unemployment rate.** In 2019 Stromsburg had a lower unemployment rate (1.3%) when compared to the state (2.3%).[49]

47 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.
48 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.
49 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

- **30.5% of workers commuted 30 minutes or more to work.** Fewer workers in Stromsburg commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (30.5% compared to 47%).[50]

Major Employers

The major employers in Stromsburg are the Midwest Covenant Home, the Polk County Rural Public Power District, Grain Products, and the Cross County School. A large percentage of residents commute to York and Columbus for work.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **77.5% of housing built prior to 1970.** Stromsburg has a larger share of housing built prior to 1970 than the state (77.5% compared to 46%).[51]
- **18.8% of housing units vacant.** Since 2010, Stromsburg's vacancy rate decreased. In 2010 the vacancy rate was 24.9%. By 2019, 18.8% of housing units were vacant.[51]
- **1.4% mobile and manufacture housing.** The City of Stromsburg had a smaller share of mobile and manufactured housing (1.4%) compared to the state (3.3%).[51]
- **18.8% renter-occupied.** The rental rate of Stromsburg was 18.8% in 2019. The percentage went down since 2010, when renter occupied housing was at 24.9%.[51]

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Stromsburg is governed by a mayor and a four-member City Council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Clerk/Treasurer
- Streets/Parks Commissioner
- Planning Commission
- Housing Authority
- Water and Sewer Department
- Volunteer Fire Department
- Public Works
- Tree Board

50 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

51 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are sufficient to pursue new capital projects. Larger projects would require bond, loans, or grants to help offset the cost. Currently a large portion of funds goes towards swimming pool bonds and water treatment plant bonds. City funds have stayed fairly consistent over recent years.

Table STR.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	Yes
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	Wellhead Protection Plan, Water System Emergency Response Plan
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	-
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	No
	Awarded a grant in the past	No
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes

Survey Components/Subcomponents		Yes/No
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	-
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	Yes
	Other (if any)	-

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited

Plan Integration

The City of Stromsburg has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code (2020)

The building code sets standards for constructed buildings and structures. The city has adopted the 2003 and 2006 International Building Codes with amendments made regarding parking. The city has also adopted the 2018 International Property Maintenance Code in 2019.

Comprehensive Plan (2014)

The comprehensive plan is designed to guide the future actions and growth of the city. It directs development away from the floodplain, directs housing away from chemical storage facilities, and directs housing and vulnerable populations way from major transportation routes. At this time, there are no plans update this document.

Polk County Local Emergency Operations Plan (2020)

The City of Stromsburg is an annex in the Polk County Local Emergency Operations Plan (LEOP). The LEOP establishes standardized policies, plans, guidelines, and procedures for emergency resources and governmental entities to respond and recover when a disaster event occurs. It contains information regarding direction and control, communications and warning, damage assessment, emergency public information, evacuation, fire services, health and human services, law enforcement, mass care, protective shelters, and resource management. This plan is updated every five years.

Water System Emergency Response Plan (2020)

A water system emergency response plan serves as a guideline for water operators and city administration to minimize the disruption of normal services to consumers and to provide public health protection during an emergency event. The document identifies several natural and human-caused events and discusses the water system's response during those events.

Wellhead Protection Plan (2005)

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area and managing the potential contaminant sources.

Zoning Ordinance (2014), Subdivision Regulations (1987), Floodplain Ordinance

The city's floodplain ordinance, zoning ordinance, and subdivision regulations outline where and how development should occur in the future. These documents contain floodplain maps, discourage development in the floodplain, require more than one foot of elevation above Base Flood Elevation, and discourage housing and vulnerable populations near chemical storage sites.

Future Development Trends

Over the past five years 12 homes were constructed in a new subdivision, four homes were built as infill development, and three homes were demolished. In addition, the city completed a storm drain project on the west side of the community. None of the newly built homes were constructed in the floodplain. Over the next five years, additional houses are planned within the new subdivision. Highway 81 is scheduled to be rebuilt in 2022 and 9th Street is to be rebuilt a few years after that. The figures below show the future land use map for the city. Industrial uses are located along the railway, while commercial uses are located along the highway.

Community Lifelines

Transportation

Stromsburg's major transportation corridor is U.S. Highway 81, which runs north to south through the center of the city. There is an average of 4,120 vehicles per day on Highway 81 with 480 of those being heavy commercial vehicles. Stromsburg has one rail line that runs through the southeastern corner of the city, a Nebraska Central Railroad Company line. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents. In addition to the highway, 9th Street could also be used as an evacuation route for the city. The sewer lift station, several churches, a natural gas station, and city hall are all located near Highway 81.

Figure STR.4: Future Land Use Map A

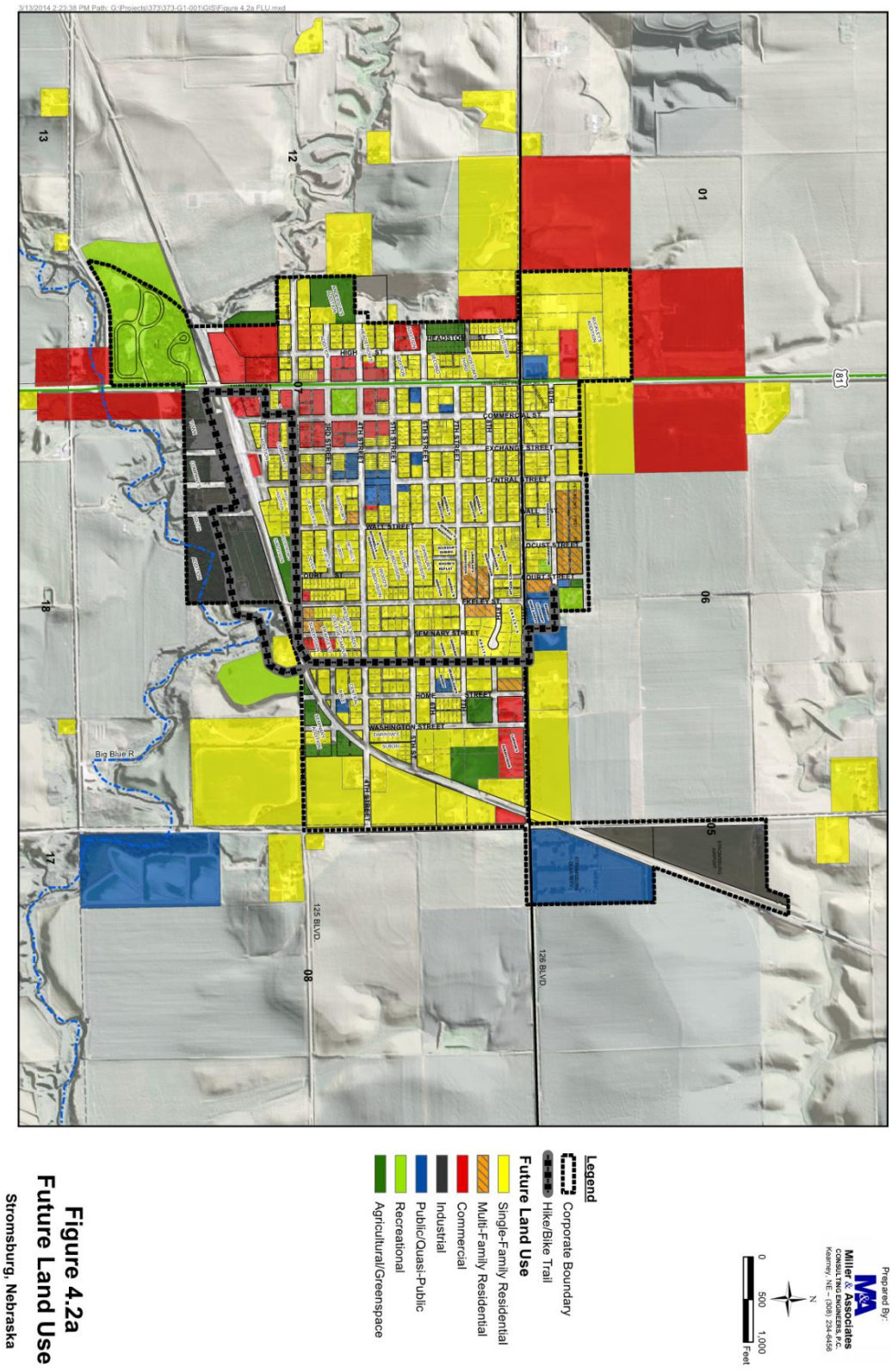


Figure STR.5: Future Land Use Map B

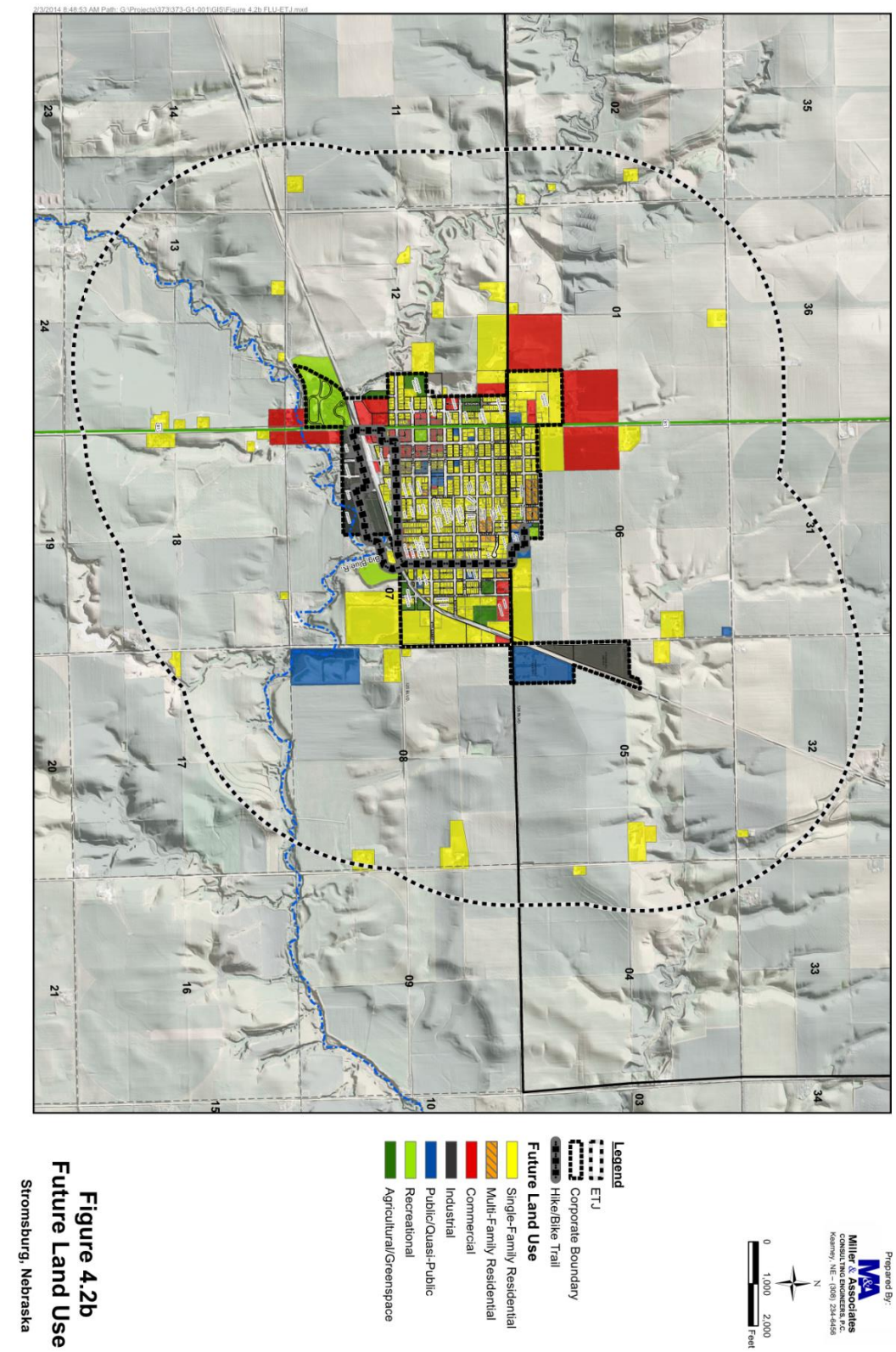


Figure 4.2b
Future Land Use
Stromsburg, Nebraska

Hazardous Materials

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are four chemical storage sites within or near Stromsburg which house hazardous materials (listed below). In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table STR.3: Chemical Storage Sites

Name	Address	Floodplain (Y/N)
Sapp Bros Petroleum Inc	12355 M Rd	N
Central Valley Ag	214 Railroad St	N
Harless Oil Company	Railroad St	N
Central Valley Ag	M Rd	N

Source: Nebraska Department of Environment and Energy[52]

Health and Medical Facilities

The following medical and health facilities are located within the community.

Table STR.4: Health and Medical Facilities

Name	Type of Facility	Address	Number of Beds
The Plaza	Assisted Living Facility	615 East 9th St	31
Midwest Covenant Home	Long Term Care Facility	615 East 9th St	51

Source: Nebraska Department of Health and Human Services[53,54,55,56]

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

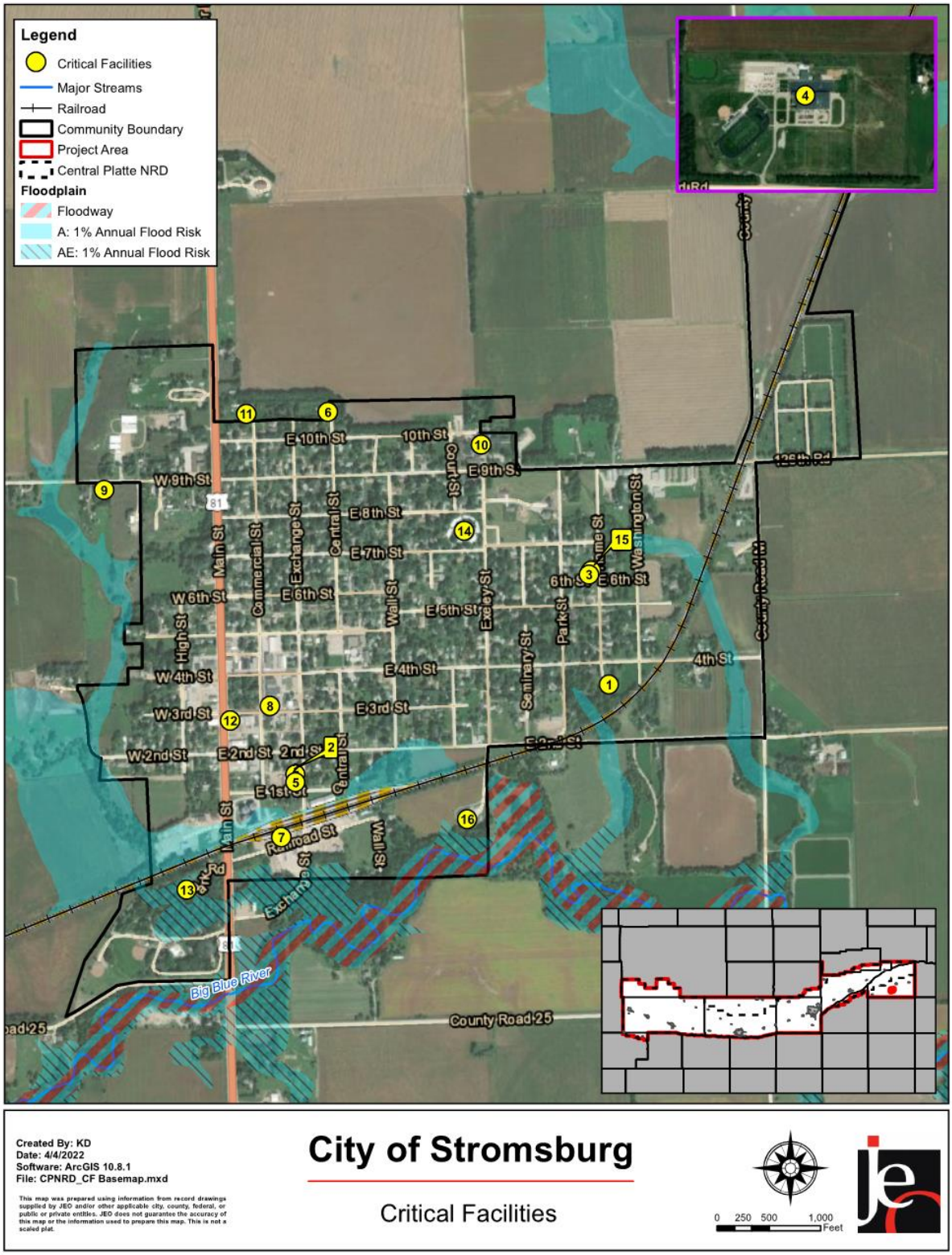
52 Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed June 2021.
53 Department of Health and Human Services. 2021. "State of Nebraska: Assisted Living Facilities." https://dhhs.ne.gov/licensure/Documents/ALF%20Roster.pdf.
54 Department of Health and Human Services. 2021. "State of Nebraska Roster: Hospitals." https://dhhs.ne.gov/licensure/Documents/Hospital%20Roster.pdf.
55 Department of Health and Human Services. 2021. "State of Nebraska Roster: Long Term Care Facilities." https://dhhs.ne.gov/licensure/Documents/LTCRoster.pdf.
56 Department of Health and Human Services. 2021. "State of Nebraska Roster: Rural Health Clinic." https://dhhs.ne.gov/licensure/Documents/RHC_Roster.pdf.

Table STR.5: Critical Facilities

CF Number	Name	Mass Care Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	City Well	N	Y	N
2	City Well	N	N	N
3	City Well	N	Y	N
4*	Cross Country School	Y	N	N
5	Electrical Substation	N	N	N
6	Gas Distribution Service	N	N	N
7	Gas Distribution Station	N	N	N
8	Legion Club	N	N	N
9	Lift Station	N	N	N
10	Midwest Convent Home	N	Y	N
11	Natural Gas Station	N	N	N
12	Senior Service Center	N	N	N
13	Sewer Lift Station	N	N	N
14	Swede Haven	N	N	N
15	Water Tower and Electric Substation	N	N	N
16	Wastewater Treatment Plant	N	Y	N

**Located one mile south of the city off 123rd Road*

Figure STR.6: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table STR.6: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
568	$49,143,316	29	$1,780,864	5.1%

Source: County Assessor, 2021

Historical Occurrences

See the Polk County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries. Larger scale and more damaging events that impacted the community are discussed under Hazard Prioritization.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

There has been one reported flood event, which occurred in 2007 and caused $20,000 in damages. The city did not flood during the 2019 floods but did have disruption in getting supplies. The Platte River, Davis Creek, Prairie Creek, and Little Blue were reported by the local planning team as the bodies of water of top concern. The flood risk areas of concern for the City of Stromsburg are located on the south and west outskirts of the city. Specific locations include 2nd St, Buckley Park, and areas south of Railroad Street. There are also areas of the community that have inadequate storm drains that cannot keep up during heavy rain events. To help mitigate flooding, the city keeps the creek cleared of fallen trees and debris. Stromsburg plans to further mitigate flooding in the city by performing and implementing findings of a stormwater drainage study.

Stromsburg is a member of the NFIP, and the city's Floodplain Administrator (Christopher Hays) will oversee the commitments and requirements of the NFIP. The initial FIRM for the city was delineated in 6/17/1986 and the current effective map date is 8/19/2008. Over 5% of parcel improvements in the city are located in the 1% annual flood risk area (see table in the Parcel Improvements and Valuation section). As of October 31, 2021, there are no NFIP policies in place. Stromsburg does not currently have any repetitive loss or severe repetitive loss structures.

The City of Stromsburg has gone through the Risk Mapping, Assessment, and Planning (MAP) process. Risk MAP is a FEMA program that provides communities with flood information and additional flood risk data (e.g., flood depth grids, percent chance grids, areas of mitigation interest, etc.). As part of that process, a HAZUS analysis was performed for the Risk MAP areas. The figure below shows the HAZUS analysis results for Stromsburg.

Figure STR.7: Estimated Potential Losses for Flood Event Scenarios

Type	Inventory Estimated Value	% of Total	10% (10-yr) Dollar Losses[1]	10% Loss Ratio[2]	2% (50-yr) Dollar Losses[1]	2% Loss Ratio[2]	1% (100-yr) Dollar Losses[1]	1% Loss Ratio[2]	0.2% (500-yr) Dollar Losses[1]	0.2% Loss Ratio[2]	Annualized Losses[1] ($/yr)	Ann. Loss Ratio[2]
Residential Building & Contents	$202,000,000	67%	$20,000	0%	$40,000	0%	$60,000	0%	$200,000	0%	$10,000	0%
Commercial Building & Contents	$51,700,000	17%	$60,000	0%	$90,000	0%	$0	0%	$300,000	0%	$10,000	0%
Other Building & Contents	$48,000,000	16%	$0	0%	$0	0%	$0	0%	$0	0%	$0	0%
Total Building & Contents[3]	$301,700,000	100%	$80,000	0%	$200,000	0%	$200,000	0%	$500,000	0%	$10,000	0%
Business Disruption[4]	$0	N/A	$0	N/A	$0	N/A	$0	N/A	$0	N/A	$0	N/A
TOTAL[5]	**$301,700,000**		**$80,000**	**0%**	**$200,000**	**0%**	**$200,000**	**0%**	**$500,000**	**0%**	**$10,000**	**0%**

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

[1]Losses shown are rounded to nearest $10,000 for values under $100,000 and to the nearest $100,000 for values over $100,000.
[2]Loss ratio = Dollar Losses ÷ Estimated Value. Loss Ratios are rounded to the nearest integer percent.
[3]Total Building and Contents = Residential Building and Contents + Commercial Building and Contents + Other Building and Contents.
[4]Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.
[5]Total = Total Building and Contents + Business Disruption

The figures in this table only represent information within the Upper Big Blue Watershed.

Source: FEMA[57]

Severe Thunderstorms

The planning team ranked hail as a top concern due to the amount of property damages that can occur. The NCEI reports 26 severe thunderstorm events since 1996. Together, these events caused $555,000 dollars in damages to Stromsburg and surrounding areas. The worst of these for Stromsburg was in June of 2002. A thunderstorm accompanied by 1.5-inch hail damaged cars, roofs, and windows. The most recent event was a hailstorm in June 2021. The planning team indicated that their main concerns are crop and building damage, downed power lines, and tree damage. Stromsburg does have a tree board but does not provide residents with information on hail resistant building materials with building permits. Some critical facilities have backup power generators, but City Hall does not. There are no weather radios in critical facilities. The planning team indicated that there are hazardous trees in the community that need to be inspected and removed. The city trims trees regularly around power lines.

Severe Winter Storms

The Christmas blizzard of 2009 came with a foot of snow and 60mph winds. In Stromsburg this caused a loss of livestock, power outages, and impassable roads. During the extremely cold temperatures in 2021, the city experienced one rolling blackout, high natural gas costs, and some residents had water lines freeze. Stromsburg's main concerns with severe winter storms are the inability for Fire and Rescue teams to respond to emergencies because of weather conditions, and city staff being unable to report to work. The community uses snow fences, as some residential areas are more prone to snow drifting. The city is responsible for snow removal and equipment is sufficient at this time. Stromsburg recently purchased a new loader, which will arrive before the winter of 2021.

[57] FEMA. September 2017. "Flood Risk Report: Upper Big Blue, 10270201".

Terrorism

Stromsburg is primarily concerned with cyber-terrorism due to an increase in activities across the United States. The city works with a contracted IT individual to provide protection from cyber-attacks. However, the city does not have anyone on staff that knows about computer issues. In the event of an attack, the city has insurance that covers a cyber-attack event. No cyber-attacks have occurred in the past.

Tornadoes and High Winds

There are two reports of tornadoes since 1996 in the City of Stromsburg. Both of these were EF0s and caused no damage. There were also small tornadoes outside of Stromsburg in June and July of 2021. The local planning team noted their main concerns with these hazards are downed power lines and damage to crops, buildings, and trees. The city backs up electronic municipal records and stores them off site overnight, but paper records are not backed up. Sirens in the community are new and are activated by the Fire Department and Sheriff's Department. The Fire Hall is a community safe room, but the planning team is unsure if it is FEMA certified. Apart from the Fire Hall, residents can seek shelter with neighbors who have basements. Text alerts are not offered, but educational outreach activities are done by the Sheriff, and presented to the school and senior center. The city has mutual aid agreements with Fire and Rescue, electricity, gas, and water/sewer services.

Mitigation Strategy

Kept Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Identify and evaluate current backup and emergency generators; obtain additional generators based on identification and evaluation; provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities and shelters. The city would like to replace the natural gas generator located at the well on 4th and Home Streets and purchase a generator for city hall.
Hazard(s) Addressed	All Hazards
Estimated Cost	$20,000 - $75,000+
Local Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Public Works
Status	Project discussions have started among staff.

Mitigation Action	Improve Emergency Communication Systems
Description	Develop Emergency Communication Action Plan; implement Emergency Communication Action Plan; obtain/upgrade emergency communication equipment.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+
Local Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Planning Commission
Status	Not Started

Mitigation Action	Reduce Damages from Floods, Stormwater, and Heavy Precipitation Event
Description	Conduct stormwater drainage study; evaluate and implement recommendations or comparable measures to improve drainage; evaluate and improve stormwater system.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 - $100,000+
Local Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Public Works
Status	Not Started

Mitigation Action	Reduce Tree Damage and Damages from Trees
Description	Conduct tree inventory; develop tree maintenance/trimming program; implement tree maintenance/trimming program; remove hazardous limbs and/or trees.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms, Severe Winter Storms, Grass/Wildfires
Estimated Cost	$100+ per Tree
Local Funding	General Budget
Timeline	5+ Years
Priority	High
Lead Agency	Tree Board, Public Works
Status	Tree trimming is an ongoing project for the city.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

Stromsburg last reviewed their section of the HMP in 2017 during the plan update. The Public Works Director and City Clerk/Treasurer are responsible for reviewing and updating the plan. These individuals will review the plan on an as needed basis.