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County Profile

Johnson County

**Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update**

2020

Local Planning Team

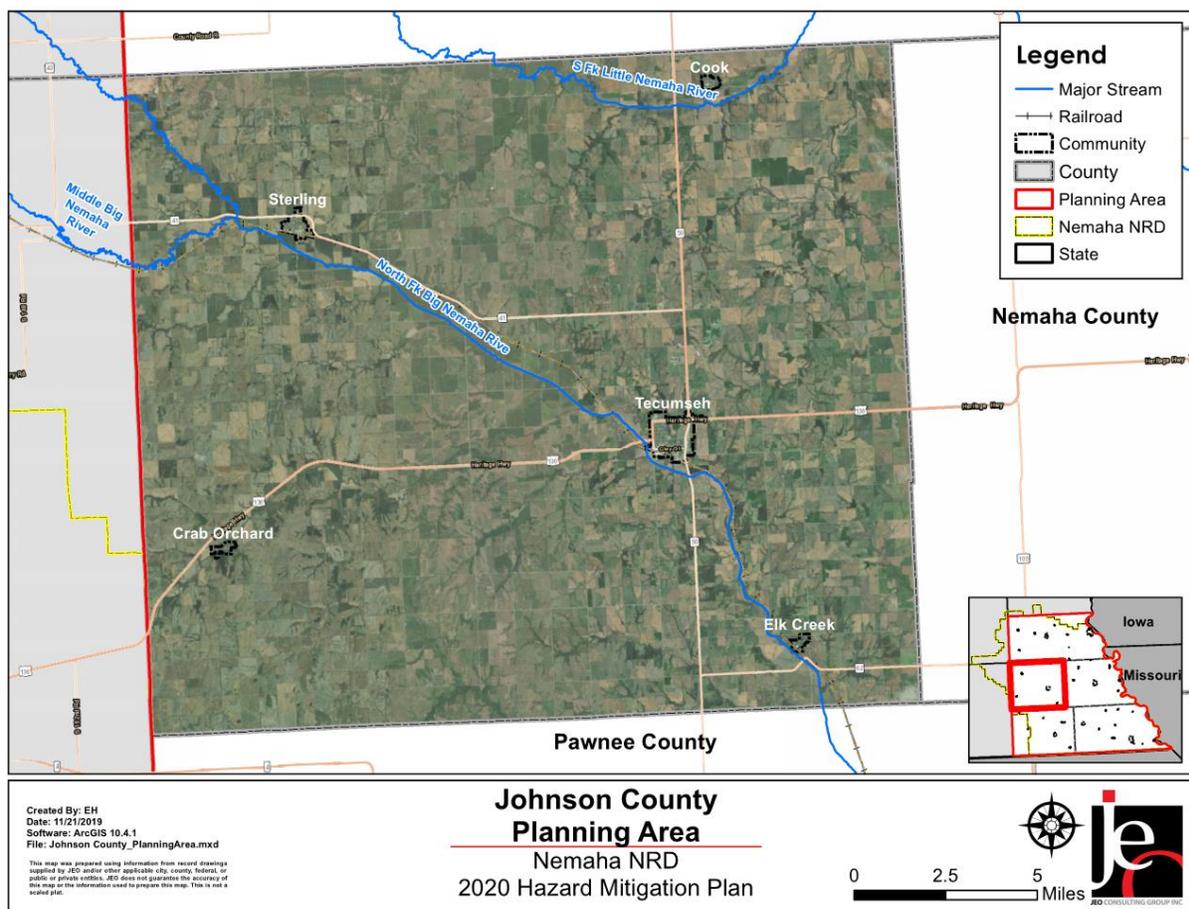
Table JCO.1: Johnson County Local Planning Team

Name	Title	Jurisdiction
Amanda Burki	Emergency Manager	Johnson and Pawnee County
Matt Schardt	Highway Superintendent	Johnson County

Location and Geography

Johnson County is located in southeastern Nebraska and is bordered by Gage, Lancaster, Otoe, Nemaha, and Pawnee Counties. The total area of Johnson County is 377 square miles. Major waterways within the county include the Big Nemaha River, Little Nemaha River, Middle Branch of the Big Nemaha River, and the North Fork Big Nemaha River. Most of the county’s land is used for agricultural production.

Figure JCO.1: Johnson County



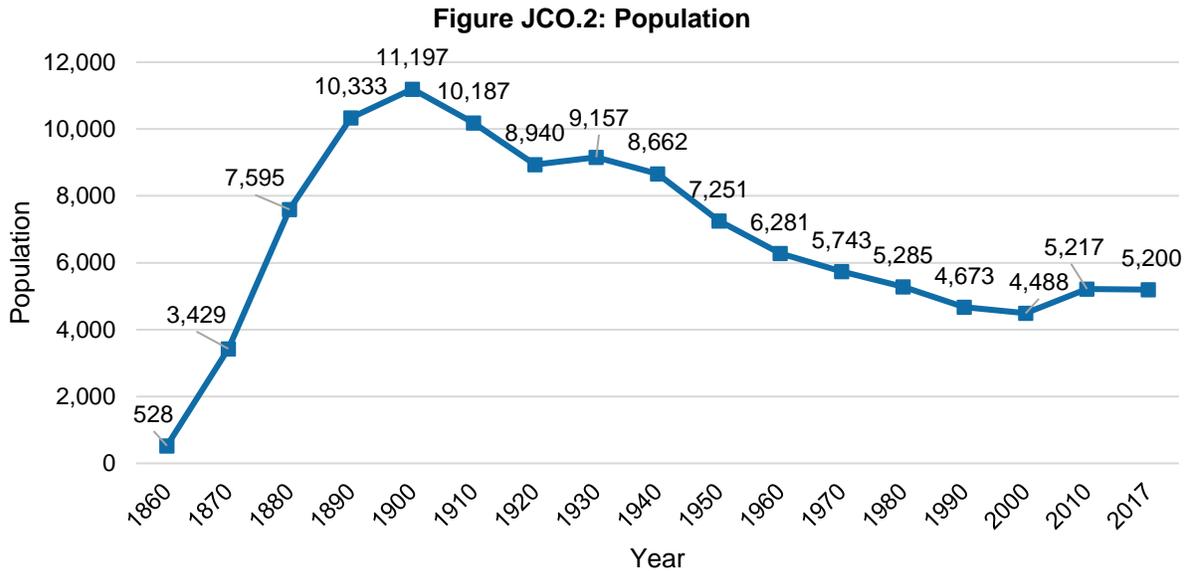
Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors and areas more at risk of transportation incidents. Johnson County’s major transportation corridors include US Highway 136 and Nebraska State Highways 41, 50, 62, and 67. A Burlington Northern Santa Fe Railway rail line runs northwest to southeast through the

county. The county also has one air landing strip located in Tecumseh. Transportation routes of most concern are Highways 50 and 136. Both are used as evacuation routes for the Cooper Nuclear Station and detours would involve gravel roads. The crossing at St. Mary's railroad doesn't have an arm which could cause accidents. None of the highways in the county are routinely closed due to flooding. Highway 50 was closed for an hour in 2019 but that was a rare situation. Farm chemicals are regularly transported along the highways.

Demographics, Employment, and Economics

The following figure displays the historical population trend from 1860 to 2017. This figure indicates that the population of Johnson County has declined since 1900 but has remained relatively steady since 2010 and was at 5,200 people in 2017.



Source: U.S. Census Bureau, 1860 - 2017¹

The young, elderly, minority and low-income populations may be more vulnerable to certain hazards than other groups. The following table indicates that the county's population is older than the state, has a slightly less diverse population with a lower poverty rate. The per capita income in Johnson County is lower than the State of Nebraska. A more detailed discussion of the vulnerabilities associated with age, ethnicity, and poverty can be found in *Section Four: Risk Assessment*.

Table JCO.2: Demographics

	Johnson County	State of Nebraska
Median age	41.1 years old	36.3 years old
Hispanic	9.9%	10.5%
Below the federal poverty line	10.1%	12.0%
Per capita income	\$22,398	\$29,866

Source: U.S. Census Bureau²

¹ United States Census Bureau. "American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov>.

Major Employers

Major employers in the county include Smart Chicken, the state correctional facility, local co-ops, and Gardner Transport. A large percentage of residents commute outside the county to Lincoln or Omaha.

Table JCO.3: Business in Johnson County

	Total Businesses	Number of Paid Employees	Annual Payroll (In Thousands)
Total for all sectors	113	862	\$27,548

Source: U.S Census Bureau²

Agriculture is important to the economic fabric of the State of Nebraska. Johnson County’s 374 farms cover 119,488 acres of land. 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 JCO.4: Agricultural Inventory

	Agricultural Inventory
Number of farms with harvested cropland	374
Acres of harvested cropland	119,488

Source: USDA Census of Agriculture, 2019³

Housing

Housing age can serve as an indicator of vulnerability, as structures that are poorly maintained or that were built prior to the development of state building codes are at greater risk to damage from hazards. The following table indicates that most of the housing in Johnson County was built prior to 1970 (62.4%). The original Flood Insurance Rate Map (FIRM) was developed in April 2006. Housing built in the floodplain after the FIRM was adopted is built to a standard of 1 foot above the base flood elevation, as required by the floodplain ordinance; housing built prior to 2006 is vulnerable to flood damage.

In the county, about 7.1% of housing units are mobile homes; communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms if those homes are not anchored correctly. Mobile homes are all located within community boundaries; there are no mobile homes in the rural areas of Johnson County. Johnson County has less renter-occupied but more vacant housing than the state. 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 renter’s insurance or flood insurance, or to know their risks to flooding and other hazards.

2 United States Census Bureau. “American Fact Finder: Geography Area Series County Business Patterns 2016 Business Patterns.” [database file]. <https://factfinder.census.gov>.

3 U.S. Department of Agriculture. 2019. “2017 Census of Agriculture.” <https://www.nass.usda.gov/Publications/AgCensus/2017/>.

Table JCO.5: Housing

	Johnson County	State of Nebraska
Housing built before 1970	62.4%	47.2%
Mobile and manufactured	7.1%	3.4%
Renter-occupied	26.1%	34.0%
Vacant	13.5%	9.2%

Source: U.S. Census Bureau^{4,5}

Future Development Trends

In the last five years, no major housing developments occurred. A new chemical supply business was built along the Cook highway spur and NioCorp is in the process of getting constructed. According to the most recent American Community Survey, Johnson County's population is generally stable, providing a reliable tax base to implement mitigation projects. The local planning team attributed the stability to available housing for the elderly. County funds are limited to maintaining current facilities and systems but have slightly increased over recent years. The population may increase once the NioCorp facility is completed. In the next five years, no housing or commercial developments are planned.

Parcel improvements and Valuation

GIS parcel data was acquired from the County Assessor. This data was analyzed for the location, number, and value of property improvements at the parcel level. Property improvements include any built structures such as roads, buildings, and paved lots. 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 JCO.6: Parcel Improvements and Value in the Floodplain

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Percentage of Improvements in Floodplain	Value of Improvements in Floodplain
3416	\$185,844,021	887	25.96%	\$41,771,853

Source: GIS Workshop/Johnson County Assessor, 2019⁶

4 United States Census Bureau. "American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov>.

5 United States Census Bureau. "American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov>.

6 GIS Workshop/Johnson County Assessor. 2019. [Personal correspondence].

Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of three chemical storage sites in the unincorporated areas of Johnson County. The table below lists the name and location of the sites and whether they are in the floodplain. An anhydrous ammonia release at a co-op in Tecumseh resulted in one fatality.

Table JCO.7: Chemical Storage Fixed Sites

Facility Name	Address	In Floodplain (Y/N)
Midwest Farmers Cooperative	31516 Pearl, Sterling, NE	Y
OPPD Substation No. 968	61891 732 nd Road, Sterling, NE	N
CenturyLink Amp Facility	72884 Highway 50, Tecumseh, NE	N

Source: Nebraska Department of Environment and Energy, 2019⁷

Critical Facilities

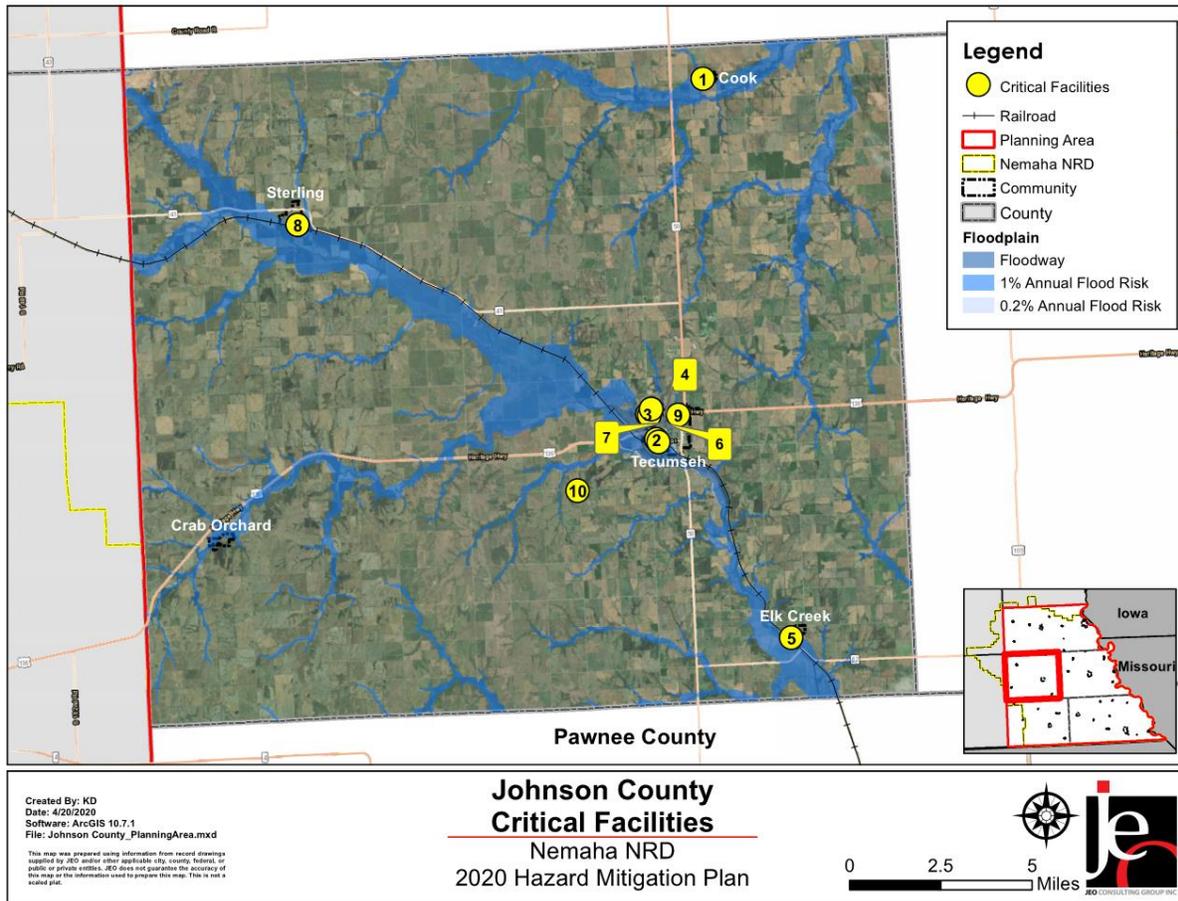
The planning team identified critical facilities necessary for Johnson County's disaster response and continuity of operations. The following table and figure provide a summary of the county's critical facilities.

Table JCO.8: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Cook Fire Hall	N	N	N
2	County Courthouse	N	N	N
3	County Roads Office	N	N	N
4	DOT Office	N	N	N
5	Elk Creek Fire Hall	Y	N	N
6	Hospital	N	Y	N
7	Sheriff's Office	N	Y	N
8	Sterling Fire Hall	N	N	N
9	Tecumseh Fire Hall/County Emergency Management	N	N	N
10	US Cellular Tower	N	Y	N

⁷ Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed November 2019. <https://deq-iis.ne.gov/tier2/tier2Download.html>.

Figure JCO.3: Critical Facilities



Historical Occurrences

The following table provides a statistical summary for hazards that have occurred in the county. These are county-specific broad estimates.

Table JCO.9: County Hazard Loss History

Hazard Type		Count	Property Damage	Crop Damage ²
Agricultural Disease	Animal Disease ¹	17	152 animals	N/A
	Plant Disease ²	14	N/A	\$87,189
Chemical & Radiological Spills (Fixed Site) ³ <i>2 Injuries</i>		1	\$0	N/A
Chemical & Radiological Spills (Transportation) ⁴ <i>1 Fatality, 2 Injuries</i>		2	\$0	N/A
Dam Failure ⁵		0	N/A	N/A
Drought and Extreme Heat	Drought ⁶	493/1,500 months	N/A	\$22,412,272
	Extreme Heat ⁷	Avg. 6 days/year		
Earthquake ¹³		1	\$0	N/A
Flooding ⁸	Flash Flood	8	\$520,000	\$84,910

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Hazard Type		Count	Property Damage	Crop Damage ²
	Flood	2	\$1,000,000	
Levee Failure ^{10, 11}		0	N/A	N/A
Severe Thunderstorms ⁸	Thunderstorm Wind Range: 50-75 kts Average: 55 kts	33	\$23,000	\$8,851,448
	Hail Range: 0.75-2.75 in Average: 1.1 in	90	\$0	
	Heavy Rain	3	\$0	
	Lightning	1	\$25,000	
Severe Winter Storms ⁸ 1 Fatality	Blizzard	6	\$0	\$252,966
	Extreme Cold/Wind chill	4	\$0	
	Heavy Snow	6	\$0	
	Ice Storm	4	\$0	
	Winter Storm	33	\$0	
	Winter Weather	5	\$0	
Terrorism ¹²		0	\$0	N/A
Tornadoes and High Winds ⁸	High Winds Range: 42-60 kts Average: 48 kts	13	\$0	\$286,942
	Tornadoes Range: EF0-EF2 Average: EF0	7	\$500,000	
Wildfire ⁹		127	2,978 acres	\$0
Total		377	\$2,068,000	\$31,975,727

N/A: Data not available
 1 - NDA, 2014 – October 2019
 2 - USDA RMA, 2000 – November 2019
 3 - NRC, 1990 - November 2019
 4 - PHSMA, 1971 - November 2019
 5 - Stanford NPDP, 1911 - 2018
 6 - NOAA, 1895 - August 2019

7 - NOAA Regional Climate Center, 1897 - September 2019
 8 - NCEI, 1996 - September 2019
 9 - NFS, 2010 - 2018
 10 - USACE NLD, 1900 - 2019
 11 - USACE, 2019
 12 – Global Terrorism Database, 1970-2018
 13 – USGS, 1900 – November 2019

The following table provides a summary of hazards that have or have the potential to affect each participating jurisdiction in Johnson County. Each jurisdiction was evaluated for previous hazard occurrence and the probability of future hazard events on each of the 12 hazards profiled in this plan. The evaluation process was based on data collected and summarized in Table JCO.9; previous impacts or the potential for impacts to infrastructure, critical facilities, people, and the economy; and the proximity to certain hazards such as dams.

Table JCO.10: Johnson County and Community Hazard Matrix

Hazard	Ag. Disease	Chemical – Fixed Site	Chemical - Transportation	Dam Failure	Drought and Extreme Heat	Earthquakes	Flooding	Levee Failure	Severe Thunderstorms	Severe Winter Storms	Terrorism	Tornadoes and High Winds	Wildfires
Johnson County	X	X	X	X	X	X	X		X	X	X	X	X
Village of Cook	X	X	X		X		X		X	X	X	X	X
Village of Elk Creek	X	X	X		X		X		X	X	X	X	X
Village of Sterling	X	X	X	X	X		X		X	X	X	X	X
City of Tecumseh	X	X	X	X	X		X		X	X	X	X	X
Cook Fire District		X	X		X		X		X	X	X	X	X
Elk Creek Volunteer Fire Dept.		X	X		X		X		X	X	X	X	X
Johnson County Central Public Schools		X	X	X	X		X		X	X	X	X	X
Sterling Rural Fire District		X	X	X	X		X		X	X	X	X	X

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County Hazard Prioritization

The following discussion provides county-specific information relevant to each hazard. The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the county. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the county's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Johnson County Hospital also gave input on what they see as their top hazards. Representatives from the hospital chose: Agricultural Animal and Plant Disease, Chemical and Radiological Spills (Fixed Site), Chemical and Radiological Spills (Transportation), Drought and Extreme Heat, Severe Thunderstorms, Severe Winter Storms, and Tornadoes and High Winds.

Agricultural Animal and Plant Disease

The primary concern related to plant and animal disease is the financial impact on the county. Plant disease reduces crop yields and livestock disease causes animal loss and high treatment costs. This can have a major impact on individuals' income. Disease outbreaks occur on a yearly basis but are typically small in size. Smart Chicken has a large concentration of chickens and sale barns are located throughout the county. Education on agricultural diseases comes from the Nebraska Extension Office and the Farm Service Agency but local farmers operate in an independent manner and typically rely on their own resources.

Chemical and Radiological Spills (Fixed Site and Transportation)

Johnson County is located close to the Cooper Nuclear Plant which prompted the hospital to develop disaster preparedness plans. Transportation routes of most concern are Highways 50 and 75, as chemicals are regularly transported along these routes. The hospital is also at risk for accidents involving anhydrous ammonia, as it is located near a major transportation route. In 2013, an anhydrous spill at the Tecumseh co-op resulted in one fatality. The hospital regularly treats small anhydrous exposures. In the event of a spill, the local fire department would be the first to respond with Johnson County Emergency Management providing support if needed.

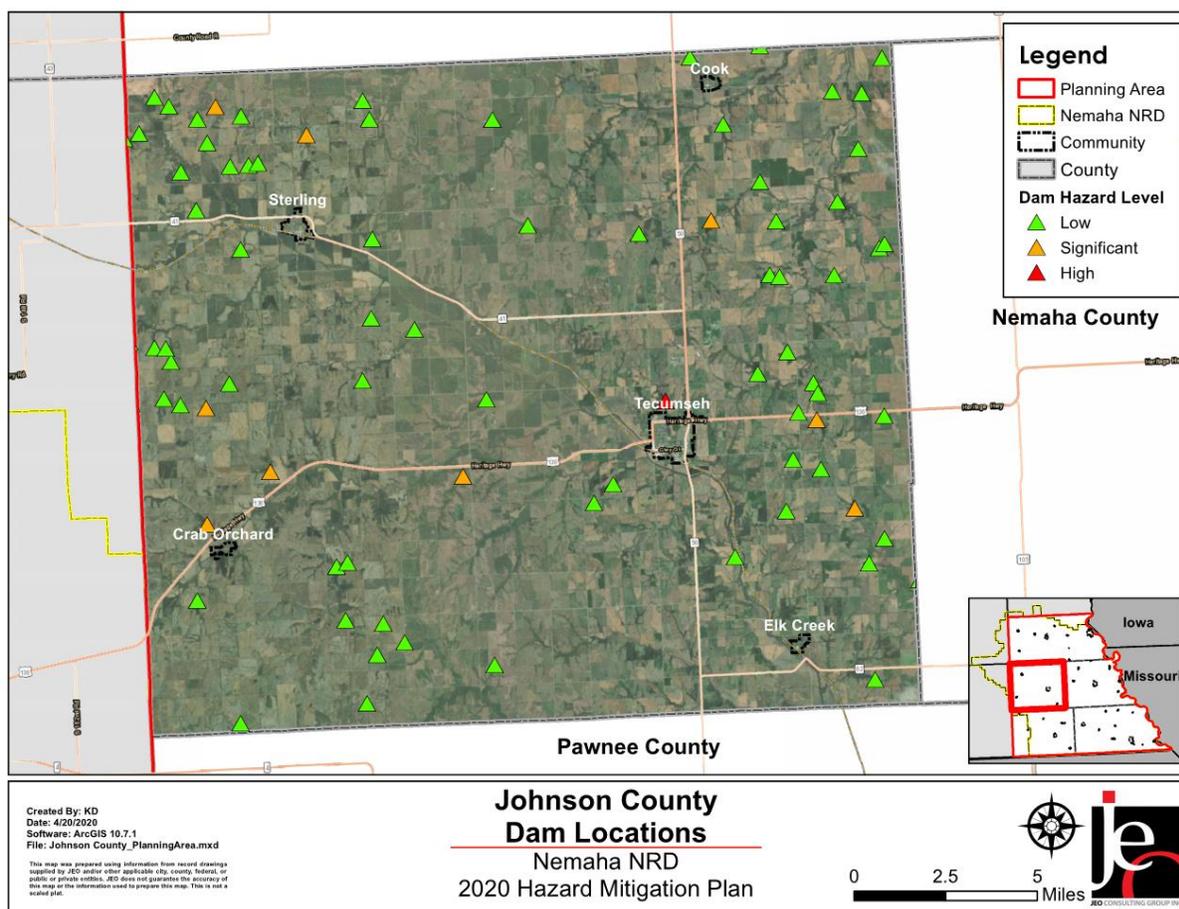
Dam Failure

Although not identified as a top hazard of concern by local planning team, Johnson County has one high hazard dam and nine significant hazard dams. The figure below shows the location of all the dams in the county. If the high hazard dam were to fail it would likely impact the City of Tecumseh. Dam inundation maps are not displayed due to security concerns. Dam failure has not occurred in the county.

Drought and Extreme Heat

In 2012 and 2017 the county lost crops due to drought and extreme heat. It is common for wells (community and residential) to dry up across the county even during small drought periods. The biggest issue regarding drought is that the county does not have the power to control irrigation or consumption. Instead, the NRD and local jurisdictions manage drought response. This can lead to conflict if communities and residents experience different response protocols. Drought monitoring is left up to individuals and local jurisdictions. There is no county-wide drought response plan but some communities like Tecumseh have response ordinances in place.

Figure JCO.4: Dam Locations



Flooding

The most recent flooding events occurred in 2011, 2015, and 2019. Flood damage in the county typically consists of bridge, highway, and culvert damage. Johnson County relies on contractors to repair damages as they do not have the materials or personnel required to implement repairs themselves. The local planning team estimated that the 2019 flood caused \$1,900,000 in damages. Bridges were damaged and several county roads were closed for a period of time. Crab Orchard had water in houses and floodwaters damaged the lagoons. The Village of Elk Creek also had lagoon damage. The county is typically more concerned about drainage issues than riverine flooding.

Severe Thunderstorms

Past damages from severe thunderstorms include flooding from heavy rains, tree damage, hail damage, loss of power, and lightning hitting communication towers. NCEI data shows that Johnson County has experienced 127 severe thunderstorm events since 1996. In the event of power loss, emergency management and other county departments have double storage backup in-house and in Lincoln for critical records. The Johnson County Hospital has hail-resistant building materials and is insured against hail damage. The hospital backs up its records and uses surge protectors.

Severe Winter Storms

In 2009 the county experienced a very large snowstorm. It caused widespread power outages, freezing pipes, stranded vehicles, and road closures. The County Roads Department does not clear snow at night due to safety issues which can make morning travel difficult. The hospital noted that staffing issues arise after winter storms due to poor road conditions. The hospital does have housing available for staff to use when roads are unsafe. The county recently purchased a four-wheel drive ambulance to help reduce response times during ice and snowstorms. Snow fences are not used on county roads, which can lead to large drifts damaging snow removal equipment.

Tornadoes and High Winds

The local planning team estimates that high wind events occur three to four times a year. No damage to houses has occurred, but crops, trees, farm equipment, and power lines have all been damaged in the past. Power outages are a regular occurrence with high winds. The county typically has very little notification of storms occurring as they are located far away from the closest National Weather Service in Valley. Instead, county departments and fire departments coordinate effectively to spot storms and notify the public. The Johnson County Hospital has policies and procedures for a tornado event and regularly practices drills. Mutual aid agreements are in place with surrounding communities, counties, and fire departments.

Governance

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

- County Clerk
- County Assessor
- County Treasurer
- County Attorney
- District Health Department
- Emergency Manager
- Highway Superintendent
- Planning & Zoning
- Sheriff
- Surveyor

Capability Assessment

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

Table JCO.11: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	No
	Emergency Operations Plan	Yes

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Survey Components/Subcomponents		Yes/No
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	ISO with Fire Departments
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	Yes
	Civil Engineering	Yes
	Local Staff Who Can Assess County's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	-
Fiscal Capability	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
	Development Impact Fees	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
	StormReady Certification	No
	Other (if any)	-

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

Plan Integration

Johnson County has several plans related to hazard mitigation. The county’s comprehensive plan was last updated in 2018. It contains goals aimed at safe growth, directs development away from the floodplain, limits density in known hazardous areas, directs development away from chemical storage facilities, directs development away from major transportation routes, encourages infill and clustering, and identifies areas that need emergency shelters. The county’s zoning ordinance, floodplain regulations, and subdivision regulations also cover similar topics as the comprehensive plan. Johnson County has a local emergency operations plan which was last updated in 2018. It contains information for the county and local communities regarding communications and warning, direction and control, damage assessment, emergency public information, evacuation, fire services, health and human services, law enforcement, mass care, protective shelter, and resource management. The plan is updated regularly and distributed to all communities. Johnson County’s capital improvement plan is updated every year and contains many projects outlined in the hazard mitigation plan. In addition, the county also has building codes and wellhead protection plans. No other examples of plan integration were identified. The county will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

Continued and New Mitigation Actions

Mitigation Action	Alert/Warning Sirens
Description	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	\$15,000+
Funding	Cost Share with Local Communities, General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	Emergency Management
Status	Ongoing. All communities have an alert siren but the Village of Crab Orchard needs a new one.

Mitigation Action	Backup and Emergency Generators
Description	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other critical facilities and shelters. Locations that need generators include the communication towers and sheriff’s department.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$15,000 - \$30,000+ per generator
Funding	PCT Regional Funds, General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Emergency Management
Status	Not Started.

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Mitigation Action	Bank Stabilization
Description	Bank degradation is occurring along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Areas for bank stabilization include Yankee Creek, Spring Creek, Little Nemaha River, and Brewers Branch.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies
Funding	General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	Highway Maintenance
Status	Ongoing. Issues are fixed as funding is available.

Mitigation Action	Civil Service Improvements
Description	Improve emergency rescue and response equipment and facilities by providing additional or updating existing emergency response equipment. This can include fire trucks, ATVs, water tanks/trucks, snow removal equipment, etc. This would also include developing backup systems for emergency vehicles and identifying and training additional personnel for emergency response. Johnson County would like to obtain equipment and train local fire and rescue departments up to the ability of water and rope rescue equipment.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$50,000
Funding	General Fund
Timeline	1-3 Years
Priority	High
Lead Agency	County Emergency Management
Status	Not Started.

Mitigation Action	Communication System
Description	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish interoperable communications.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$10,000+
Funding	General Fund, State Revolving Fund
Timeline	Ongoing
Priority	High
Lead Agency	Sheriff's Office
Status	Ongoing. Interoperable communications are complete. Alert sense is being installed.

Mitigation Action	Community Education and Awareness
Description	Activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchase equipment such as overhead projectors and laptops.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$500+
Funding	General Fund
Timeline	Ongoing
Priority	High
Lead Agency	Emergency Management
Status	Ongoing. The county hosts Stop the Bleed classes and storm spotter training. Social media is also used to raise awareness.

Mitigation Action	Drainage Study / Stormwater Management Plan
Description	Drainage studies can be conducted to identify and prioritize improvements to address site specific localized flooding/drainage problems. Stormwater master plans can be conducted to perform a community-wide stormwater evaluation, identifying multiple problem areas, and potentially multiple drainage improvements for each.
Hazard(s) Addressed	Flooding
Estimated Cost	\$10,000 - \$100,000+
Funding	General Fund, State Revolving Fund
Timeline	5+ Years
Priority	High
Lead Agency	Highway Maintenance
Status	Not Started.

Mitigation Action	Flood-Prone Property Acquisition
Description	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Repetitive loss structures are typically highest priority.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies by Property
Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Floodplain Manager
Status	Not Started.

Mitigation Action	Flood-Prone Property Mitigation
Description	Decrease the number of structures at risk to flooding by elevating structures or filling in basements. Additionally, this can provide flood insurance benefits to those communities within the NFIP.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies
Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Floodplain Manager
Status	New Action. Not Started.

Mitigation Action	Hazardous Tree Removal
Description	Identify and remove hazardous limbs and/or trees.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
Estimated Cost	\$100 per tree
Funding	General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	Highway Maintenance
Status	Ongoing. Hazardous trees and limbs are removed as necessary.

Mitigation Action	Power and Service Lines
Description	Communities can work with OPPD or NPPD to identify vulnerable transmission and distribution lines and plan to bury lines underground or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use underground construction methods where possible for future installation of power lines.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$800,000 per mile
Funding	Utility Rates
Timeline	Ongoing
Priority	Medium
Lead Agency	County Planning, OPPD, NPPD
Status	Ongoing. All new construction projects bury lines underground.

Mitigation Action	Safe Rooms and Storm Shelters
Description	Design and construct storm shelters and safe rooms in highly vulnerable areas such as campgrounds, schools, and other areas. The school in Tecumseh needs a safe room.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	\$4,000 - \$10,000+
Funding	Donations
Timeline	5+ Years
Priority	Low
Lead Agency	Highway Superintendent
Status	Not Started.

Mitigation Action	Source Water Protection Plan
Description	Villages and cities can evaluate and locate new sources of groundwater to ensure adequate supplies to support the existing community and any additional growth which may occur. Also, identify develop water sources for fire protection.
Hazard(s) Addressed	Drought and Extreme Heat
Estimated Cost	\$5,000+
Funding	General Fund, Local Jurisdictions
Timeline	2-5 Years
Priority	Low
Lead Agency	Rural Water, County Planning, Local Jurisdictions
Status	Not Started.

Mitigation Action	Stormwater System and Drainage Improvements
Description	Undersized systems can contribute to localized flooding. Stormwater system improvements may include pipe upsizing and additional inlets. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements.
Hazard(s) Addressed	Flooding
Estimated Cost	\$100,000+
Funding	General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	Highway Maintenance
Status	Ongoing. Issues are fixed as funding is available. Upsized a ditch near 610 avenue and 723 road after the March 2019 flooding.

Mitigation Action	Warning Systems
Description	Improve/implement city cable TV interrupt warning system and telephone interrupt system such as Reverse 911.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$5,000+
Funding	State Revolving Fund, General Fund
Timeline	1 Year
Priority	High
Lead Agency	Emergency Management
Status	In Progress. Reverse 911 is complete, alert sense is being installed.

Mitigation Action	Weather Radios
Description	Conduct an inventory of weather radios at schools, and other critical facilities and provide new radios as needed.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds, Flooding
Estimated Cost	\$50 per radio
Funding	General Fund
Timeline	1 Year
Priority	Low
Lead Agency	Emergency Management
Status	Not Started.

Removed Mitigation Actions

Mitigation Action	Floodplain Regulations
Hazard(s) Addressed	Flooding
Reason for Removal	The county currently has no plans to update their flood regulations. The county regularly reviews their regulations and ordinances and updates them as needed. They will continue to enforce all local regulations.

Mitigation Action	Irrigation/Groundwater Management Plan
Hazard(s) Addressed	Drought and Extreme Heat
Reason for Removal	The NRD would handle a project like this.

Mitigation Action	Levee/Floodwall Construction and/or Improvements
Hazard(s) Addressed	Levee Failure, Flooding
Reason for Removal	The NRD would handle a project like this.

Mitigation Action	Maintain Good Standing in NFIP
Hazard(s) Addressed	Flooding
Reason for Removal	While the county will continue to participate and maintain compliance in the NFIP, this project can be removed as it is considered an ongoing effort.

Community Profile

Village of Cook

**Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update**

2020

Local Planning Team

Table COO.1: Village of Cook Local Planning Team

Name	Title	Jurisdiction
Travis Effken	Board Chairperson	Village of Cook
Amber Drake	Board Member	Village of Cook

Location and Geography

The Village of Cook is in northeastern Johnson County and covers an area of 0.17 square miles. Cook is located to the north of the Little Nemaha River.

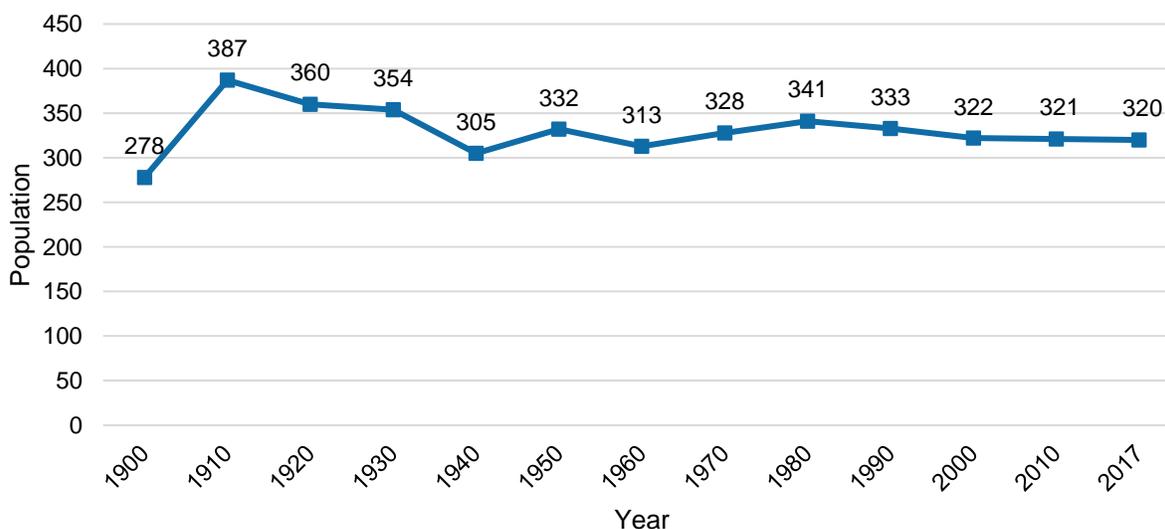
Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community and areas more at risk of transportation incidents. Cook’s major transportation corridor is State Highway Spur 49A. It is traveled by an average of 840 vehicles daily, 85 of which are trucks.⁸ The village does not have a rail line traveling through the community. Highway 41 is the transportation route of most concern due to high truck traffic and farm chemicals being transported along it. If an evacuation were necessary, the local planning team indicated that East Church Street may be difficult as it is a dead-end street.

Demographics

The Village of Cook’s population has been stable at about 320 people since 2000, providing a stable tax base that could fund mitigation projects. Cook’s population accounted for 6.2% of Johnson County’s population in 2017.⁹

Figure COO.1: Population

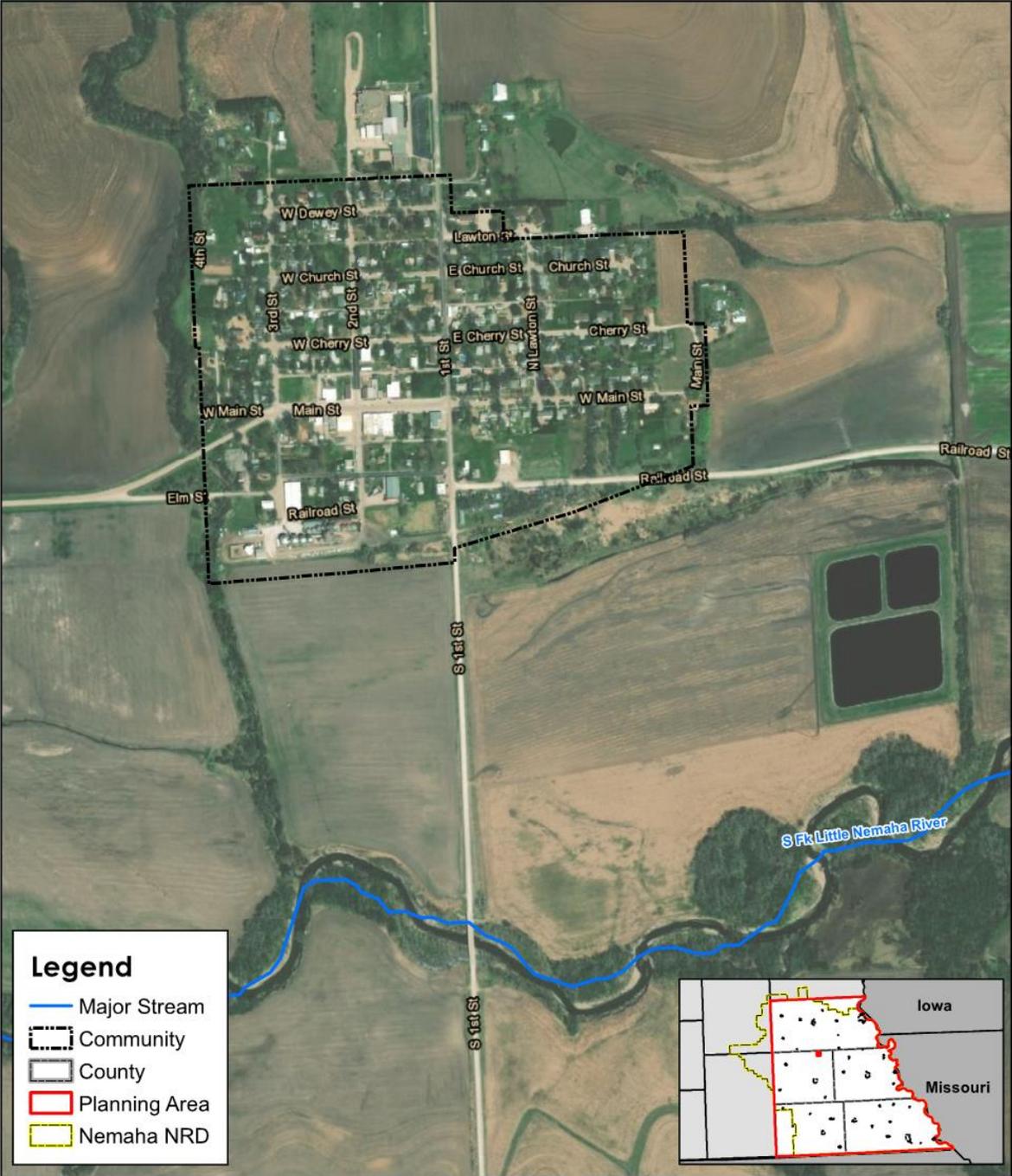


Source: U.S. Census Bureau, 1900 – 2017

Figure COO.2: Village of Cook

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

9 United States Census Bureau. “American Fact Finder: DP05: Demographic and Housing Estimates.” [database file]. <https://factfinder.census.gov/>.



The young, elderly, minority, and low-income populations may be more vulnerable to certain hazards than other groups. In comparison to the county, Cook's population was:

- **Younger.** The median age of Cook was 39.7 years old in 2017, compared with Johnson County's median of 41.1 years. Cook's population grew younger since 2010, when the median age was 47.9 years old.⁹
- **Less ethnically diverse.** Since 2010, Cook grew less ethnically diverse. In 2010, 2.2% of Cook's population was Hispanic or Latino. By 2017, about 1.3% was Hispanic or Latino. During that time, the Hispanic population in the county grew from 8.7% in 2010 to 9.9% in 2017.⁹
- **More likely to be below the federal poverty line.** The poverty rate in the Village of Cook (12.2% of people living below the federal poverty line) was higher than the county's poverty rate (10.1%) in 2017.¹⁰

Employment and Economics

The Village of Cook's economic base is a mixture of industries. In comparison to Johnson County, Cook's economy had:

- **Similar mix of industries.** Cook's major employment sectors, accounting for 10% or more of employment each, were: manufacturing, retail trade, education, and public administration.¹⁰
- **Higher per capita income.** Cook's per capita income in 2017 (\$24,153) was about \$2,000 higher than the county (\$22,398).¹⁰
- **More long-distance commuters.** About 25.3% of workers in Cook commuted for fewer than 15 minutes, compared with about 48.2% of workers in Johnson County. About 44.1% of workers in Cook commuted 30 minutes or more to work, compared to about 29.7% of county workers.¹¹

Major Employers

Major employers in Cook include Seeba Hardware, Johnson County Central Middle School, Mainstreet Bank, United States Post Office, Village Office, Cook Diesel, Wagoner Constructions, and Frontier. The local planning team estimates that approximately 50% of residents commute to Lincoln, Omaha, Tecumseh, Auburn, or Weeping Water for employment.

Housing

In comparison to Johnson County, the Village of Cook's housing stock was:¹²

- **Older.** Cook had a larger share of housing built prior to 1970 than the county (71% compared to 62.4%).
- **Less amounts of mobile and manufactured housing.** The Village of Cook had a smaller share of mobile and manufactured housing (0%) compared to the county (7.1%).
- **More renter-occupied.** About 27.5% of occupied housing units in Cook were renter-occupied compared with 26.1% of occupied housing in Johnson County.

10 United States Census Bureau. "American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

11 United States Census Bureau. "American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. <https://factfinder.census.gov/>.

12 United States Census Bureau. "American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

- **Less occupied.** Approximately 15.3% of Cook’s housing units were vacant compared to 13.5% of units in Johnson County.

The age of housing may indicate which housing units were built prior to the development of state building codes. Homes built within a flood hazard area before the adoption of their community’s Flood Rate Insurance Map (FIRM) are not likely to be built above the 1% annual chance floodplain. Older and vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms if those homes are not anchored correctly. Mobile homes are located on East Railroad, North 3rd Street, and West Dewey. 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 renter’s insurance or flood insurance, or to know their risks to flooding and other hazards. A significant number of unoccupied housing suggests that future development may be unlikely to occur in the area.

Future Development Trends

In the last five years the village experienced business loss and homes being demolished. According to the most recent American Community Survey estimate, Cook’s population is generally stable. The local planning team attributed this stability to the village life and an aging community. Municipal funds mainly go towards maintain current facilities and systems. However, a small portion of funds are allocated to pursue new projects. Funds have stayed steady over recent years. In the next five years, no housing or commercial developments are planned.

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, paved lots, roads, etc.) at the parcel level. The data did not contain the number of structures on each parcel. The parcel data was analyzed to determine the number and valuation of property improvements located in the 1% annual chance floodplain. A summary of the results of this analysis is provided in the following table.

Table COO.2: Parcel Improvements and Value in the Floodplain

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Percentage of Improvements in Floodplain	Value of Improvements in Floodplain
182	\$ 7,040,118	11	6.04%	\$ 466,140

Source: GIS Workshop/Johnson County Assessor, 2019¹³

¹³ GIS Workshop/Johnson County Assessor. 2019. [Personal correspondence].

Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of two chemical storage sites in Cook. The table below lists the name and location of the sites and whether they are in the floodplain.

Table COO.3: Chemical Storage Fixed Sites

Facility Name	Address	In Floodplain (Y/N)
Midwest Farmers Cooperative	202 S 3 rd Street	Y
OPPD Substation No. 967	73498 624 Avenue	N

Source: Nebraska Department of Environment and Energy¹⁴

Critical Facilities

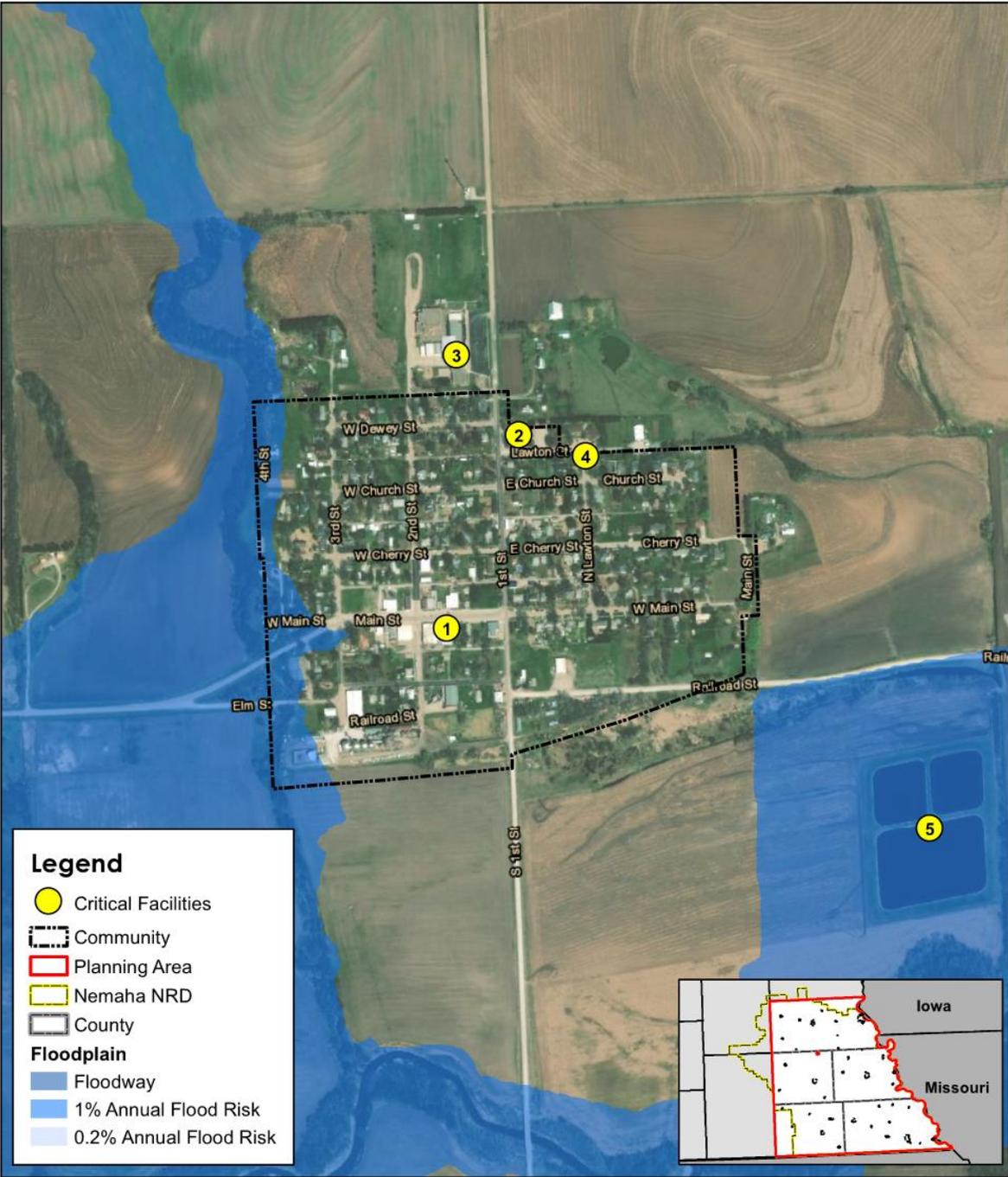
The planning team identified critical facilities necessary for the Village of Cook's disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the community.

Table COO.4: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Cook Community Center	Y	Y	N
2	Grace Lutheran Church	N	Y	N
3	Johnson County Middle School	Y	Y	N
4	Water Tower	N	Y	N
5	Wastewater Lagoons	N	Y	Y

¹⁴ Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed November 2019. <https://deq-iis.ne.gov/tier2/tier2Download.html>.

Figure COO.3: Critical Facilities



Created By: KV
Date: 4/7/2020
Software: ArcGIS 10.7.1
File: Community_PlanningArea.mxd

This map was prepared using information from record drawings supplied by JEO and/or other applicable city, county, federal, or public or private entities. JEO does not guarantee the accuracy of this map or the information used to prepare this map. This is not a scaled plan.

**Village of Cook
Critical Facilities**
Nemaha NRD
2020 Hazard Mitigation Plan

0 0.05 0.1 Miles

JEO CONSULTING GROUP INC.

Historical Occurrences

See the Johnson County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the community. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Severe Thunderstorms

Village concerns regarding severe thunderstorms include stormwater drainage on Main Street and fallen limbs. Whenever the village has a heavy rain, Main Street floods because of the poor crowning on 1st Street. In the event of power loss, the village office backs up computer records and has backup generators on the wells and lift station. Weather radios are located at the fire and rescue building so that an alarm can be activated if necessary.

Severe Winter Storms

Severe winter storms occur on an annual basis throughout the planning area, including the community. Past storms have caused very little damage in the village and critical facilities have not been impacted. The Village Superintendent is responsible for snow removal within community boundaries. Equipment includes a 2019 skid loader and a 2004 truck with a blade. No other mitigation is done by the village for severe winter storms.

Tornadoes and High Winds

Tornadoes have not impacted the village, but periodically high winds have damaged trees. The local fire department is able to activate the warning sirens which can be heard throughout the community. County Emergency Management also issues text alerts to those signed up to the program. There are no certified safe rooms, but the community center, church, and homes can be used for residents seeking shelter. In the event of a disaster, a mutual aid agreement is in place with Tecumseh.

Governance

The Village of Cook is governed by a five-member village board; other governmental offices and departments are listed below. The community government will oversee the implementation of hazard mitigation projects.

- Clerk/Treasurer
- Attorney
- Utilities Superintendent
- Fire Department
- Sewer/Water/Street Commissioner
- Engineer

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.

Table COO.5: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	Yes
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	No
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	No
	Building Codes	Yes
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	-
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	Yes
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	-
Fiscal Capability	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	No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	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.	No

Survey Components/Subcomponents		Yes/No
	Ex. CERT Teams, Red Cross, etc.	
	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 needed to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Community support to implement projects	Limited
Time to devote to hazard mitigation	Moderate

Plan Integration

Cook does not have a comprehensive plan or zoning ordinances. However, the village is currently in the process of creating a comprehensive plan with external entities. The goal is to integrate the hazard mitigation plan as much as possible into the comprehensive plan once it gets created. The village has recently created a Zoning Committee to help coordinate the creation of a zoning ordinance. Within Cook’s general ordinances, the village has adopted the 1970 International Building Code. Also within the general ordinances are references to municipal planning, police regulations, departments ordinance, and housing regulations. Cook is an annex in the 2018 Johnson County Local Emergency Operations Plan. It contains information regarding warning, incident command and field response, law enforcement, fire department, emergency medical services, public works, emergency operations center, emergency public information, sheltering, resources, damage assessment, health and human services, public health, and financial accountability. No other examples of plan integration were identified. The community will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Above Ground Stormwater System and Drainage Improvements
Description	Stormwater systems comprising of ditches, culverts, or drainage ponds can be used to convey runoff. Undersized systems can contribute to localized flooding. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance, reducing the potential for flooding. Needed along Main Street and 1 st Street.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies
Funding	General Fund
Timeline	2-5 Years
Priority	High
Lead Agency	Village Board, Utilities
Status	Ongoing. Drainage improvements are made as issues are identified.

Mitigation Action	Backup Records
Description	Develop protocol for backing up critical records onto a portable storage device or service. Maintain routine backup of records.
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	1 Year
Priority	High
Lead Agency	Clerk
Status	New Action. Not Started.

Mitigation Action	Underground Stormwater System and Drainage Improvements
Description	Underground stormwater systems comprising of pipes and inlets can be used to convey runoff. Undersized systems can contribute to localized flooding. Stormwater system improvements may include pipe upsizing and additional inlets. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Needed along Main Street and 1 st Street.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies
Funding	General Fund
Timeline	2-5 Years
Priority	High
Lead Agency	Village Board, Utilities
Status	New Action. Not Started.

Community Profile

Village of Elk Creek

Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table EKC.1: Village of Elk Creek Local Planning Team

Name	Title	Jurisdiction
Kirk Bartels	Board Member	Village of Elk Creek
Glen Plager	Board Member	Village of Elk Creek

Location and Geography

The Village of Elk Creek is in the southeast corner of Johnson County and covers an area of 0.13 square miles. Elk Creek is located northeast of the Big Nemaha River.

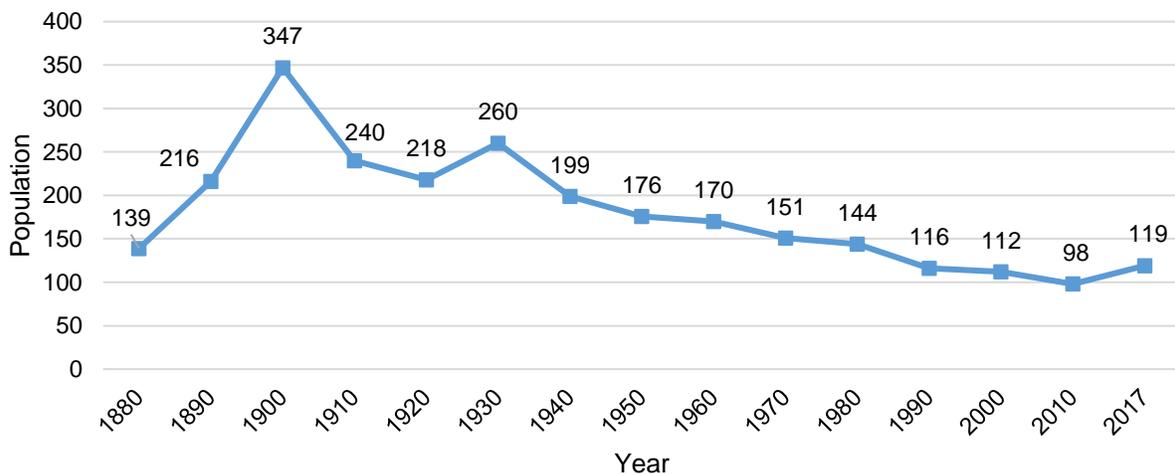
Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community and areas more at risk of transportation incidents. Elk Creek’s major transportation corridor is the spur of State Highway 49. It is traveled by an average of 435 vehicles daily, 45 of which are trucks.¹⁵ The village has one Burlington Northern Santa Fe Railway line traveling on the southwestern edge of the village. The local planning team has identified State Highway 49, the railway line, Main Street, and Elk Street as the transportation routes of most concern. Hazardous chemicals are regularly transported to the co-op elevator via State Highway 49, Elk Street, and Main Street. Hazardous chemicals are also stored on-site at the co-op. In the event of an anhydrous ammonia chemical spill, areas of the community nearest the elevator would likely have the most difficulty evacuating due to the chemical fog.

Demographics

The Village of Elk Creek’s population has increased since 2010 to about 119 people in 2017. The population growth means an increasing tax base, which could make funding mitigation projects easier. Elk Creek’s population accounted for 2.3% of Johnson County’s population in 2017.¹⁶

Figure EKC.1: Population



Source: U.S. Census Bureau, 1880 – 2017

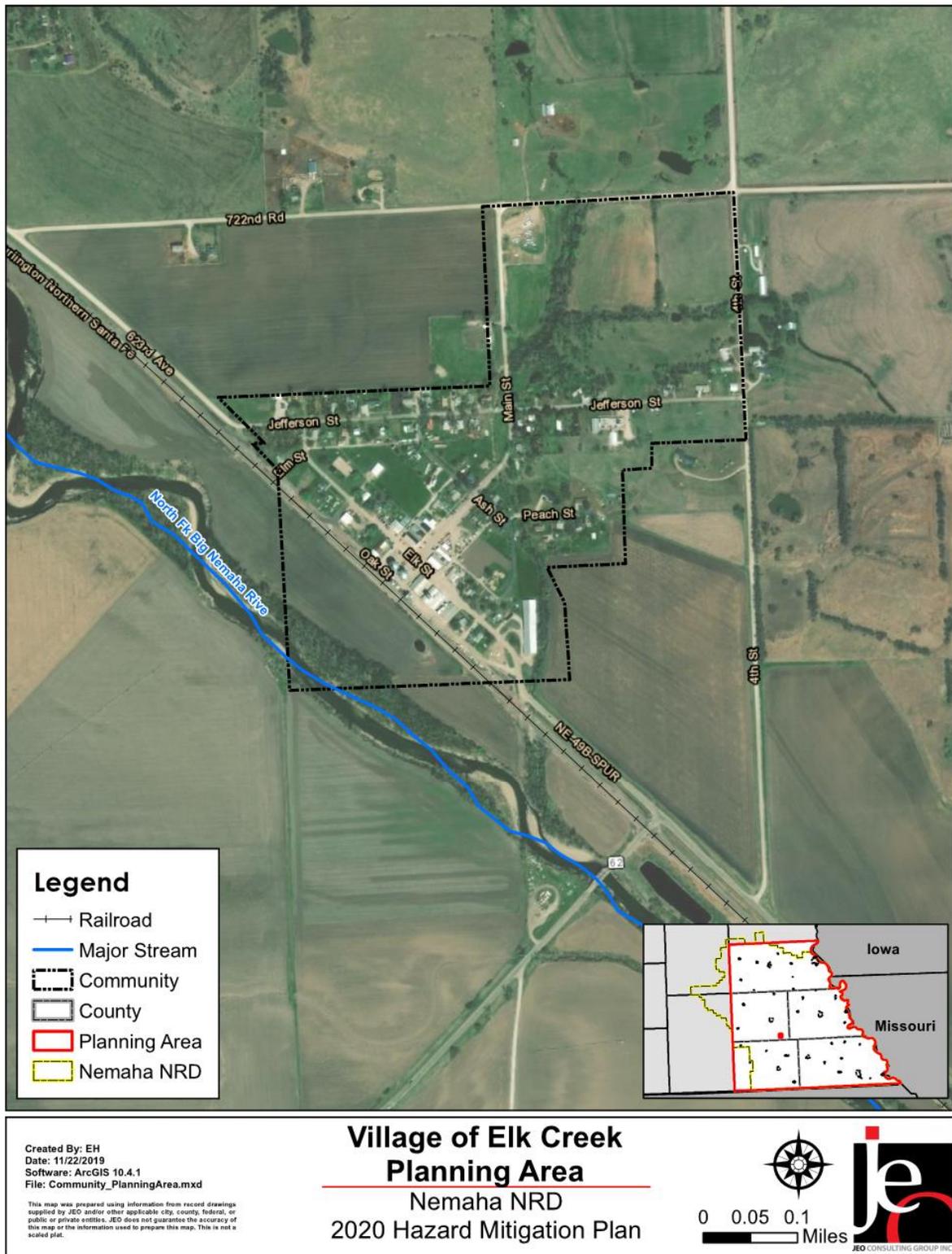
15 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map].

<https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34>.

16 United States Census Bureau. "American Fact Finder: DP05: Demographic and Housing Estimates." [database file].

<https://factfinder.census.gov/>.

Figure EKC.2: Village of Elk Creek



The young, elderly, minority, and low-income populations may be more vulnerable to certain hazards than other groups. In comparison to the county, Elk Creek's population was:

- **Older.** The median age of Elk Creek was 49.6 years old in 2017, compared with Johnson County's median of 41.1 years. Elk Creek's population grew older since 2010, when the median age was 45.7 years old.¹⁶
- **Less ethnically diverse.** Since 2010, Elk Creek grew more ethnically diverse. In 2010, 0% of Elk Creek's population was Hispanic or Latino. By 2017, about 3.4% was Hispanic or Latino. During that time, the Hispanic population in the county grew from 8.7% in 2010 to 9.9% in 2017.¹⁶
- **Less likely to be below the federal poverty line.** The poverty rate in the Village of Elk Creek (6.7% of people living below the federal poverty line) was less than the county's poverty rate (10.1%) in 2017.¹⁷

Employment and Economics

The Village of Elk Creek's economic base is a mixture of industries. In comparison to Johnson County, Elk Creek's economy had:

- **Similar mix of industries.** Elk Creek's major employment sectors, accounting for 10% or more of employment each, were manufacturing and education.¹⁷
- **Higher per capita income.** Elk Creek's per capita income in 2017 (\$29,045) was about \$6,600 higher than the county (\$22,398).¹⁷
- **Fewer long-distance commuters.** About 58.8% of workers in Elk Creek commuted for fewer than 15 minutes, compared with about 48.2% of workers in Johnson County. About 27.9% of workers in Elk Creek commuted 30 minutes or more to work, compared to about 29.7% of county workers.¹⁸

Major Employers

Gottula Propane Services and the Frontier Cooperative Elevator are the largest employers for the Village of Elk Creek. A large percentage of residents also commute to the nearby communities of Pawnee, Auburn, Tecumseh, and Lincoln.

Housing

In comparison to Johnson County, the Village of Elk Creek's housing stock was:¹⁹

- **Older.** Elk Creek had a larger share of housing built prior to 1970 than the county (93.5% compared to 62.4%).
- **More mobile and manufactured housing.** The Village of Elk Creek had a larger share of mobile and manufactured housing (15.8%) compared to the county (7.1%).
- **More renter-occupied.** About 39.4% of occupied housing units in Elk Creek were renter-occupied compared with 26.1% of occupied housing in Johnson County.
- **More occupied.** Approximately 6.6% of Elk Creek's housing units were vacant compared to 13.5% of units in Johnson County.

17 United States Census Bureau. "American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

18 United States Census Bureau. "American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. <https://factfinder.census.gov/>.

19 United States Census Bureau. "American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

The age of housing may indicate which housing units were built prior to the development of state building codes. Homes built within a flood hazard area before the adoption of their community’s Flood Rate Insurance Map (FIRM) are not likely to be built above the 1% annual chance floodplain. Older and vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. The Village of Elk Creek has several mobile homes located along Jefferson Street, Main Street, and 1st Street. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms 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 renter’s insurance or flood insurance, or to know their risks to flooding and other hazards. A significant number of unoccupied housing suggests that future development may be unlikely to occur in the area.

Future Development Trends

The local planning team indicated that little has changed in the past five years other than the addition of a new elevator bin. According to the U.S. Census Bureau American Community Survey estimates, Elk Creek’s population has increased. The population growth may be attributed to inexpensive housing in the community. Municipal funds are limited to maintaining and repairing existing systems, with a large portion going towards upgrading the park playground. Funds have stayed the same over recent years. No new housing developments are planned at this time. Anticipated industry includes manufacturing scarce metals with the development of the Nio Corp mine which will be located near Elk Creek, Nebraska.

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, paved lots, roads, etc.) at the parcel level. The data did not contain the number of structures on each parcel. The parcel data was analyzed to determine the number and valuation of property improvements located in the 1% annual chance floodplain. A summary of the results of this analysis is provided in the following table.

Table EKC.2: Parcel Improvements and Value in the Floodplain

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Percentage of Improvements in Floodplain	Value of Improvements in Floodplain
98	\$ 1,815,966	14	14.3%	\$ 531,985

Source: GIS Workshop/Johnson County Assessor, 2019²⁰

²⁰ GIS Workshop/Johnson County Assessor. 2019. [Personal correspondence].

Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there is one chemical storage site in Elk Creek. The table below lists the name and location of the site and whether it is in the floodplain.

Table EKC.3: Chemical Storage Fixed Sites

Facility Name	Address	In Floodplain (Y/N)
Midwest Farmers Cooperative	425 Elk Street	Y

Source: Nebraska Department of Environment and Energy²¹

Critical Facilities

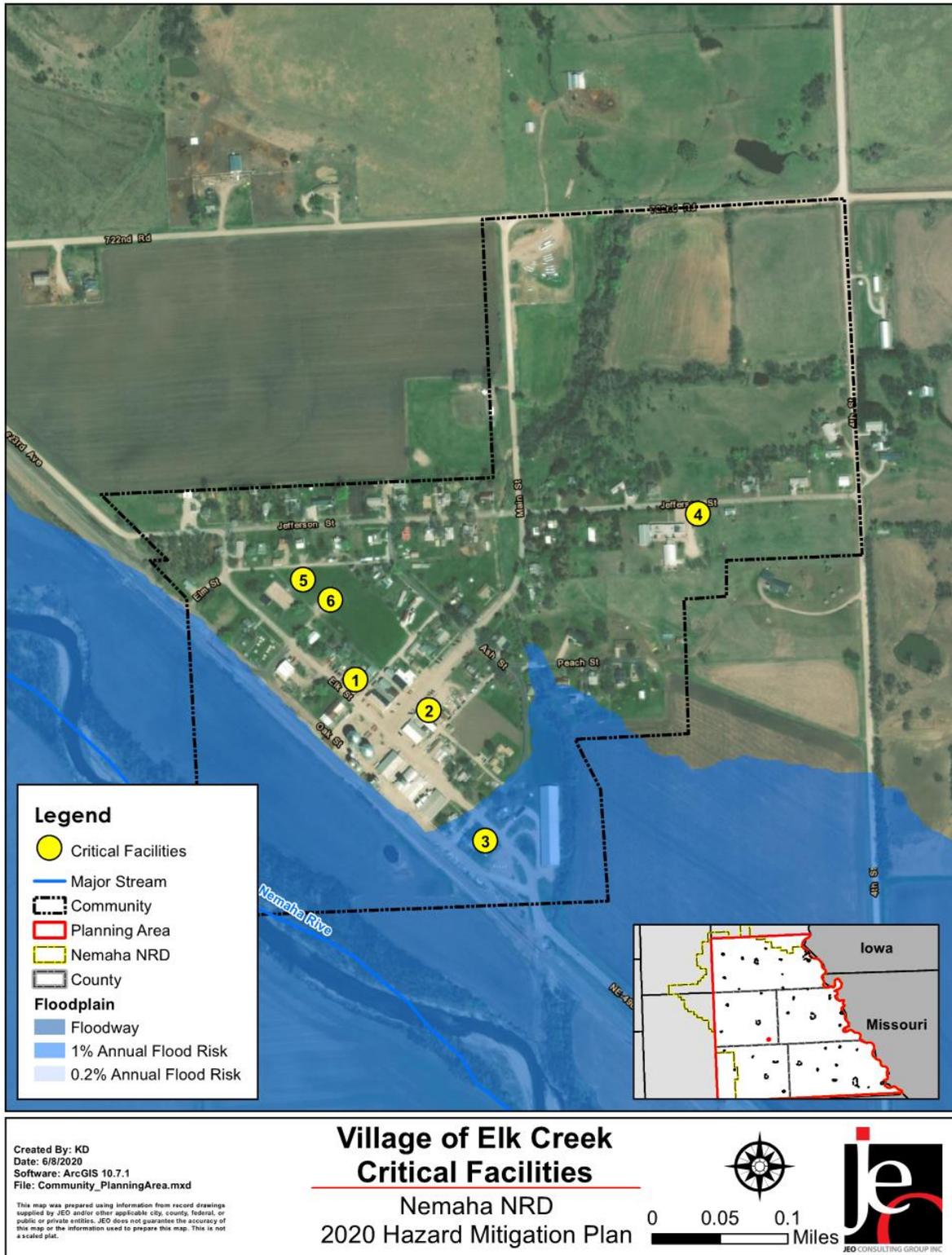
The planning team identified critical facilities necessary for the Village of Elk Creek’s disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the community.

Table EKC.4: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Fire Hall	Y	N	N
2	Legion	N	N	N
3	Lift Station	N	Y	Y
4	Water Tower	N	N	N
5	Well	N	N	N
6	Village Building	N	Y	N

²¹ Nebraska Department of Environment and Energy. “Search Tier II Data.” Accessed November 2019. <https://deq-iis.ne.gov/tier2/tier2Download.html>.

Figure EKC.3: Critical Facilities



Historical Occurrences

See the Johnson County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the community. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Chemical and Radiological Spills (Fixed Site)

The Midwest Farmer's Cooperative has been identified as a local chemical storage site in the Village of Elk Creek. The primary concern for the village is the potential for chemical leaks and spills. No spill events have occurred in the community to date, but possible spills remain a precautionary concern. Critical facilities located near the chemical storage site includes the lift station. Vulnerable populations include residents next to and across the street from the storage site. Emergency phone numbers have been posted at all storage sites. The local fire department is equipped and trained to respond to chemical storage spills.

Chemical and Radiological Spills (Transportation)

Chemical transportation spills are a concern for the village due to the high volume of chemicals transported along local routes. No chemical spill events have occurred in the community to date, but possible spills remain a precautionary concern. Local transportation routes of concern for potential spills are State Highway Spur 49, Main Street, Elk Street, and the railroad line. Critical facilities such as the fire hall and lift station are located along transportation routes where chemicals are regularly transported. The local co-op elevator and fire department engage in safety training to mitigate the impacts in the event of a chemical spill.

Severe Thunderstorms

Primary concerns regarding severe thunderstorms are high winds, hail, and sufficient notice of incoming storms. In June 2009, a hailstorm in the community caused crop damage. No critical facilities have been damaged by severe thunderstorms. The village has buildings that are made of metal and are insured to lessen the impacts of potential hail damage. Mitigation actions taken to reduce risk include using surge protectors, tree trimming, and storm spotting. Text alerts for severe weather are also offered by the county emergency management.

Severe Winter Storms

Severe winter storms are a common concern for the local planning team with past impacts including downed power lines from ice storms and freezing of the water tower. Both were fixed quickly. Between 2007 and 2008, a severe winter storm caused a loss of power and downed trees. Between 2009 and 2010, severe winter storms caused a large accumulation of snow in the community. No critical facilities have been damaged by severe storms in past years, but downed power lines remain a concern for the local planning team. A small portion of the villages power lines are buried, making the rest susceptible to severe winter storms. Snow removal resources are sufficient in the community. Pre-snow preparations such as moving snow off streets early is a measure taken to mitigate the overall impacts of a severe winter storm.

Tornadoes and High Winds

While no tornadic events have directly impacted Elk Creek, high winds occurred in spring 2019. There are currently no data backup systems in place for important records. No critical facilities have been damaged by high winds or tornadoes in the past. There is a warning siren in place that is activated manually by designated individuals and reaches the entire community. In addition to the sirens, text alerts are also offered by the county emergency management. In the event of a disaster, the Village of Elk Creek has mutual aid agreements with surrounding fire departments and Southeast Nebraska Mutual Aid.

Governance

The Village of Elk Creek is governed by a five-member village board; other governmental offices and departments are listed below. The community government will oversee the implementation of hazard mitigation projects.

- Clerk
- Treasurer
- Attorney
- Utility Superintendent
- Fire Department
- Sewer/Water Operator
- Street Superintendent
- Parks and Recreation

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.

Table EKC.5: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	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	No
	Community Rating System	No
Other (if any)	-	
Administrative &	Planning Commission	Yes
	Floodplain Administration	No

Survey Components/Subcomponents		Yes/No
Technical Capability	GIS Capabilities	No
	Chief Building Official	Yes
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	-
Fiscal Capability	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	Yes
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	Yes
	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.	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	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	-

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

Plan Integration

Elk Creek’s zoning ordinance, floodplain regulations, building code, and subdivision regulation were all last updated in 2018. These documents discourage development in the floodplain, require elevation of structures in the floodplain, and include the ability to implement water restrictions. The village’s capital improvement plan was last updated in 2018 and identifies projects to budget for. Projects include installing water meters, updating the electrical distribution system, and improving community-owned structures. Elk Creek is also an annex in the 2018 Johnson County

Local Emergency Operations Plan. It contains information regarding warning, incident command and field response, law enforcement, fire department, emergency medical services, public works, emergency operations center, emergency public information, sheltering, public health, and damage assessment. No other examples of plan integration were identified. The community will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Alert/Warning Sirens
Description	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking with remote activation options.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	\$5,000+
Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board
Status	New Action. Not Started.

Mitigation Action	Bank Stabilization
Description	Repair the riverbank next to the dike in the secondary lagoon.
Hazard(s) Addressed	Flooding
Estimated Cost	\$250,000 - \$300,000
Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board
Status	New Action. Planning stage, the village board is currently looking for funding and grant options.

Mitigation Action	Hazardous Tree Removal
Description	Conduct tree inventory. Develop and implement tree maintenance and trimming program to remove hazardous limbs and trees.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
Estimated Cost	\$200 per tree
Funding	General Budget
Timeline	High
Priority	1-5 Years
Lead Agency	Village Board
Status	New Action. Not Started.

Mitigation Action	Transformer Check and Replacement
Description	Work with OPPD to check PCB and replace bad or out of date transformers to prevent leakage of PCB.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds, Drought and Extreme Heat
Estimated Cost	Test: \$150 - \$200 Replacement: \$3,000+ per transformer
Funding	General Budget
Timeline	1 Year
Priority	High
Lead Agency	Village Board, OPPD
Status	New Action. Not Started.

Community Profile

Village of Sterling

**Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update**

2020

Local Planning Team

Table SRL.1: Village of Sterling Local Planning Team

Name	Title	Jurisdiction
Samantha Gordon	Village Clerk/Treasurer	Village of Sterling
John Keizer	Village Chairman	Village of Sterling
Spencer Pagel	Village Superintendent	Village of Sterling

Location and Geography

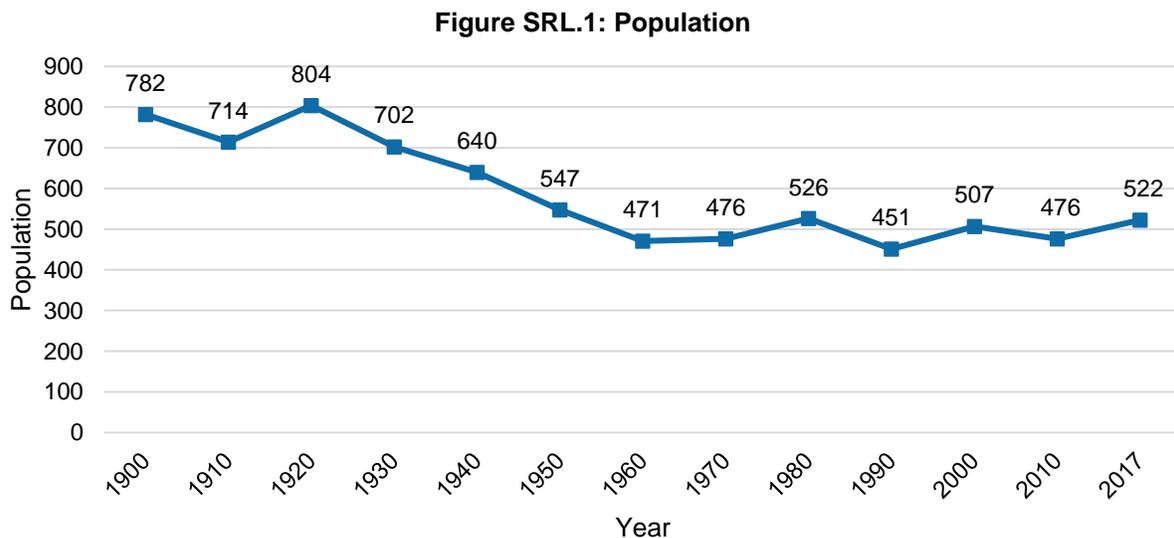
The Village of Sterling is in northwestern Johnson County and covers an area of 0.4 square miles directly north of the Big Nemaha River.

Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community and areas more at risk of transportation incidents. Sterling's major transportation corridor is State Highway 41. It is traveled by an average of 2,155 vehicles daily, 370 of which are trucks.²² The village has one Burlington Northern Santa Fe Railway line traveling on the southern edge of the village. East Locust Street from Lincoln Street to Highway 41 regularly is closed due flooding during heavy rain events. If the community needed to evacuate, high access, the train crossing, and the bridge crossing may make evacuation difficult.

Demographics

The Village of Sterling's population has increased since 2010 and was at 522 people in 2017. An increasing population means a growing tax base, which may make funding mitigation projects easier. Sterling's population accounted for 10% of Johnson County's population in 2017.²³



Source: U.S. Census Bureau, 1900 – 2017

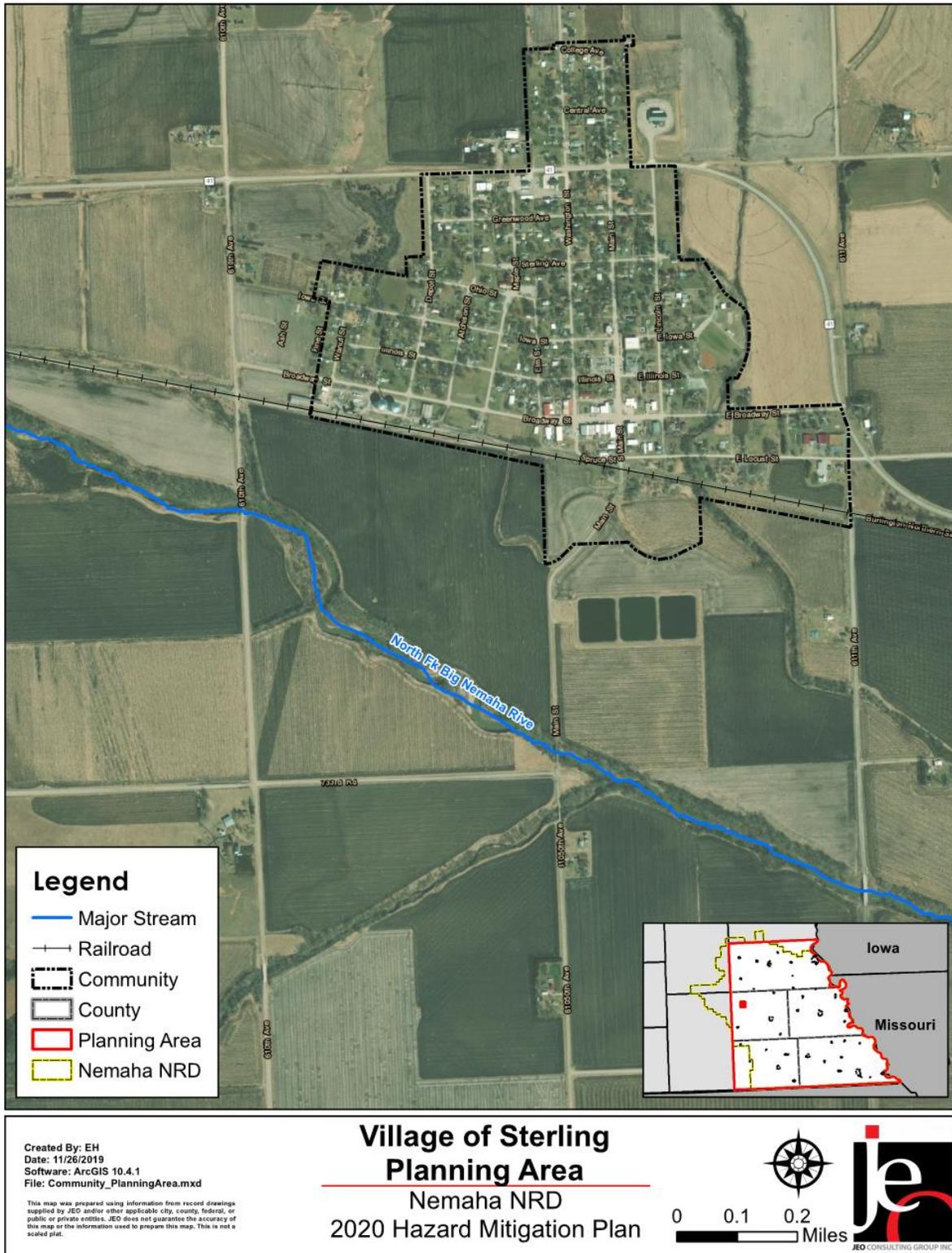
22 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map].

<https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34>.

23 United States Census Bureau. "American Fact Finder: DP05: Demographic and Housing Estimates." [database file].

<https://factfinder.census.gov/>.

Figure SRL.2: Village of Sterling



The young, elderly, minority, and low-income populations may be more vulnerable to certain hazards than other groups. In comparison to the county, Sterling's population was:

- **Older.** The median age of Sterling was 48.1 years old in 2017, compared with Johnson County's median of 41.1 years. Sterling's population grew older since 2010, when the median age was 42.2 years old.²³
- **Less ethnically diverse.** Since 2010, Sterling grew more ethnically diverse. In 2010, 0.7% of Sterling's population was Hispanic or Latino. By 2017, about 3.3% was Hispanic or Latino. During that time, the Hispanic population in the county grew from 8.7% in 2010 to 9.9% in 2017.²³
- **Less likely to be below the federal poverty line.** The poverty rate in the Village of Sterling (3.3% of people living below the federal poverty line) was lower than the county's poverty rate (10.1%) in 2017.²⁴

Employment and Economics

The Village of Sterling's economic base is a mixture of industries. In comparison to Johnson County, Sterling's economy had:

- **Similar mix of industries.** Sterling's major employment sectors, accounting for 10% or more of employment each, were: manufacturing, education, and public administration.²⁴
- **Higher per capita income.** Sterling's per capita income in 2017 (\$27,899) was about \$5,500 higher than the county (\$22,398).²⁴
- **More long-distance commuters.** About 22.7% of workers in Sterling commuted for fewer than 15 minutes, compared with about 48.2% of workers in Johnson County. About 49.8% of workers in Sterling commuted 30 minutes or more to work, compared to about 29.7% of county workers.²⁵

Major Employers

Major employers in Sterling include the school district, Farmers Cooperative, Jet Stop, and Scott's Place. A large percentage of workers commute to the Tecumseh prison, Beatrice, and Lincoln for employment.

Housing

In comparison to Johnson County, the Village of Sterling's housing stock was:²⁶

- **Newer.** Sterling had a smaller share of housing built prior to 1970 than the county (56.1% compared to 62.4%).
- **More mobile and manufactured housing.** The Village of Sterling had a larger share of mobile and manufactured housing (9.2%) compared to the county (7.1%).
- **Less renter-occupied.** About 21.1% of occupied housing units in Sterling were renter-occupied compared with 26.1% of occupied housing in Johnson County.
- **Less occupied.** Approximately 18.5% of Sterling's housing units were vacant compared to 13.5% of units in Johnson County.

24 United States Census Bureau. "American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

25 United States Census Bureau. "American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. <https://factfinder.census.gov/>.

26 United States Census Bureau. "American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

The age of housing may indicate which housing units were built prior to the development of state building codes. Homes built within a flood hazard area before the adoption of their community’s Flood Rate Insurance Map (FIRM) are not likely to be built above the 1% annual chance floodplain. Older and vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms if those homes are not anchored correctly. Mobile homes are spread throughout the community. 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 renter’s insurance or flood insurance, or to know their risks to flooding and other hazards. A significant number of unoccupied housing suggests that future development may be unlikely to occur in the area.

Future Development Trends

In the past five years new housing was built and some vacant houses were demolished. In addition, a community building, new pre-school, and grocery store/lumber yard were built. According to the most recent American Community Survey estimates, Sterling’s population is generally increasing. The local planning team indicated the growth was due to the school district and new housing. Municipal funds for the village are sufficient to pursue new projects, however, a large portion is already dedicated to replacing a bridge, repairing a bridge, and rehabilitating the water tower. Municipal funds have increased over recent years, but so have the cost of maintenance projects. Over the next five years, new housing is planned to the north on Washington Street at Ehmens Addition. The new housing is being directed away from the floodplain. Additionally, a new custom metal machinery shop and possible museum are also planned.

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, paved lots, roads, etc.) at the parcel level. The data did not contain the number of structures on each parcel. The parcel data was analyzed to determine the number and valuation of property improvements located in the 1% annual chance floodplain. A summary of the results of this analysis is provided in the following table.

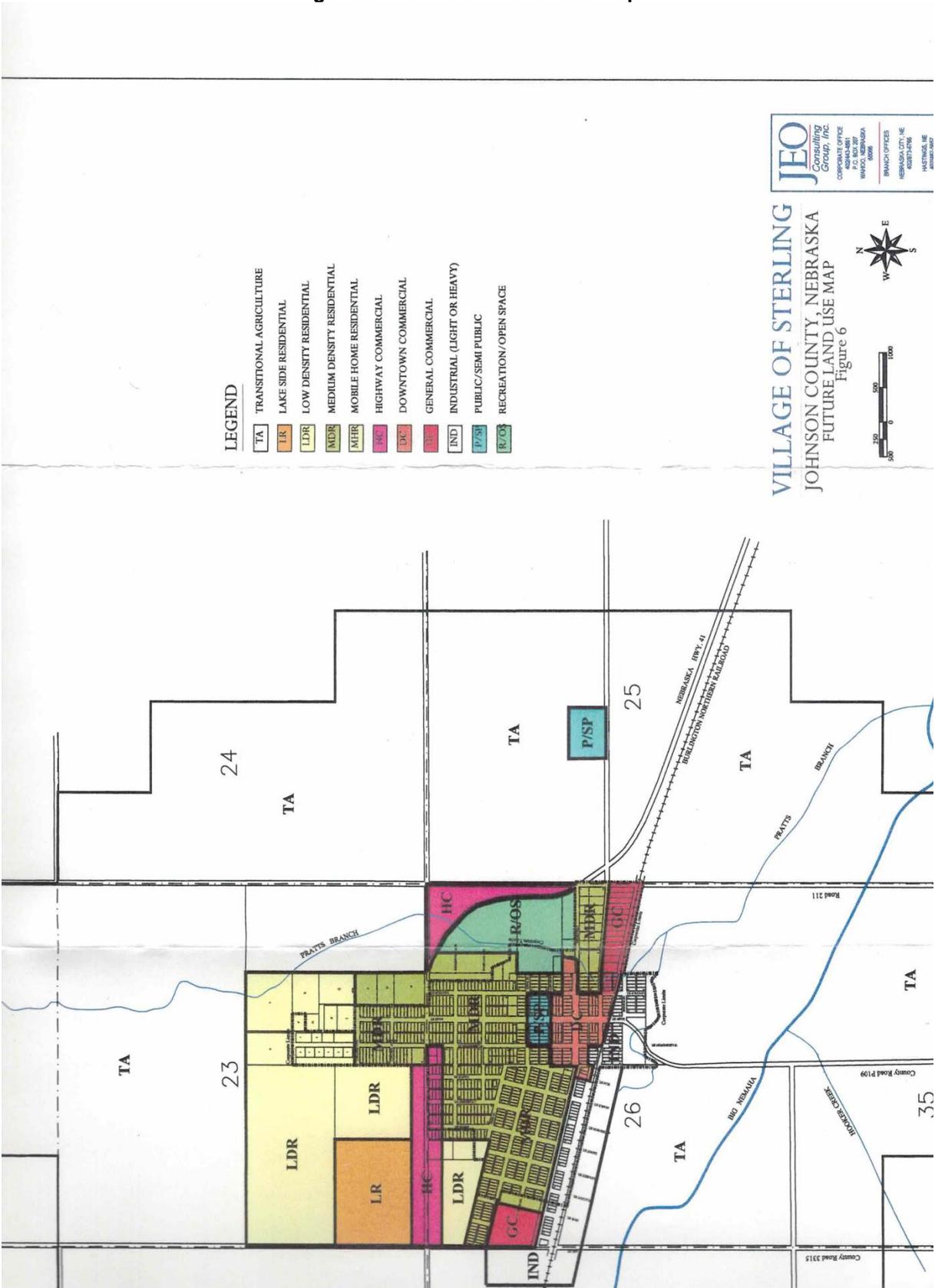
Table SRL.2: Parcel Improvements and Value in the Floodplain

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Percentage of Improvements in Floodplain	Value of Improvements in Floodplain
302	\$16,287,724	64	21.19%	\$ 2,360,687

Source: GIS Workshop/Johnson County Assessor, 2019²⁷

²⁷ GIS Workshop/Johnson County Assessor. 2019. [Personal correspondence].

Figure SRL.3: Future Land Use Map



Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of three chemical storage sites in Sterling. The table below lists the name and location of the sites and whether they are in the floodplain.

Table SRL.3: Chemical Storage Fixed Sites

Facility Name	Address	In Floodplain (Y/N)
Farmers Cooperative	755 Broadway Street	Y
OPPD Substation No 969	610 th Avenue	Y
Farmers Cooperative	Maple Street & Broadway Street	Y

Source: Nebraska Department of Environment and Energy²⁸

Critical Facilities

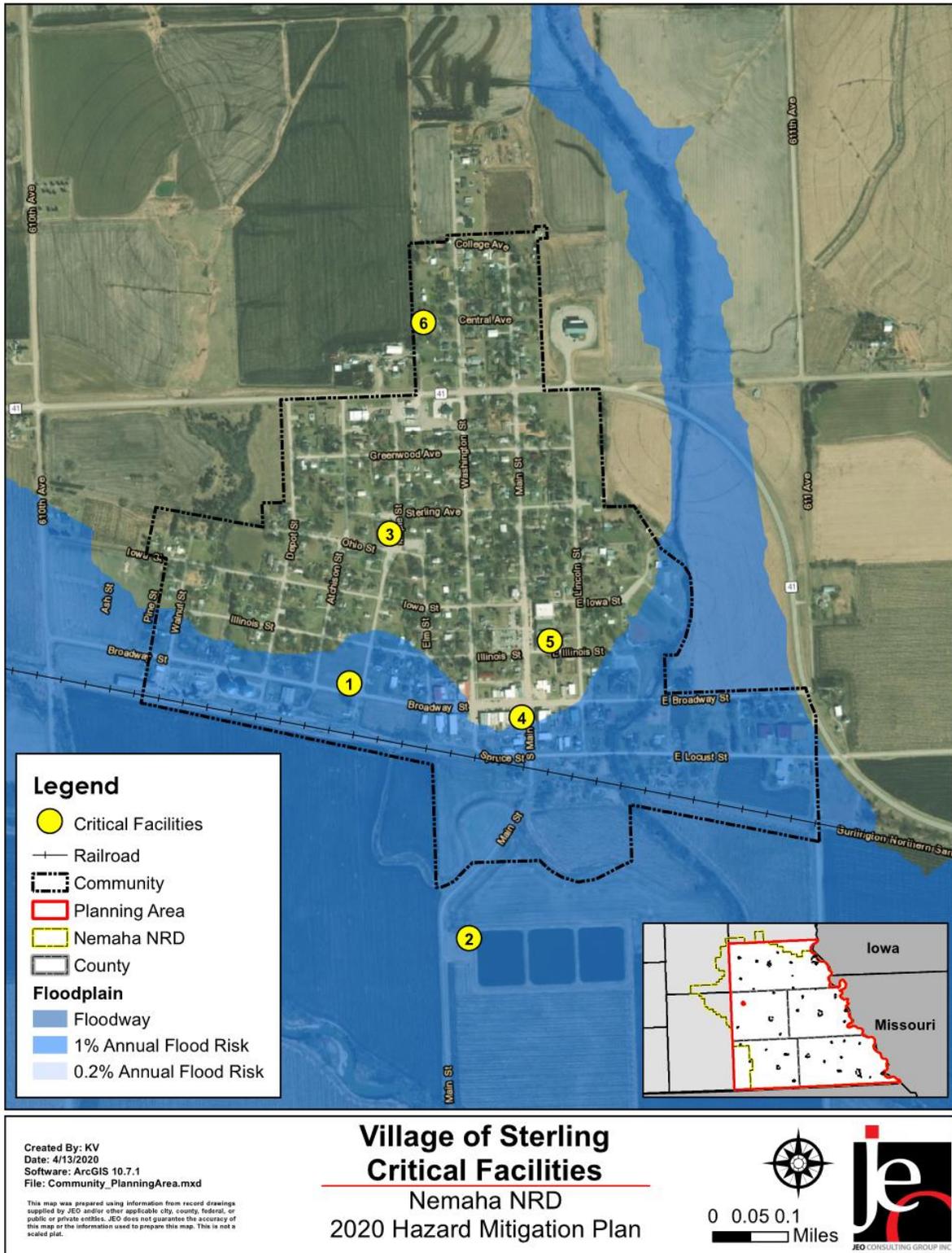
The planning team identified critical facilities necessary for the Village of Sterling's disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the community.

Table SRL.4: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Community Building	N	N	Y
2	Sewer Pumping Station	N	Y	Y
3	St. John's Lutheran Church	Y	N	N
4	Sterling Fire Hall	N	Y	Y
5	Sterling Public School	Y	N	N
6	Water Tower/Well	N	N	N

²⁸ Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed November 2019. <https://deq-iis.ne.gov/tier2/tier2Download.html>.

Figure SRL.4: Critical Facilities



Historical Occurrences

See the Johnson County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the community. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Chemical and Radiological Spills (Transportation)

Transportation routes of most concern include Highway 41, Depot Street, and the railroad. Chlorine is delivered every couple of months and fertilizer, anhydrous ammonia, and propane are transported on Highway 41 and Depot Street. The railroad regularly transports various hazardous materials. The community center and Village Office are located on Broadway Street which is near the rail line. No significant spills have occurred. The village uses designated routes for chemical transportation to reduce the potential impacts from a spill.

Flooding

Past flood events have closed the bridge and East Locust Street and damaged water/sewer lines. For example, the March 2019 flood event damaged the East Locust Street bridge, causing it to close temporarily. Currently, Sterling is working to replace the bridge and is updating the sewer/water lines. Pratts Creek and the Big Nemaha River are the water bodies most at risk of flooding. Poor stormwater drainage is also an issue on the southeast and southwest parts of the community. The village would like to make internal drainage improvements, perform a drainage improvement study, perform debris removal and bank stabilization along Pratts Creek, make infiltration improvements to the sewer main, and have a redundant water transmission main from the well field.

Severe Thunderstorms

The village's primary concerns related to severe thunderstorms include power outages, flooding, and hail damage. In May 2015, the village experienced a hailstorm which damaged roofs, siding, gutters, and the park shelter. Then in December 2019, a power surge shut down the sewer pumps. Critical facilities are insured against hail damage. The local planning team estimates that less than 1% of power lines are buried most of which go to streetlights. When coupled with hazardous trees located in the park and along streets, the risk of downed power lines is high. The village regularly trims and removes trees to help reduce this risk. Sterling would like to upgrade the telecom/communication at community facilities, build a new well, and work with the school district to purchase a backup power generator for the school.

Severe Winter Storms

During the winter of 2019, the village received a large volume of snow. Minimal damage occurred other than fallen tree limbs and blocked streets. No critical facilities have been damaged from past winter storms. The Village Superintendent and other staff are responsible for snow removal. Removal equipment includes a Bobcat, a dump truck, a pickup with a plow, and a salt spreader. The local planning team indicated that the dump truck needs to be replaced. To help mitigate the effects of severe winter storms, the village ensures that enough salt is on hand and educates the public to move vehicles off the streets. Improvements that village would like to make include

buried underground power upgrades, a generator for the wellfield, and a generator for the community center.

Tornadoes and High Winds

No tornadoes have impacted the village, but in September 2019 high winds knocked down trees in the park. There is one tornado siren located in the middle of the community which can be activated by county or local officials at the fire hall. Johnson County Emergency Management also offers text alerts for individuals signed up for the program. There are no certified safe rooms, but the village is currently looking at putting a safe room at the community center. Individuals seeking safe shelter can use the church basement, home basements, or the Village Office basement. In the event of a disaster, mutual aid agreements are in place with NPPD, Tecumseh Fire Department, and Burr Fire Department.

Governance

The Village of Sterling is governed by a five-member village board; other governmental offices and departments are listed below. The community government will oversee the implementation of hazard mitigation projects.

- Clerk/Treasurer
- Attorney
- Utility Superintendent
- Fire Department
- Zoning
- Parks & Recreation
- Engineer
- Street Commission
- Water & Wastewater Commission

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.

Table SRL.5: 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	No
	National Flood Insurance Program	Yes

Section Seven | Village of Sterling Profile

Survey Components/Subcomponents		Yes/No
	Community Rating System	No
	Other (if any)	-
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	Yes
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	-
	Fiscal Capability	Applied for grants in the past
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
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	Yes
	Other (if any)	-

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

Plan Integration

Sterling’s comprehensive plan was last updated in 2018 and is currently going through a slight revision. It contains goals aimed at safe growth, directs development away from the floodplain, directs development away from chemical storage facilities, directs development away from major transportation routes, encourages infill, encourages elevation of structures located in the floodplain, and encourages preservation of open space. The village plans on integrating the hazard mitigation plan with the comprehensive plan during the update process. The zoning ordinance was last updated in 2018, the floodplain regulations are currently being updated, and the subdivision regulations were last updated in 2001. These documents discourage development in the floodplain, encourage maintaining open space in the floodplain, discourage development near chemical storage sites, discourage development along major transportation routes, include the ability to implement water restrictions, and restrict the subdivision of land within the floodplain. Sterling is also an annex to the 2018 Johnson County Local Emergency Operations Plan. It contains information regarding warning, incident command and field response, law enforcement, emergency medical services, public works, emergency operations center, emergency public information, sheltering, resources, damage assessment, health and human services, public health, and financial accountability. No other examples of plan integration were identified. The community will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Above Ground Stormwater System and Drainage Improvements
Description	Stormwater systems comprising of ditches, culverts, or drainage ponds can be used to convey runoff. Undersized systems can contribute to localized flooding. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance, reducing the potential for flooding.
Hazard(s) Addressed	Flooding
Estimated Cost	\$500,000
Funding	Bonds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk, Board Chairman
Status	New Action. Not Started.

Mitigation Action	Acquire Identification Resources
Description	Provide the opportunity to purchase and have available the most current Emergency Response Guidebook. This guidebook outlines emergency protocol and visually identifies hazardous materials labels. This would aid in the identification of which chemicals were being transported or stored, to further informed action on the part of the observer and responders.
Hazard(s) Addressed	Chemical and Radiological Spills
Estimated Cost	\$25+
Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Clerk
Status	New Action. Not Started.

Mitigation Action	Backup Records
Description	Develop protocol for backing up critical records onto a portable storage device or service. Maintain routine backup of records.
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk
Status	New Action. Not Started.

Mitigation Action	Bank Stabilization
Description	Stabilize banks along streams and rivers. This may include, but is not limited to: reducing bank slope, addition of riprap, installation of erosion control materials/fabrics.
Hazard(s) Addressed	Flooding
Estimated Cost	\$500,000
Funding	Bonds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk, Board Chairman
Status	New Action. Not Started.

Mitigation Action	Bury Power and Service Lines
Description	Work with local Public Power Districts or electric department to identify vulnerable transmission and distribution lines and plan to bury lines undergrounds or retrofit existing structures to be less vulnerable to storm events. Electrical utilities should be required to use underground construction methods where possible for future installation of power lines. The village would like power lines buried to the village office.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
Estimated Cost	Varies
Funding	Bonds
Timeline	5+ Years
Priority	Low
Lead Agency	Clerk, Board Chairman
Status	New Action. Not Started.

Mitigation Action	Channel and Bridge Improvements
Description	Implement channel and bridge improvements to increase channel conveyance and decrease the base flood elevations.
Hazard(s) Addressed	Flooding
Estimated Cost	\$500,000
Funding	Bonds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk, Board Chairman
Status	New Action. Not Started.

Mitigation Action	Community Rating System
Description	Participation in the CRS as part of the NFIP can provide an opportunity for the community to undertake a number of projects and activities designed to increase flooding mitigation efforts. Maintaining status as a CRS community can reduce flood insurance premiums.
Hazard(s) Addressed	Flooding
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	2-5 Years
Priority	High
Lead Agency	Clerk, Board Chairman
Status	New Action. Not Started.

Mitigation Action	Designated Snow Routes
Description	During winter events, the community will have designated snow routes for the community to use.
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk, Utility Superintendent
Status	New Action. Not Started.

Mitigation Action	Drainage Study / Stormwater Master Plan
Description	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Hazard(s) Addressed	Flooding
Estimated Cost	\$50,000
Funding	Bonds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk, Board Chairman
Status	New Action. Not Started.

Mitigation Action	Education Program for Chemical Releases
Description	Develop education program to inform residents of risks related to chemical releases (including direct outreach to residents living in the immediate vicinity of chemical storage sites).
Hazard(s) Addressed	Chemical and Radiological Spills
Estimated Cost	\$3,000+
Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Clerk
Status	New Action. Not Started.

Mitigation Action	Emergency Exercise: Hazardous Spill
Description	Utilize exercise to prepare for potential explosions or hazardous spills. Ensure that nearby business and residents have appropriate plans in place.
Hazard(s) Addressed	Chemical and Radiological Spills
Estimated Cost	\$5,000+
Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Clerk, Fire Department
Status	New Action. Not Started.

Mitigation Action	Improve and Revise Snow/Ice Removal Program
Description	As needed, continue to revise and improve the snow and ice removal program for streets. Revisions should address situations such as plowing snow, ice removal, parking during snow and ice removal, removal of associated storm debris, and rescuing those stranded during winter weather events.
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk, Utility Superintendent
Status	New Action. Not Started.

Mitigation Action	Land Use Regulations (Chemical and Radiological Spills)
Description	Develop land use ordinances and regulations to prevent storage of chemicals near residential developments, within the floodplain, within the immediate vicinity of critical facilities, or in other hazard-prone areas.
Hazard(s) Addressed	Chemical and Radiological Spills
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	5+ Years
Priority	Low
Lead Agency	Clerk
Status	New Action. Not Started.

Mitigation Action	Parcel Level Evaluation of Floodprone Properties
Description	Conduct a study examining parcels located in floodprone areas and identify mitigation measures that can reduce future impacts.
Hazard(s) Addressed	Flooding
Estimated Cost	\$50,000
Funding	Bonds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk
Status	New Action. Not Started.

Mitigation Action	Safe Rooms and Storm Shelters
Description	The village is looking at putting a safe room at the community center.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	\$2,000,000
Funding	Bonds
Timeline	5+ Years
Priority	Low
Lead Agency	Clerk, Board Chairman
Status	New Action. Not Started.

Mitigation Action	Shelter In Place
Description	Provide shelter in place training to facilities housing vulnerable populations (nursing homes, childcare facilities, schools, etc.).
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	5+ Years
Priority	Low
Lead Agency	Clerk
Status	New Action. Not Started.

Mitigation Action	Storm Shelter Identification
Description	Identify any existing private or public storm shelters. The community building and church can both be used as a sheltering location.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	2-5 Years
Priority	Medium
Lead Agency	Clerk
Status	New Action. Not Started.

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Mitigation Action	Transportation Drainage Improvements
Description	Make improvements to roadways and drainage ways to prevent damage to key transportation routes. Utilize geosynthetic products for repair and mitigation of damages. Consider covering of road washouts, culvert sizing headwalls, steep banks, slides, in-road springs, roadway edge armoring, low water crossings, pothole grading, weak foundations, gravel road maintenance, ditch linings, on steep grades, erosion protection, etc.
Hazard(s) Addressed	Flooding
Estimated Cost	\$500,000
Funding	Bonds
Timeline	5+ Years
Priority	Low
Lead Agency	Clerk
Status	New Action. Not Started.

Community Profile

City of Tecumseh

**Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update**

2020

Local Planning Team

Table TCM.1: City of Tecumseh Local Planning Team

Name	Title	Jurisdiction
Doug Goracke	City Utility Foreman	City of Tecumseh
Bruce Delluge	Attorney / City Zoning	City of Tecumseh
Janelle Moran	City Clerk / Floodplain Administrator	City of Tecumseh
Mary Kent	Interim Administrator	Johnson County Hospital
Jennifer Schel	Employee	Johnson County Hospital

Location and Geography

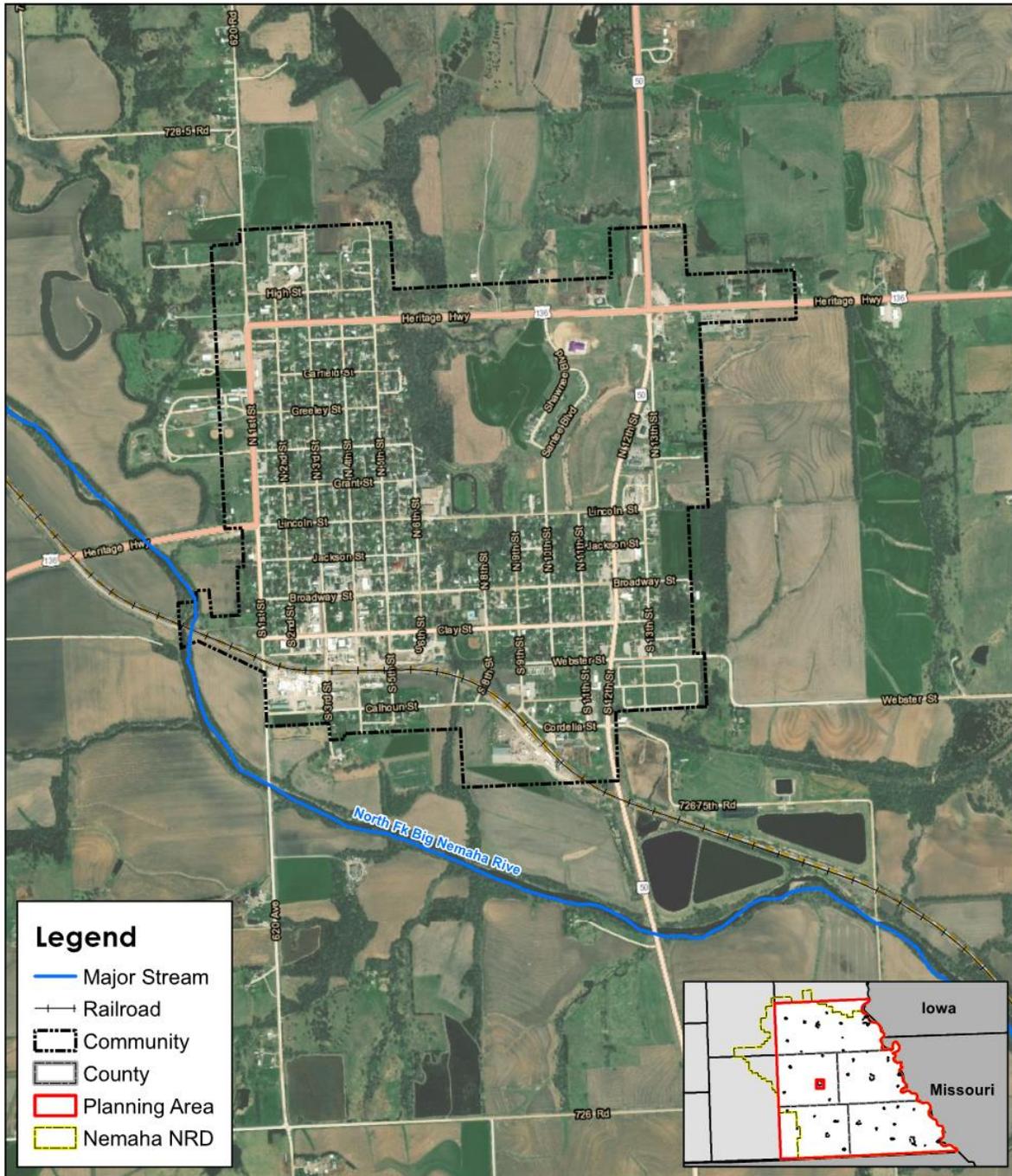
The City of Tecumseh is in central Johnson County and covers an area of 1.5 square miles. The Big Nemaha River is located on the western and southern borders of the community. The Tecumseh State Correctional Institution is located one mile north of the city.

Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community and areas more at risk of transportation incidents. Tecumseh’s major transportation corridors are US Highway 136 and State Highway 50. Highway 136 has an average of 2,290 vehicles a day and Highway 50 has an average of 3,160 vehicles a day.²⁹ The city has one Burlington Northern Santa Fe Railway line traveling the community’s southern edge. Transportation routes of most concern are Highway 50 and 136, old Highway 50, and the rail line. Chemicals coming from Cooper Nuclear Plant and agricultural chemicals are transported on all the routes other than old Highway 50. Old Highway 50 is a concern due to the high amount of truck traffic. No areas of the city would be difficult to evacuate, but notices should be issued in all languages spoken in Tecumseh to aid understanding.

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

Figure TCM.1: City of Tecumseh



Created By: EH
 Date: 11/26/2019
 Software: ArcGIS 10.4.1
 File: Community_PlanningArea.mxd

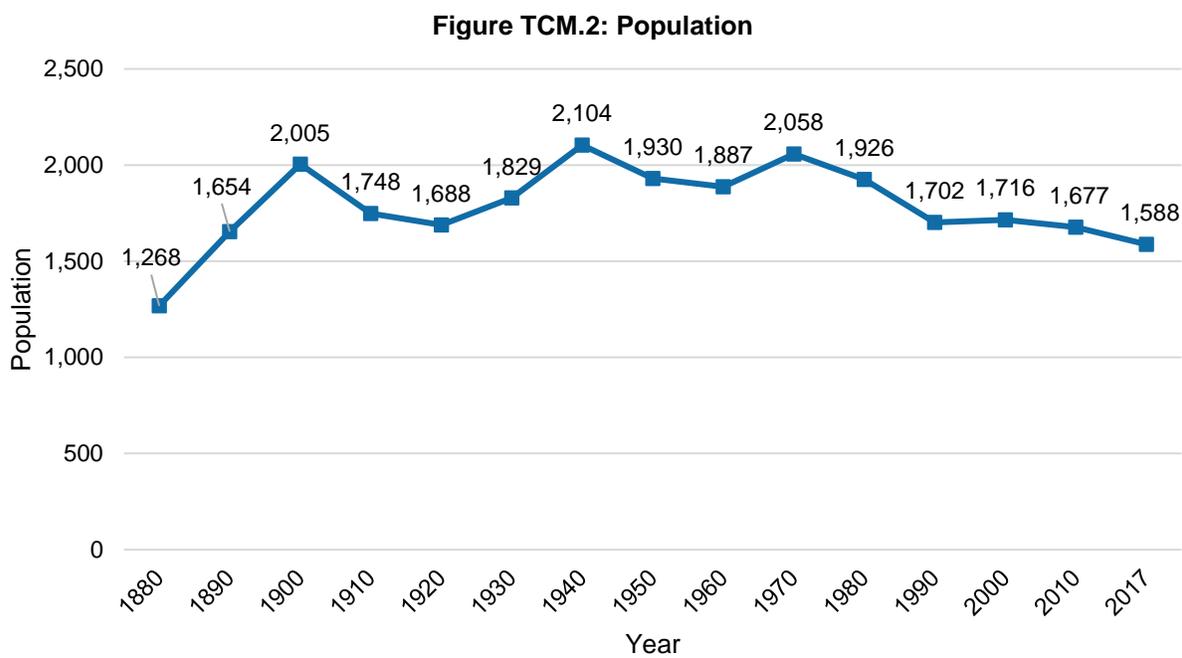
This map was prepared using information from record drawings supplied by JED and/or other applicable city, county, federal, or public or private entities. JED does not guarantee the accuracy of this map or the information used to prepare this map. This is not a scaled plot.

**City of Tecumseh
 Planning Area**
 Nemaha NRD
 2020 Hazard Mitigation Plan

A north arrow is located above the scale bar. The scale bar shows 0, 0.15, and 0.3 miles. The logo for JED Consulting Group Inc. is on the right, featuring the letters 'je' in a stylized font with a red square above the 'e'.

Demographics

The City of Tecumseh’s population has been decreasing since 2000 and was at 1,588 people in 2017. A decreasing population could mean a declining tax base, which may make funding mitigation projects more difficult. Tecumseh’s population accounted for 30.5% of Johnson County’s population in 2017.³⁰



Source: U.S. Census Bureau, 1880 – 2017

The young, elderly, minority, and low-income populations may be more vulnerable to certain hazards than other groups. In comparison to the county, Tecumseh’s population was:

- **Older.** The median age of Tecumseh was 45.1 years old in 2017, compared with Johnson County’s median of 41.1 years. Tecumseh’s population grew slightly younger since 2010, when the median age was 45.3 years old.³⁰
- **More ethnically diverse.** Since 2010, Tecumseh grew more ethnically diverse. In 2010, 15.9% of Tecumseh’s population was Hispanic or Latino. By 2017, about 18.8% was Hispanic or Latino. During that time, the Hispanic population in the county grew from 8.7% in 2010 to 9.9% in 2017.³⁰
- **More likely to be below the federal poverty line.** The poverty rate in the City of Tecumseh (12.5% of people living below the federal poverty line) was higher than the county’s poverty rate (10.1%) in 2017.³¹

30 United States Census Bureau. “American Fact Finder: DP05: Demographic and Housing Estimates.” [database file]. <https://factfinder.census.gov/>.

31 United States Census Bureau. “American Fact Finder: DP03: Selected Economic Characteristics.” [database file]. <https://factfinder.census.gov/>.

Employment and Economics

The City of Tecumseh's economic base is a mixture of industries. In comparison to Johnson County, Tecumseh's economy had:

- **Similar mix of industries.** Tecumseh's major employment sectors, accounting for 10% or more of employment each, were: manufacturing, retail trade, education, and public administration.³¹
- **Similar per capita income.** Tecumseh's per capita income in 2017 (\$22,721) was about \$300 higher than the county (\$22,398).³¹
- **Fewer long-distance commuters.** About 78.4% of workers in Tecumseh commuted for fewer than 15 minutes, compared with about 48.2% of workers in Johnson County. About 10.8% of workers in Tecumseh commuted 30 minutes or more to work, compared to about 29.7% of county workers.³²

Major Employers

Major employers in the community include Tyson Smart Chicken, TSCI, the hospital, assisted living, and Topps Mechanical. The local planning team estimated that around 10% of residents commute to other communities like Nebraska City and Beatrice for employment.

Housing

In comparison to Johnson County, the City of Tecumseh's housing stock was:³³

- **Older.** Tecumseh had a larger share of housing built prior to 1970 than the county (65.2% compared to 62.4%).
- **Less mobile and manufactured housing.** The City of Tecumseh had a smaller share of mobile and manufactured housing (5.8%) compared to the county (7.1%).
- **More renter-occupied.** About 36.2% of occupied housing units in Tecumseh were renter-occupied compared with 26.1% of occupied housing in Johnson County.
- **Similarly occupied.** Approximately 12.7% of Tecumseh's housing units were vacant compared to 13.5% of units in Johnson County.

The age of housing may indicate which housing units were built prior to the development of state building codes. Homes built within a flood hazard area before the adoption of their community's Flood Rate Insurance Map (FIRM) are not likely to be built above the 1% annual chance floodplain. Older and vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms if those homes are not anchored correctly. Mobile homes in Tecumseh are located on the southeast portion of the city. 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 renter's insurance or flood insurance, or to know their risks to flooding and other hazards. A significant number of unoccupied housing suggests that future development may be unlikely to occur in the area.

32 United States Census Bureau. "American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. <https://factfinder.census.gov/>.

33 United States Census Bureau. "American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

Future Development Trends

In the past five years, the city tore down over 50 houses and nine new houses were built. A new pool was constructed, but its grand opening was delayed because of the COVID-19 pandemic. According to the latest American Community Survey estimates, Tecumseh’s population is declining. The local planning team indicated that this was due to an aging population and no large communities nearby for employment. Municipal funds for any new capital projects are very limited. Currently a large portion of funds is going to the new swimming pool, two new wells, upgrading cooling towers at the power plant, downtown revitalization, and a new utility reading system. Funds have remained stable over recent years. In the next five years, a housing development on the north side of the community will continue to add houses. There is the potential for rental property additions as well. All new construction of homes are being built out of the floodplain. NioCorp located six miles from Tecumseh will finish construction in a year or two.

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, paved lots, roads, etc.) at the parcel level. The data did not contain the number of structures on each parcel. The parcel data was analyzed to determine the number and valuation of property improvements located in the 1% annual chance floodplain. A summary of the results of this analysis is provided in the following table.

Table TCM.2: Parcel Improvements and Value in the Floodplain

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Percentage of Improvements in Floodplain	Value of Improvements in Floodplain
883	\$ 50,481,784	80	9.06%	\$ 6,566,653

Source: GIS Workshop/Johnson County Assessor, 2019³⁴

³⁴ GIS Workshop/Johnson County Assessor. 2019. [Personal correspondence].

Figure TCM.3: Future Land Use Map

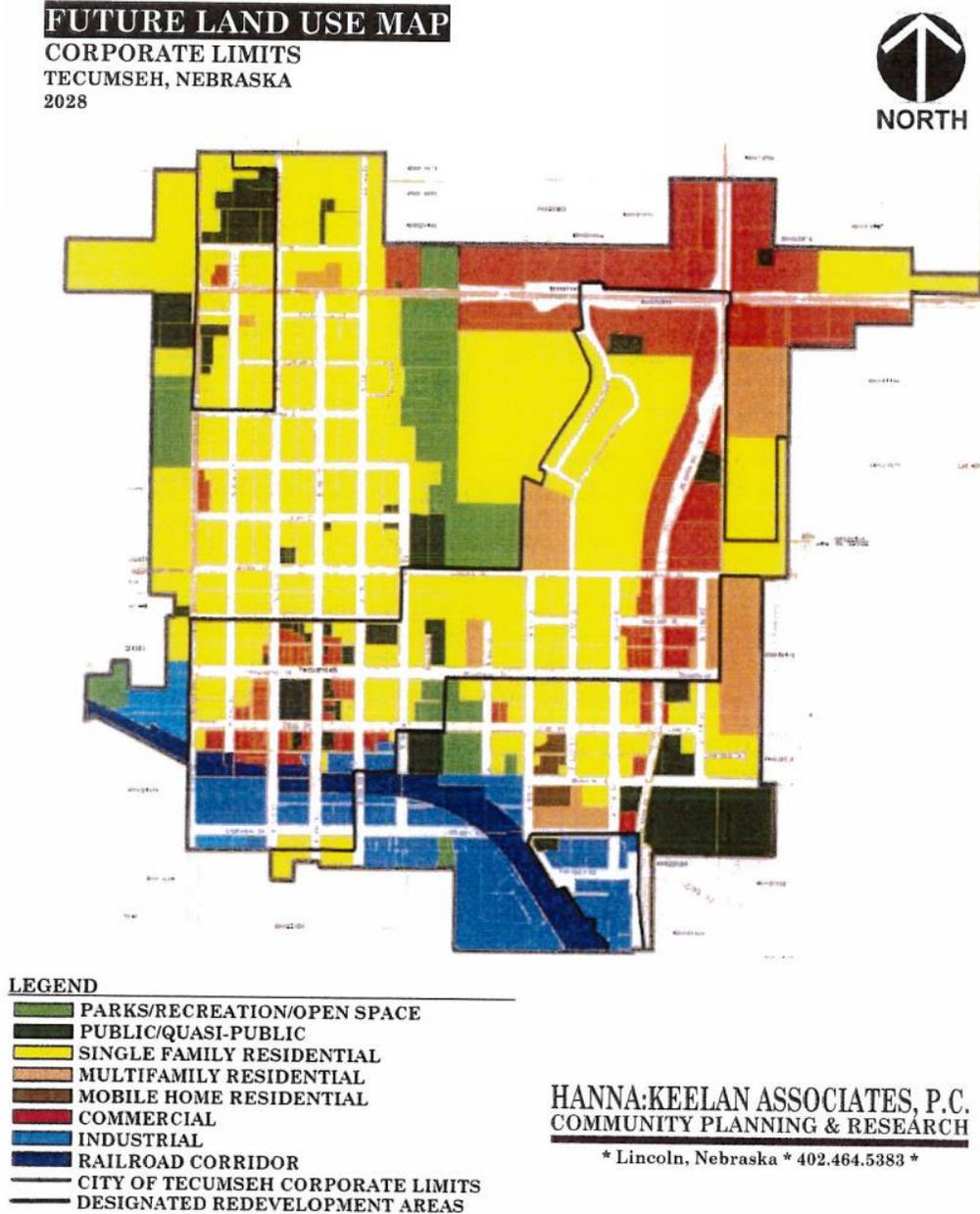


ILLUSTRATION 4.5

Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of three chemical storage sites in Tecumseh. The table below lists the name and location of the sites and whether they are in the floodplain.

Table TCM.3: Chemical Storage Fixed Sites

Facility Name	Address	In Floodplain (Y/N)
MBA Poultry	333 3 rd Street	Y
Midwest Farmers Cooperative	600 S 10 th Street	N
CenturyLink Amp Facility	72884 Highway 50	N

Source: Nebraska Department of Environment and Energy³⁵

Critical Facilities

Critical facilities were identified during the 2015 planning process and revised for this plan update. The planning team identified critical facilities necessary for the City of Tecumseh's disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the community.

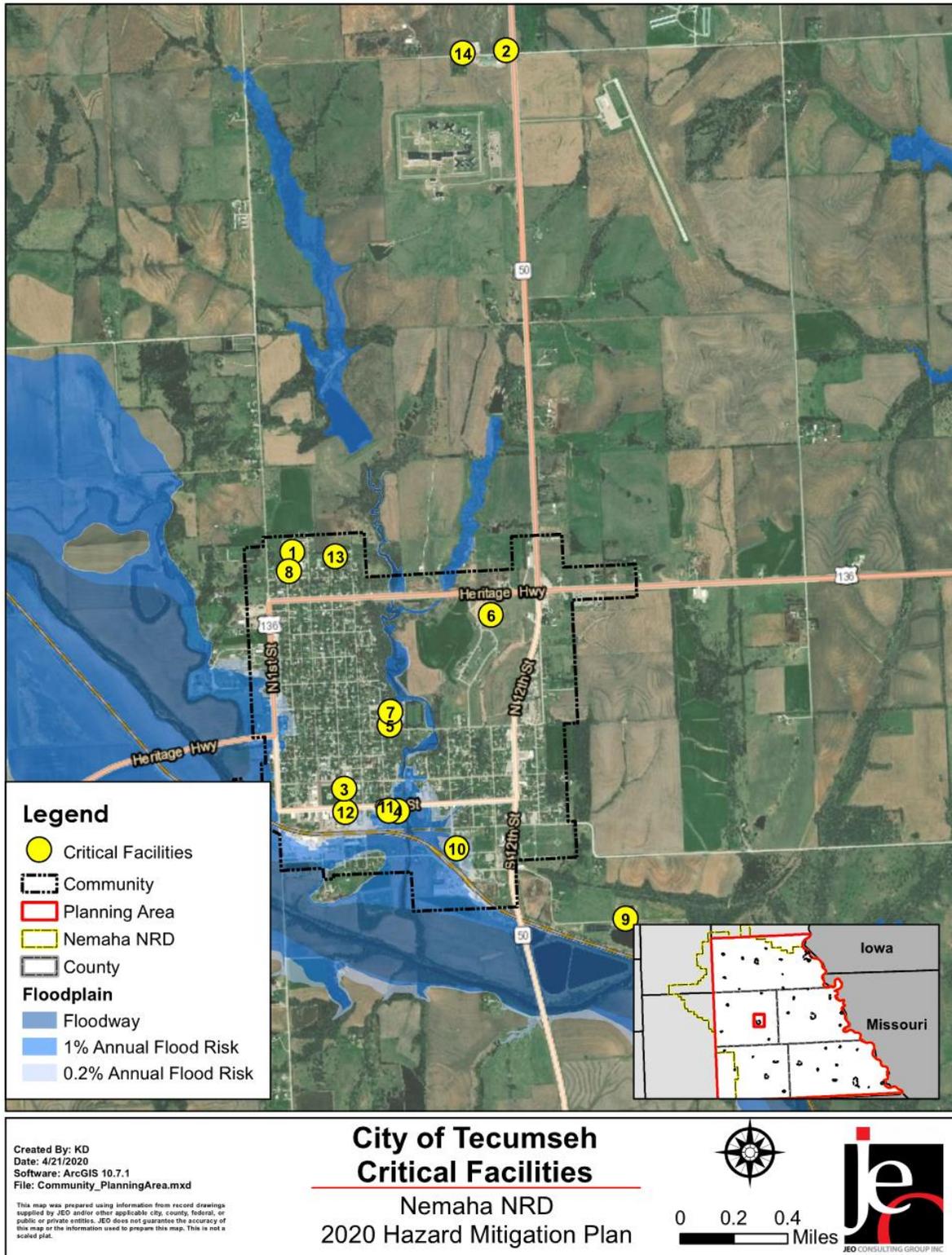
Table TCM.4: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	Located in Floodplain (Y/N)
1	Belle Terrace	N	Y	N
2	Booster Pumping Station	N	Y	N
3	City Hall	N	N	N
4	City Shop	N	Y	N
5	Elementary School	N	N	N
6	Fire Station	N	N	N
7	High School	Y	N	N
8	Hospital	N	Y	N
9	Lagoons and WWTP	N	Y	Y (1%)
10	Lift Station	N	Y	Y (0.2%)
11	Power Plant	N	Y	N
12	Sheriff's Office	N	Y	N
13	Water Tower #1 and Water Tower #2	N	N	N
14	Water Tower #3	N	N	N
15*	Wells (5 Total)	N	Y	N

*Not Mapped. Located approximately two miles north of the community

35 Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed November 2019. <https://deq-iis.ne.gov/tier2/tier2Download.html>.

Figure TCM.4: Critical Facilities



Historical Occurrences

See the Johnson County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the community. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see Section Four: Risk Assessment.

Dam Failure

Although not identified as a top hazard of concern by the local planning team, there is a high hazard dam located near the city. The figure below shows the location of the Middle Big Nemaha 96 dam. If the dam were to fail it would likely flood major portions of the community. Dam inundation maps are not shown here due to security issues. There have been no historic dam failures impacting the city.

Drought and Extreme Heat

Tecumseh's primary concern related to drought and extreme heat is the potential impacts to the city's wells and lack of water. Specifically, Tecumseh is worried about irrigation wells using too much water during a drought and impacting the city's wells. Tecumseh has a high population as well as the prison which rely on the city providing water. In 2012 the city experienced a major drop in water levels at all five wells and had to shut down one of the wells so it would not be damaged. The community does not have any formal drought triggers but does monitor water levels daily. In the past, the city has asked heavy water users to reduce consumption as much as possible. This has been done five or six times in the past 30 years. The local planning team indicated that businesses and residents do a really good job of reducing consumption when asked.

As part of the HMP process, a qualitative analysis of the public water supply's vulnerability to drought was conducted. Figure TCM.6 shows the location of the city's public water supply wells relative to potential drought vulnerability. Further analysis would need to be done to determine if additional wells are needed and where to best locate them. Additional information regarding the qualitative analysis can be found in the Drought Profile within *Section 4: Risk Assessment*.

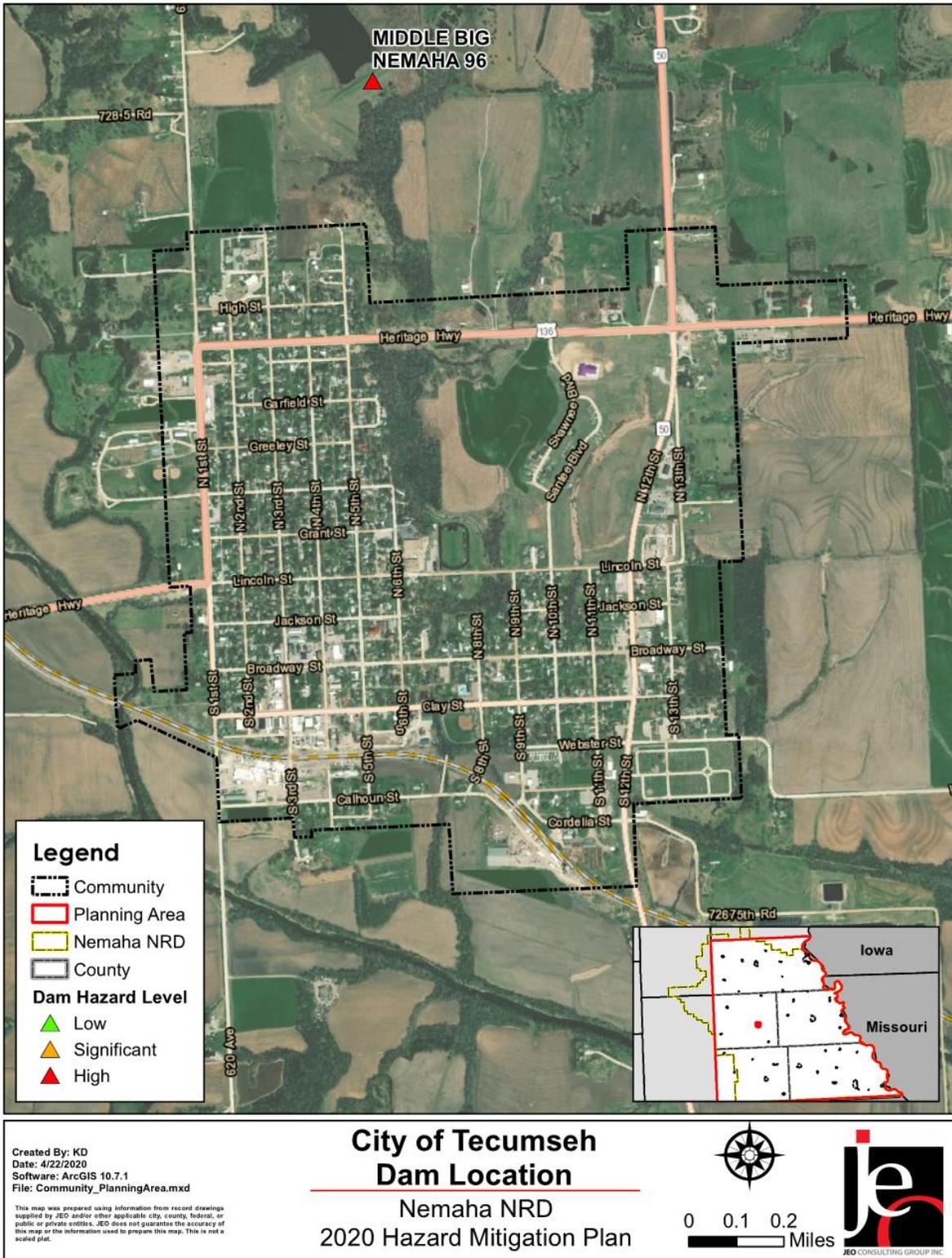
Severe Thunderstorms

In 2017 the city experienced a severe thunderstorm which damaged some structures but mostly impacted trees. Hail in 2018 damaged city hall, the power plant, and wells. Insurance covered most of the damages. In addition, in 2010 the city received FEMA assistance after a severe thunderstorm caused damage throughout the community. Power outages are typical due to downed trees and lightning strikes. In the event of power loss, city hall has a backup system for critical records.

Severe Winter Storms

The last major snowstorm to cause damage occurred in 2009. Snow removal is generally limited due to the high costs of equipment and labor. There are hazardous trees located throughout the community that need to be trimmed. Previous winter storms have damaged trees causing power outages. Power is generated in town and OPPD is able to supply power if the city experiences a prolonged power outage. Once, however, power to the well field was out for three days due OPPD outage. The city was able to use portable generators to keep them operational during that time.

Figure TCM.5: Dam Location



Tornadoes and High Winds

The city has not experienced a tornado event in town. Several have occurred near the community but have gone around it. No damages have been reported from these events. There are no safe rooms in Tecumseh, but the community building is solid concrete and is available for shelter to residents that need it. If a disaster were to occur, the city has mutual aid agreements in place with the county and surrounding communities.

Governance

The City of Tecumseh is governed by a five-member city council; other governmental offices and departments are listed below. The community government will oversee the implementation of hazard mitigation projects.

- Clerk/Treasurer
- Attorney
- Mayor
- Utility Foreman
- Sheriff
- Fire Department
- Sewage Plant Operator
- Parks & Recreation
- Public Works
- Economic Developer

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.

Table TCM.5: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	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)	-	
Administrative &	Planning Commission	Yes
	Floodplain Administration	Yes

Section Seven | City of Tecumseh Profile

Survey Components/Subcomponents		Yes/No
Technical Capability	GIS Capabilities	Yes
	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	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
	Electric Service Fees	Yes
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	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)	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 needed to implement mitigation projects	Limited
Staff/expertise to implement projects	Moderate
Community support to implement projects	Moderate
Time to devote to hazard mitigation	Moderate

Plan Integration

Tecumseh has several plans which relate or mention hazards and hazard mitigation. Specific plans are discussed below.

Comprehensive Plan

Tecumseh's comprehensive plan was last updated in November 2018. It contains goals aimed at safe growth, directs development away from the floodplain, directs development away from chemical storage facilities, limits density in known hazardous areas, encourages infill, encourages clustering of development, and encourage preservation of open space. There are currently no plans to update the comprehensive plan.

Zoning Ordinance, Floodplain Regulations, and Subdivision Regulations

The city's zoning ordinance was last updated in 2020, the floodplain regulations were updated in 1989, and the subdivision regulations were updated in 2001. However, minor text changes are done several times a year. These documents prohibit new development in the floodplain, encourage open space in the floodplain, limit development in the extraterritorial jurisdiction, and restrict the subdivision of land within the floodplain.

Building Codes

The city adopted the Uniform Building Codes required by the State of Nebraska in 2020. The codes require elevation of structures in the floodplain, require mechanical systems to be elevated for structures in the floodplain, outline sump pump installation, and require stormwater detention for commercial structures.

Capital Improvements Plan

Tecumseh updates its capital improvements plan on an annual basis. Projects in the plan include installing water meters, regular maintenance for drainage structures, widening roadways, updating the electrical distribution system, burying power lines, installing new municipal wells, snow removal equipment, well rehabilitation, standpipe maintenance, and improving the existing water treatment facility.

Local Emergency Operations Plan

The city is an annex in the 2018 Johnson County Local Emergency Operations Plan. It contains information regarding basic disaster operations, incident command, field operations, first responders, and emergency operation center. This plan is regularly updated by Johnson County Emergency Management.

In addition to those plans, the city also has a wellhead protection plan, housing study, and downtown revitalization study. No other examples of plan integration were identified. The community will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates. Specifically, the community plans to update the Capital Improvements Plan annually and the goals, objectives, and mitigation actions of the HMP should be integrated in the update.

Mitigation Strategy

Completed Mitigation Actions

Mitigation Action	Community Shelter
Hazard(s) Addressed	All Hazards
Status	The community building was upgraded in 2015 using CDBG and general funds.

Mitigation Action	Construct a New Fire Hall
Hazard(s) Addressed	All Hazards
Status	A new fire hall was constructed in 2018 using a bond.

Continued and New Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Provide a portable or stationary source of backup power to redundant power supplies municipal wells, lift stations, and other critical facilities and shelters. Generators are needed at the wells and power plant.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	\$150,000+
Funding	EDA Grant, Utility Rates
Timeline	1 Year
Priority	High
Lead Agency	Utility Foreman
Status	Planning Stage. Locations for generators have been determined.

Mitigation Action	Bank Stabilization
Description	Bank degradation is occurring along many rivers and creeks. Stabilization improvements including rock rip rap vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Tributary in public park cause erosion and bank destabilization in the city. Bank stabilization is also needed from Town Branch down to Clay Street.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies depending on project
Funding	General Fund, Local Option Sales Tax
Timeline	2-5 Years
Priority	Medium
Lead Agency	Utility Foreman
Status	Not Started.

Mitigation Action	Bury Power and Service Lines
Description	Work with Omaha Public Power District to identify vulnerable transmission and distribution lines and plan to bury lines underground or retrofit existing structures/infrastructure to be less vulnerable to storm events.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
Estimated Cost	\$800,000 per mile
Funding	Utility Rates
Timeline	Ongoing
Priority	Medium
Lead Agency	Utility Foreman
Status	Ongoing. All new construction/maintenance is buried lines.

Mitigation Action	Civil Service Improvements
Description	Improve emergency rescue and response equipment and facilities by providing additional or updating existing emergency response equipment. This could include fire trucks, ATVs, water tanks/truck, snow removal equipment, etc. This would also include developing backup systems for emergency vehicles and identifying and training additional personnel for emergency response.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies
Funding	Utility Rates
Timeline	Ongoing
Priority	High
Lead Agency	Utility Foreman
Status	Ongoing. Equipment is purchased as needed.

Mitigation Action	Drainage Study/Stormwater Master Plan
Description	Drainage studies can be conducted to identify and prioritize improvements to address site specific localized flooding/drainage problems. Will install storm water system and replace water mains in the downtown square.
Hazard(s) Addressed	Flooding
Estimated Cost	\$10,000 - \$100,000+
Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Engineer
Status	Not Started.

Mitigation Action	Ensure Adequate Water Supply for Health and Safety
Description	Work with the Nebraska Department of Health and Human Services to secure revolving loan funding for supplementing the jurisdiction's water supply with an additional source; determine a method to have citizens voluntarily reduce demand for water during times of drought. This may involve instituting a moratorium on unnecessary water usage and implementing a fine/penalty system for those found in violation.
Hazard(s) Addressed	Drought and Extreme Heat
Estimated Cost	\$1,300,000
Funding	Rates, Bonds, State Revolving Fund
Timeline	1-3 Years
Priority	High
Lead Agency	Public Works
Status	New Action. Not Started.

Mitigation Action	First Aid Training
Description	Promote first aid training for all residents.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$500+
Funding	General Fund, Staff Time
Timeline	Ongoing
Priority	Medium
Lead Agency	Utility Foreman, City Clerk
Status	Ongoing. First aid classes are regularly held in the city.

Mitigation Action	Hail-Resistant Building Materials
Description	Promote the use of hail-resistant building materials in any new construction or remodel.
Hazard(s) Addressed	Severe Thunderstorms
Estimated Cost	Staff Time
Funding	General Fund, Staff Time
Timeline	Ongoing
Priority	Medium
Lead Agency	Utility Foreman, City Clerk
Status	Ongoing. Tin is used on wells and used to replace switchgears.

Mitigation Action	Hazardous Tree Removal
Description	Identify and remove hazardous limbs and/or trees.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
Estimated Cost	\$100 per tree
Funding	General Fund
Timeline	Ongoing
Priority	Medium
Lead Agency	Utility Foreman
Status	Ongoing. As trees are identified, they are removed if possible.

Mitigation Action	Install Vehicular Barriers
Description	Install vehicular barriers to protect critical facilities and key infrastructure where possible.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$500 - \$25,000
Funding	General Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Utility Foreman, City Clerk
Status	Not Started.

Mitigation Action	Stormwater System and Drainage Improvements
Description	Undersized systems can contribute to localized flooding. Stormwater system improvements, such as pipe upsizing and additional inlets, installation of retention and detention facilities can be implemented to decrease runoff rates while also decrease the need for other stormwater system improvements.
Hazard(s) Addressed	Flooding
Estimated Cost	\$100,000+
Funding	General Fund
Timeline	Ongoing
Priority	Low
Lead Agency	Engineer, Maintenance
Status	Ongoing. Improvements are made as needed.

Removed Mitigation Actions

Mitigation Action	Comprehensive City Disaster/Emergency Response Plan
Hazard(s) Addressed	All Hazards
Reason for Removal	The city is covered by the county local emergency operations plan.

Mitigation Action	Develop Continuity Plans
Hazard(s) Addressed	All Hazards
Reason for Removal	This is covered in the county local emergency operations plan.

Mitigation Action	Develop Database of Vulnerable Populations
Hazard(s) Addressed	All Hazards
Reason for Removal	This action would be better handled by the county emergency manager.

Mitigation Action	Floodplain Regulations Enforcements
Hazard(s) Addressed	Flooding
Reason for Removal	The city currently has no plans to update their floodplain regulations. The city regularly reviews their regulations and ordinances and updates them as needed. Tecumseh will continue to enforce all local regulations.

Mitigation Action	Low Impact Development Best Practices
Hazard(s) Addressed	Flooding
Reason for Removal	The city would like to focus on other mitigation actions.

Mitigation Action	Participation in the National Flood Insurance Program (NFIP)
Hazard(s) Addressed	Flooding
Reason for Removal	While the city will continue to participate and maintain compliance in the NFIP, this project can be removed as it is considered an ongoing effort.

Mitigation Action	Public Awareness / Education
Hazard(s) Addressed	All Hazards
Reason for Removal	This action would be better handled by the county emergency manager.

Mitigation Action	Shelter in Place Education and Training
Hazard(s) Addressed	All Hazards
Reason for Removal	This action would be better handled by the county emergency manager.

Mitigation Action	Weather Radios
Hazard(s) Addressed	All Hazards
Reason for Removal	No longer needed as cell phones are used.

District Profile

Cook Fire District

Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table CFD.1: Cook Fire District Local Planning Team

Name	Title	Jurisdiction
Adam Badberg	Fire Chief	Cook Fire District

Location and Geography

The Cook Fire District covers approximately 56,480 acres in the northern portion of Johnson County and southern portion of Otoe County, including the Village of Cook and the Village of Burr. The fire district mainly addresses grass and wildfire in the region's rural area.

Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors and areas more at risk of transportation incidents. Nebraska State Highway 49A, 50, and S66E all travel through the fire district. State Highway 49A is traveled by a total annual average of 840 vehicles daily, 85 of which are trucks. State Highway 50 is traveled by a total annual average of 2,845 vehicles daily, 425 of which are trucks. State Highway S66E is traveled by a total annual average of 545 vehicles daily, 50 of which are trucks.³⁶ The transportation route of most concern is Highway 50 as a wide variety of chemicals are transported along it.

Demographics

See the Village of Cook, Village of Burr, Otoe County, and the Johnson County profiles for regional demographic information. The district serves approximately 600 people.

Future Development Trends

There have been no changes to the fire district in the last five years, and the local planning team does not anticipate any changes occurring over the next five years.

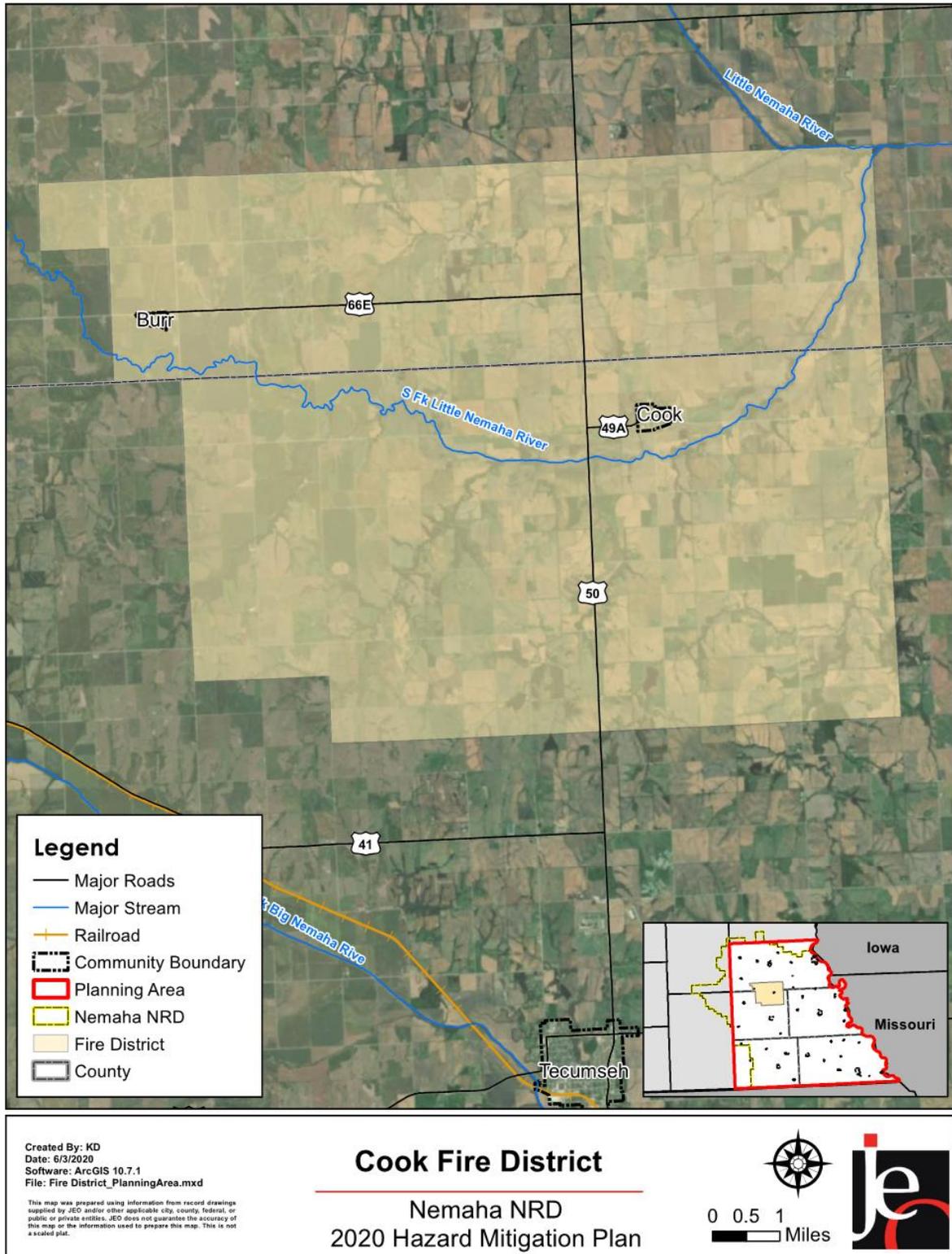
Critical Infrastructure

Chemical Storage Fixed Sites

Information on chemical storage sites can be found in the Village of Cook, Village of Burr, Otoe County, and Johnson County profiles. The largest fixed chemical site concern is a potential anhydrous ammonia leak at Frontier Co-op.

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

Figure CFD.1: Cook Fire District



Critical Facilities

The planning team identified critical facilities necessary for the fire district's disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the Cook Fire District.

Table CFD.2: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	Located in Floodplain (Y/N)
1	Cook Fire Hall	Y	N	N
2	Tornado Siren	N	N	N
3	Water Tower	N	N	N

Historical Occurrences

See the Johnson County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the district. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the district's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Dam Failure

The dam of most concern for the fire district is the Mittleberg Reservoir Dam located half a mile northwest of Cook. It has not failed in the past, but if it were to fail, the west side of Cook would be impacted. Evacuation of affected residents would occur with help from the fire district. An evacuation plan is discussed the Johnson County Emergency Operations Plan.

Drought and Extreme Heat

The frequency and severity of grass fire increases with drought and extreme heat. During past droughts the fire district noticed an increase of grassland and wildland fires. The Village of Cook has two wells and a 30,000-gallon water tower and water levels are checked on a daily basis. Voluntary and mandatory restrictions are also available if determined by the Cook Village Board. Water supplies have been sufficient for the fire district during past drought events. The fire district uses the University of Nebraska Drought Monitor and the National Weather Service to determine if drought is occurring. The Cook Rescue Squad is available to assist vulnerable populations who are at higher risk of illness during drought and extreme heat events.

Severe Winter Storms

Snow and ice storms, blizzards, cold temperatures, and winter storms occur on an almost annual basis in the district. Most common impacts are power outages and travel hazards. Snow removal is done by the Cook Village Superintendent and Johnson/Otoe County Roads Department. No critical facilities have been damaged during past severe winter storms. The Cook Fire District provides emergency response during storms.

Figure: CFD.2: Critical Facilities

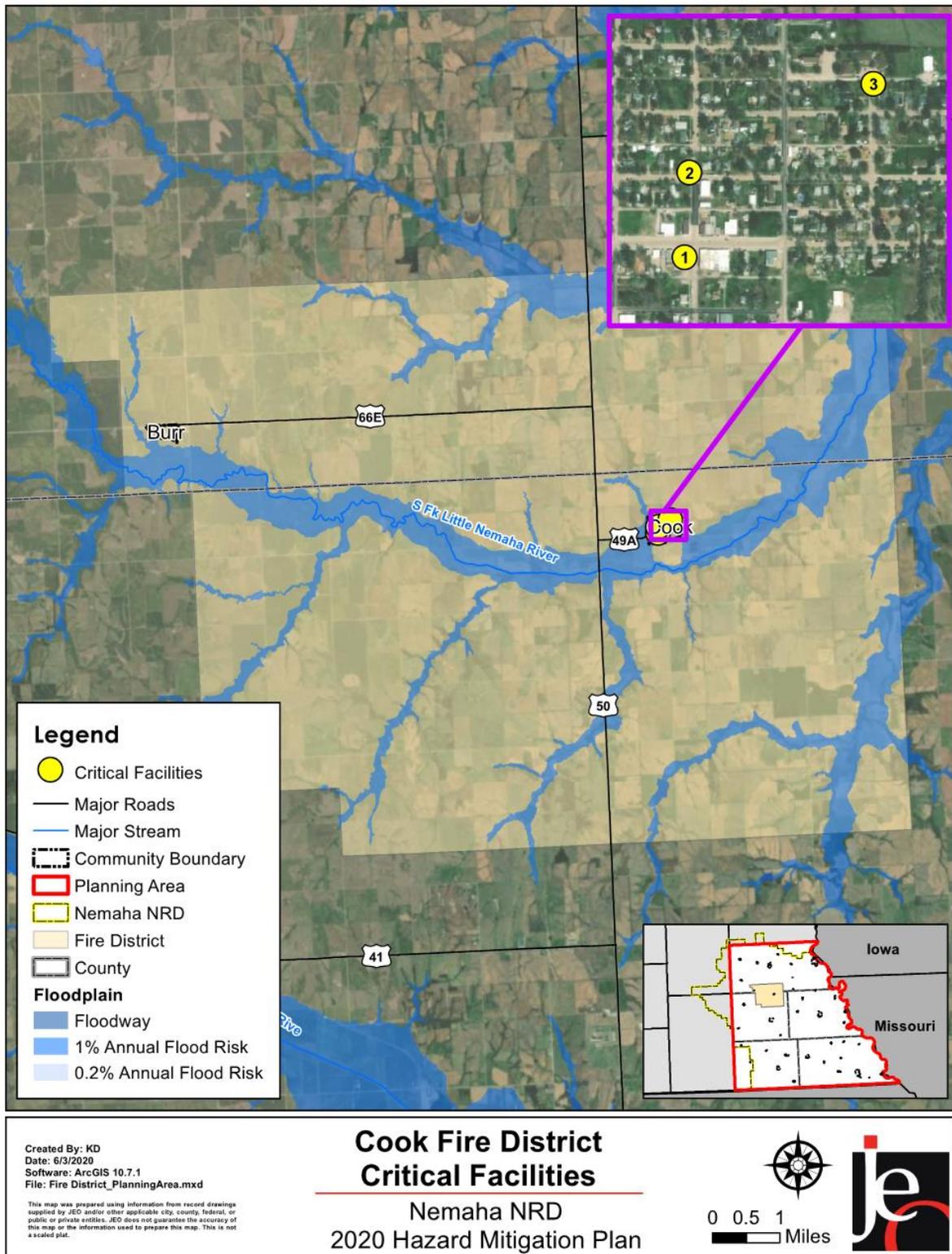
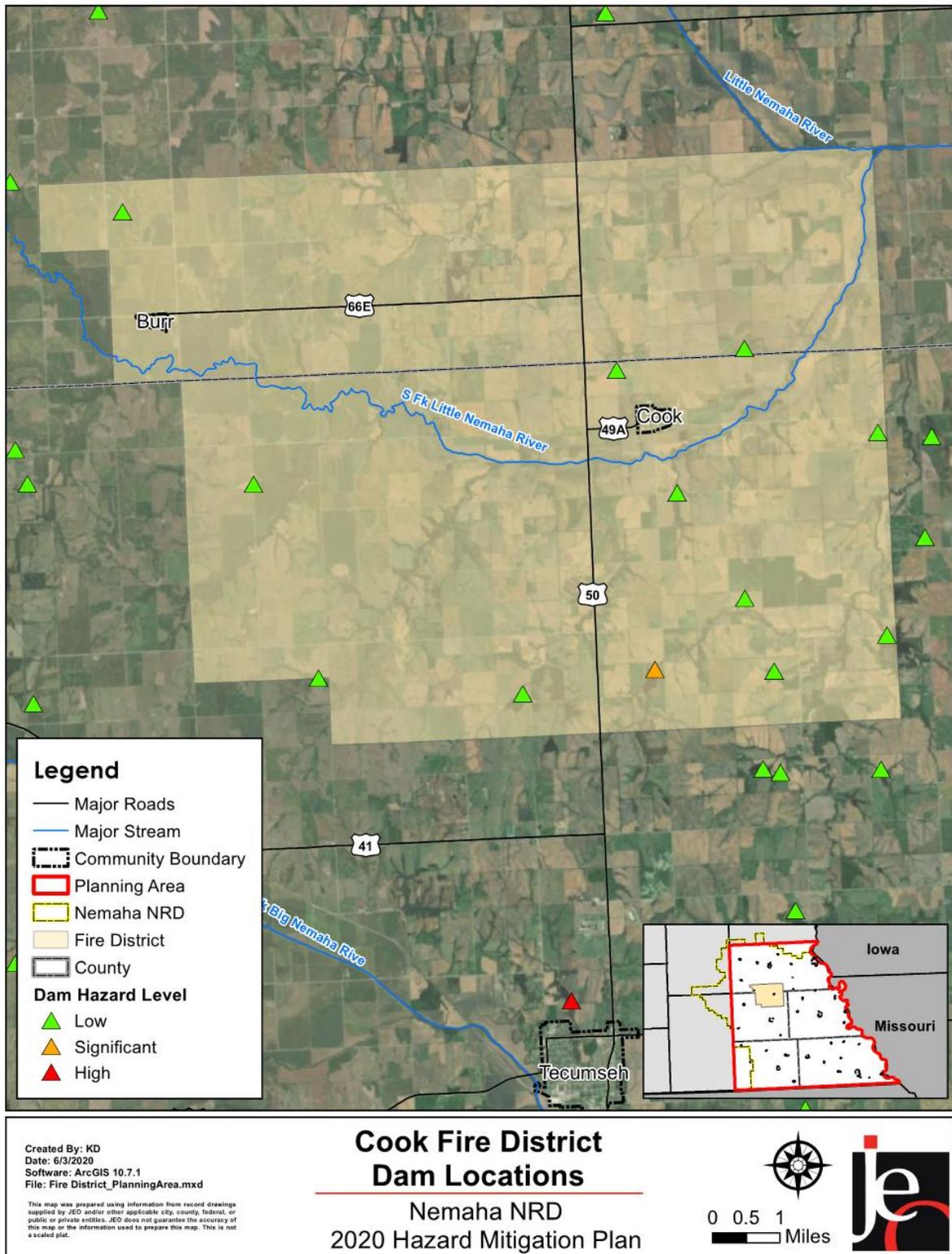


Figure CFD.3: Dam Locations



Tornadoes and High Winds

In 2012 a house and machine shed one mile north and one and a half miles west of Cook were destroyed by a tornado. No critical facilities have been damaged by past tornado or high wind events. In the event of a tornado in the village, the Cook Fire Hall can be used as a community shelter. NFIRS records are backed up on the National Database System; other important records are in paper form or kept on a computer. There is one tornado siren in Cook, and it is activated by a control box in the Cook Fire Hall. The County Emergency Manager sets up storm spotter training annually for fire district staff and volunteers. The public is also welcome to attend those trainings. In the event of a disaster, the district has mutual aid agreements in place with the Southeast Nebraska Mutual Aid Association, Burr, Talmage, and Syracuse.

Wildfire

The priority of the fire district is to contain and extinguish grass and wildfires with minimal loss to property and no loss of life. Wildfires occur every year due to a wide variety of causes. The largest reported wildfire occurred in 2006 and burned 400 acres of range land. There is no Wildland-Urban Interface Code, but the district does encourage defensible spaces around structures. Response vehicles for fires include: three grass rigs, one pumper, one tanker, one equipment truck, and one CAFS truck. In order to mitigate wildfires, the district preforms prescribed burns on CRP and grasslands when asked by landowners.

Staffing

The Cook Fire District is supervised by a fire chief and a five-member board who will oversee the implementation of hazard mitigation projects. There are 20 volunteer members. Other offices are listed below.

- Assistant Fire Chief
- Treasurer
- Secretary
- Captains
- Safety Officer

Capability Assessment

Due to the unique structure of fire districts, the typical capability assessment table was not used. The following table summarizes the district’s overall capabilities. The Cook Fire District will continue to utilize existing relationships with local, county, state, and federal agencies in the implementation of mitigation projects. Other than vehicles, response equipment includes breathing apparatus, jaws of life, airbags, and ventilation equipment. The district has monthly trainings for staff and volunteers as well as NSFMTD training. Public education includes Fire Safety Week at Johnson County Central Elementary School and replacing smoke detector batteries in the community every fall. The fire district has not applied for grants in the past.

Table CFD.3: Overall Capability Assessment

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

Plan Integration

The Cook Fire District does not have any formal planning documents; however it does have Standard Operating Guidelines (SOGs) which were updated in 2002. These SOGs outline the district response to different calls that could be received. It also discusses requests for mutual aid support. Additionally, the fire district is covered in the 2018 Johnson County Local Emergency Operations Plan. 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. No other examples of plan integration were identified. The district will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Install a new three phase generator, transfer switch, and all necessary wiring for power during an outage.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$30,000
Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Rural Fire Board, Fire Chief
Status	New Action. Not Started.

Mitigation Action	Civil Service Improvements
Description	Replace hydraulic rescue tools with a newer, higher pressure set.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$30,000 - \$50,000
Funding	General Budget, Fundraisers
Timeline	1 Year
Priority	High
Lead Agency	Rural Fire Board, Fire Chief
Status	New Action. Not Started.

District Profile

Elk Creek Volunteer Fire Department

Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table EFD.1: Elk Creek Volunteer Fire Department Local Planning Team

Name	Title	Jurisdiction
Kirk Bartels	Fire Chief	Elk Creek Volunteer Fire Department

Location and Geography

The Elk Creek Volunteer Fire Department covers 49,392 acres in the southeastern portion of Johnson County, the southwestern portion of Nemaha County, and the northern portion of Pawnee County. It also includes the Village of Elk Creek. The fire district mainly addresses grass and wildfire in the region's rural area.

Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors and areas more at risk of transportation incidents. Nebraska Highway 50 and 62 both travel through the fire district. Nebraska Highway 50 is traveled by a total annual average of 1,540 vehicles daily, 170 of which are trucks. Nebraska Highway 62 is traveled by a total annual average of 380 vehicles daily, 45 of which are trucks.³⁷ A Burlington Northern Santa Fe rail line runs north to south through the center part of the district. Transportation routes of most concern include Highway 62, Highway 50, Spur B49, and the railroad because crude oil, farm chemicals, and ethanol are regularly transported on them.

Demographics

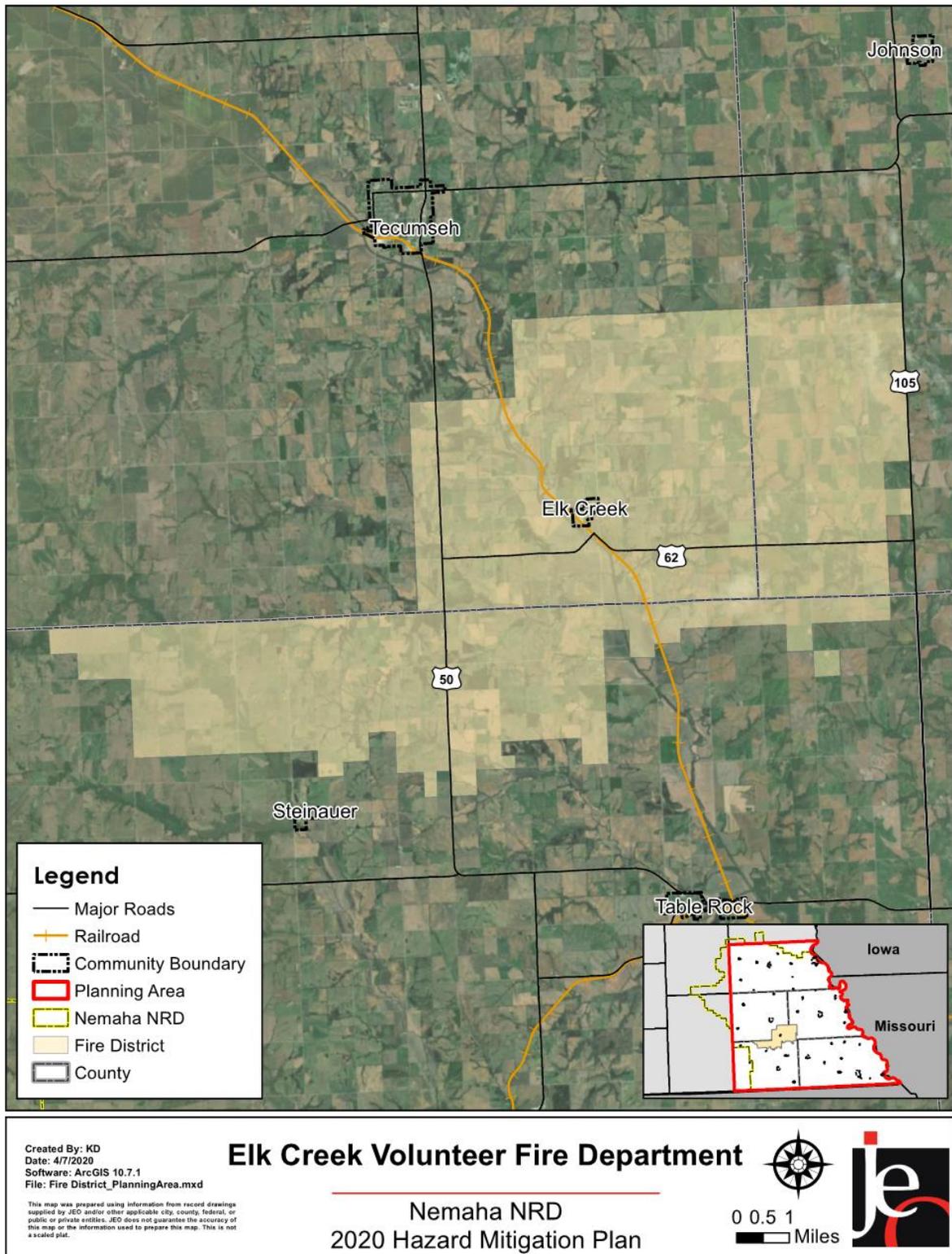
See the Village of Elk Creek, Nemaha County, Pawnee Count, and the Johnson County profiles for regional demographic information. The district serves approximately 400 people.

Future Development Trends

Over the past five years there have been no changes to the fire department. There are no planned changes in the next five years.

³⁷ Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. <https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34>.

Figure EFD.1: Elk Creek Volunteer Fire Department



Critical Infrastructure

Chemical Storage Fixed Sites

Information on chemical storage sites can be found in the Village of Elk Creek, Pawnee County, Nemaha County, and Johnson County profiles.

Critical Facilities

The planning team identified critical facilities necessary for the fire district’s disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the Elk Creek Volunteer Fire Department.

Table EFD.2: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Elk Creek Fire Hall	Y	Y	N

Historical Occurrences

See the Johnson, Pawnee, and Nemaha County profiles for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the district. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the district’s capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

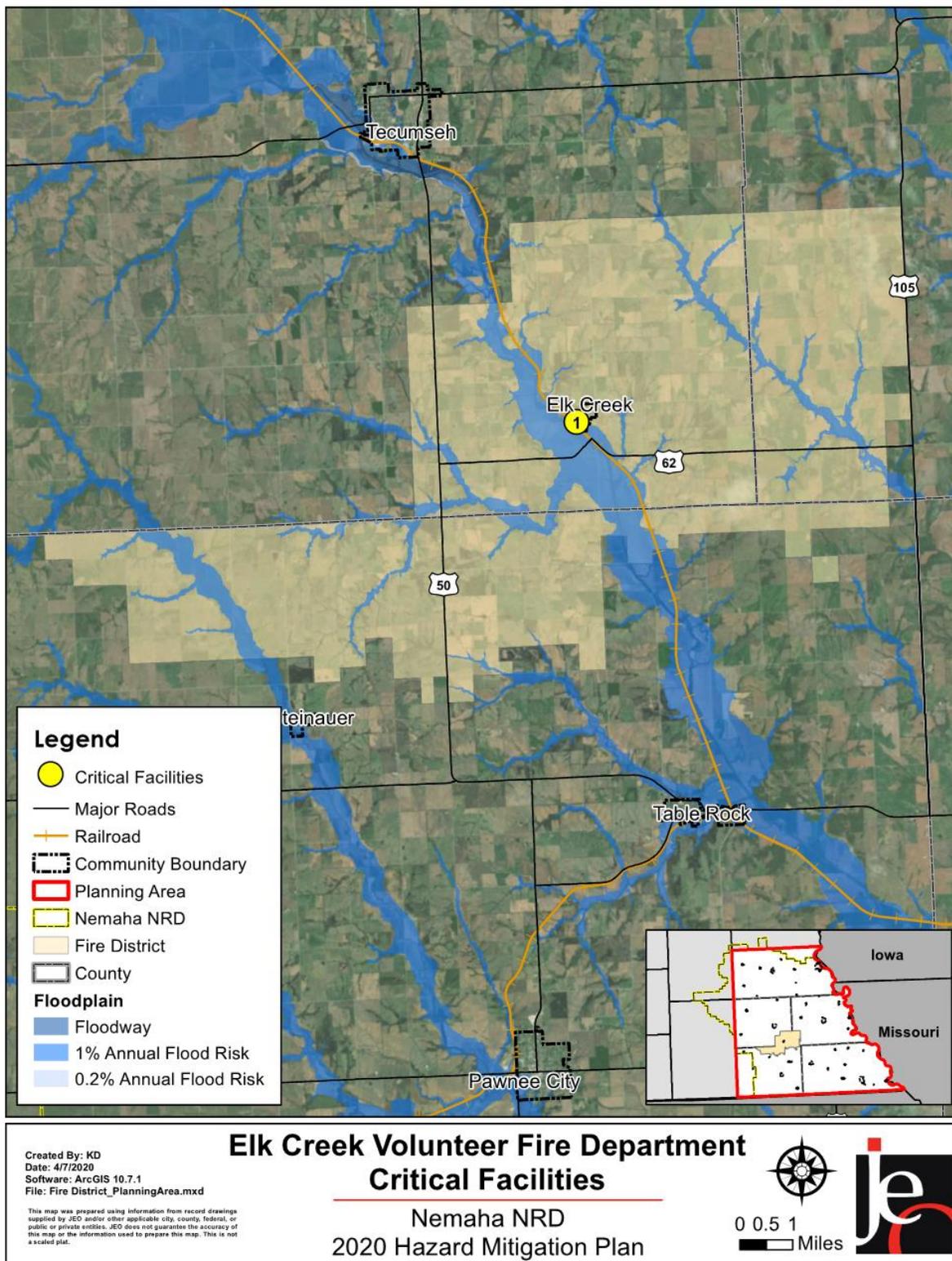
Chemical and Radiological Spills (Fixed Site)

The largest fixed chemical site in the district is a bulk storage tank at the cooperative. There are no critical facilities near the tank, but residential houses are located next door and across the street. These families are educated about the threat of a chemical spill. No large spills have occurred at this or other locations in the district. If a spill were to occur, the employees at the co-op and the fire district would be the first to respond. Response equipment includes one tanker, one pumper, two grass rigs, and PPE. To reduce the impacts of a spill, members of the fire department tour facilities and receive trainings on spill response.

Chemical and Radiological Spills (Transportation)

Concerns regarding transportation spills include train derailment, hazardous chemical spills, and accidents on the highway leading to spills. Transportation routes of most concern are the Burlington Northern rail line and Highway 50. Those routes primarily carry bulk crude oil and ethanol, but smaller amounts of various chemicals are also carried. No major spills have occurred in the past. To reduce the impacts of a potential spill, the fire district works with the railroad on potential issues and is trained on spill response.

Figure EFD.2: Critical Facilities



Severe Thunderstorms

Primary concern regarding severe thunderstorms include hail, lightning strikes, and flooding from heavy rains. Past damaging events include hail that damaged crops and a lightning strike in 2020 that started a barn fire. No critical facilities have been damaged from past events. If damage were to occur, all buildings are insured. Surge protectors have also been installed on all important electronic devices. The fire district goes out and conducts storm spotting to warn people and report to the sheriff's office and emergency management. Weather radios are also used for notification purposes.

Severe Winter Storms

Severe winter storms are an annual occurrence across the district. Past heavy snow and ice events have caused prolonged road closures and hazardous driving conditions. This has affected response times immediately after or during an event. To reduce the hazardous conditions, snow is removed as soon as possible along major streets and salt is also used. Winter storms have also caused power outages from downed powerlines. The fire hall has a backup power generator, but the department would like an upgraded version.

Tornadoes and High Winds

Tornadoes have occurred in the district. Past events have been close to the community but have not caused damage at the fire hall. Elk Creek has a warning siren that is manually operated by a switch on a light pole on Main Street. Depending on the wind direction, it is possible that not all areas of the community can hear the siren. There are no certified safe rooms in the district, but the fire hall and old school building are available for the public to use for shelter. Education outreach involves testing the warning siren and publishing informational briefings in the local newspaper. In the event of a disaster, the fire district has mutual aid agreements with Southeast Nebraska Mutual Aid which includes most communities in southeast Nebraska.

Staffing

The Elk Creek Volunteer Fire Department is supervised by a fire chief and a five-member rural fire board who will oversee the implementation of hazard mitigation projects. Other offices are listed below.

- President
- Vice President
- Certification Officer
- Treasurer
- Secretary

Capability Assessment

Due to the unique structure of fire districts, the typical capability assessment table was not used. The following table summarizes the district's overall capabilities. The Elk Creek Volunteer Fire Department will continue to utilize existing relationships with local, county, state, and federal agencies in the implementation of mitigation projects. The district has applied for grants in the past and has been awarded grants from the Forest Service.

Table EFD.3: Overall Capability Assessment

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

Plan Integration

Elk Creek Volunteer Fire Department does not have any formal planning documents; however, it does have Standard Operating Guidelines (SOGs). These SOGs outline the department's response to common types of calls that could be received. The district will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

New 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 the fire hall.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies by size
Funding	General Budget
Timeline	5+ Years
Priority	Low
Lead Agency	Rural Fire Board, Fire Chief
Status	New Action. Not Started.

Mitigation Action	Civil Service Improvements
Description	Improve emergency rescue and response equipment and facilities by providing additional or updating existing equipment. For example: backup systems for emergency vehicles, training additional personnel, upgrading radio systems, etc. New SCBA tanks are needed by the fire district.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$8,000 for new tanks
Funding	General Budget, Forestry Grant
Timeline	1 Year
Priority	High
Lead Agency	Rural Fire Board, Fire Chief
Status	New Action. Not Started.

District Profile

Johnson County Central Public Schools

Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table JCC.1: Johnson County Central Public Schools Local Planning Team

Name	Title	Jurisdiction
Rick Lester	High School Principal	Johnson County Central Public Schools
Russ Waring	Maintenance	Johnson County Central Public Schools
Lisa Kuhl	Nurse	Johnson County Central Public Schools

Location

Johnson County Central Public Schools is located in central Johnson County and southern Otoe County and consists of three schools and a bus barn. The school district provides services to students in the communities of Tecumseh, Cook, Talmage, and Lorton.

Transportation

Transportation information is important to hazard mitigation plans because it suggests areas more at risk of transportation incidents. Six major transportation corridors travel through the district's boundary: US Highway 136 and Nebraska State Highways 41, 50, S66E, 67, and 128. Highways 50 and 136 are closest to the school buildings. US Highway 136 is traveled by a total annual average of 2,905 vehicles daily, 415 of which are trucks. Nebraska State Highway 50 is traveled by a total annual average of 4,315 vehicles daily, 690 of which are trucks.³⁸ A Burlington Northern Santa Fe Railway rail line runs northwest to southeast through the district. Transportation routes of most concern are all rural routes on unpaved roads as road conditions can vary widely. The district owns nine buses and 250 students are bused to and from school.

Demographics

The following figure displays the student population trend. It indicates that the student population has been relatively stable since 2007. In the 2018-2019 school year there were 526 students enrolled at Johnson County Central Public Schools.³⁹ The district planning team anticipates very little change to the student population in the next five years.

38 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map].

<https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34>.

39 Nebraska Department of Education. 2019. "Nebraska Education Profile." <https://nep.education.ne.gov/>.

Figure JCC.1: Johnson County Central Public Schools

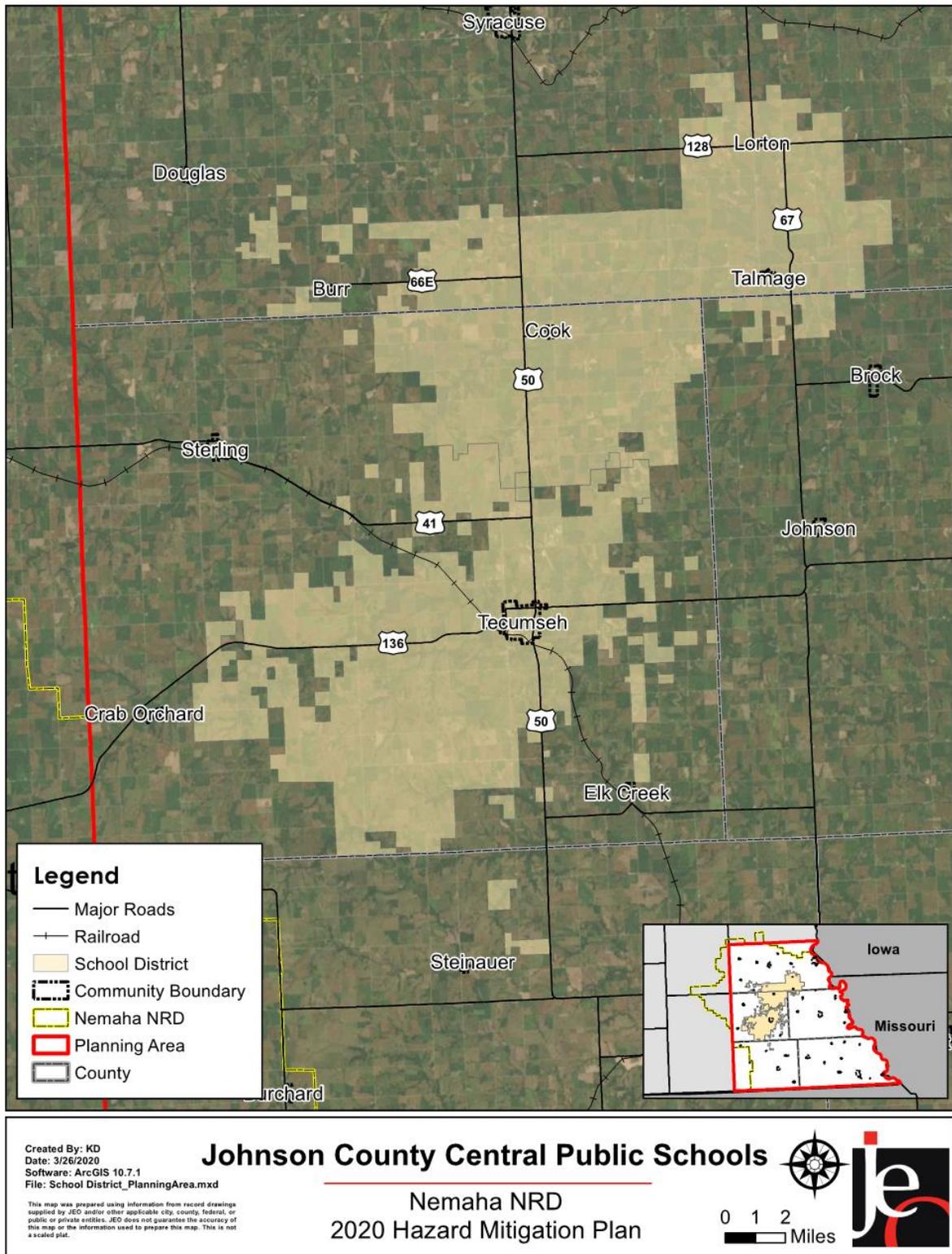
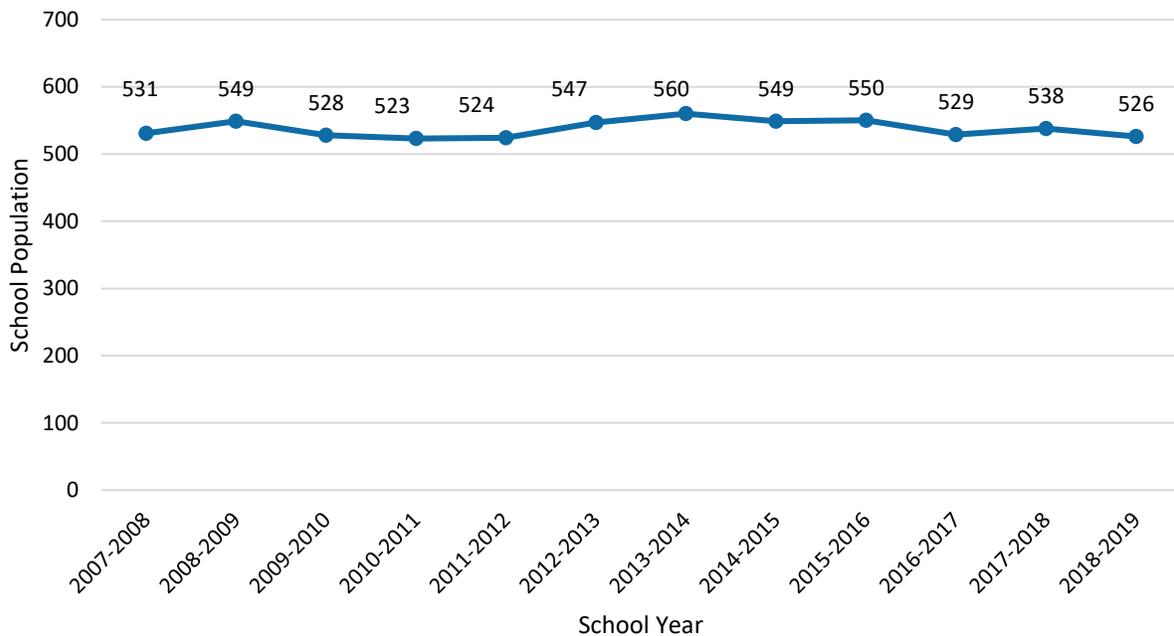


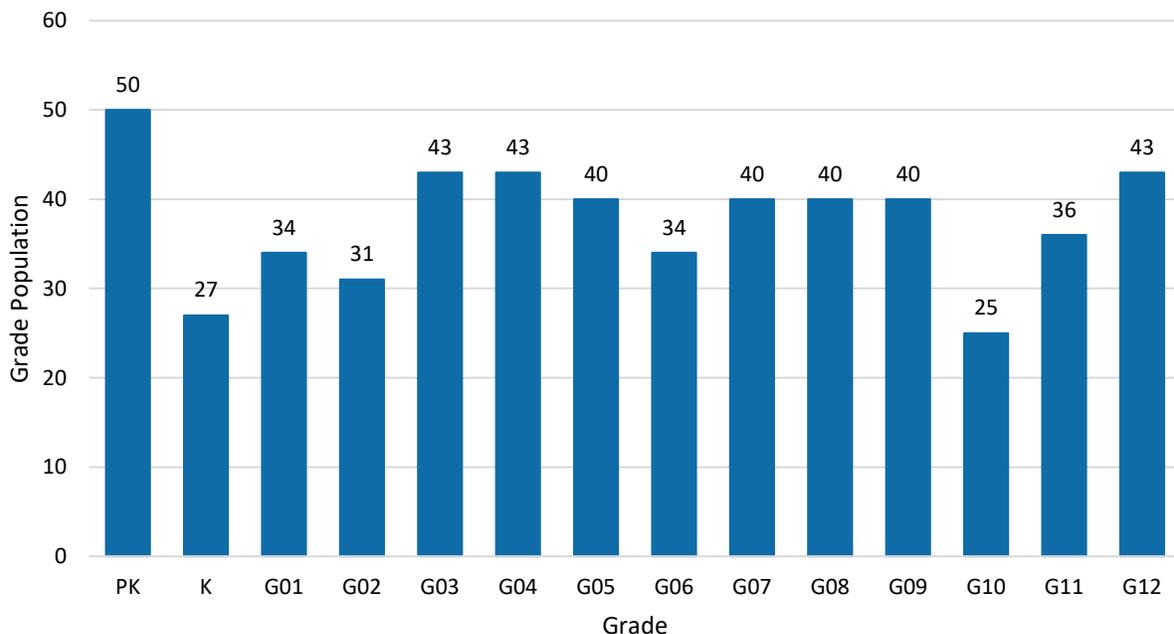
Figure JCC.2: Student Population



Source: Nebraska Department of Education, 2019

During the 2018-2019 school year, the largest number of students were in prekindergarten, 3rd, 4th, and 12th grade. The lowest population of students was in 10th, kindergarten, and 2nd grade. Children under 16 are especially vulnerable to hazard events because they are dependent on parents and guardians for transportation and financial support.

Figure JCC.3: Number of Students by Grade



Source: Nebraska Department of Education, 2019

According to the Nebraska Department of Education, 23% of students are in a Special Education program. This is higher than the state average of 15%. About 51% of students receive either free or reduced priced meals at school. About 5% of students are English Language Learners; students fluent in a second language most commonly speak Spanish. These students may be more vulnerable during a hazardous event than the rest of the student population.

Table JCC.2: Student Demographics

	School District	State of Nebraska
Free/Reduced Priced Meals	50.76%	45.21%
English Language Learners	5.04%	7.16%
Special Education Students	23.11%	14.71%

Source: Nebraska Department of Education, 2019

Future Development Trends

In the last five years, the school has removed two modular buildings that were used to teach classes. Currently the district is in discussion about building a new elementary school in four to five years, a new middle school in six to eight years, and a new high school in 10-15 years. However, discussions are in the preliminary stages and much depends on funding and if bond issues are passed.

Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of eight chemical storage sites that house hazardous materials in the Johnson County Central Public Schools District. Refer to the City of Tecumseh, Village of Cook, Village Lorton, Village of Talmage, Otoe County, and Johnson County profiles for more information on these sites. All three schools are located approximately ten blocks from a co-op.

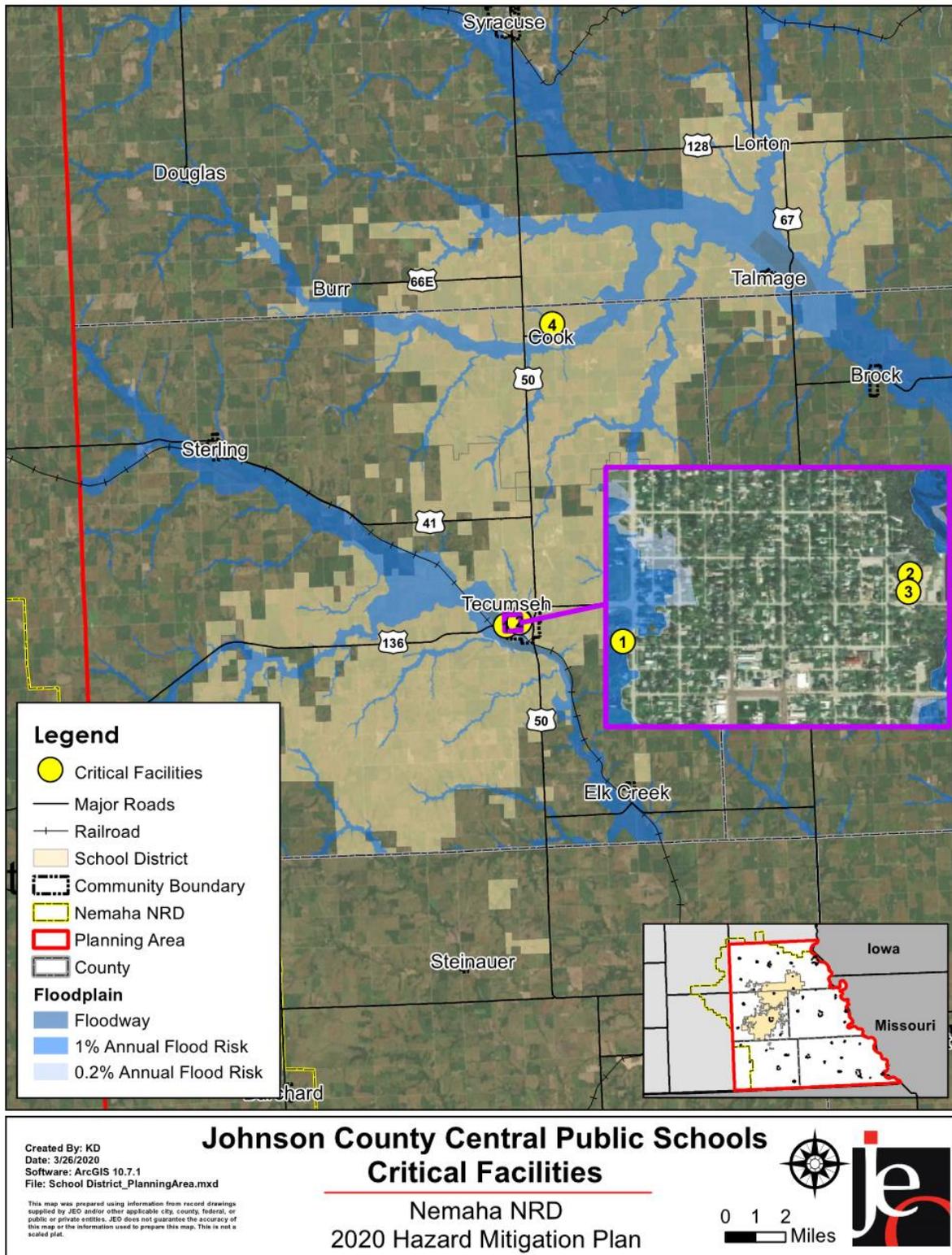
Critical Facilities

Johnson County Central Public Schools identified the following critical facilities necessary to maintain the functions of the schools. The following table and figure provide a summary of the critical facilities for the community.

Table JCC.3: Critical Facilities

CF Number	Name	# of Students	# of Staff	Community Shelter (Y/N)	Safe Room (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Bus Barn	0	0	N	N	N	Y
2	JCC High School	135	37	Y	Y	N	N
3	JCC PK-3 rd	132	25	Y	Y	N	N
4	JCC PK & 4 th -8 th	213	32	Y	Y	N	N

Figure JCC.4: Critical Facilities



Historical Occurrences

See the Johnson County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were selected by the school district's planning team from the regional hazard list as the relevant hazards for the district. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the district's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Chemical and Radiological Spills (Fixed Site)

The only concern related to fixed site chemical spills is that the middle school in Cook is run by propane. If a leak were to occur at the school, it may need to evacuate so as not to impact students and staff. The school building has an evacuation plan in place and drills are conducted on an annual basis. There have been no historical spills at the middle school building.

Severe Thunderstorms

The primary concern related to severe thunderstorms is damage to physical facilities. Any time there is a significant rain event, flooding occurs in the basement of the high school and elementary main floor of the Tecumseh building. While the Tecumseh school buildings are protected by hail-resistant building materials, several structures at the Cook building are metal which could be damaged by hail. All district-owned buildings have hail insurance. In the event of a power surge, the main server has Uninterruptable Power Supplies to protect electronic devices. All school buildings have weather radios.

Severe Winter Storms

The largest impacts from winter storms the district has experienced were transportation and school closing. Due to the annual nature of winter storms, snow days are built into the school schedule. County roads are the largest concern as they are the last to be plowed and can quickly deteriorate into impassable conditions. This has caused bus routes to be rerouted in the past. School buildings have not been damaged due to past events. Snow removal on school property is done by maintenance and sub-contractors using a tractor, snow blowers, and pickups with blades. Roads are plowed by the local community or county.

Terrorism

Terrorism is always a possibility at schools due to previous incidents around the country. The district has not had a terroristic event, but in 2007 a student wrote a threat of violence on the bathroom wall. In order to mitigate a terrorism event, all three schools have a safety plan in place and have exercises for an active shooter.

Tornadoes and High Winds

No tornado events have impacted the school district but the potential for extensive damage is a concern. The elementary school in Tecumseh had the roof membrane blown off during a high wind event several years ago. In case of a tornado or high wind event each school's safe room is their locker room. All three schools are also designated as community shelters. School records are backed up at two different sites and two different locations (Tecumseh and Cook). Students are educated on tornado safety through tornado drills and education information packets.

Administration

The Johnson County Central Public Schools Board of Education, comprised of a locally elected six-member board, establishes regulations and policies to govern the school district. They appoint a superintendent to implement these regulations. The superintendent in turn appoints principals who supervises the schools' operations. These administrators will manage the implementation of hazard mitigation projects. The district also has the following offices, departments, and committees.

- High School Secretary
- Elementary Secretary
- Superintendent Secretary
- Middle School Secretary

Capability Assessment

The following table summarizes the district's overall capability to implement mitigation projects. Staff is trained about emergency procedures using a handbook and in-service trainings. Students and families are educated about emergency procedures in a monthly newsletter and a yearly letter. The district partners with the local fire department to have an assembly during fire month and police visits the schools to do drug awareness days. An active shooter training is scheduled for the fall of 2020-2021 school year in cooperation with multiple community agencies.

Table JCC.4: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning Capability	Capital Improvements Plan/Long-Term Budget	Yes
	Continuity of Operations Plan	Yes
	Disaster Response Plan	Yes
	Other (if any)	-
Administration & Technical Capability	GIS Capabilities	No
	Civil Engineering	No
	Local staff who can assess community's vulnerability to hazards	No
	Grant Manager	No
	Mutual Aid Agreement	No
	Other (if any)	-
Fiscal Capability	Applied for grants in the past	No
	Awarded grants in the past	No
	Authority to levy taxes for specific purposes such as mitigation projects	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Approved bonds in the past	No
	Flood Insurance	No
	Other (if any)	-
Education & Outreach Capability	Local school groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc. (Ex. Parent groups, hazard mitigation boards, etc.)	No
	Ongoing public education or information program (Ex. Responsible water use, fire	Yes

Survey Components/Subcomponents		Yes/No
	safety, household preparedness, environmental education, etc.)	
	StormReady Certification	No
	Other (if any)	-
Drills	Fire	9 / year
	Tornado	1 / year
	Intruder	2 / year
	Bus evacuation	1 / year
	Evacuation	1 / year
	Other (if any)	-

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

Plan Integration

The school system has two planning documents which relate to hazard mitigation. The JCC Strategic Plan is updated yearly, and the administration meets weekly to discuss any issues that need to be addressed. It covers priority projects for the school district like updating sprinkler and communication systems. The School Safety Manual is updated yearly, and its committee meets once a semester. The plan covers response to fire, tornadoes, earthquakes, winter weather, and flooding. It also assigns specific responsibilities to staff, addresses shelter in place protocols, evacuation, and sheltering locations. In addition, the school district is a member of “I Love You Guys,” which is a standard response protocol for emergency situations like active shooter, intruder, lock out, and evacuation. No other examples of plan integration were identified. The district will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates. Specifically, the district plans to update its Strategic Plan and School Safety Manual annually and the goals, objectives, and mitigation actions of the HMP should be integrated in the updates.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Above Ground Stormwater System and Drainage Improvements
Description	Install drainage for flood control at the JCC Tecumseh Site.
Hazard(s) Addressed	Flooding
Estimated Cost	\$10,000+
Funding	General Budget
Timeline	5+ Years
Priority	Medium
Lead Agency	Facilities
Status	New Action. Not Started.

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Mitigation Action	Backup and Emergency Generator
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 the JCC at Tecumseh Site.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$15,000 - \$30,000 per generator
Funding	General Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Facilities
Status	New Action. Not Started.

Mitigation Action	Classroom Door Security System
Description	Purchase and install a new classroom door security system at all JCC facilities.
Hazard(s) Addressed	Terrorism
Estimated Cost	Unknown
Funding	General Budget
Timeline	5+ Years
Priority	Low
Lead Agency	Facilities
Status	New Action. Not Started.

Mitigation Action	Communication System
Description	Purchase and install a new communication system for the entire JCC School District.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$15,000+
Funding	General Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Facilities
Status	New Action. Not Started.

Mitigation Action	Sprinkler System
Description	Purchase and install a sprinkler system for the JCC at Tecumseh site. Currently the site is lacking a sprinkler system.
Hazard(s) Addressed	Wildfire
Estimated Cost	Unknown
Funding	General Budget
Timeline	5+ Years
Priority	Medium
Lead Agency	Facilities
Status	New Action. Not Started.

District Profile

Sterling Rural Fire District

Nemaha Natural Resources District
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table STF.1: Sterling Rural Fire District Local Planning Team

Name	Title	Jurisdiction
Jason Ebbers	Assistant Fire Chief	Sterling Rural Fire District
Steve Eickhoff	Fire Chief	Sterling Rural Fire District

Location and Geography

The Sterling Rural Fire District covers 64,480 acres in the northwest portion of Johnson County, including the Village of Sterling and the southwest portion of Otoe County. The fire district mainly addresses grass and wildfire in the region’s rural area.

Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors and areas more at risk of transportation incidents. Nebraska Highway 41 travels through the fire district. Nebraska Highway 41 is traveled by a total annual average of 2,155 vehicles daily, 370 of which are trucks.⁴⁰ A Burlington Northern Santa Fe rail line runs through district. Transportation routes of the most concern include Highway 41 and the railroad as chemicals are regularly transported along them. During heavy rain events, E. Locust Street between Lincoln Street and Highway 41 regularly floods.

Demographics

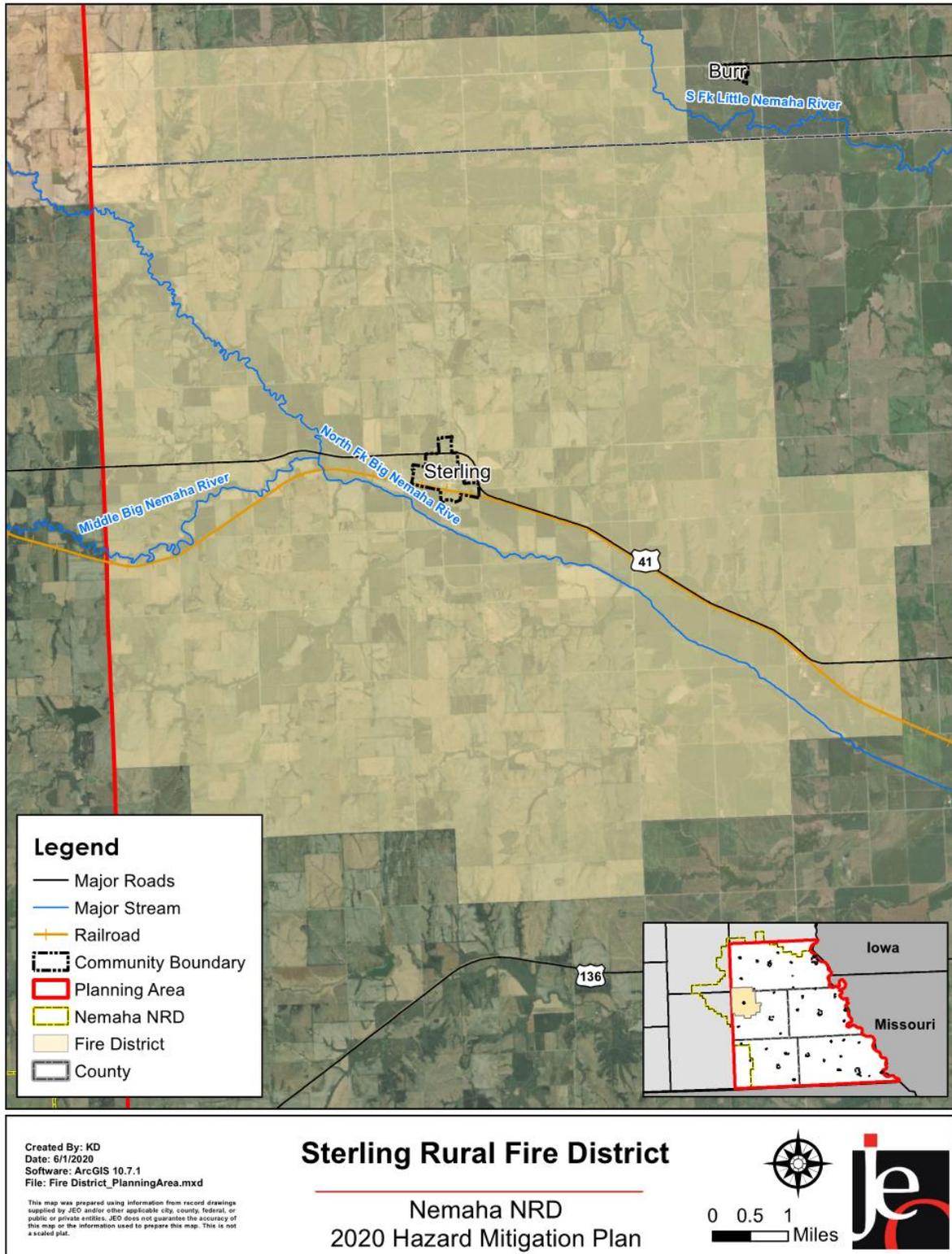
See the Village of Sterling, Johnson County, and Otoe County profiles for regional demographic information. The district serves approximately 1,200 people.

Future Development Trends

In the past five years there have been no changes to the district. The local planning team does not anticipate any changes over the next five years.

⁴⁰ Nebraska Department of Roads. 2018. “Interactive Statewide Traffic Counts Map.” [map]. <https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34>.

Figure STF.1: Sterling Rural Fire District



Critical Infrastructure

Chemical Storage Fixed Sites

Information on chemical storage sites can be found in the Village of Sterling, Johnson County, and Otoe County profiles.

Critical Facilities

The planning team identified critical facilities necessary for the fire district’s disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the Sterling Rural Fire District.

Table STF.2: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Sterling Fire Hall	N	Y	N

Historical Occurrences

See the Johnson County and Otoe County profiles for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the district. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the district’s capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Chemical and Radiological Spills (Fixed Site)

Concerns regarding chemical fixed sites are anhydrous ammonia and propane leaks. Response equipment includes a tanker, two pumpers, and equipment with air packs. Rail cars are often parked overnight near the Sterling downtown area. The Co-op is also located near downtown and residential homes. No large spills have occurred locally. The fire district has SCBA gear for anhydrous leaks but does not have protective gear for other hazardous chemicals. Updated SCBA gear is needed due to the number of out-of-date units, however funding is limited due to other expenses. To reduce the potential impacts of a spill a containment barrier has been put in around the liquid fertilizer storage tank.

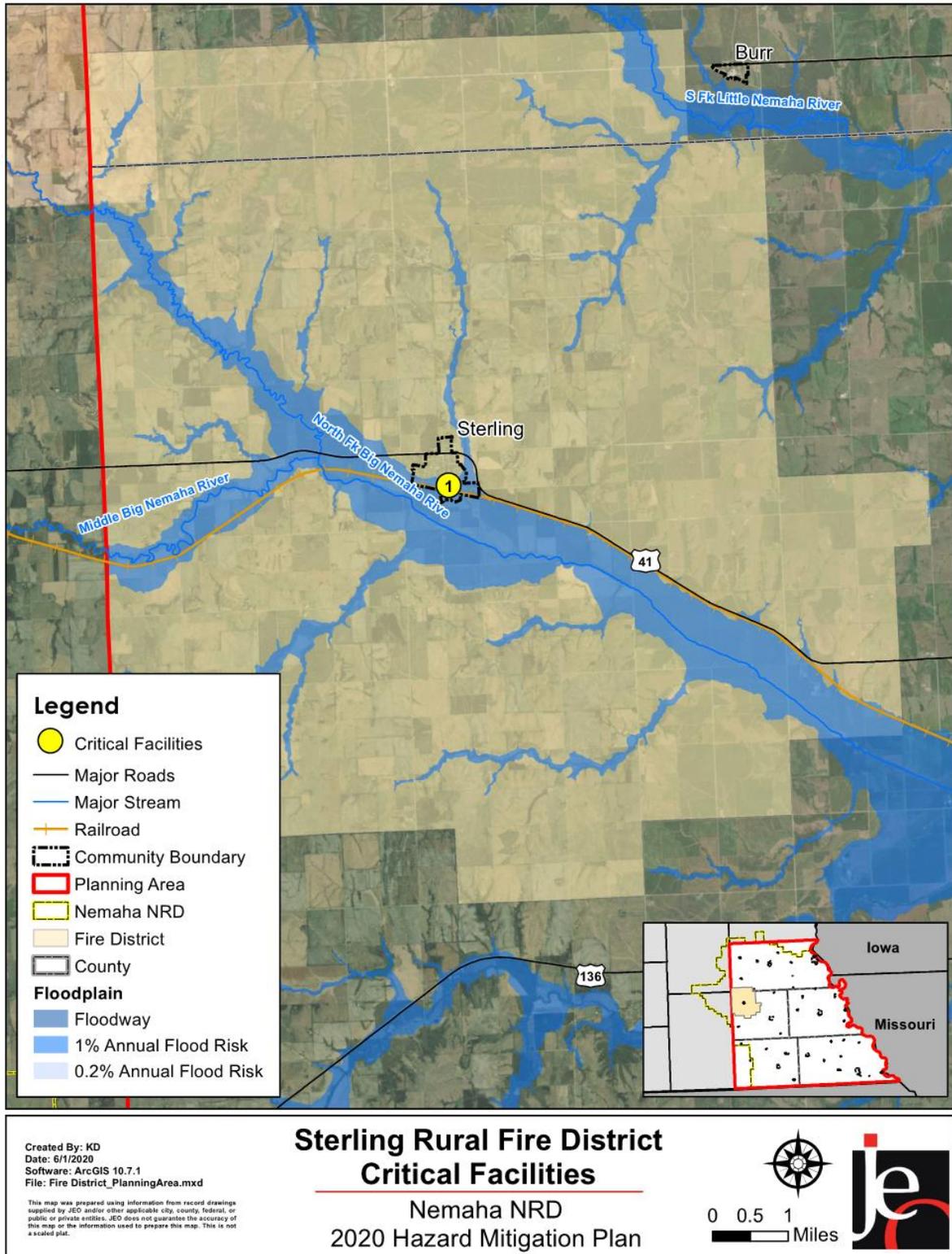
Chemical and Radiological Spills (Transportation)

Highway 41 and the Burlington Northern rail line are the transportation routes of most concern. Propane, anhydrous ammonia, and chlorine gas are all transported along those routes. No major spills have occurred in the district. In order to mitigate the potential impacts, the communities use designated chemical transportation routes through the villages. If a large spill were to occur the district would like need outside assistance from the County Emergency Management Agency.

Severe Thunderstorms

Past events include hail in 2015, which damaged roofs, siding, and gutters. Flooding in 2019 damaged bridges, damaged water/sewer lines, and caused road closures. Concerns regarding severe thunderstorms are hail damage, flooding, and power outages. To reduce the risk of power loss, tree limbs have been cut back from power lines. Important records are not backed up and kept only as hard copies. The Johnson County Emergency Management offers text alerts for those who sign up for the program.

Figure STF.2: Critical Facilities



*Note: Floodplain is based off preliminary FIRM maps. Final effective FIRM maps are currently being produced.

Severe Winter Storms

The last major winter storms occurred during the winter of 2019. The district experienced lots of snow, damaging trees. Other historic impacts include drifting snow, cold wind chills, and power outages. The local planning team indicated that approximately 1% of power lines are buried, increasing the risk of power loss. Snow removal is handled by the villages within the communities and by respective counties on county roads. Snow removal is typically sufficient, but hazardous roads have impacted response times in the past.

Tornadoes and High Winds

No tornadoes have occurred in the district, but high winds have caused tree damage and overturned farm pivots in the rural areas. The fire hall has not been damaged by past high wind events. The warning siren for Sterling can be activated manually at the fire hall. The community of St. Mary does not have a tornado siren. There are no safe rooms in the district and residents must use basements as shelter locations. In the event of a disaster, the fire department has mutual aid agreements with Tecumseh Fire Department, Adams Fire Department, Burr Fire Department, and Douglas Fire Department.

Staffing

The Sterling Rural Fire District is supervised by a fire chief and the five-member Sterling Rural Fire Board who will oversee the implementation of hazard mitigation projects. Other offices are listed below. There are 25 members on the fire department.

- Assistant Fire Chief
- Treasurer
- Secretary

Capability Assessment

Due to the unique structure of fire districts, the typical capability assessment table was not used. The following table summarizes the district’s overall capabilities. The Sterling Rural Fire District will continue to utilize existing relationships with local, county, state, and federal agencies in the implementation of mitigation projects. The fire department has applied for grants in the past and has been awarded a forestry grant.

Table STF.3: Overall Capability Assessment

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

Plan Integration

The Sterling Rural Fire District does not have any formal planning documents; however, it does have Standard Operating Guidelines (SOGs) which were last updated in 2007. These SOGs outline the districts response to both storm watches and hazardous materials. No other examples of plan integration were identified. The district will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Civil Service Improvements
Description	Improve emergency rescue and response equipment and facilities by providing additional or updating existing equipment. For example: backup systems for emergency vehicles, training additional personnel, upgrading radio systems, etc. The district needs to update SCBA to comply to state and fire equipment guidelines to safely execute anhydrous ammonia and other breathing hazard type calls.
Hazard(s) Addressed	All Hazards
Estimated Cost	\$8,000+ per SCBA
Funding	General Fund
Timeline	2-5 Years
Priority	High
Lead Agency	Fire Chief, Rural Fire Board President
Status	New Action. Not Started.