



# Thayer County, Nebraska Comprehensive Plan 2024 Public Hearing Draft



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# Chapter One

## The Comprehensive Plan

**FIGURE 1.1: THAYER COUNTY AND SOUTHERN NEBRASKA**

Thayer County is home to about 5,000 residents in southern Nebraska on the Kansas state line. There are 11 incorporated communities which provide the foundations for Thayer County:

- Village of Alexandria
- Village of Belvidere
- Village of Bruning
- Village of Byron
- Village of Carleton
- Village of Chester
- Village of Davenport
- City of Deshler
- Village of Gilead
- City of Hebron (county seat)
- Village of Hubbell

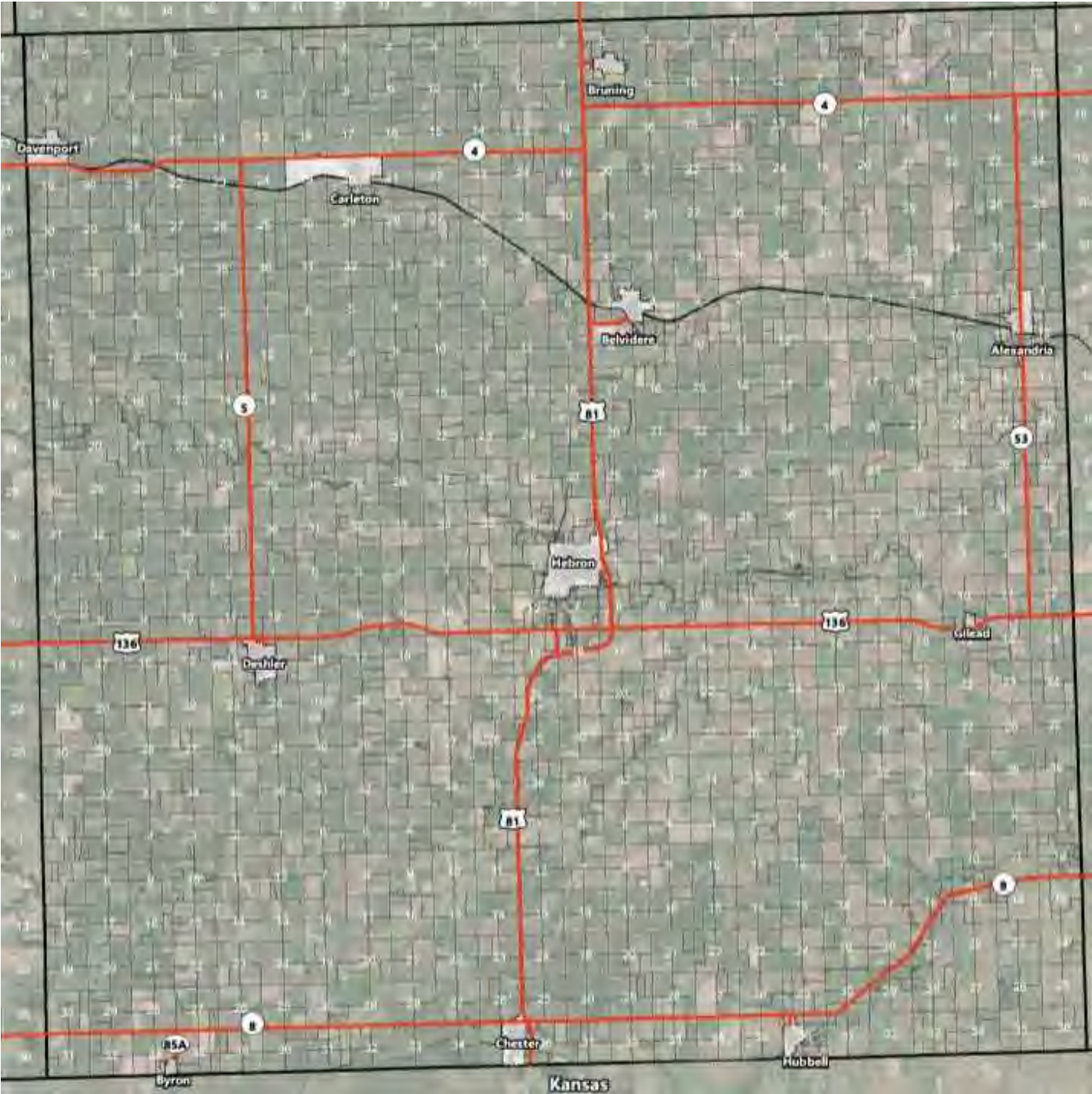
Thayer County is approximately 575 square miles in area. Nuckolls County is west of Thayer County, Clay County is to the northwest, Fillmore County to the north, Saline County to the northeast, Jefferson County to the east, and Republic and Washington counties in Kansas, to the south. US Highway 81 crosses the county



Source: ESRI



FIGURE 1.2: THAYER COUNTY AND MUNICIPALITIES



Source: Marvin Planning Consultants and ESRI

north to south as a four-lane divided highway. US Highway 136 crosses east to west.

## HISTORY

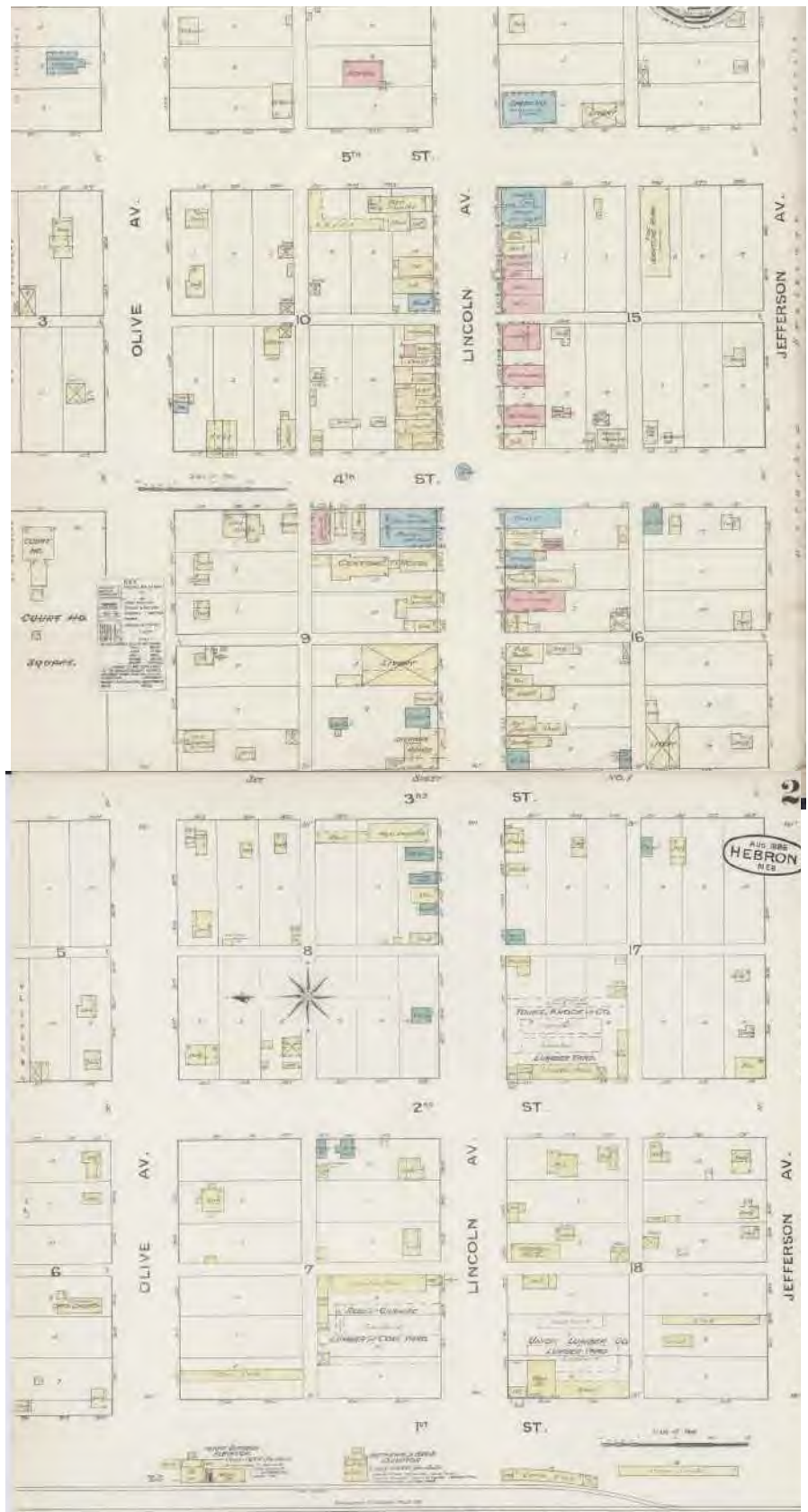
Thayer County is a square with each side 24-miles long. The gently rolling land has elevations rising from 1,375 feet to 1,680 feet above sea level. The topography ranges from valley land, to plains, dissected plains, and bluffs and escarpments. The Little Blue River flows east-west through the central part of the county. The climate is typical for the region, with an average of 31.4 inches of rain and 24 inches of snow per year.

Beginning in 1834, emigrants from the eastern states took to the Oregon Trail, leaving the vicinity of Independence, Missouri, crossing northeast Kansas and following the Little Blue River across what was to become Thayer County on their way to the Platte River and points west. The first settlers arrived in the Alexandria area in 1858. In 1860-61 the Pony Express crossed the county, generally following the Oregon Trail route north of the Little Blue River.

Thayer County was created in 1856 as Jefferson County—present day Jefferson County to the east was initially named Jones County. In 1869, Company A, First Nebraska Cavalry, was organized and a stockade called Fort Butler erected west of the Hebron townsite.

Thayer County was officially organized in 1870-1871 and renamed for General John Milton Thayer. Thayer served in the Union Army's Western Theater during the Civil War and was elected to the US Senate in 1867

FIGURE 1.3: SANBORN MAPS, HEBRON, 1886



Source: Library of Congress



when Nebraska became a State. He was appointed Governor of Wyoming Territory in 1875, and then elected 7th Governor of Nebraska in 1886.

The City of Hebron was platted in 1869 and soon after was named the county seat. In 1872, the St. Joseph and Denver Railroad laid tracks in Thayer County on the way to Hastings, naming new towns in alphabetical order from east to west. Alexandria, Belvidere, Carleton, and Davenport were platted in 1873 by the Nebraska Land and Town Company for the railroad. This line was purchased by the Union Pacific in 1885 and renamed the St. Joseph and Grand Island.

In the 1870s, Thayer County became a home of the woman's suffrage movement in Nebraska. Susan B. Anthony lectured there in 1877 and Mrs. Elizabeth Cady Stanton in 1879, at which time the Thayer County Woman's Suffrage Association was established.

About 1880, the Burlington and Missouri River Railroad (B&M)—a subsidiary of the Chicago, Burlington and Quincy Railroad (CB&Q)—built a branch

line across the southern part of the county. This led to the establishment of Hubbell, Chester, and Harbine (renamed Byron in 1889) on the Burlington Route.

In 1886, the Chicago, Rock Island, and Pacific Railroad entered the county and the next year Bruning, Gilead, and Deshler were established. The town of Friedensau was located just northeast of Deshler and most of the buildings were moved to Deshler after the railroad bypassed the community, leaving the church and cemetery to mark the site.

During the 1930s the federal government established a Civilian Conservation Corps camp at Hebron to help residents during the Great Depression, and during World War II an Army Air Field was built six miles east of Bruning.

## COMPREHENSIVE PLAN

The Comprehensive Plan is Thayer County's primary policy guide concerning the location, character, and type of growth and development anticipated over the next 20 years. The Comprehensive Plan is a local initiative intended to:

- I. Promote orderly growth and development in Thayer County;
- II. Provide policy guidance to enable citizens and elected officials to make better informed decisions about the future of the county;
- III. Provide a guideline for the location of future development and uses within the planning jurisdiction of the County;

- IV. Provide a vision and direction for the future planning period of the county, and;
- V. Act as an information and management tool for County leaders to use in their decision-making process when considering future developments.

The Comprehensive Plan is developed, reviewed, and implemented by the residents and property owners of Thayer County. A strong local planning effort gives local leaders the tools to address national issues such as economic restructuring or, for example, the 30 by 30 initiative (addressed in *Chapter Ten Natural Resources and the Environment*). The Comprehensive Plan is not an initiative of the Federal government. It is a local effort based in the laws of the State of Nebraska.

The Comprehensive Plan **is not a static document**; it should evolve as changes in the land use, population, or local economy occur during the planning period (2024 to 2044).

## THE PLANNING PROCESS

The Comprehensive Plan process results in locally-important general goals and policies, based upon current and future issues faced by the County and its residents. These are intended to be practical guidelines for addressing existing conditions and guiding future growth.

In conjunction with the development of general goals and policies, the planning team performed data collection phase, with information providing a snapshot of the past and



Oregon Trail Monument  
Source: Marvin Planning Consultants





## PLAN PREPARATION

This plan was prepared under the direction of Thayer County Planning Commission, with the assistance and participation of the Thayer County Board of Commissioners, County staff, and citizens of Thayer County.

The time period for achieving the goals, programs, and developments identified in the Thayer County Comprehensive Plan is 20 years. However, the County should review the plan annually and update the document every 10 years (2033), or when major, unanticipated opportunity arises. Completing updates every ten years or so will allow the County to incorporate ideas and developments not known at the time of the present comprehensive planning process.

## PLAN COMPONENTS

Nebraska State Statutes require the inclusion of certain elements in a Comprehensive Plan. A County "Comprehensive Development Plan," as defined in Neb. Rev. Stat. §23-114.02 (Reissue 1997), "shall consist of both graphic and textual material and shall be designed to accommodate anticipated long-range future growth."

present conditions within the county. Analysis of data provides a basis for developing forecasts of future land use demands, as well as future needs regarding housing and facilities.

The Comprehensive Plan is a **blueprint** designed to identify, assess, and develop actions and policies in the areas of population, land use, transportation, housing, economic development, community facilities, communications, and utilities. The

The Plan is only one of several tools within the toolbox which helps guide the community into the future.

Comprehensive Plan contains recommendations to help the County and its residents improve their property and quality of life. Tools, programs, and methods necessary to carry out the recommendations are identified through the planning process.

This plan is not intended to sit idly on a shelf collecting dust. Implementation of development policies contained within the Comprehensive Plan is dependent upon the adoption of the plan by the governing body and the leadership exercised by the present and future elected and appointed officials of Thayer County.

The Comprehensive Plan is a vision presented in text, graphics and tables representing the desires of the county and its residents for the future.

Planned growth will make Thayer County more effective in serving residents, more efficient in using resources, and able to meet the standard of living and quality of life every individual desires.

The Comprehensive Plan is comprised of the following chapters:

- 1) Introduction
- 2) Community Engagement
- 3) Population
- 4) Housing
- 5) Economic Development
- 6) County Facilities
- 7) Parks and Recreation
- 8) Public Safety
- 9) Communications, Utilities, and Energy
- 10) Natural Resources and the Environment
- 11) Hazard Mitigation
- 12) Land Use
- 13) Transportation
- 14) Implementation

Analyzing past and existing demographic, housing, economic and social trends permit the projection of likely conditions in the future.

Projections and forecasts are useful tools in planning for the future; however, these tools are not always accurate and may change due to unforeseen factors. Also, past trends may be skewed or the data may be inaccurate, creating a distorted picture of past conditions. Therefore, it is important for Thayer County to closely monitor population, housing and economic conditions impacting the county.

Through periodic monitoring, the county can adapt and adjust to changes at the local level. Having the ability to adapt to

socio-economic change allows the county to maintain an effective Comprehensive Plan for the future, to enhance the quality of life, and to raise the standard of living for all residents.

The Comprehensive Plan records where Thayer County has been, where it is now, and where it likely will be in the future. Having this record in the Comprehensive Plan will serve to inform county officials as much as possible.

The Comprehensive Plan is an information and management tool for county leaders to use in their decision-making process when considering future developments. The Comprehensive Plan is not a static document; it should evolve as changes in the land-use, population or local economy occur during the planning period. This information is the basis for Thayer County's evolution as it achieves its physical, social, and economic goals.

## COUNTY JURISDICTION

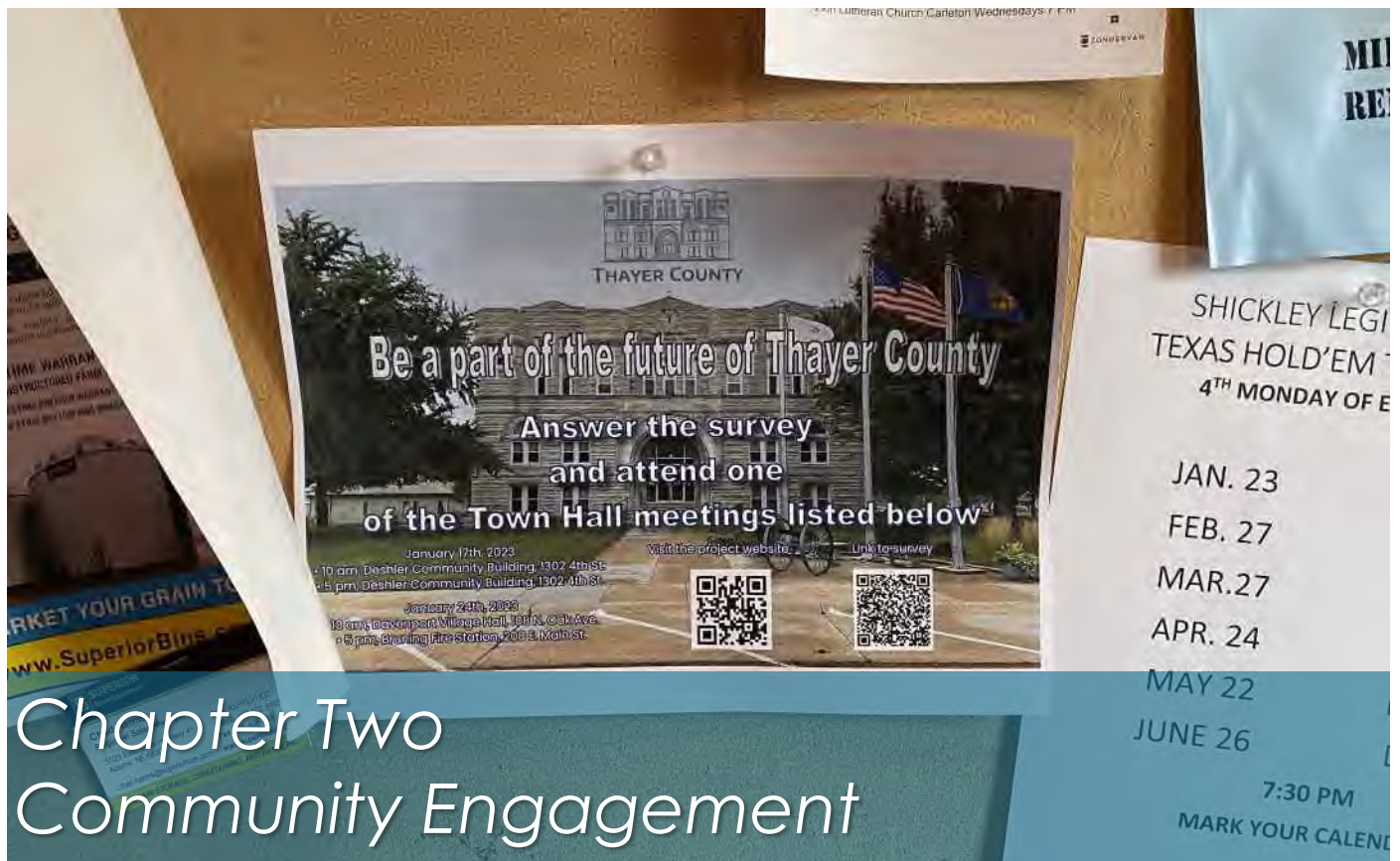
The Thayer County Board of Commissioners, which is a board of elected officials, performs the governmental functions for the County. Each incorporated community in Thayer County also has elected officials and officers overseeing how their community is governed. The planning and zoning jurisdiction of Thayer County, pursuant to Neb. Rev. Stat. §23-114 (Reissue 1997), includes all of the unincorporated portions of the county, excluding the established extraterritorial jurisdiction of each incorporated city or village

(Neb. Rev. Stat. §17-1001 (Reissue 1997)).

Each incorporated municipality in Thayer County participated in preparation of this plan, and representatives of each participated in preparation of their individual community comprehensive plans in a coordinated effort.

## PROCESS FOR ADOPTION

When it is time to adopt this Comprehensive Plan, the Board of Commissioners adopts the plan by Resolution. Adoption of the Comprehensive Plan requires both the Planning Commission and County Board to hold separate Public Hearings. After the Planning Commission Public Hearing, the Planning Commission makes a recommendation to the Board of Commissioners, who then holds their Public Hearing. Notice of both public hearings is required to be published in the newspaper of general circulation a minimum of ten days prior to each hearing.



## Chapter Two Community Engagement

Community engagement is critical to a successful planning effort. Community engagement both provides essential information as the basis of the plan and policies, as well as determining the public's priorities for future action implementing the plan.

This chapter describes the community engagement efforts of the planning process. This includes:

- Advisory Committee
- Public Meetings
- Website
- Surveys

### ADVISORY COMMITTEE

Thayer County and each of the cities and villages of the county worked cooperatively with Marvin Planning Consultants (MPC) to review and update the County Comprehensive Plan and the comprehensive plans for each of the municipalities. This

effort was intended to provide the basis, then, to update zoning and other development regulations as necessary.

The Technical Advisory Committee served as the steering group for the Thayer County Comprehensive Plan process. Members of the Advisory Committee included County staff and elected officials, and representatives from the Planning Commission, cities, and villages of the county.

A Kick-off Meeting was held on July 27, 2022, at the Thayer County Courthouse in Hebron. Staff from Marvin Planning Consultants reviewed the comprehensive planning process and received feedback on issues of importance in the local community.

The Technical Advisory Committee met in conjunction with the Thayer County Planning Commission on December 1, 2022, at the County Courthouse in Hebron. MPC staff presented information from the community profile, including demographics, housing, and economic development statistics and trends analysis. This information is incorporated into chapters three, four, and five of this document. On April 14, and June 8, 2023, the Committee met with MPC staff to discuss the remaining plan elements and consider priorities for land use and development. MPC staff provided an update to the Planning Commission at their meeting on August 24, 2023.





Town Hall Meeting  
Source: Marvin Planning Consultants

MPC Staff worked closely with staff from the County, cities, and villages throughout the process to collect and review data, and recommend goals and action items for the plan and for implementation through zoning and subdivision regulations.

## PUBLIC MEETINGS

Residents and property owners were invited to a series of public Town Hall meetings held in January 2023.

- 1/17 Morning and Evening at Thayer County Event Center, Deshler
- 1/24 Morning at Davenport Village Office
- 1/24 Evening at Bruning Fire Hall

Participants at each meeting engaged in a conversation, facilitated by the consultants, regarding the strengths, weaknesses, opportunities, and

threats (SWOT), related to growth and development of Thayer County and its communities. Detailed notes from the Town Hall meetings are included in Appendix A.

## SWOT Analysis

### Strengths

In general, strengths are local assets in which Thayer County has a competitive advantage, and things which draw people to the County.

Participants cited a diversified list of strengths of Thayer County. This includes production agriculture and agricultural technology, the UP Railroad, and manufacturing. Local businesses and services such as the EDA and hospital were highlighted as well. Overall, the small town lifestyle is recognized as a strength to build on to keep and attract residents for the future.

### Weaknesses

Weaknesses are areas where Thayer County has a competitive disadvantage, and things which may keep people from moving to the County.

A lack of housing is affecting communities across Nebraska, in small towns as well as big cities. Housing and commercial blight are problems and infrastructure is aging. While there are funding opportunities available, grant-writing capacity is limited and requirements are constantly changing. There is a lack of employees, and daycare is needed to help keep young families in the workforce.

Participants noted people have changing expectations, and things which used to be considered amenities are now considered necessities. Broadband is limited, and there needs to be land opened for



new development near the cities and villages of the county.

### Opportunities

Opportunities are regional, national, or international trends which may bring growth and development to Thayer County, with some hard work and determination.

Broadband is a utility in the 21st century. While broadband may be a current weakness, it is a future opportunity. Thayer County's small town quality of life is an opportunity to play to the communities' strengths. There is a strong local economic development program and jobs opportunities are available, including entrepreneurial opportunities to grow and start one's own business.

Thayer County has a prime location on north-south and east-west transportation corridors.

There are opportunities to provide more variety in services to travelers. There are opportunities for infill development, and to bring business/industry to infrastructure rather than serving scattered sites out in the country.

### Threats

Threats are outside forces providing challenges to continued local growth and development—they are also challenges to be overcome with hard work and determination.

Participants cited generational change as a threat, as existing business owners get closer to retirement. Along with generational change, there are fewer volunteers coming forward—young leaders are needed for the future.

Natural and manmade hazards will need to be mitigated, including flooding, wildfire, tornado, public health, and other infrastructure threats. While some places have good drinking water, others have nitrates in surface and groundwater. Requirements for renewable energy—wind and solar, electric vehicles (EVs)—will need to be addressed.

### Focus Groups/Interviews

The planning team met with community members in small groups and individually throughout the planning process. The qualitative data provided contributes to all elements of this plan.

### WEBSITE

A special project website (<https://tinyurl.com/thayercountycompplan>) was established at the onset of the planning process for the county and individual cities and villages. The project website served as a vehicle for community input on the Comprehensive Plan project and included a link to the survey.

### SURVEYS

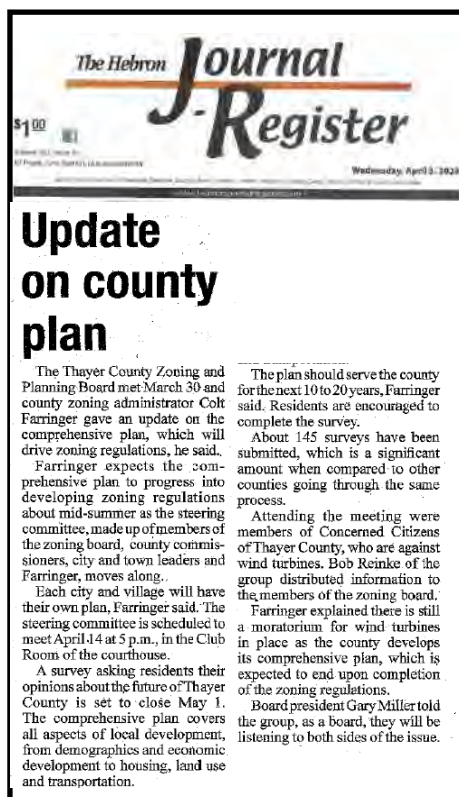
The Thayer County Comprehensive Plan Survey was developed in support of the county-wide planning effort to encourage community engagement. The survey was open and advertised from January to May. Paper copies were also made available across the county and in each community.

There were over 200 respondents to the survey, with 27% living in rural Thayer County, 27% living in Hebron, and 15% in Deshler. Family brings many people to Thayer County (and keeps them here), although many people have moved here for work. Over half of respondents stated their opinion of Thayer County is as a high or very-high quality place to live.

Particular issues identified in the survey included:

- Impacts of wind turbines on the landscape
- More affordable housing for young families
- Importance to preserve and share Thayer County history
- Importance of lakes, reservoirs, and streambeds—environmental impacts on water

FIGURE 2.1: MEDIA COVERAGE



- Support for retention of current businesses and revitalization of existing business districts
- Support for Law Enforcement, EMS and Fire services
- Support for county-wide volunteer opportunities
- Need to develop child daycare, grocery stores, restaurants, and healthcare.

Results of the survey, as well as all aspects of community engagement, inform each element of this plan. Additional information on survey respondents is included in Appendix A.

## GOALS AND ACTIONS

Planning for future land use and development is an ongoing process of goal setting and problem solving aimed at creating the conditions for a better quality of life. Planning focuses on ways of solving existing problems within the county, and providing an action-oriented tool for Thayer County leaders and residents to achieve their vision for the future.

### THAYER COUNTY GOALS

The goals of the *Thayer County Comprehensive Plan* are intended to address existing conditions and trends, and to address issues and concerns of citizens as expressed through community engagement.

Goals for the comprehensive plan are presented throughout the plan. Each chapter contains goals and action items to address each element.

- **Goals** are statements of what the citizens of Thayer County want to achieve. A goal should be stated in a manner allowing it to be accomplished. Goals in this plan may include specific policies for land use and development. Goals inform policies of the County.
- **Action Items** are specific statements in support of goals. Action items are future-focused measures, projects, plans, or activities proposed to implement the comprehensive plan in the real world.

It is important to establish goals and actions over the short-term as well as long-term. Goals and action items should be evaluated, reviewed, and updated regularly as conditions and resources change.

### Tools and Strategies

There are a variety of tools and strategies lending further support to achieving the County's goals beyond specific action items identified in the comprehensive plan. For example, a Capital Improvements Program (CIP) can be used as an implementation tool across the County's responsibilities. These activities should be reviewed during regular plan maintenance and included in the plan if and when appropriate.

### Plan Maintenance and Review

As stated in the introductory chapter, the comprehensive plan is intended to address growth and development anticipated over the next 20 years. Goals are focused on the next 10 years, with more specific action items identified for short-term and long-term implementation. As noted in the final chapter, Implementation and regular review are essential to bring this plan to life.



## Chapter Three Population

Population drives all aspects of the life of a county including employment, housing, infrastructure, and fiscal stability. The local population grows and contracts as people are born and die, or move in and move out of a community. It is critical to understand how population trends potentially impact the area. Thayer County's leaders need to understand where the county has been, where it is currently, and where it appears to be going.

Understanding historic population trends aids in identifying where the population may grow in the future and in determining potential impacts on demand for goods, services, public safety, education, and other needs within the county. Projections provide an estimate for Thayer County to base future land use and development decisions. However, population projections

are only estimates and unforeseen factors will likely affect projections significantly.

The United States Census Bureau's American Community Survey (ACS) is the primary data source for this chapter. The most current, publicly available data is presented as appropriate. While the US Census Bureau's decennial census, which has taken place every 10 years since 1790, is well-known, difficulties with Census collection in 2020 have delayed the release of more detailed information. Therefore, analysis herein must rely on ACS data which are estimates based on the US Census Bureau's five-year running survey of all Americans. The primary data sets are the 2007-2011 data series for 2011, and the 2017-2021 data series for 2021.

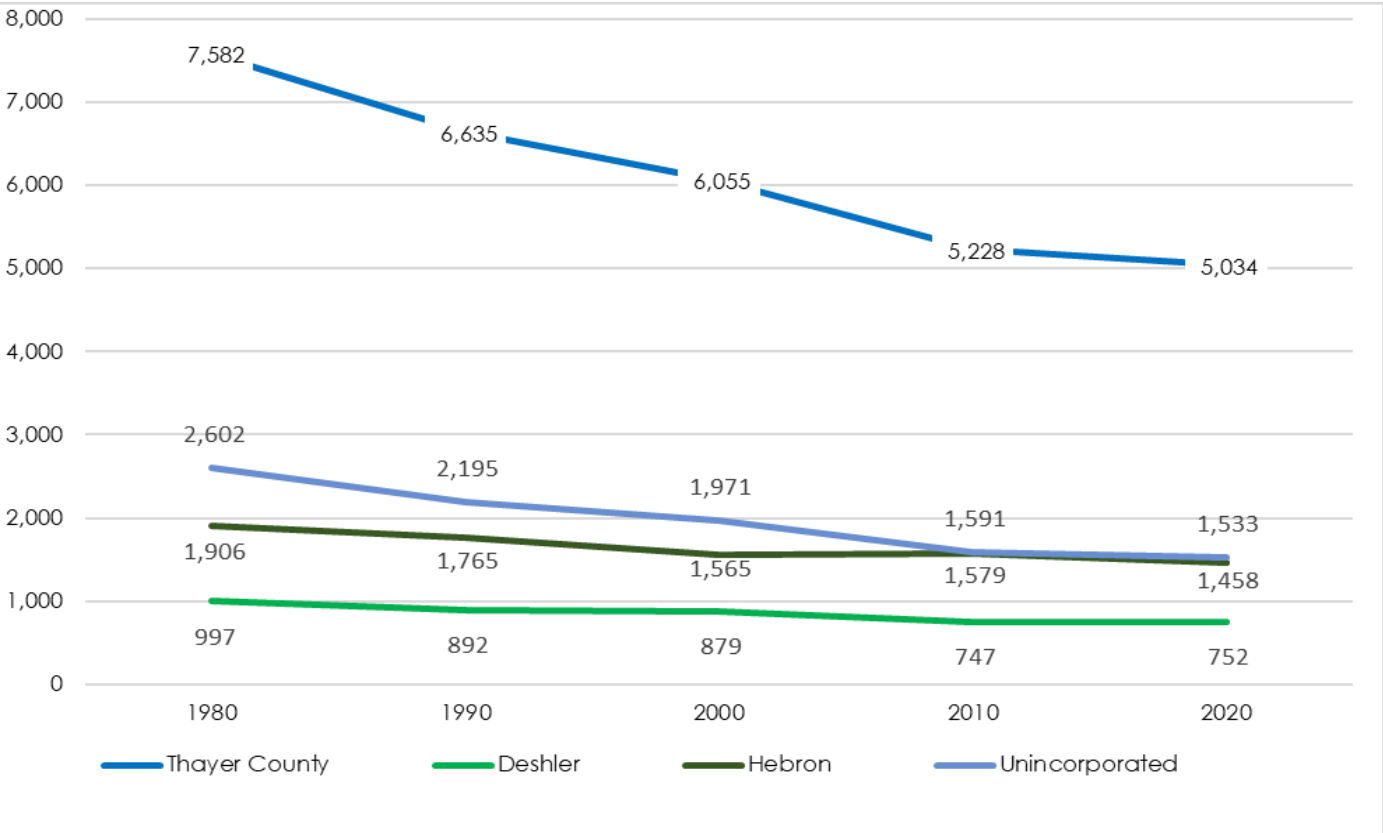
### TRENDS ANALYSIS

The US Census Bureau's latest estimate of Thayer County's population is 4,885 residents as of 2022. The Census Bureau's official decennial population counts for 1980 through 2020 for Thayer County and its municipalities are shown in Figures 3.1 and 3.2 following. These data provide a look at where the county has been and informs the projection of future population levels later in the chapter.

In Thayer County, the county seat of Hebron is the largest community with a population of 1,458 in 2020 (Figure 3.1). Gilead is the smallest, with a population of 30 residents (Figure 3.2).

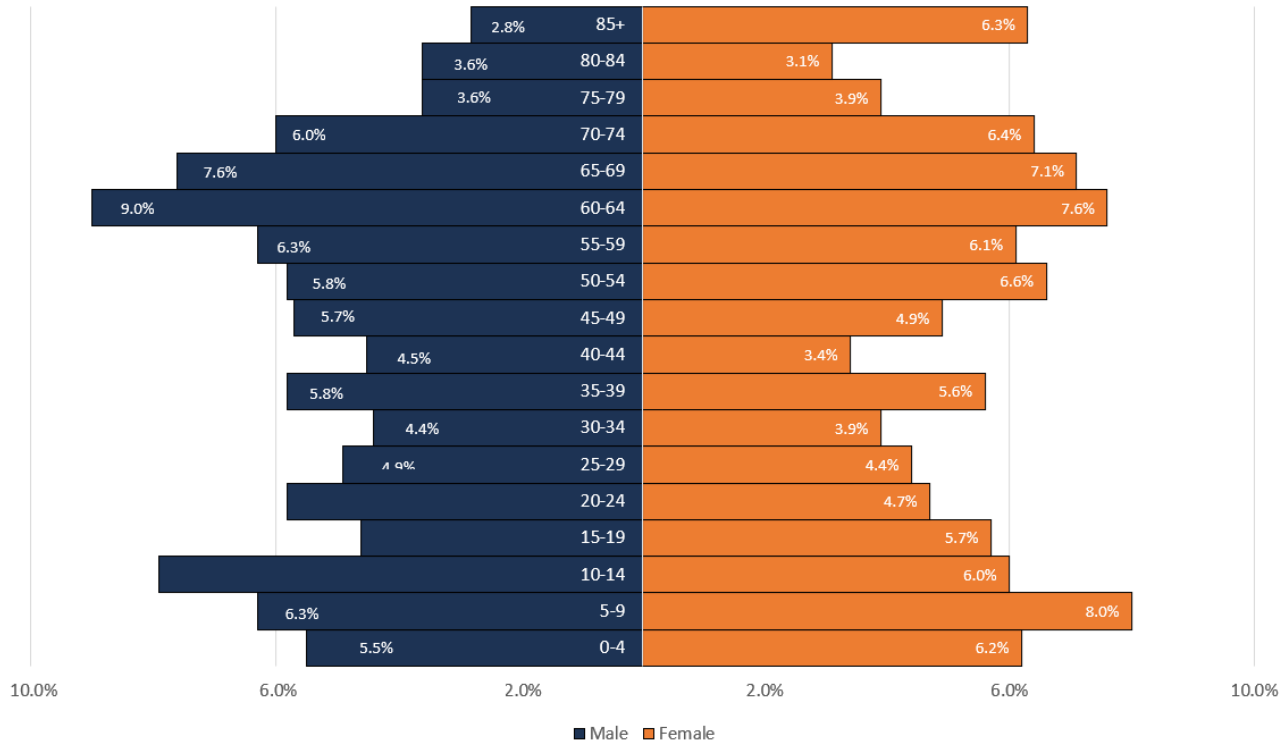
Overall, Thayer County has seen a 33.6% decline in population—a loss of 2,548 residents—from 1980 to 2020. From 2010 to 2020 alone, the decennial population fell by 3.7%. This decrease included

**FIGURE 3.1: POPULATION TRENDS 1980-2020 FOR THAYER COUNTY, UNINCORPORATED AREAS, DESHLER, AND HEBRON**



Source: U.S. Census Bureau 1980 - 2020.

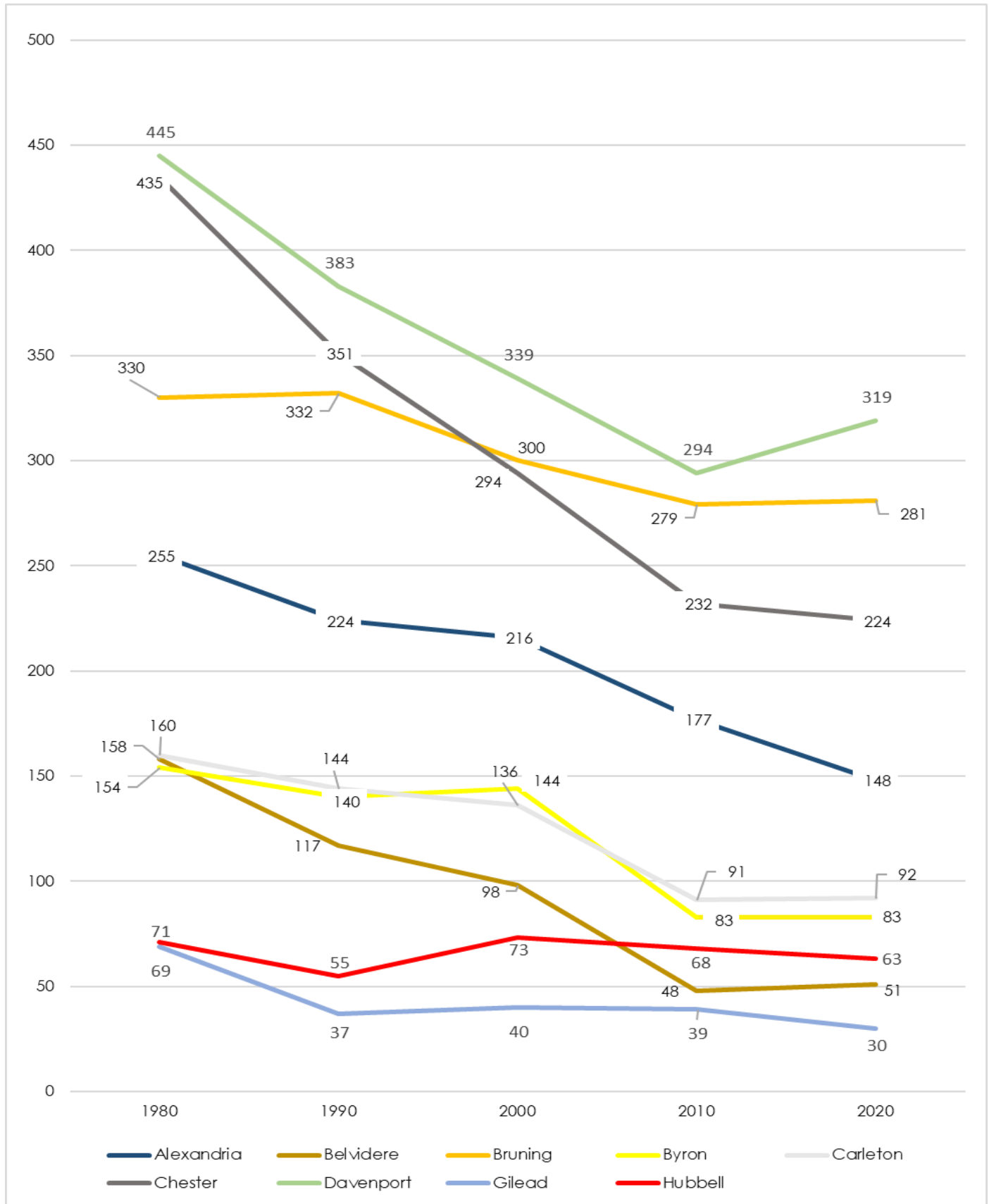
**FIGURE 3.3: POPULATION PYRAMID, 2021**



Source: U.S. Census Bureau American Community Survey 2017-2021.

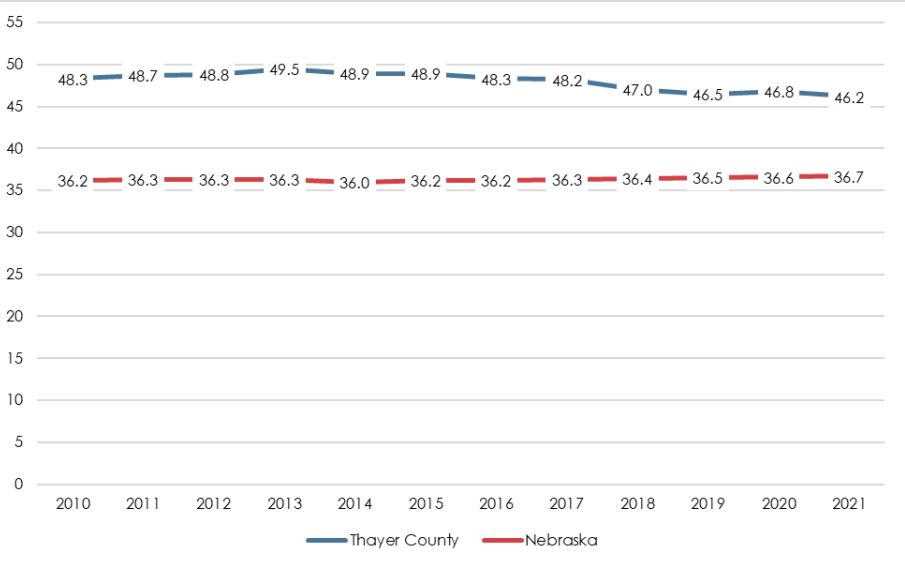


**FIGURE 3.2: POPULATION TRENDS 1980-2020 FOR THAYER COUNTY'S VILLAGES**



Source: U.S. Census Bureau 1980 - 2020

FIGURE 3.4: MEDIAN AGE 2010-2021



Source: American Community Survey 2006-2010 to 2017-2021

both the unincorporated portions of the county and its incorporated communities. The unincorporated portions of Thayer County declined by 41.1% (1,069 people) from 1980 to 2020, and the population per square mile fell from 9.1 to 8.8. Hebron saw a decrease of 448 people or almost one-quarter of its 1980

population. From 2010 to 2020, Hebron's population fell by 7.7%. The remaining incorporated places all saw declines as well. Ultimately, the county as a whole lost population across the board.

Figure 3.3 shows a population pyramid of the current age structure of Thayer County, as reported by the American Community Survey for 2017-2021. The largest cohort of men (9.0%) were age 60-64. The largest

cohort of women were age 5-9 (8.0%). There were also many more women (6.3%) than men (2.8%) age 85 and over. Service providers for senior citizens should take this gender discrepancy into account during program planning.

Among the working age population ages 20-64, the smallest cohort among women were age 40-44 (3.4%) and among men were age 30-34 (4.4%).

Median Age

The median age in Thayer County increased from 48.3 years in 2010 to approximately 49.5 years in 2013 and declined to 46.2 years in 2021 (Figure 3.4). The overall median age across Nebraska increased by 0.5 years during the same period.

DEPENDENCY RATIO

Dependency ratios examine the portion of Thayer County's population supporting the age groups historically dependent upon others, including those under 18 years and those 65 years and older. (See the box to the right for details on calculating

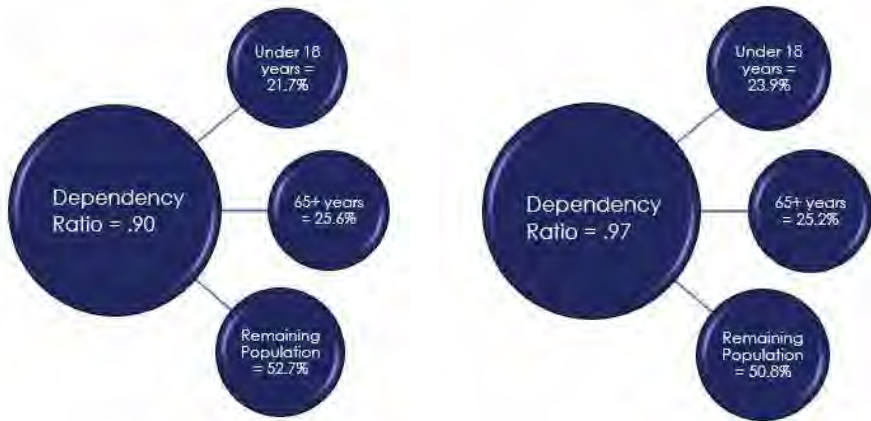
Dependency Ratio

The dependency ratio examines the portion of a community's population in the workforce, who can support age groups typically and historically dependent on the incomes of others.

- < 1: 1 Independent resident is able to support more than 1 Dependent resident
- = 1: 1 Independent resident able to support 1 Dependent resident
- > 1: 1 Independent resident able to support less than 1 Dependent resident

To calculate the dependency ratio, take the sum of the share 18 years and younger plus the share 65 years and older, divided by share of remaining population.

FIGURE 3.5: DEPENDENCY RATIO 2011 AND 2021



Sources: American Community Survey 2007-2011 & 2017-2021

**TABLE 3.1: RACE AND ETHNICITY 2011-2021**

Race	2011 *		2021*		2011-2021	
	Number	% of total	Number	% of total	Net Change	% change
Estimated Population	5,231		5,053		-178	-3.4%
White Alone	5,150	98.5%	4,801	95.0%	-349	-6.8%
Black Alone	5	0.1%	12	0.2%	7	140.0%
American Indian Alone	4	0.08%	6	0.1%	2	50.0%
Asian Alone	1	0.02%	1	0.02%	0	0
Some Other Race Alone	4	0.08%	13	0.3%	9	225.0%
Two or More Races	67	1.3%	220	4.4%	153	228.4%
Hispanic Origin (Any Race)	92	1.8%	145	2.9%	53	57.6%

Source: American Community Survey 2007-2011 & 2017-2021. \*ACS Estimate

the ratio.) This ratio highlights the proportion of employed persons in the county who support themselves as well as older and younger dependent populations.

Figure 3.5 presents the dependency ratios for 2011 and 2021 in Thayer County. The share of persons less than 18 years of age increased while the share of persons 65+ decreased slightly.

In 2011, Thayer County had a Dependency Ratio of 0.90 (47.3%/52.7%). By 2021, the Ratio had increased to 0.97 (49.2%/50.8%). While there were a decreasing number of residents in each age group, the working age population decreased at a greater rate than the historically dependent age groups. One positive aspect is the younger population decreased at a lesser rate, which indicates there may be more school-aged children than might be expected.

## ETHNICITY

During the past decade, Thayer County has seen a shift in the race and ethnicity of residents. Race and ethnicity are self-identification terms in which residents choose how they identify themselves.

In 2021, 95% of Thayer County residents identified as White, compared to 84% in Nebraska statewide. Among all residents, 2.9% identified as Hispanic or Latino of any race in 2021. While this was over twice as high as in 2011, statewide 11.5% of all Nebraska residents identified as Hispanic in 2021. Over 50% of Thayer County residents identify their ancestry as German.

Thayer County has seen increases in population identifying as Black, American Indian, Some Other Race, and Two or More Races. The largest increase was in the Two or More Races category, which grew by 228%.

## VETERANS

Among Thayer County residents 18 years and over, 8.1% are veterans, compared to 7.7% of Nebraskans overall. The largest group served during the Vietnam era.

Over 46% of veterans in the county are age 75 years and over. Among veterans, 44% reported they had a disability, compared to 17% of the general civilian population age 18 years and older.

## COMPONENTS OF CHANGE

Population change includes both natural increase or decline (the difference between births and deaths) and migration (the difference between people moving in and out of the county). For example, many places experience natural increase (more births than deaths) yet face a declining population due to out-migration.

## AGE STRUCTURE ANALYSIS

Age structure of the county affects population change. For example, where there are relatively larger younger age groups (20-44 years), there is typically a greater ability to sustain future population growth, since this age group tends to have children as well as participating in the workforce.

Table 3.2 presents the age group structure for Thayer County in 2011 and 2021. Age structure provides an understanding of where some of the population shifts are occurring. Reviewing population in this manner also informs a more detailed analysis of which specific groups are

**TABLE 3.2: AGE AND SEX CHARACTERISTICS 2011-2021**

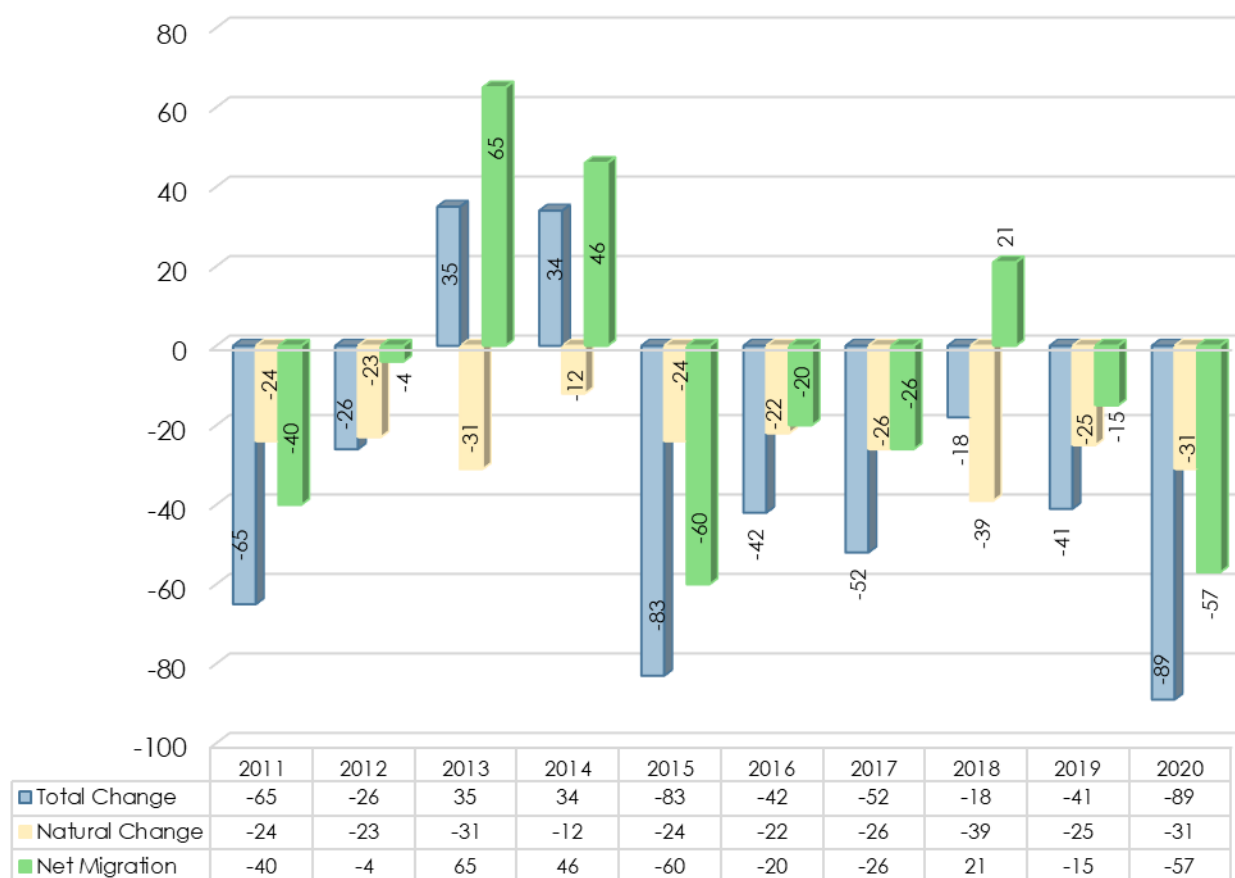
Male and Female Population Estimates					
Age in 2011	2011 population*	Age in 2021	2021 population*	Cohort Change	% Change
		0-4	295	-	-
		5-9	362	-	-
0-4	309	10-14	352	43	14.1%
5-9	277	15-19	259	-18	-6.6%
10-14	319	20-24	264	-55	-17.3%
15-19	340	25-29	235	-105	-30.9%
20-24	152	30-34	209	57	37.8%
25-29	199	35-39	288	89	44.9%
30-34	225	40-44	200	-25	-11.1%
35-44	539	45-54	580	41	7.6%
45-54	779	55-64	735	-44	-5.7%
55-64	758	65-74	684	-74	-9.8%
65-74	560	75-84	358	-202	-36.0%
75 & older	779	85 and over	232	-547	-70.2%
Total	5,231*		5,053*	-178	-3.4%

Source: American Community Survey 2007-2011 & 2017-2021. \*ACS Estimate

moving in and out of the county. Negative changes in a group indicate out-migration or a combination of out-migration and deaths.

Thayer County saw growth from 2011 to 2021 in several age groups—the 10-14, 30-34, 35-39, 45-49, and 45-54 groups (age in 2021). The 0-4 and 5-9 groups always show an increase, since these individuals were born between the two census survey periods. The 35-39 age group grew by 45%, a significant gain for the county. The age groups which increased are typically of the age with young families, who may be returning to their hometown or are attracted by an opportunity to raise their families in a rural community.

**FIGURE 3.6: POPULATION COMPONENTS OF CHANGE 2011-2020**



Source: U.S. Census Bureau

The remaining age groups were reduced from 2011 to 2021, through natural decrease (deaths) and net negative migration. As might be expected, the largest decreases were in the 75-84 and 85 and over age groups, which typically experiences decrease through migration to specialized care facilities in other communities and amenity migration, as well as natural decrease. The next largest decrease, however, was a 31% reduction in the 25-29 age group, as young people left the county for higher education and entry-level job opportunities. This reinforces the importance of being open to those young families looking for the small town lifestyle Thayer County has to offer.

### Natural Change and Net Migration

Population shifts have two key components: migration and natural change (the difference between births and deaths). The components of change for Thayer County are shown in Figure 3.6, based on US Census Bureau annual population estimates.

Thayer County experienced negative natural change—fewer births than deaths, in each year from 2010-2011 to 2019-2020. In 2013 and 2014, however, Thayer County experienced population growth due to net in-migration.

### POPULATION PROJECTIONS

Population projections are future estimates based upon past and present circumstances. There are different methods commonly

used to project future population, with advantages and disadvantages for smaller and larger communities. Several factors (demographics, economics, social, etc.) also affect the relationship between projections and ultimate population levels, positively or negatively.

The University of Nebraska-Omaha Center for Public Affairs Research (the State Data Center) develops official population projections for Nebraska counties, based on trends with both natural change and migration rates. The most recent report, composed after the release of the US Census 2020 complete count, projects Thayer County's population will continue to decrease, to:

- 4,644 by 2030,
- 4,440 by 2040,
- 4,320 by 2050.

### Trend Line Analysis

Trend Line Analysis is a process of projecting future population based upon the rate of change during a specified period of time. For this analysis, several different Thayer County population trend lines were reviewed, including 2010 to 2020, 2000 to 2020, 1990 to 2020, and 1970 to 2020. Results for Thayer County are shown in the side bar.

For the purposes of this plan, three population projections were selected to illustrate growth scenarios (Figure 3.7).

LOW: The 30-year trend was selected for the Low Series and may be considered a worst-case scenario. This is unlikely to occur yet serves as a baseline for planning purposes. If the County is

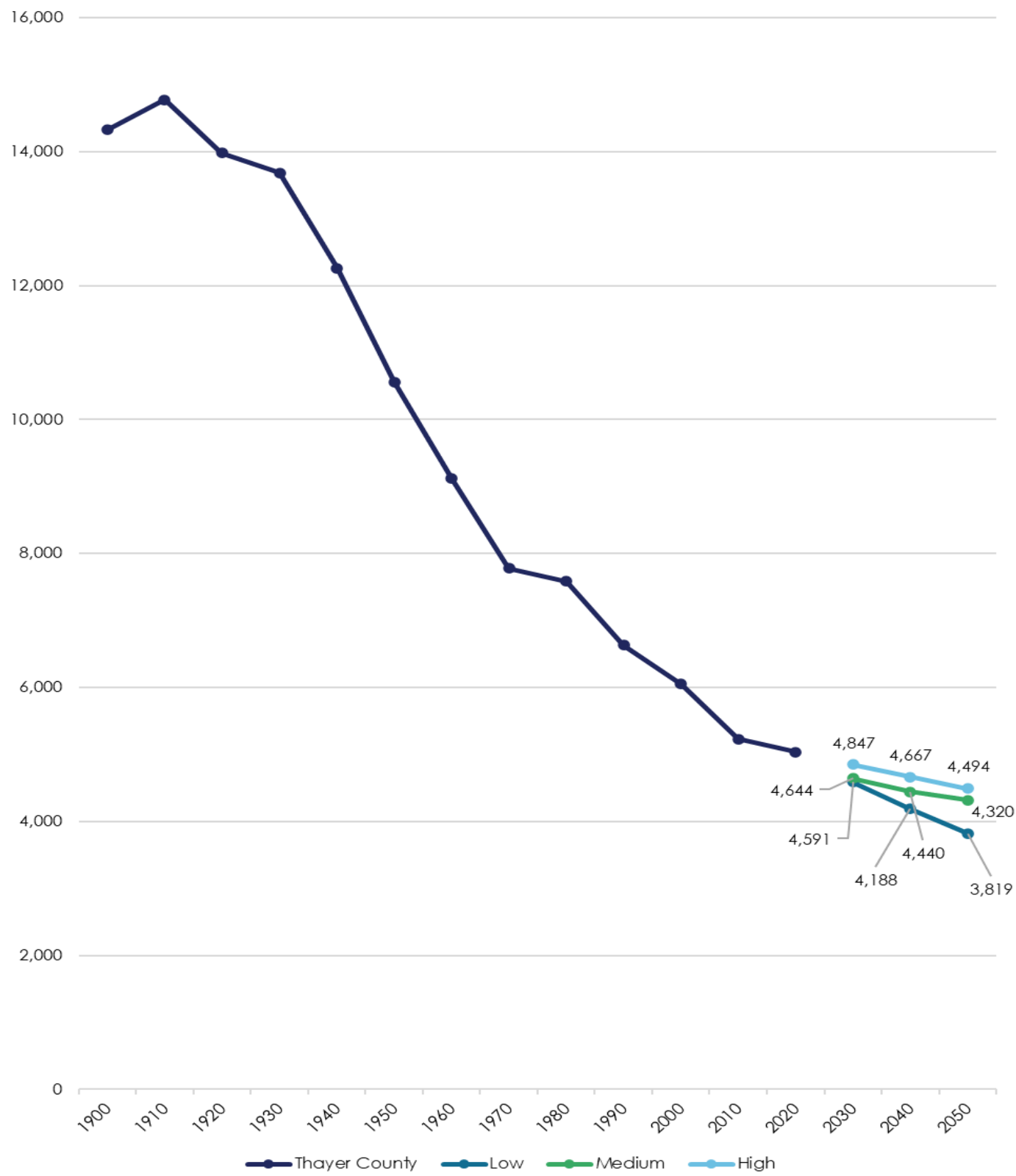
#### Thayer County Trend Line Analysis

Year	Ten Year Trend
2020	5,034 persons
2030	4,847 persons
2040	4,667 persons
2050	4,494 persons
Year	Twenty Year Trend
2020	5,034 persons
2030	4,590 persons
2040	4,185 persons
2050	3,816 persons
Year	Thirty Year Trend
2020	5,034 persons
2030	4,591 persons
2040	4,188 persons
2050	3,819 persons
Year	Fifty Year Trend
2020	5,034 persons
2030	4,614 persons
2040	4,230 persons
2050	3,877 persons

prepared for population at this level, they will be prepared for more moderate population change.

MEDIUM: The State Data Center projections serve as the Medium Series  
HIGH: The more-recent 10-year trend was selected as the High Series. This is an optimistic scenario which can also serve as a goal—to continue the recent trend moderating the historical contraction of population and working towards growth by making Thayer County a more attractive place to live.

FIGURE 3.7: THAYER COUNTY POPULATION AND PROJECTIONS



Sources: Nebraska State Data Center, Center for Public Affairs Research, University of Nebraska at Omaha, U.S. Census Bureau 1970 - 2020, Marvin Planning Consultants





## Chapter Four Housing

The housing profile presents data about past and present housing conditions, while identifying potential needs including provisions for safe, decent, sanitary, and affordable housing for every family and individual residing within the county. This plan focuses on housing in the unincorporated County jurisdiction; however, the housing element must consider the entire county-wide housing market. This chapter addresses household character, housing resources, and housing goals and policies.

Projecting future housing needs requires several factors to be considered including population change, household income, employment rates, land use patterns, and residents' attitudes and expectations. The following tables and figures provide information to aid in determining future housing needs and develop policies designed to

accomplish the housing goals for Thayer County.

### HOUSEHOLD CHARACTER

The US Census Bureau's American Community Survey (ACS) reported the total number of households in Thayer County fell by approximately 7% between the surveys of 2007

-2011 and 2017-2021 (Table 4.1). It should be noted the ACS is a rolling survey used to estimate totals and is subject to margins of error which are more pronounced for smaller areas.

While the number of households decreased by about 7%, the estimated population only declined by approximately 3.4% over the same time period. This resulted in an increase in the

**TABLE 4.1: THAYER COUNTY HOUSEHOLDS 2011-2021**

	2011	2021	Change 2011-2021
Total Households	2,212	2,056	-7%
Average Household Size	2.29	2.40	—
Married-couple household	1,311	1,084	-17%
Householder living alone	692	659	-5%
Households with one or more under 18 years	545	447	-18%
Households with one or more 65 years and over	866	816	-6%
Householder living alone, 65 years and over	396	353	-11%

Source: American Community Survey 2007-2011 & 2017-2021.

average household size to 2.4 persons.

The number of households with children under 18 decreased by 18%, while the number of households with residents aged 65 years or over decreased by about 6%.

HOUSEHOLDS

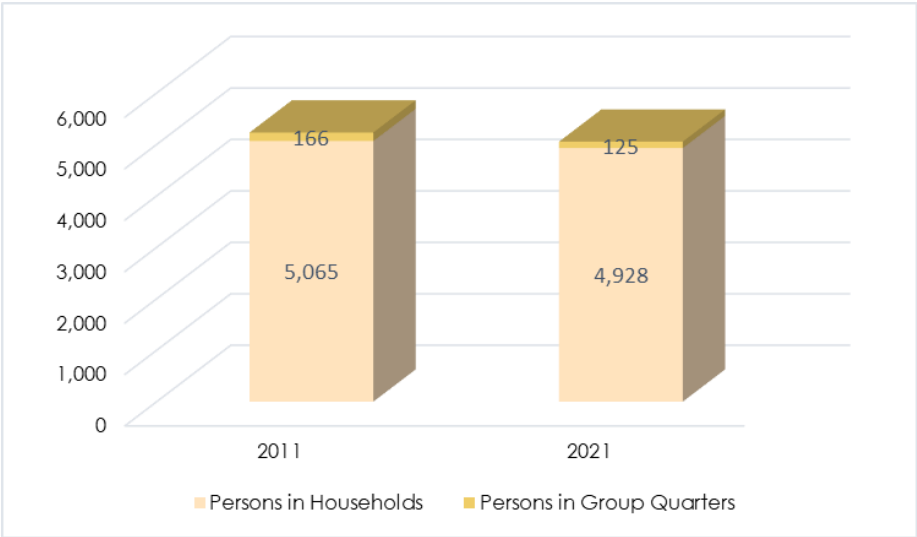
In 2021, there were 213 fewer people living in households than in 2011, which represents a contraction of -3% (Figure 4.1). Between 2011 and 2021, the number of people living in group quarters went from 166 people in 2011 to 125 in 2021, a decrease of about -25%. Group quarters include such places as residential treatment centers, skilled nursing facilities, or group homes, among other places.

Figure 4.2 shows the average household size in the region. The trend nationally has been towards a declining household size. In 2021, there was an average of 2.26 persons in each household in Thayer County. The average household size in surrounding counties in 2021 were:

- Clay County had 2.48 persons/household
- Fillmore County had 2.27 persons/household
- Jefferson County had 2.27 persons/household
- Nuckolls County had 2.36 persons/household
- Saline County had 2.65 persons/household

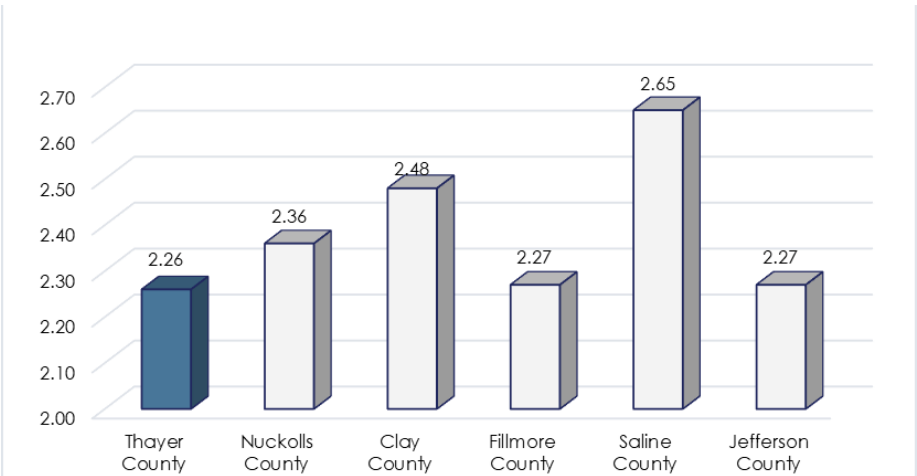
Two-person households were the largest group in owner-occupied housing in Thayer County in 2021, representing 777 housing units (Figure 4.3). By comparison, the largest household size for rentals

FIGURE 4.1: HOUSEHOLD POPULATIONS 2011-2021



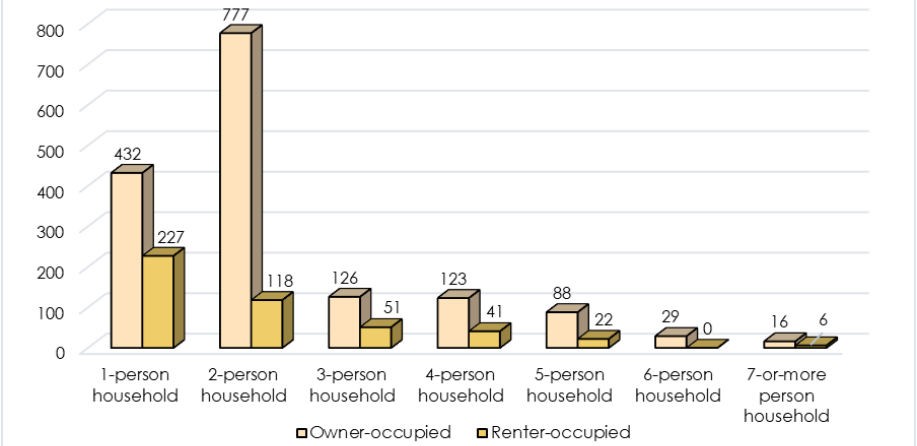
Source: American Community Survey 2007-2011 & 2017-2021.

FIGURE 4.2: AVERAGE HOUSEHOLD SIZE 2021



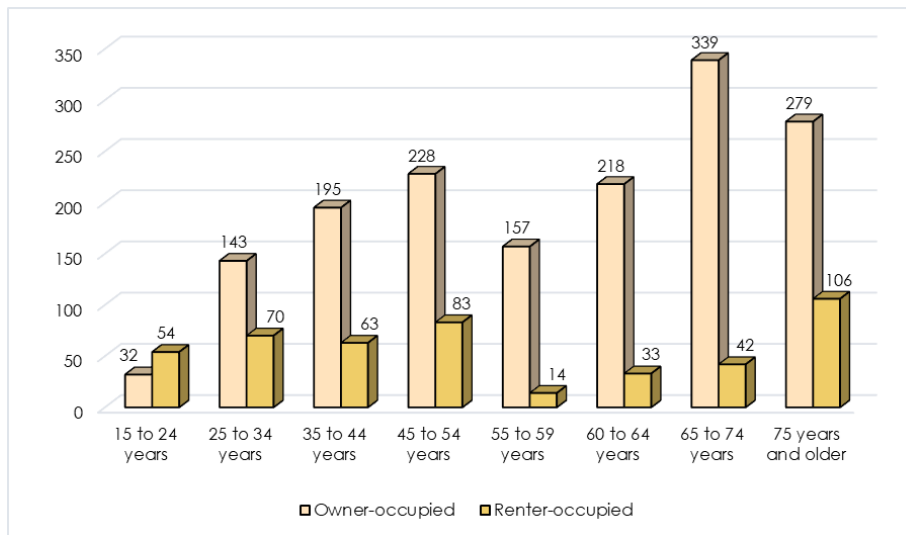
Source: American Community Survey 2017-2021.

FIGURE 4.3: PERSONS BY HOUSEHOLD TYPE 2021



Source: American Community Survey 2007-2011 & 2017-2021.

**FIGURE 4.4: HOUSEHOLDER AGE BY HOUSEHOLD TYPE 2021**



Source: American Community Survey 2007-2011 & 2017-2021.

was one-person households with 227 housing units.

The largest home ownership age cohort consists of those 65 to 74 years old (21%) (Figure 4.4). The largest renter-occupied age

cohort were those 75 years and older (23%). While home-ownership does tend to skew towards older demographics, there is a demand for rental housing among the oldest residents of Thayer County.



Residential Street, Hebron  
Source: Marvin Planning Consultants

## HOUSING STOCK

An analysis of the housing stock can reveal a great deal about trends in population and economic conditions. Examining the housing stock is also important to understand the overall quality of housing in Thayer County. The number of housing units counted in the US Census Bureau's decennial Census declined from 2,731 in 2010 to 2,498, a contraction of -8.5% (Table 4.2). This exceeded the population loss of -3.7% in the same Census count. The county seat of Hebron experienced a loss of approximately 10% of housing units in this Census count.

**TABLE 4.2: THAYER COUNTY HOUSING UNITS 2010-2020**

	2010	2020	Change 2010-2020
Thayer County	2,731	2,498	-8.5%
Alexandria	105	91	-13.3%
Belvidere	32	28	-12.5%
Bruning	155	146	-5.8%
Byron	63	54	-14.3%
Carleton	49	41	-16.3%
Chester	150	128	-14.7%
Davenport	175	167	-4.6%
Deshler	392	377	-3.8%
Gilead	24	18	-25.0%
Hebron	791	708	-10.5%
Hubbell	44	38	-13.6%

Source: US Census Bureau Redistricting File, 2010 & 2020.

It should be noted the ACS surveys for 2007-2011 reported there were 2,734 housing units in Thayer County compared to 2,731 in the 2010 decennial Census; and the ACS surveys for 2017-2021 reported there were 2,528 housing units compared to 2,498 in the 2020 decennial Census.

The ACS number is substantially below the statistic reported in the decennial Census, and may represent either an over-estimate in the ACS or an undercount in the decennial Census complete count.

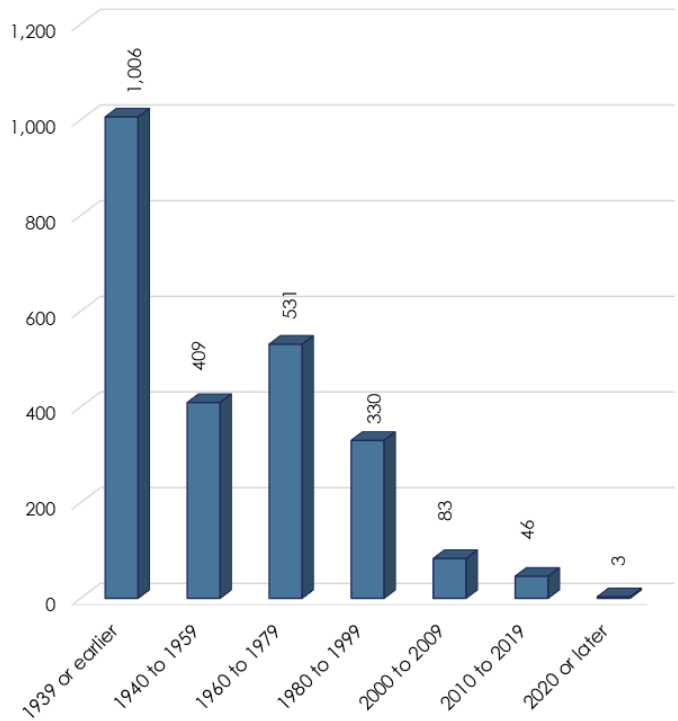
Age of Housing Units

Thayer County's housing stock is aging. Figure 4.5 shows 1,006 homes, or 42% of the county's 2,408 housing units (as covered by the ACS), were constructed prior to 1940. This statistic is county-wide, including each community, and will consist of older well-kept homes as well as homes likely in need of repair or demolition.

The county has experienced ebbs and flows of construction activity since 1940, with the largest number of homes (22%) built between 1960 and 1979. These data reflect the fact the local economy was relatively good during these decades. However, since 2000, the construction of new homes has slowed with less than 6% of all homes built in the last two decades.

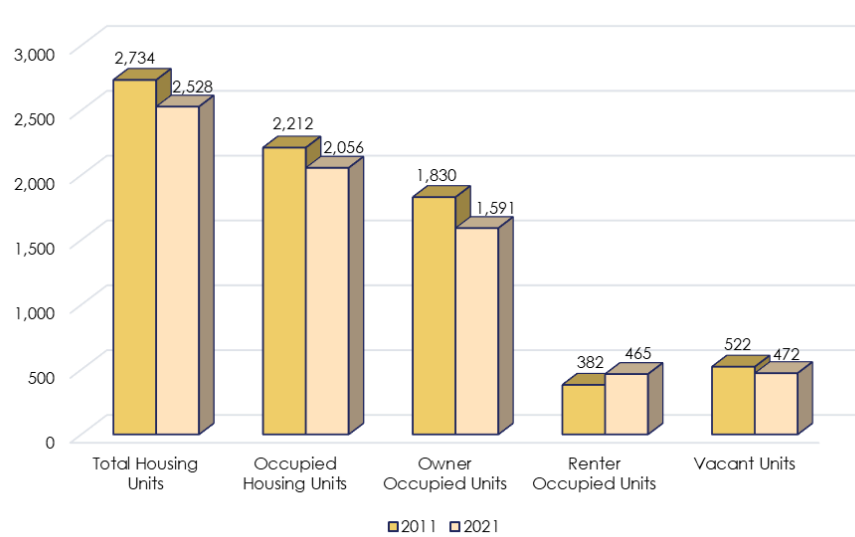
Due to the age of homes in the county, there may be a need for home improvement assistance. An example would be a special weatherization program to bring older homes up to current energy efficiency standards.

FIGURE 4.5: AGE OF EXISTING HOUSING STOCK



Source: American Community Survey 2007-2011 & 2017-2021.

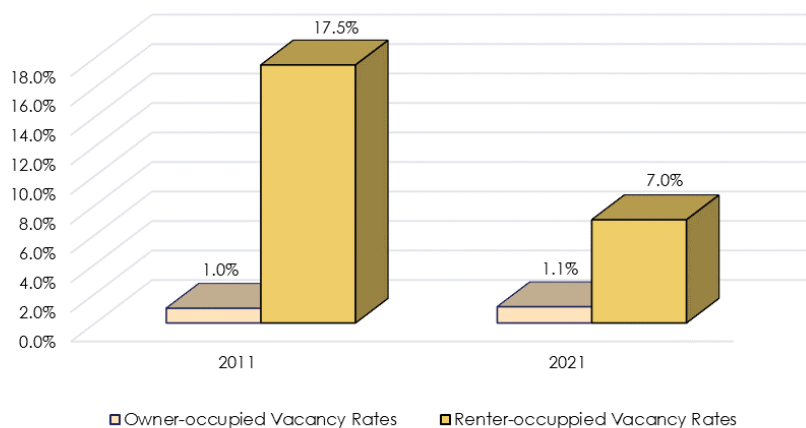
FIGURE 4.6: OCCUPIED VS. VACANT HOUSING UNITS 2011-2021



Source: American Community Survey 2007-2011 & 2017-2021.

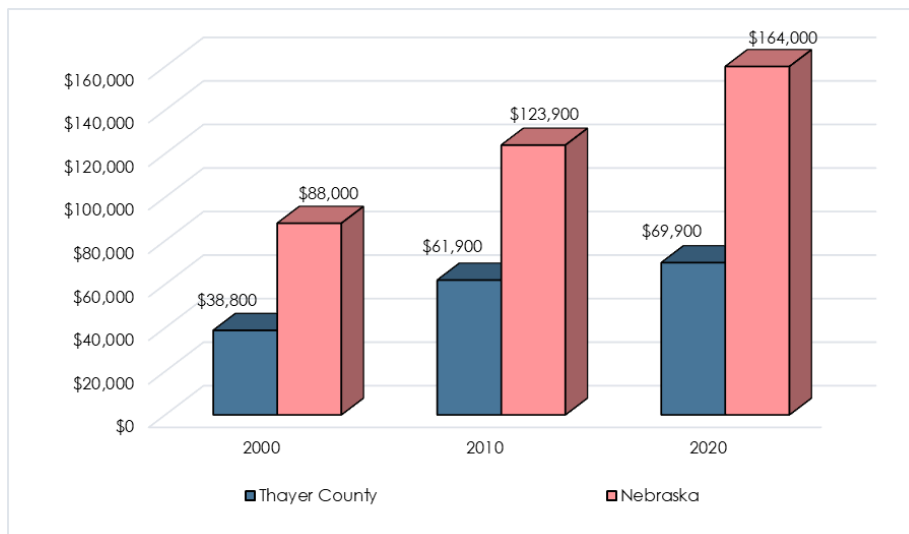


**FIGURE 4.7: VACANCY RATES BY TYPE OF UNIT 2011-2021**



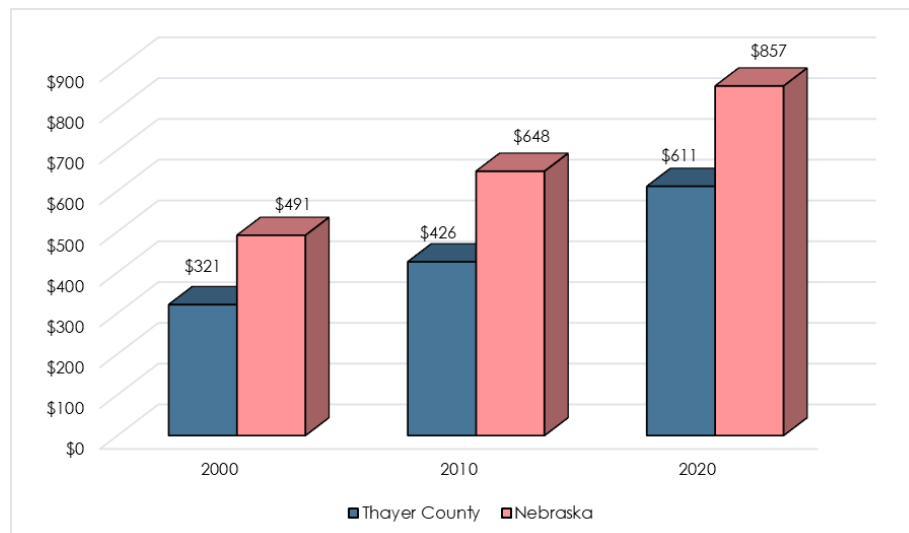
Source: American Community Survey 2007-2011 & 2017-2021.

**FIGURE 4.8: MEDIAN VALUE OWNER-OCCUPIED UNITS 2000-2020**



Source: U.S. Census Bureau 2000, American Community Survey 2006-2010 & 2016-2020.

**FIGURE 4.9: MEDIAN GROSS RENT 2000-2020**



Source: U.S. Census Bureau 2000, American Community Survey 2006-2010 & 2016-2020.

## Occupied vs. Vacant Units

The ACS estimated the number of occupied and vacant housing units in Thayer County declined from 2011 to 2021. The number of owner-occupied units decreased from 1,830 to 1,591 and the number of renter-occupied units increased from 382 to 465 (Figure 4.6). The vacancy rate for owner-occupied units increased slightly from 1.0% to 1.1%, while the vacancy rate for renter-occupied units fell from 17.5% to 7.0% (Figure 4.7).

## Median Value of Owner-Occupied Units

The median value of owner-occupied housing units in Thayer County increased from \$38,800 in 2000 to \$61,900 in 2010 (Figure 4.8). By 2020, the median value had increased to \$69,900. Over the same time period, the State's median value had increased from \$88,000 to \$164,000.

## Median Gross Rent

Thayer County and the state of Nebraska have both seen significant growth in median gross rent since 2000. Median gross rent in Thayer County almost doubled from 2000 to 2020, increasing to \$611 (Figure 4.9). Median gross rent in Nebraska increased by 75% to \$857 by 2020.

Rent in the county and state both grew faster than the Consumer Price Index, which only increased at a rate of 50.5% during the same period. This might be expected as the number of vacant housing units decreased faster than the population decreased, leading to increased demand for housing.

Substandard Housing

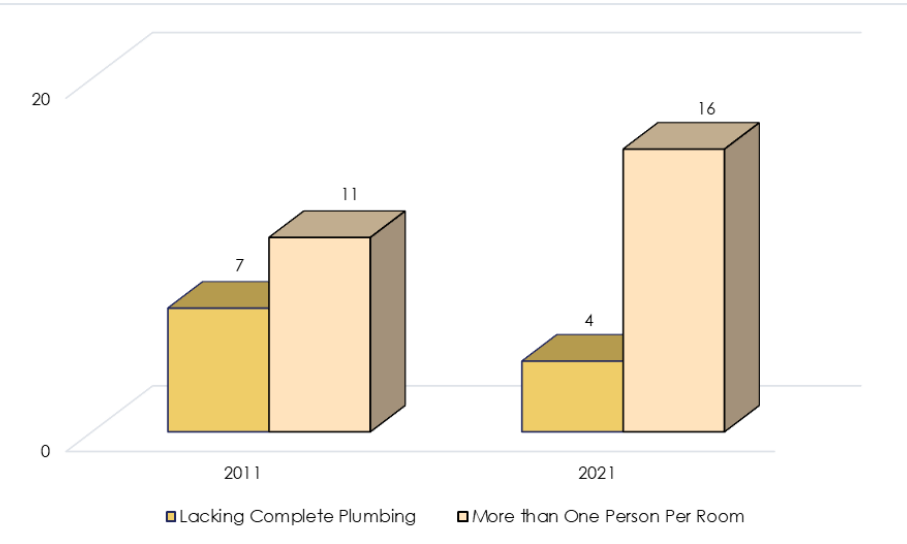
According to the U.S. Department of Housing and Urban Development (HUD) guidelines, housing units lacking complete plumbing or which are overcrowded are considered substandard housing units. HUD defines a complete plumbing facility as hot and cold-piped water, a bathtub or shower, and a flush toilet; overcrowding is more than one person per room. In addition, anytime there is more than 1.0 persons per room, the housing unit is considered overcrowded, thus substandard.

This criteria, when applied to Thayer County, means 18 units were considered substandard in 2011 and 20 units were substandard in 2021. (These data fail to consider housing units which met both criterion and counted twice.) Even so, the County should not assume the number of substandard housing units are overestimated. Housing units containing major defects requiring rehabilitation or upgrades to meet building, electrical, or plumbing codes should also be included in an analysis of substandard housing.

A majority (55%) of respondents to the Thayer County Comprehensive Plan Survey strongly agree old buildings and houses should be cleaned up or torn down. Over 80% agreed or strongly agreed “I would support a program to strengthen community pride and appearance.”

A comprehensive survey of the entire housing stock should be completed every five years to determine and identify the housing units which would benefit from rehabilitation or modernization work. This process

FIGURE 4.10: SUBSTANDARD HOUSING CONDITIONS 2011-2021



Source: American Community Survey 2007-2011 & 2017-2021.

will help ensure a county maintains a high quality of life for its residents through protecting the quality and quantity of its housing stock.

HOUSING RESOURCES

HOUSING STUDY

The Thayer County Economic Development Alliance sponsored a comprehensive housing study and needs analysis for Thayer County and its communities in February 2021. The report included a community profile, citizen participation, and analysis of housing demand.

The housing study includes a Housing Action Plan for implementation of the study's recommendations. These action items include:

- 1. Establish housing development partnerships
- 2. Regional land bank program
- 3. Establish a County-wide housing investment fund

- 4. Expand and organize a continuum of (Housing) residential care program for residents 55+ years of age.
- 5. Plan and implement an annual “Housing Summit”.
- 6. Continue and maintain comprehensive and redevelopment planning activities.
- 7. Establish a Thayer County workforce employer housing assistance program.
- 8. Establish a Thayer County housing disaster/pandemic recovery program.
- 9. Create and implement a Housing Code inspection/ rental licensing program.
- 10.Owner/rental housing rehabilitation/preservation program.
- 11.Owner/rental housing demolition/replacement program.
- 12.Low-to-Moderate income elderly (55+ years) rental housing initiative.
- 13.Low-income elderly (55+ years) owner housing initiative
- 14.Moderate-to-Upper income elderly (55+ years) homeownership initiative.

15. Low-to-Moderate Income rental housing initiative.
16. Low-income homeownership initiative.
17. Moderate-to-Upper income homeownership initiative.
18. Downtown housing initiative- Hebron & Deshler

## HOUSING TYPES

Zoning and subdivision regulations should be reviewed to assure county homeowners

have a variety of housing options available in appropriate locations. A majority of respondents to the Thayer County Comprehensive Plan Survey (62%) agreed or strongly agreed "New housing should be built within city limits or within close proximity."

### Missing Middle Housing

"Missing middle" housing types provide diverse housing options,

such as duplexes, fourplexes, cottage courts, and multiplexes. These house-scale buildings fit seamlessly into existing residential neighborhoods. They provide solutions along a spectrum of affordability to address the mismatch between the available U.S. housing stock and shifting demographics combined with the growing demand for walkability.

Many "missing middle" housing types are more suited to cities and villages, as they support walkability, locally-serving retail, and public transportation options. Some missing middle housing types, in particular duplex or single-family attached housing units, would help meet needs on many family farms and other rural needs.

Source: [missingmiddlehousing.com](http://missingmiddlehousing.com)



New Multifamily Housing, Deshler  
Source: Marvin Planning Consultants

### Manufactured and Modular Homes

Prefabricated or manufactured homes are built off-site, typically in an enclosed factory, and transported as single or multiple units to the home site.

The term "manufactured home" is defined by federal law (24 CFR 3280) as built under the federal building code administered by the US Department of Housing and Urban Development—the HUD Code—which went into effect in 1976. The term "mobile home" refers to older homes, built prior to 1976 which do not meet the HUD Code. "Modular homes" are also built off-site, typically to meet the International Residential Code (IRC) the same as a site-built home.



Example of Modular/Manufactured Housing  
Source: Marvin Planning Consultants

Prefabricated housing is often more affordable than site-built housing, and factory conditions may result in higher-quality as construction is sheltered from bad weather. Manufactured and modular homes are often placed on a basement or permanent foundation and should be treated similarly to standard site-built construction in zoning and subdivision regulations.

Source: [www.hud.gov/OMHP](http://www.hud.gov/OMHP)

### ECONOMIC DEVELOPMENT DISTRICT

The Southeast Nebraska Economic Development District (SENDD—see Chapter Five) offers programs and funds to provide new housing and rehab well-loved homes throughout Thayer County. Programs include Owner-Occupied Rehabilitation, Purchase-Rehab-Resale program, upper story housing development.

Source: [www.sendd.org/](http://www.sendd.org/)

### Home Ownership Program

Thayer County Economic Development Alliance (see Chapter Five) has made funds available through the Nebraska Affordable Housing Program to provide down payment assistance to homebuyers for the purchase of existing homes within Thayer County. The Southeast Nebraska Development District (SENDD) has been contracted by TCEDA to conduct housing management of the program

Source: [www.tceda.org/life/housing](http://www.tceda.org/life/housing)

### LAND TRUSTS

A community land trust (CLT) is a nonprofit corporation that owns land on behalf of a community. CLTs use public and private

investment funds to acquire land. They hold land for the benefit of the community.

As a compliment to land trusts, land banks are public authorities or non-profit organizations created to acquire, hold, manage, and redevelop property. The purpose is to return these properties to productive use to meet community goals, such as increasing affordable housing or stabilizing property values.

Source: [nhc.org/policy-guide/land-based-solutions/land-banks-and-community-land-trusts](http://nhc.org/policy-guide/land-based-solutions/land-banks-and-community-land-trusts)

## HOUSING GOALS AND ACTIONS

### HOUSING GOAL 4.1

A variety of housing is available throughout the county.

#### Actions

- 4.1.1 Support TCEDA implementation of action items in the Housing Action Plan.
- 4.1.2 Target redevelopment strategies toward vacant and abandoned properties.
- 4.1.3 Consider participation in an area-wide code enforcement program.
- 4.1.4 Promote the private renovation of vacant homes.
- 4.1.5 Support cities and villages in accommodating new housing.
- 4.1.6 Regularly review zoning codes to accommodate changing housing needs.

### HOUSING GOAL 4.2

Thayer County residents in need have access to affordable and attainable housing.

#### Actions

- 4.2.1 Prioritize public funding for projects incorporating affordable, missing middle and/or workforce housing.
- 4.2.2 Work with affordable housing developers to create additional rental housing for very-low income families.
- 4.2.3 Explore creating a local Community Land Trust.





# Chapter Five Economic Development

## ECONOMIC PROFILE

Economic development is a process of investment to expand prosperity in an area. New enterprises and the retention and expansion of existing businesses creates jobs and provides new sources of income. A diversified economic base enables local leaders to respond to changing economic conditions, improve local incomes, increase job opportunities, and improve the quality of life of a community.

While the jurisdiction of this plan focuses on the unincorporated area of Thayer County, economic development extends across village, city, and county lines. In this chapter, income and employment data and trends were reviewed for Thayer County and Nebraska statewide. Data sources include the US Census Bureau, US Bureau of Economic Analysis (BEA), and US Bureau of Labor Statistics.

## INCOME STATISTICS

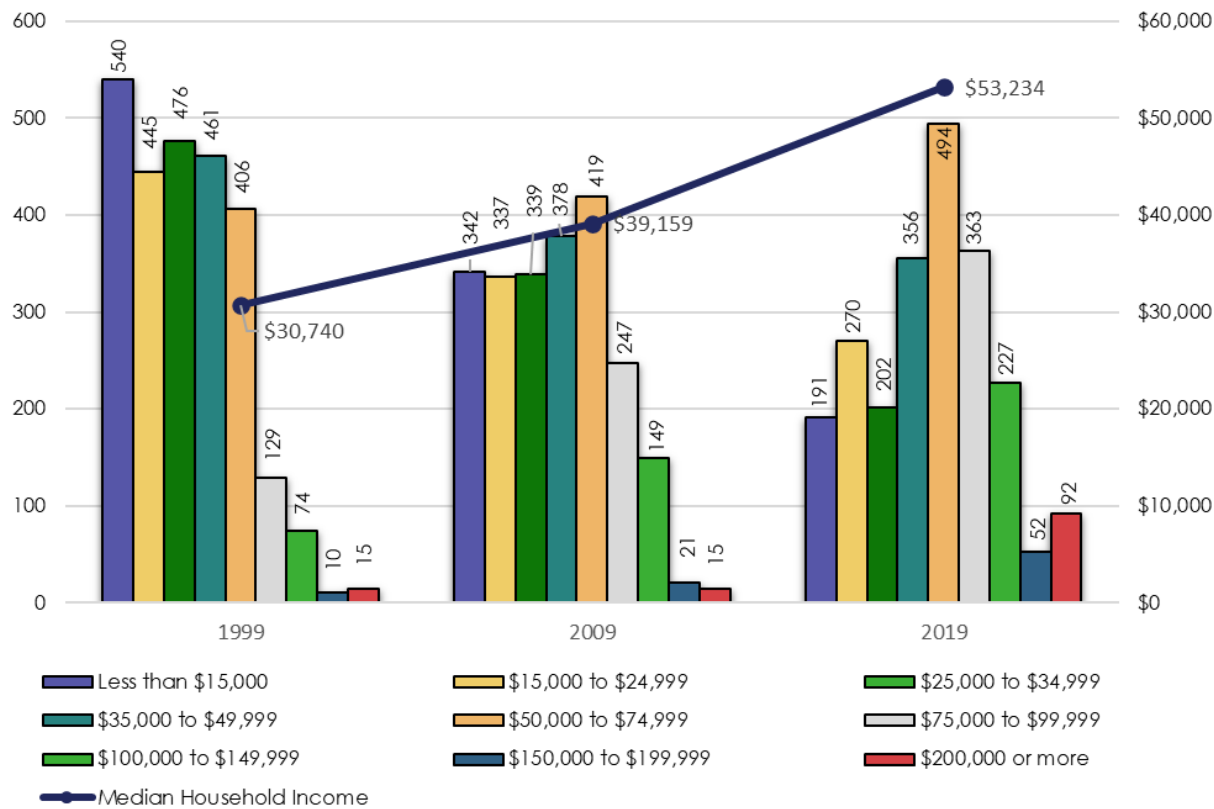
Income statistics indicate the earning power of residents. The data below show personal and household income levels for Thayer County in comparison to the state. These data were reviewed to determine whether households experienced increases in income at a rate comparable to the state of Nebraska and the Consumer Price Index (CPI).

Figure 5.1 shows the number of Thayer County households in different income ranges in 1999, 2009, and 2019, according to US Census surveys. In 1999, the most common income range was less than \$15,000. In 2009, the most common range was \$50,000 to \$74,999 in the middle of the range, which included even more households in 2019.

The median household income for Thayer County was \$30,740 in 1999, which was significantly less than the state's median income of \$39,250. By 2009, the median household income increased to \$39,159, which was also significantly smaller than the state's median household income of \$49,342. Finally, in 2019, the median household income had risen to \$53,234, compared to the state's median household income of \$63,105.

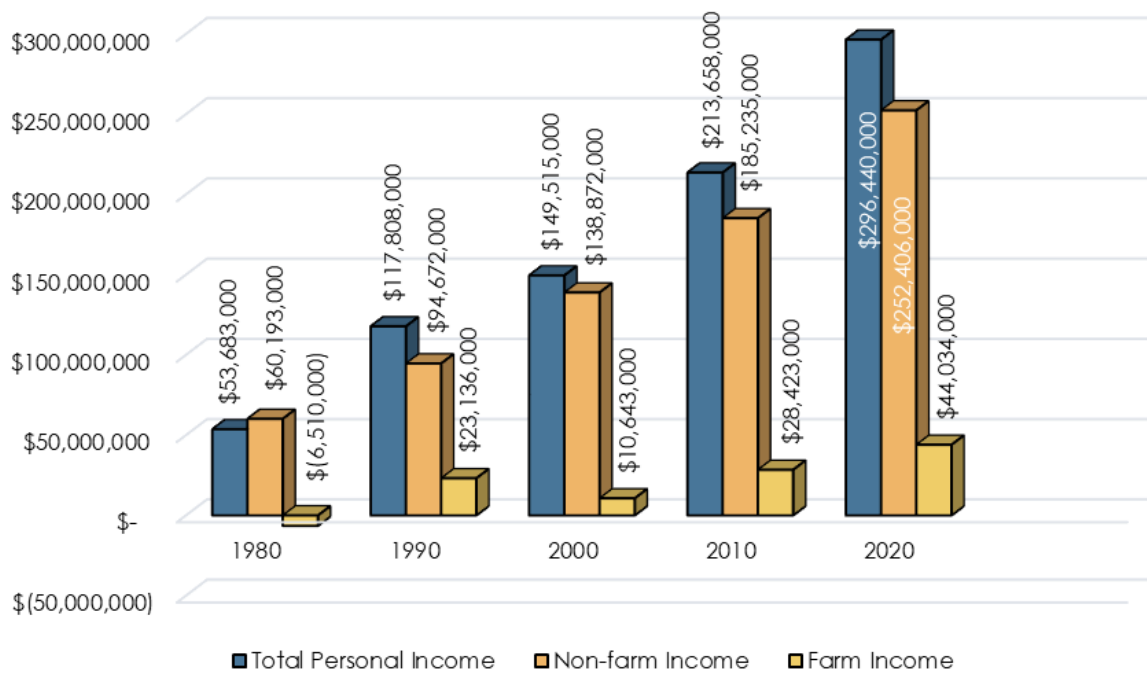
Thayer County's median household income grew by approximately 75% from 1999-2019. The state's median household income meanwhile grew by 60%, although the county figure was still well behind the state. However, the CPI for this period increased by 50.5%, which indicates household income growth in Thayer County exceeded inflation. Therefore,

FIGURE 5.1: HOUSEHOLD INCOME 1999 TO 2019



Source: U.S. Census Bureau 2000, American Community Survey 2006-2010 & 2016-2020.

FIGURE 5.2: INCOME BY SOURCE 1980 TO 2020



Source: BEA Regional Economic Accounts, 1980 - 2020

households were at least earning more in real dollars in 2020 than in 2000.

### Income by Source

There are different sources of personal income, with the two primary categories being farm and non-farm income. Changes in these statistics can be compared to the CPI, in order to determine if increases are keeping pace with inflation.

Between 1980 and 2020, the CPI increased by 214%. According to the US Bureau of Economic Analysis (BEA), Total Personal Income in Thayer County went from \$53,683,000 in 1980 to \$296,440,000 in 2020 (Figure 5.2). This was an increase of 452%. Total personal income in the county increased at approximately twice the rate of inflation over the 40-year period.

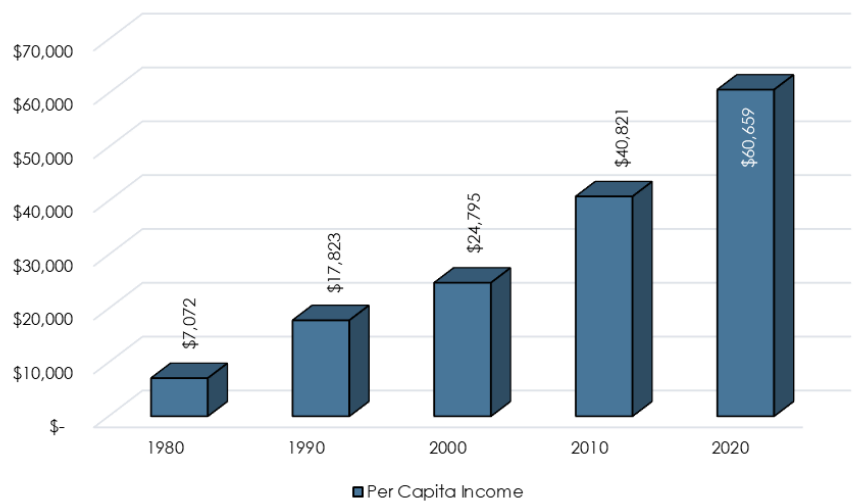
### Non-farm and Farm Income

Non-farm income increased from \$60,193,000 in 1980 to \$252,406,000 in 2020. This was an increase of approximately 320%, which was greater than the rate of increase of the CPI. By 2020, farm income had risen from -\$6,510,000 to \$44,034,000, an increase of 776%.

### Per Capita Income

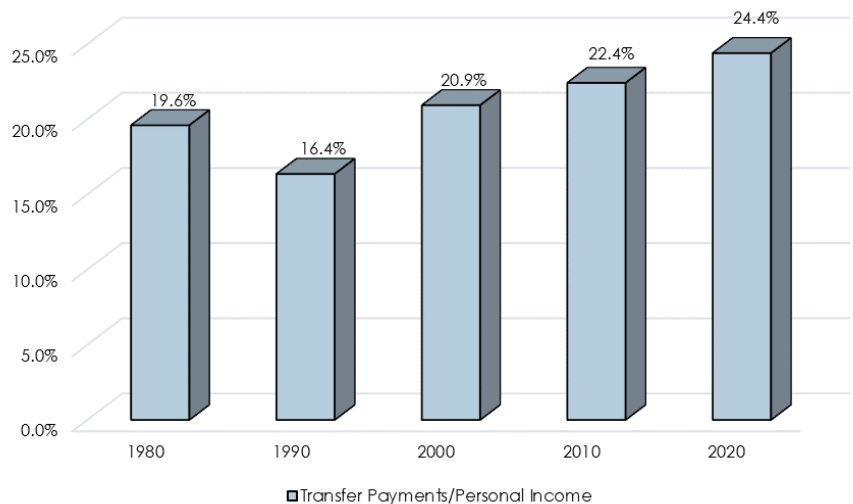
Per Capita Income is determined by dividing total personal income, earned by all of the residents in an area, by the number of residents in an area. The per capita income in Thayer County increased from \$7,072 in 1980 to \$60,659 in 2020, an increase of 758% (Figure 5.3). This was significantly higher the CPI increase. Thayer County's per capita income exceeded Nebraska's per capita income level of \$57,570 in 2020.

**FIGURE 5.3: PER CAPITA INCOME**



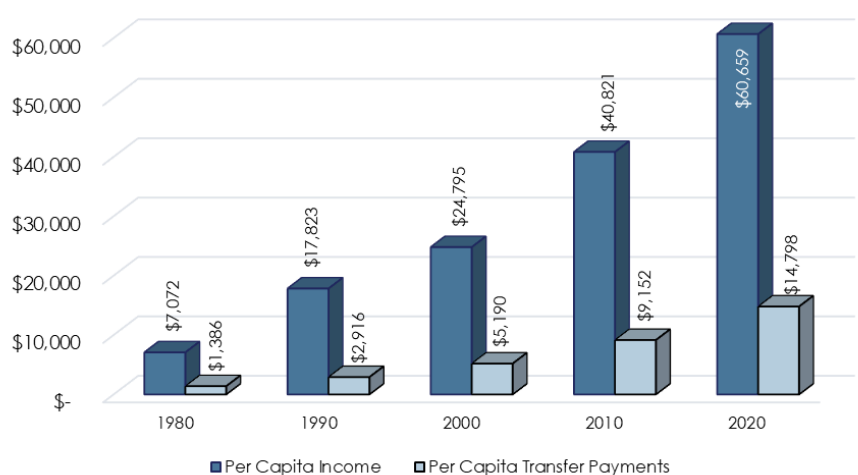
Source: BEA Regional Economic Accounts, 1980 - 2020

**FIGURE 5.4: TRANSFER PAYMENTS AS A PROPORTION OF INCOME 1980-2020**



Source: BEA Regional Economic Accounts, 1980 - 2020

**FIGURE 5.5: PERSONAL INCOME AND TRANSFER PAYMENTS 1980-2020**



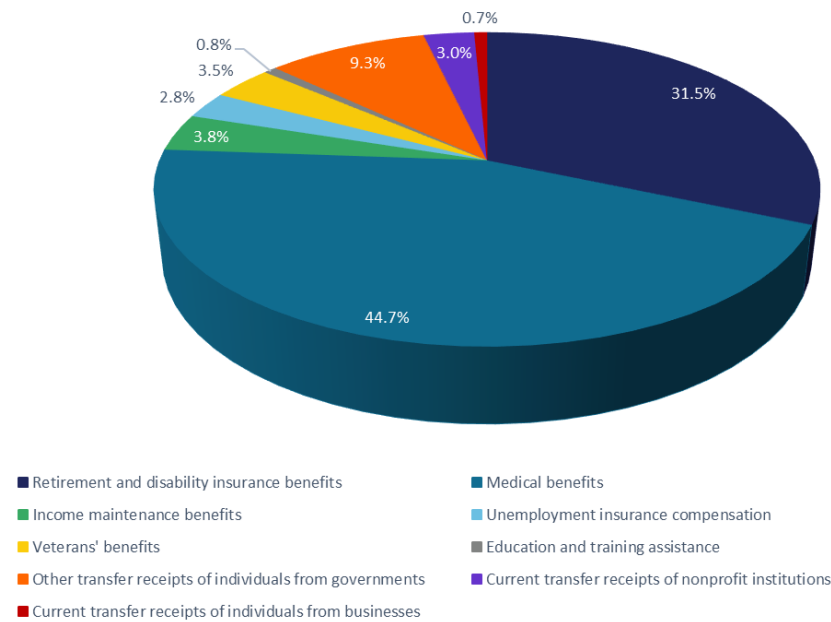
Source: BEA Regional Economic Accounts, 1980 - 2020

TRANSFER PAYMENTS

Another income source is transfer payments, which are a growing component of non-farm income. Transfer payments as a proportion of personal income have risen considerably since 1970. In 1980, transfer payments comprised 19.6% of total personal income (Figure 5.4). In 1990, this figure was reduced to 16.4%; however, by 2020, transfer payments represented 24.4% of total personal income. Per Capita transfer payments rose to \$14,798 by 2020 (Figure 5.5).

As seen in Figure 5.6, the majority of transfer payments are in the form of Medical Benefits and Retirement Benefits, indicating a major impact of the aging

FIGURE 5.6: TRANSFER PAYMENTS BY SOURCE 2020



Source: BEA Regional Economic Accounts, 2020

Transfer Payments

Government transfer payments span a wide range of uses and organizations. The funds for these payments also come from many different sources. However, the most common form of transfer payment is retirement and disability insurance benefits. These payments are made to those who qualify for OASDI benefits, railroad retirement and disability benefits, workers compensation programs and others.

Medical benefits are the second most common form of transfer payments. These types of benefits are government payments made through intermediaries to beneficiaries of medical care. Specifically, medical benefits come from either public assistance medical care or military medical insurance benefits. Public assistance is received by low-

income individuals and payments come through the federally assisted, state-run Medicaid program and the Children's Health Insurance Program (CHIP). Military insurance is provided to military personnel through the TriCare Management Program.

Unemployment insurance is perhaps the third most common type of government transfer payments. This insurance includes state unemployment, federal unemployment and other organizations of unemployment compensation. Veterans' benefits are also a fairly common form of transfer payment. Transfer payments which surround these types of benefits are made up of veterans' pension and disability benefits, veterans' life insurance benefits and other types of veterans assistance.

Finally, education and training assistance is considered a type of government transfer payment. This government assistance consists of higher education student assistance, interest payments on student loans and state educational assistance. The combination of these benefits help individuals at all levels of education afford school. They also help people from all types of backgrounds. From individuals who may only need a loan to people who need more assistance, all people can be helped with these transfer payments.



**TABLE 5.1: TRANSFER PAYMENTS 1980-2020**

Description	1980	1990	2000	2010	2020	Change	Change/ Year
Personal current transfer receipts (thousands of dollars)	10,521	19,275	31,296	47,899	<b>72,319</b>	587%	14.7%
Current transfer receipts of individuals from governments (thousands of dollars)	10,031	18,501	30,123	46,818	<b>69,655</b>	594%	14.9%
Retirement and disability insurance benefits	6,412	11,385	14,832	18,389	<b>22,773</b>	255%	6.4%
Social Security benefits	6,237	11,123	14,493	17,735	<b>21,913</b>	251%	6.3%
Excluding Social Security benefits	175	262	339	654	<b>860</b>	391%	9.8%
Medical benefits	2,356	5,521	12,914	22,328	<b>32,294</b>	1271%	31.8%
Medicare benefits	1,262	3,483	7,348	14,406	<b>20,700</b>	1540%	38.5%
Public assistance medical care benefits	1,083	2,008	5,540	7,831	<b>11,505</b>	962%	24.1%
Military medical insurance benefits	11	30	26	<b>91</b>	89	709%	17.7%
Income maintenance benefits	484	683	1,350	2,319	<b>2,779</b>	474%	11.9%
Supplemental Security Income (SSI) benefits	134	14	299	348	<b>459</b>	243%	6.1%
Earned Income Tax Credit (EITC)	57	175	466	688	<b>814</b>	1328%	33.2%
Supplemental Nutrition Assistance Program (SNAP)	91	130	123	331	<b>365</b>	301%	7.5%
Other income maintenance benefits	202	264	462	952	<b>1,141</b>	465%	11.6%
Unemployment insurance compensation	155	77	183	800	<b>2,004</b>	1193%	29.8%
State unemployment insurance compensation	124	73	183	790	<b>2,004</b>	1516%	37.9%
Excluding state unemployment insurance compensation	31	4	-	10	-	-	-
Veterans' benefits	516	650	587	1,424	<b>2,535</b>	391%	9.8%
Education and training assistance	108	183	245	409	<b>551</b>	410%	10.3%
Other transfer receipts of individuals from governments	-	2	12	1,149	<b>6,719</b>	-	-
Current transfer receipts of nonprofit institutions	279	311	494	630	<b>2,138</b>	666%	16.7%
Current transfer receipts of individuals from businesses	211	463	679	451	<b>526</b>	149%	3.7%

Source: BEA, Regional Economic Information System 1980 - 2020 Data in thousands of dollars.

population. There may be an economic development opportunity for retiree retention and attraction, as well as balancing the demographic profile with youth retention and in-migration.

Table 5.1 enumerates different categories of transfer payments from 1980 to 2020. (Figures in Table 5.1 are in thousands of dollars.) The largest increase in transfer payments was in Medicare benefits with a total increase of approximately 1,540%. The bold text highlight the highest year of expenditures in each category. Actual expenditures in 2020 in some categories showed a decrease from previous years, although public expenditures during the first year of the COVID pandemic likely influenced the year's expenditures.

## EMPLOYMENT

Employment by industry data assists in understanding the key generators of income. This section provides data on the types of jobs in Thayer County and the type of employment and occupations of residents.

### INDUSTRY EMPLOYMENT

As shown in Table 5.2, the total number of jobs in Thayer County fell from 3,644 in 2011 to 3,429 in 2021, according to the US Bureau of Economic Analysis (BEA). This was a contraction of -6.3%, with farm employment decreasing by -5.7% and non-farm employment decreasing by -6.4%. While there were impacts from the pandemic, statewide total employment in Nebraska grew by 7.9% in the same decade.

The Government sector contracted by -4.8% from 2011 to 2021, yet remained the largest reported sector with 661 jobs in Thayer County.

Health Care is the largest employment sector in Nebraska statewide. In Thayer County, employment in Health Care was not disclosed in 2021 to avoid identifying any individual establishment.

Although manufacturing grew by 6.7% statewide, in Thayer County jobs decreased to 460 in 2021. Even so, manufacturing remained the largest private-sector industry disclosed—Thayer County held 1.72 times more jobs in proportion to population than a typical Nebraska county. Wholesale trade, at 264 jobs, had 2.42 times more jobs in this sector than would be expected.

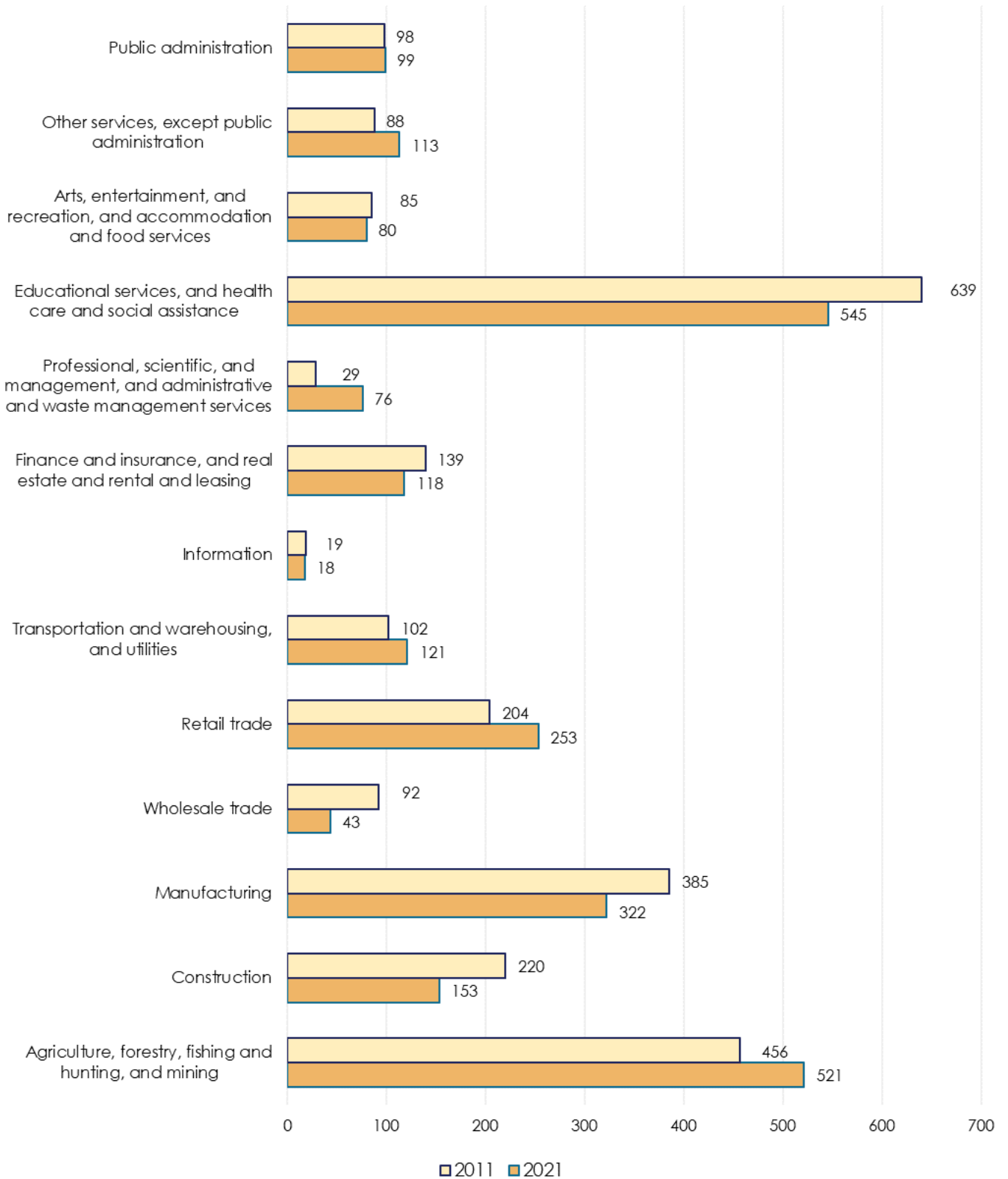
**TABLE 5.2: EMPLOYMENT IN THAYER COUNTY 2011-2021**

Industry	2011	2021	Change 2011-2021
<b>Total Employment by Place of Work</b>	<b>3,644</b>	<b>3,429</b>	<b>-6.3%</b>
Farm Employment	498	471	-5.7%
Non-Farm Employment	3,146	2,958	-6.4%
Forestry and Fishing	(D)	(D)	n/a
Mining, Quarrying, and Oil & Gas Extraction	(D)	0	n/a
Utilities	(D)	(D)	n/a
Construction	185	191	3.1%
Manufacturing	505	460	-9.8%
Wholesale Trade	257	264	2.7%
Retail Trade	338	261	-29.5%
Transportation and Warehousing	(D)	(D)	n/a
Information	19	12	-58.3%
Finance and Insurance	207	176	-17.6%
Real Estate	75	105	28.6%
Professional, Scientific, and Technical Services	48	65	26.2%
Management of Companies	0	0	-
Administrative/Support/Waste Management	56	67	16.4%
Educational Services	25	(D)	n/a
Health Care and Social Assistance	276	(D)	n/a
Arts, Entertainment, and Recreation	(D)	(D)	n/a
Accommodation and Food Services	(D)	(D)	n/a
Other Services (except Government)	178	189	5.8%
Government	693	661	-4.8%

(D) Not Disclosed, n/a– Not Available

Source: BEA Regional Economic Accounts, 2010- 2020

**FIGURE 5.7: RESIDENTS' EMPLOYMENT BY INDUSTRY 2011-2021**



Source: American Community Survey 2007-2011 & 2017-2021.

The ACS estimates employment statistics for the people who live in an area. In 2011, 639 Thayer County residents were employed in the Educational services, and health care and social assistances industry, the largest jobs sector (Figure 5.7). In 2021, this was still the largest sector, even though there were only 545 people employed in this sector. Agriculture, forestry, fishing and hunting, and mining grew the largest amount, from 456 to 521. The greatest number of respondents to the Thayer County Comprehensive Plan Survey (26%) reported Agriculture as their primary source of income.

### Major Employers

According to the Thayer County Economic Development Alliance (see later in this chapter), major employers in the area include:

- Cargill Ag, Carleton
- MTP Manufacturing, Bruning
- MetalQuest (precision CNC machining), Hebron
- Norder Supply (ag), Bruning
- Nutrien Ag, Davenport
- Reinke Manufacturing Company (irrigation systems and precision ag components), Deshler
- Thayer County Health Services (hospital), Hebron
- Thayer County (government)
- School Districts

Approximately 70% of respondents to the Thayer County Comprehensive Plan Survey agree or strongly agree “New or expanded manufacturing or assembly plants will bring the kinds of jobs we need.” A majority agreed it is very important to have more restaurants (56%) and daycare (54%) available.



MTP Manufacturing, Bruning  
Source: Marvin Planning Consultants



MetalQuest, Hebron  
Source: Marvin Planning Consultants

### LABOR FORCE

According to the US Bureau of Labor Statistics (BLS), Thayer County's labor force declined from 3,003 in 2012 to 2,727 in 2022, a 9.2% reduction in available labor. The labor force also declined in adjacent Clay, Jefferson, and Saline Counties in Nebraska.

Thayer County's unemployment rate also dropped, from 3.0% to 1.9% over the same timeframe (Table 5.3). In comparison, the

TABLE 5.3: UNEMPLOYMENT RATES  
2012-2022

	2012	2022
Thayer County	3.0%	1.9%
Clay County	3.6%	2.4%
Fillmore County	3.2%	1.9%
Jefferson County	3.7%	1.9%
Nuckolls County	3.4%	2.2%
Saline County	4.2%	2.6%
Nebraska	4.0%	2.3%

Source: US Bureau of Labor Statistics, Local Area Unemployment Statistics



unemployment rate for the State of Nebraska decreased from 4.0% to 2.3%. Most of the adjacent counties had a lower unemployment rate than the statewide rate in 2022.

While a lower unemployment rate may imply more people are working, there are fewer people participating in Thayer County's labor force than there were, shrinking the pool of labor available for new and expanded businesses.

It should be noted these are annual average statistics. Since 2020, the COVID-19 pandemic has had a significant effect on employment and unemployment levels nationwide.

## COMMUTER TRENDS

Thayer County is part of a regional job market, with local residents commuting outside the county to work, while others commute into the county to work. The ACS estimates in 2021, 18.7% of Thayer County residents

left the county to work each day. Of these residents, 3.6% left the state to work, which would be expected with the state of Kansas adjacent to the county.

Travel time to work is a factor used to gauge if Thayer County's workforce may want to find employment closer to home. The mean travel time to work for Thayer County residents in 2021 was 14.2 minutes, compared to 19.2 minutes statewide. Figure 5.8 indicates in 2021, almost half (49%) of commuters were traveling 10 minutes or less to work, including 3.6% who worked from home. About one-quarter (26%) commuted 20 minutes or more to work. Those traveling 45 minutes or more totaled approximately 5.5%.

The greatest number of respondents to the Thayer County Comprehensive Plan Survey (40%) reported a commute of less than 10 minutes, while approximately 10% worked from home

(telecommute) or at home. About 1/3 of respondents worked in Hebron and 15% worked in Deshler.

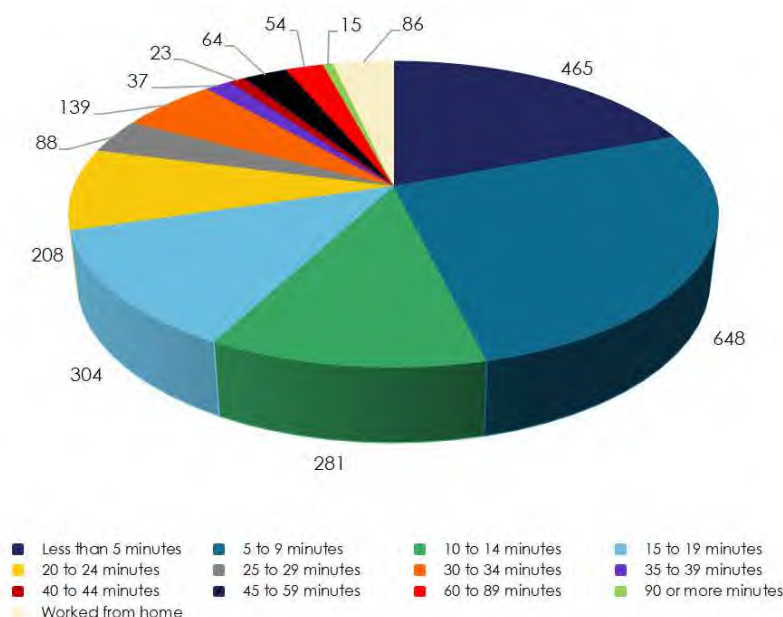
## OCCUPATIONS

Industry is the type of activity at a person's place of work. Occupation is the kind of work a person does to earn a living. The following data examine five occupational areas established by the U.S. Census Bureau to evaluate trends in employment and the area economy. The five occupational categories used in the analysis are:

- Managerial business, science, and arts occupations;
- Service occupations;
- Sales and office occupations;
- Natural resources, construction, and maintenance occupations, and;
- Production, transportation, and material moving occupations

In 2021, the ACS reported the largest number of Thayer County residents, 34.8%, worked in

**FIGURE 5.8: TRAVEL TIME TO WORK 2021**



Source: American Community Survey 2017-2021.

### Journey to Work

According to the US Census Bureau's Longitudinal Employer-Household Dynamics database, the largest number of outbound commuters drive to Lancaster County/ Lincoln and inbound commuters drive from Nuckolls County (west of Thayer County).

**TABLE 5.4: BASIC/NON-BASIC EMPLOYMENT BY OCCUPATION - 2021**

Location (County)	Management business, science, and arts occupations	Service occupations	Sales and office occupations	Natural Resources, construction and maintenance occupations	Production, transportation, and material moving occupations	Base Multiplier
Thayer	34.8%	16.2%	15.2%	17.5%	16.2%	10.2
Clay	36.3%	15.0%	15.9%	14.5%	18.3%	11.8
Fillmore	34.9%	14.2%	20.7%	13.4%	16.7%	17.2
Jefferson	31.1%	16.4%	17.1%	17.4%	18.0%	8.5
Nuckolls	39.4%	18.2%	15.9%	10.7%	15.8%	20.8
Saline	28.4%	17.3%	14.7%	13.2%	26.4%	5.9
<b>Nebraska</b>	<b>39.2%</b>	<b>15.8%</b>	<b>20.8%</b>	<b>9.9%</b>	<b>14.4%</b>	<b>n/a</b>

Source: American Community Survey 2017-2021.

Management, business, science, and arts occupations (Table 5.4). This compares to 39.2% of Nebraska residents statewide.

## ECONOMIC BASE

A community's economic base is made up of businesses producing goods and services sold primarily outside the area. The revenues of base industries are returned to the local area in the form of wages to employees and payments to local suppliers. Non-Basic employment relies on

business activity providing goods and services primarily within the local area, and the revenues of such sales re-circulate within the community in the form of wages and expenditures by local citizens.

In order to estimate the number of basic jobs in a local area, a comparative area must be selected. For purposes of this analysis, Thayer County will be compared to the state of Nebraska. This allows the analysis to establish where Thayer County is producing goods and service for export compared to the state as a whole.

### Basic Employment

Occupation categories are compared to the same categories for the state to determine "basic" employment. Where the percentage of county residents in a certain occupation exceeds the state's percentage, those jobs are considered "basic" employment with exports of goods or services bringing new income into the county. Table 5.4 indicates Thayer County has exports in three occupational categories:

- Service occupations,
- Natural Resources, construction and maintenance occupations;
- Production, transportation, and material moving occupations.

Basic occupation data can be compared to basic industry data for additional economic insights. Both basic and non-basic employment could be stronger. The County should continually work on existing business retention and expansion assistance to help employers stay and grow in Thayer County.

### Base Multiplier

A concept directly related to the basic/non-basic analysis is the base multiplier. The base multiplier is a number which represents how many non-basic jobs are supported by each basic job. A high base multiplier means the loss of one basic job will have a potential large impact on the local economy. Behind this analysis is if basic jobs bring new money into a local economy, this money becomes the wages for other workers in the economy. Therefore, more money is brought in by basic jobs creating more non-basic jobs.

#### Basic employment

Basic employment is business activity providing services primarily outside the area through the sale of goods and services, the revenues of which are directed to the local area in the form of wages and payments to local suppliers.

Non-Basic employment is business activity providing services primarily within the local area through the sale of goods and services, and the revenues of such sales re-circulate within the community in the form of wages and expenditures by local citizens.

The information in Table 5.4 shows Thayer County has a base multiplier of 10.2, which means for every job considered to be basic, 10 other jobs in the county are supported and/or impacted. This indicates for every job tied to exportation of goods or services, there are 10 jobs created/ supported by the dollars coming into the community. Therefore, if Thayer County lost just one of the jobs tied to exports then there is the potential to lose approximately 10 jobs from the non-basic employment side.

There is no magical multiplier a county should aim to achieve. Every county is different and the dynamics involved are different. The unique and ever-changing dynamics are what make a particular county's economy unique and attractive to different employers. It is critical to determine a future vision for business and industry and work towards this end.

As previously mentioned, it is also critical to invest in business

retention and expansion programs to support those employers already located in the county. Some places become too focused on attracting the next big thing and forget about the opportunities existing employers can offer through expansion of their operations.

#### Small-Scale Manufacturing

Manufacturing and exported services provide primary sector jobs and create new wealth in a community. Small-scale manufacturing, light industry, and professional services operate with a small number of employees and utilize local materials.

Thayer County has a diverse manufacturing base, and many residents are skilled in agricultural production and related machinery. Small-scale manufacturers and exported services can operate from rural Nebraska and sell their products across the world.

## AGRICULTURAL PROFILE

The US Department of Agriculture (USDA) conducts the Census of Agriculture every five years. Tables 5.5 to 5.8 examine the agricultural profile of Thayer County. Table 5.5 examines the number of farms and their high-level characteristics for these farms for 1997 through 2017.

### Farms

The number of farms within Thayer County decreased by -27.2% between 1997 and 2017 (Table 5.5 ). A falling number of farms has been normal throughout the Great Plains region. The total number of farms went from 569 in 1997 to 414 in 2017.

Each farm may have multiple owners and producers. The Census of Agriculture defines "producer" as "a person who is involved in making decisions for the farm operation... The producer may be the owner, a member of the owner's household, a hired manager, a tenant, a renter, or a sharecropper."

**TABLE 5.5: FARMS AND LAND IN FARMS 1997 - 2017**

Agricultural Characteristics	1997	2002	2007	2012	2017	% Change 1997-2017
Number of farms	569	558	483	432	414	-27.2%
Land in Farms (acres)	368,478	380,447	351,364	326,300	325,649	-11.6%
Average size of farms (acres)	648	682	727	755	787	21.5%
Total area of county (acres)	367,238	367,238	367,238	367,238	367,238	-
Percentage of land in farms	100.3%	103.6%	95.7%	88.9%	88.7%	-
Total cropland (acres)	287,879	295,909	266,148	253,995	251,004	-12.8%
Harvested cropland (acres)	255,387	265,719	253,053	246,632	243,564	-4.6%
Irrigated cropland (acres)	115,901	133,066	131,413	135,509	138,272	19.3%
Estimated Market Value of Land & Bldg (avg./farm)	\$674,167	\$862,079	\$1,325,009	\$3,114,514	\$3,082,516	357.2%
Estimated Market Value of Land & Bldg (avg./acre)	\$979	\$1,333	\$1,821	\$4,123	\$3,920	300.4%

Source: U.S. Census Bureau ; USDA Census of Agriculture, 1997, 2002, 2007, 2012, 2017

Note: this data is self reported, and may reflect operations in more than one county.

Of the 414 farms in Thayer County in 2017, 193 were operated by a full owner, 164 by a part-owner (on owned and rented ground), and 57 by a tenant farmer. There were 702 producers reported in the Census of Agriculture, including 199 with one producer and 166 with two. There were 383 producers who reported farming was their primary occupation. There were 377 producers who reported they worked off-farm during the year.

From 1997 to 2017, total land in farms fell from 368,478 acres to 325,649 acres, a reduction of -12%. The average size of farms increased from 648 acres in 1997 to 787 acres in 2017. This trend of increasing average size has been the norm across Nebraska and the United States for the last several decades. Total cropland in Thayer County decreased from 287,879 acres in 1997 to 251,004 acres in 2017, which was a change of -13%. Harvested cropland only decreased by about -5%, while irrigated cropland increased by 19%.

Land and Buildings

Table 5.5 also shows the estimated market values of land and buildings, both by average per farm and average per acre. In 1997, the average value per farm acre was \$674,167. The average value increased through 2012 before ending at \$3,082,516, an increase of 357%. Average value per acre increased from \$979 in 1997 to 3,920 in 2017; an increase of approximately 300%. The CPI for this same period was approximately 47.0%; therefore, the average value per acre increased at nearly seven times the rate of the CPI.

TABLE 5.6: NUMBER OF FARMS BY SIZE

Farm Size (acres)	1997	2002	2007	2012	2017	% Change 1997-2017
1 to 9	18	7	17	23	29	61.1%
10 to 49	31	48	35	45	55	77.4%
50 to 179	97	121	121	84	81	-16.5%
180 to 499	166	127	85	86	74	-55.4%
500 to 999	126	121	101	68	55	-56.3%
1,000 or more	131	134	124	126	120	-8.4%

Source: USDA Census of Agriculture, 1997, 2002, 2007, 2012, 2017  
Note: this data is self reported, and may reflect operations in more than one county.

TABLE 5.7: FARMS AND LIVESTOCK BY TYPE

Type of Livestock	1997	2002	2007	2012	2017	% Change 1997 to 2017
Cattle and Calves						
farms	328	285	197	194	180	-45.1%
animals	51,996	40,250	46,075	32,188	45,056	-13.3%
average per farm	159	141	234	166	250	
Beef Cows						
farms	277	257	173	175	160	-42.2%
animals	12,740	12,583	11,168	(D)	12,182	-4.4%
average per farm	46	49	65	-	76	
Milk Cows						
farms	12	10	3	2	4	-66.7%
animals	411	581	201	(D)	836	103.4%
average per farm	34	58	67	-	209	
Hogs and Pigs						
farms	46	18	8	3	1	-97.8%
animals	21,812	14,675	8,624	5,305	(D)	-
average per farm	474	815	1,078	1,768	-	
Sheep and Lambs						
farms	28	20	14	22	-	-
animals	1,376	663	340	1,606	-	-
average per farm	49	33	24	73	-	
Chickens (layers and pullets)						
farms	20	7	10	26	1	-95.0%
animals	907	115	200	590	(D)	-
average per farm	45	16	20	23	-	

Source: U.S.D.A Census of Agriculture, 1997, 2002, 2007, 2012, 2017  
Note: this data is self reported, and may reflect operations in more than one county.  
(D) Data Disclosure - Information Withheld



## Farms by Size

In 1997, the largest number of farms (166) were between 180 to 499 acres in size (Table 5.6). By 2017, the largest category (120) were 1,000 acres or more, even though the number had declined from 131 in 1997. The number of small farms of 1 to 9 acres and 10 to 49 acres in size grew over the time period.

## Ag Products

Total sales of agricultural products were reported of \$227,717,000 for 2017, below the figure of \$249,384,000 in 2012. This was an average of \$550,041 per

farm in 2017, compared to an average of \$577,278 per farm in 2012. There were 61 farms reporting less than \$1,000 in sales on the low end, and 107 farms with sales of \$500,000 or more on the high end in 2017.

The number of farms with cattle and calves, beef cows, and milk cows, decreased by about 40-60% from 1997 to 2017 (Table 5.7). The number of cattle fell by -13.5%. The number of milk cows doubled to 836 by 2017, although there were only 4 farms with milk cows over the year. Only 1 hog producer and

1 farm with chickens remained in 2017, and no sheep producers were reported. Some data is not disclosed to avoid identifying individual producers, shown as a "(D)" in the table.

In 2017, 311 farms sold crops, with a total value of \$128,760,000. This was also down from 345 farms in 2012 with total value of \$186,208,000. Table 5.8 reports on specific crops. Corn and soybeans have been the two most frequently raised crops in Thayer County. An average of 561 acres of corn is raised per farm, and 381 acres of soybeans. The number of farms raising corn for grain, wheat, oats, sorghum for grain, soybeans, and hay/forage crops decreased from 33% to 98% between 1997 and 2017. The number of acres of corn for grain, corn for silage, and soybeans increased.

**TABLE 5.8: NUMBER OF FARMS AND CROPS BY TYPE**

Type of Crop	1997	2002	2007	2012	2017	% Change 1997 to 2017
Corn for Grain						
farms	352	334	295	278	230	-34.7%
acres	115,694	106,927	120,464	165,692	128,948	11.5%
average per farm	329	320	408	596	561	
Corn for Silage						
farms	19	50	16	16	19	0.0%
acres	1,298	3,119	742	599	1,746	34.5%
average per farm	68	62	46	37	92	
Wheat						
farms	264	200	224	117	58	-78.0%
acres	30,041	26,560	41,051	16,140	6,688	-77.7%
average per farm	114	133	183	138	115	
Oats						
farms	40	33	17	6	1	-97.5%
acres	985	948	402	118	(D)	-
average per farm	25	29	24	20	-	
Sorghum for Grain						
farms	323	214	124	24	23	-92.9%
acres	41,210	32,142	16,814	2,074	1,952	-95.3%
average per farm	128	150	136	86	85	
Soybeans						
farms	381	353	276	261	251	-34.1%
acres	58,733	85,370	68,111	82,262	95,533	62.7%
average per farm	154	242	247	315	381	
Hay/Forage						
farms	266	259	190	175	177	-33.5%
acres	11,295	14,228	9,703	9,273	8,384	-25.8%
average per farm	42	55	51	53	47	

Source: U.S.D.A Census of Agriculture, 1997, 2002, 2007, 2012, 2017

Note: this data is self reported, and may reflect operations in more than one county.

(D) Data Disclosure - Information Withheld

## 2022 Census of Agriculture

USDA was conducting the 2022 Agricultural Census while this comprehensive planning process was under way. Results are due to be released in 2024. The new agricultural data should be reviewed and this plan may need to be updated upon publication.

## Value-Added Agriculture

While much of Thayer County's agricultural production is sold at wholesale and exported across the country, some local production is processed locally so value is added closer to home.

A majority of respondents to the Thayer County Comprehensive Plan Survey (81%) agree or strongly agree with the statement "Create farm-to-home operations (such as farmer's markets, community-supported agriculture on-farm stores)". Approximately 58% support vineyards and wine making.

Agriculture has historically been a major part of the Thayer County and Nebraska economy. Future land use policies will have a major impact on the animal and crop agriculture industry. As well, regional and national trends in agricultural production will continue to affect wholesale and value-added ag processing into the foreseeable future.

## ECONOMIC DEVELOPMENT RESOURCES

### THAYER COUNTY ECONOMIC DEVELOPMENT ALLIANCE

The Thayer County Economic Development Alliance is a county-wide partnership working together to provide a strong economic base and quality of life for all Thayer County residents. TCEDA's emphasis is county and community development, providing support for local business through retention and start-up programs. The organization has focused in particular on small business retention and expansion to support home-grown enterprises.

TCEDA also provides leadership and support for workforce housing (see *Chapter Four*), retailing, and employee recruitment.

Source: [tceda.org](https://tceda.org)

## SOUTHEAST NEBRASKA ECONOMIC DEVELOPMENT DISTRICT

The Southeast Nebraska Economic Development District (SENDD) is a voluntary association of counties and municipalities formed under the Nebraska Interlocal Cooperation Act to identify common problems, their solutions, and to provide continuing support for efficient and effective government among its members.

SENDD is dedicated to place-making in the region through projects aimed at supporting local businesses, job creation, affordable and safe housing, education, health, and recreation. SENDD has also been active in supporting rural broadband development.

SENDD also works with the US Economic Development Administration (EDA) on the regional Comprehensive Economic Development Strategy (CEDS), a continuous regional economic development planning process for southeast Nebraska. The most recent CEDS for 2021-2025 presents a wealth of social and economic data, and includes regional goals including:

- Capital Facilities and Infrastructure
- Built Resources
- Regional Collaboration and Commitment
- Economy and Housing
- Natural Resources

Source: [www.sendd.org](https://www.sendd.org)



Thayer County agriculture  
Source: Marvin Planning Consultants

## NEBRASKA DEPARTMENT OF ECONOMIC DEVELOPMENT

Since 1967, the Nebraska Department of Economic Development (DED) has been focused on growing and diversifying the state's economic base, bringing new dollars, new businesses, and new people into the state. DED functions to:

- Support communities with development efforts.
- Assist with starting, retaining, and expanding businesses.
- Promote the state for business locations and expansions.

DED efforts supporting community development include the Community Development Block Grant (CDBG) program, Civic and Community Center Financing Fund (CCFF), Economic Development Certified Community (EDCC), Leadership Certified Community (LCC), Local Option Municipal Economic Development Act (LB840), Nebraska Capital Projects fund, Nebraska Rural Projects fund, Site and Building Development fund, and others. DED also provides resources for grant management and technical assistance with Enterprise Zones and Opportunity Zones.

Source: [opportunity.nebraska.gov](https://opportunity.nebraska.gov)

### LB840

The Local Option Municipal Economic Development Act (LB840, 1991) authorized incorporated cities and villages — if approved by local voters — to collect and appropriate local tax dollars, including sales and/or property tax, for economic development purposes.



Lincoln Avenue, Downtown Hebron  
Source: Marvin Planning Consultants

To implement an LB840 program, communities formulate a written economic development plan which, if voter-approved, becomes the foundation for the collection and expenditure of local tax revenues for economic development under which the municipality's LB840 program operates. As of 2023, the cities of Deshler and Hebron have authorized LB840 programs.

## NEBRASKA MAIN STREET NETWORK

Nebraska's downtowns are places of civic pride and places where the community gathers. They are a reflection of what we love about our communities. A majority of respondents to the Thayer County Comprehensive Plan Survey (80%) agree or strongly agree "Existing business districts should be revitalized".

The Nebraska Main Street Network exists to help communities develop traditional commercial districts so they are attractive to residents and business friendly for commercial investment and economic growth. They help communities work through the revitalization process, provide support as they develop solutions, build partnerships and plan for the future.

Source: [nebraskamainstreet.org](https://nebraskamainstreet.org)

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# ECONOMIC DEVELOPMENT GOALS AND ACTIONS

## ECONDEV GOAL 5.1

Thayer County has a dynamic economic development program to support entrepreneurship, business retention and expansion, and industrial recruitment.

### Actions

- 5.1.1 Continue to support TCEDA local economic development initiatives.
- 5.1.2 Inform the community of economic development accomplishments.
- 5.1.3 Support TCEDA business retention & expansion programs to meet needs of local employers.
- 5.1.4 Review and improve Thayer County's online presence.
- 5.1.5 Continue to utilize the County website with regular updates to meeting agendas and minutes, regulations and permit forms, and community profile information.

## ECONDEV GOAL 5.2

There are sites available for commercial and industrial development.

### Actions

- 5.2.1 Continue implementation of a clear and consistent development review process to ensure timely permit review.
- 5.2.2 Support local Tax Increment Financing (TIF) where appropriate.
- 5.2.3 Support municipalities extending public utilities to reduce the costs of development and encourage development in appropriate areas.
- 5.2.4 Work closely with Southeast Nebraska Economic Development District (SENDD) to access EDA and other funding sources for local economic development.

## ECONDEV GOAL 5.3

There is an accessible system in-place for workforce development.

### Actions

- 5.3.1 Continue support of K-12 education to include skills-based training and creative partnerships with local businesses.
- 5.3.2 Encourage community college workforce training in Thayer County.

## ECONDEV GOAL 5.4

Residents have options for remote work, including access to broadband.

### Actions

- 5.4.1 Promote and support the development, expansion, and accessibility of broadband and communication networks.





State and local governments provide services to their residents through public facilities. It is important for all levels of government to anticipate the future demand for their services if they are to remain strong and vital. This chapter reviews facilities plans, resources, and goals and policies,

In many cases, public and institutional services are provided by non-governmental, private or non-profit organizations for the community as a whole. These are important service providers and are an integral part of the community.

### FACILITIES PLAN

This element of the comprehensive plan, in conjunction with other chapters, is intended to meet the requirements of Neb. Rev. Stat. §23-114.02, to address

community facilities, including schools, libraries, and other public buildings.

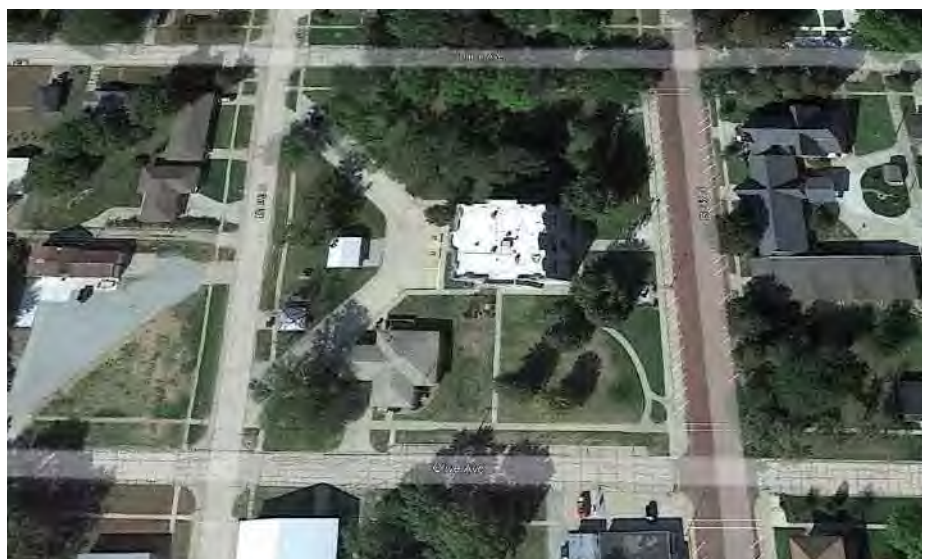
This chapter groups these into the following categories:

- Public buildings;
- Historic sites and places;
- Education, and;
- Health care

### PUBLIC BUILDINGS

There are several public and private buildings and facilities serving the public in Thayer County. These critical facilities are mostly located within the incorporated municipalities, including the county seat at Hebron.

**FIGURE 6.1: THAYER COUNTY COURTHOUSE AND SHERIFF'S OFFICE**



**FIGURE 6.2: THAYER COUNTY ROAD AND BRIDGE DEPARTMENT SHOP**



### County Courthouse

The Thayer County Courthouse is located at 225 N. 4th Street in Hebron (Figure 6.1). The County Courthouse was designed by architect George A. Berlinghof of Beatrice, and constructed by Robert Burke of Omaha, in 1901-1903.

The tower of the building was removed and the structure remodeled after a tornado hit Hebron in 1953, with five deaths and \$2 million in damages.

The County Courthouse provides office and meeting space for most County Offices. A public meeting room is available on the first floor. Thayer County is part of District 1 of the Nebraska Judicial Branch. Nebraska Department of Health and Human Services also has an office at the County Courthouse.

The Thayer County Courthouse, and Thayer County Sheriff's Office which is also located adjacent to the Courthouse, are considered Critical Facilities (see *Chapter Eight Public Safety*).

### County Road Department

The Thayer County Road and Bridge Department Shop is located at 1309 Road 6100, on the northwest side of Hebron (Figure 6.2).

### USDA

The USDA Farm Service Agency (FSA) Service Center Office is located at 1220 South Avenue in Hebron.

### US Postal Service

The USPS has post offices located in all municipalities in Thayer County except Belvidere. Post office facilities in some smaller communities remain open with limited retail hours. The Post Office building in Hebron was listed on the National Register of Historic Places.

### Blue Rivers Area Agency on Aging

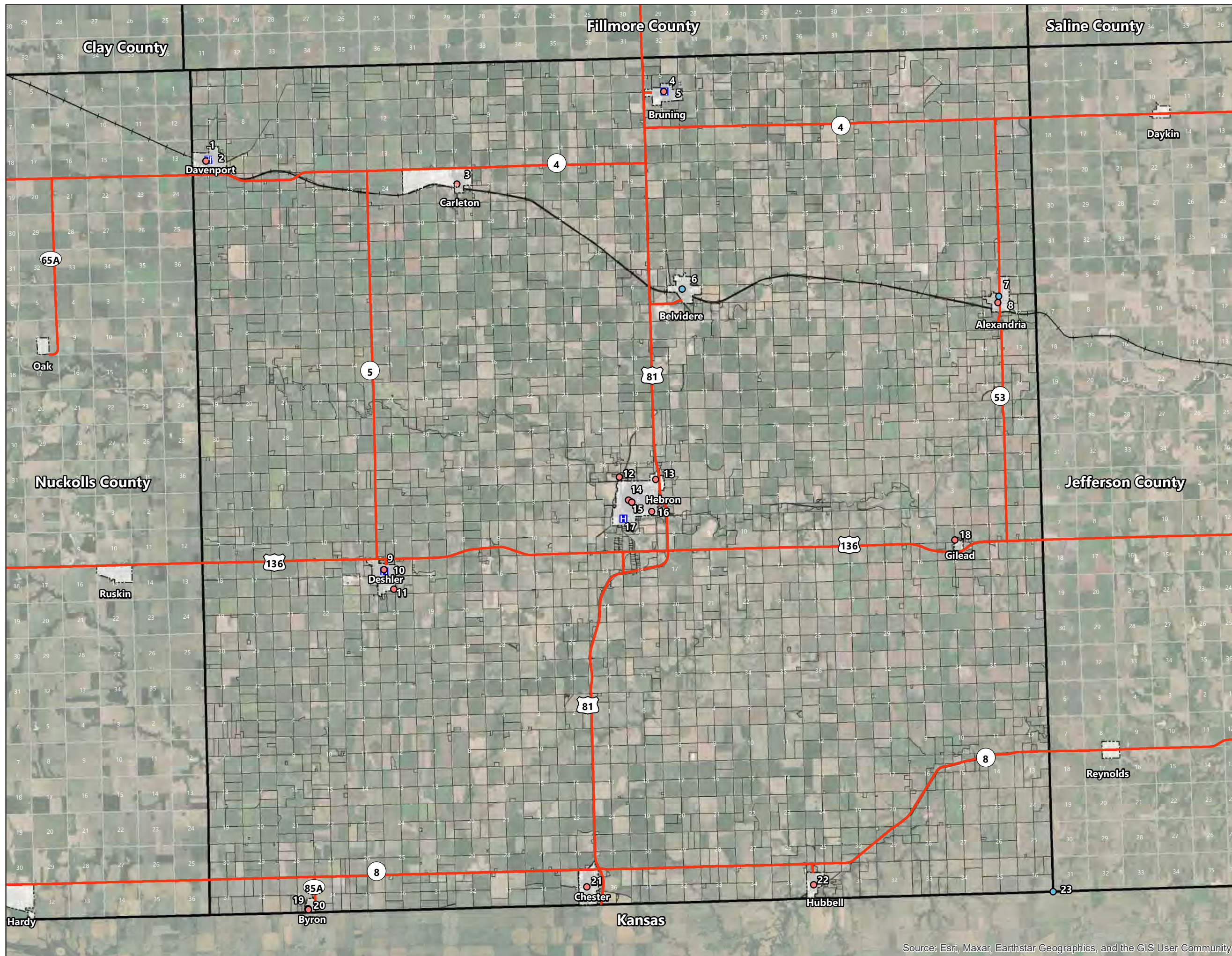
Blue Rivers Area Agency (AAA) on Aging is a vital local resource for seniors age 60 and over. Their mission is to develop or support a system of coordinated and comprehensive services for older individuals promoting a safe, healthy, and independent lifestyle. Blue Rivers AAA serves an 8-county area from their main office in Beatrice, and a local transit facility in Hebron (see *Chapter 13 Transportation*). The AAA administers 17 Senior Centers with nutrition services, including Davenport, Deshler, and Hebron, and arranges home delivered meals to Chester.

Source: [www.braaa.org](http://www.braaa.org)



Byron Community Center  
Source: Marvin Planning Consultants














## THAYER COUNTY, NEBRASKA

## COMPREHENSIVE PLAN

### FIG 6.X: COUNTY FACILITIES

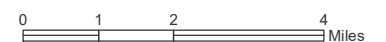
## LEGEND

-  Public Buildings
-  Historic Sites and Places
-  Healthcare
-  Highways
-  Municipal Limits
-  Railroad
-  County Boundaries
-  Parcels
-  Sections

- 1: Davenport US Post Office
- 2: Davenport Medical Clinic
- 3: Carleton US Post Office
- 4: Bruning US Post Office
- 5: Bruning Medical Clinic
- 6: Museum and Historical Society
- 7: Richard E. Dill House
- 8: Alexandria US Post Office
- 9: Deshler US Post Office
- 10: Deshler Medical Clinic
- 11: Thayer County Activity Center
- 12: County Road Department
- 13: Stasiny Community Center
- 14: County Courthouse
- 15: Hebron US Post Office
- 16: USDA
- 17: Thayer County Health Services
- 18: Gilead US Post Office
- 19: Byron Community Center
- 20: Byron US Post Office
- 21: Chester US Post Office
- 22: Hubbell US Post Office
- 23: Sixth Principal Meridian Memorial

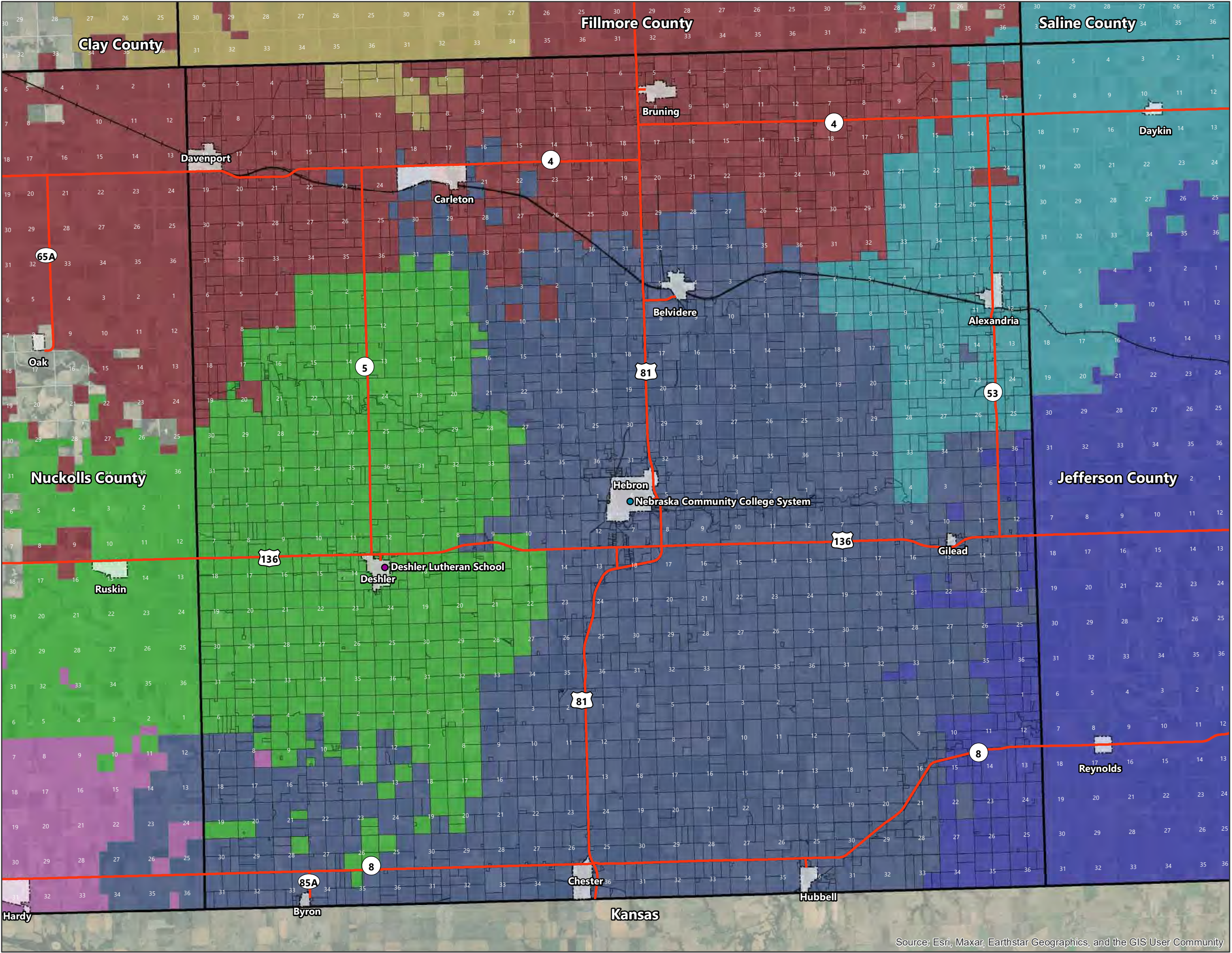


PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.24.24



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





THAYER COUNTY, NEBRASKA  
COMPREHENSIVE PLAN  
FIG 6.X: EDUCATION

**LEGEND**

- Higher Education
- Private Schools
- Highways
- Municipal Limits
- Railroad
- County Boundaries
- Parcels

**School District**

- Bruning-Davenport Unified School District
- Deshler Public Schools
- Fairbury Public Schools
- Meridian Public Schools
- Shickley Public Schools
- Superior Public Schools
- Thayer Central Community Schools

**Sections**

**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal Growth and Community Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.24.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



## Byron Community Center

The Byron Community Center houses the Byron Public Library, a state-of-the-art Fitness Center, a well-equipped professional kitchen, and a great room for large gathers. The new facility was built with private funds raised by the residents and businesses of the village of Byron and surrounding rural area.

## Stastny Community Center

The Stastny Community Center is an event center located at the intersection of Dove Road and US Highway 81 in Hebron. The 7,500 square foot building offers facilities for meetings, weddings, banquets, and auctions.

## Thayer County Activity Center

The Thayer County Activity Center is located at the Thayer County Fairgrounds in Deshler (see *Chapter Seven*). The Activity Center has space for large and small meetings with kitchen facilities available to rent.

## Libraries

- Alexandria. Tucker Memorial Library, 313 Harbine Street
- Bruning Public Library, 117 E. Main Street.
- Byron Public Library, 119 Kansas Avenue
- Davenport Public Library, 109 N. Maple Avenue
- Deshler, Jennifer Reinke Public Library, 311 East Pearl Street.
- Hebron Secrest Library, 146 N. 4th Street.

## HISTORIC SITES AND PLACES

As noted in the Introduction to this plan, Thayer County has a rich history dating back to the days of the Oregon Trail. The first settlers arrived from the east in the 1850s. The railroads followed,



Stastny Community Center, Hebron  
Source: Marvin Planning Consultants

towns grew and prospered. Then many of the railroads were replaced by highways.

Thayer County residents support their historic sites and place. Almost 90% of respondents to the Thayer County Comprehensive Plan Survey agreed "It is important to preserve and share Thayer County history."

In 1991, the Nebraska Historic Buildings Survey (NEHBS) documented historic buildings and places across Thayer County. At the time, 742 properties were surveyed, with 1,773 contributing buildings.

Two buildings in Thayer County—the Hebron Post Office and Richard E. Dill House—have been listed on the National Register of Historic Places. The survey considered the Courthouse to be eligible for nomination. Inclusion on the National Register may enable income-producing properties to qualify for tax credits for eligible rehabilitation costs.

## Thayer County Museum and Historical Society

The Thayer County Historical Society, a 501(c)3 non-profit organization, operates the Thayer County Museum, which opened



Thayer County Museum, Belvidere  
Source: Thayer County Historical Society

in 1970 at the former Belvidere school.

The Museum complex is composed of over a dozen structures, including machinery buildings, a one-room country schoolhouse, a blacksmith shop, and the office/annex/library building. This includes the remains of an iron Leffel's Double Turbine Water Wheel which measures 17 feet in diameter (one of the largest ever in the state).

The Historical Society sponsors events and activities at the facility in Belvidere throughout the year.

Source: [www.thayercountymuseum.com](http://www.thayercountymuseum.com)

### Hebron Post Office

The US Post Office in Hebron is located at the southwest corner of 5th and Olive Street. The one-story red brick building with Modernistic details is a typical example of a small post office built from standardized plans in the 1930s. The building was dedicated in 1937.

The Hebron Post Office building was listed on the National



Stampeding Buffalo Stopping Train by Eldora Lorenzini, 1939  
Source: National Register of Historic Places

Register of Historic Places in 1992, as part of the Nebraska Post Offices Which Contain Section Artwork (1938-1942). This is a multiple-property nomination at the state level of significance for its association with the Depression-era U.S. Treasury Department's Section of Fine Arts program. The mural "Stampeding Buffalo Stopping Train" was completed by Colorado Springs-artist Eldora

Lorenzini in 1939. It measures 12 by 4 feet on the north lobby wall above the postmaster's door.

Source: [catalog.archives.gov/id/73919895](https://catalog.archives.gov/id/73919895)

### Richard E. Dill House

Constructed in 1936, the Richard Dill House at 6th and Mercy Street in Alexandria has been recognized as the first application of post-tensioned prestressed concrete to building construction in the United States. The Modern Movement-style home is built completely of concrete planks, with an entire wall of glass on the south façade. A garage was later added onto the building (right side of photo).

Mr. Dill was a native of Alexandria who studied Engineering at the University of Nebraska, and was employed as a rural mail carrier. The one-story home was listed on the National Register of Historic Places in 1973.

Source: [catalog.archives.gov/id/73921441](https://catalog.archives.gov/id/73921441)



Richard E. Dill House, Alexandria  
Source: Marvin Planning Consultants



## Sixth Principal Meridian Memorial

In 1855, Charles A. Manners surveyed the boundary between Nebraska and Kansas along the parallel 40° north, setting a cast iron monument at the Initial Point of the Sixth Principal Meridian. This point was the basis for all public land surveys of Nebraska and Kansas and parts of Colorado, Wyoming and South Dakota.

On June 11, 1987, the Professional Surveyors of the 6th P.M. dedicated a memorial on the Nebraska-Kansas state line east of Hubbell, made of Colorado red granite with Wyoming and Nebraska rubble stone. The site is located off the beaten path—enhanced wayfinding signage from Hubbell and Highway 8 would help visitors better find the memorial.



Sixth Prime Meridian Memorial, east of Hubbell  
Source: Marvin Planning Consultants

## Oregon Trail, California Trail, and Pony Express

As noted in Chapter One, the Oregon Trail, California Trail, and Pony Express crossed Thayer County in the nineteenth century, generally north of the Little Blue River. The National Historic Trails enter Nebraska from Kansas southeast of Fairbury, following the north bank of the Little Blue and entering Thayer County south of Alexandria. The trail continues north of Hebron, leaving the county northwest of Deshler.

As 1836 is generally considered the initial year of the Oregon Trail, there may be increased interest from tourists traveling the route leading up to the bicentennial year of 2036.

## EDUCATION

### Thayer Central Community Schools

Thayer Central Community Schools serve approximately 425 students in Hebron and the surrounding area, including

Belvidere, Byron, Chester, Gilead, Hubbell and part of Carleton.

Thayer Central Elementary and Junior/Senior High School are located on a common campus on Eads Avenue in Hebron. Thayer Central High School is classified by the Nebraska State Activities Association in C-2 for basketball and D-1 for Football.

### Deshler Public Schools

Deshler Public Schools serve 248 students in Deshler and the surrounding area, including Ruskin in Nuckolls County.

Deshler Secondary and Elementary schools are located on Third Street, across from the Thayer County Fairgrounds in Deshler. Deshler High School is classified by the Nebraska State Activities Association in Class D-1 for basketball, and D-2 for football.

### Bruning-Davenport Unified School District

The Bruning-Davenport Unified School District serves 178 students the area around Bruning and Davenport, and part of Carleton.



Pony Express Centennial Monument  
Source: Marvin Planning Consultants

The Bruning School hosts pre-Kindergarten and first grade students, and grades 9-12. The Davenport School hosts grades two through eight. Bruning-Davenport cooperates with Shickley Public Schools to the north to compete in high school sports. The BDS teams are classified by the Nebraska State Activities Association in Class D-1 for basketball and D-2 for football.

### Shickley Public Schools

Shickley Public Schools serves 164 students from Fillmore County and part of Thayer County north of Carleton. The Shickley Jr-Sr High School and Elementary School are located at Shickley.

As the Bruning-Davenport and Shickley school districts continue and likely increase cooperative programming and activities, there will be increasing traffic between these communities. Currently, County Road 5400 is functionally classified as a Major Collector, yet remains a gravel road (see Chapter 13).

### Meridian Public Schools

The Meridian Public Schools serve 207 students in the area around Daykin, including Alexandria and portions of northeastern Thayer County.

The Meridian Public School building is located at the intersection of 560th Avenue and 724th Road west of Daykin, just inside Jefferson County. Meridian High School is classified by the Nebraska State Activities Association in Class D-2 for basketball, and D-6 for football.



SCC Hebron Learning Center  
Source: Marvin Planning Consultants

### Fairbury Public Schools

The Fairbury Public Schools serve 918 students in the area around Fairbury, including portions of eastern Thayer County and much of Jefferson County.

Fairbury Junior/Senior High School is located on 9th Street in Fairbury. Jefferson Intermediate School is located on K Street, and Central Elementary School is located on F Street. Fairbury High School is classified by the Nebraska State Activities Association as a Class C-1 school for football and basketball.

### Superior Public Schools

The Superior Public Schools serve 410 students in Nuckolls County and a small area in western Thayer County. Superior Elementary School and Superior Middle/High School are located in Superior.

Superior High School is classified by the Nebraska State Activities Association in Class C-2 for basketball and D-1 for football.

### Private Schools

Deshler Lutheran School is located at 509 E. Hebron Ave, in Deshler, with students in Kindergarten through 8th grade. The school is sponsored by St. Peter Lutheran Church-Deshler and Trinity Lutheran Church-Friedensau.

### Nebraska Community College System

Thayer County is served by Southeast Community College, with campus locations in Beatrice, Lincoln, and Milford. The college also has learning centers in Falls City, Hebron, Nebraska City, Plattsmouth, Wahoo, and York.

The Hebron Learning Center is located at 610 Jefferson Avenue in downtown Hebron. The college offers credit and leisure learning courses, GED/English Language Learner classes, Nursing Assistant courses and continuing education hours for Registered Nurses (RNs) and Licensed Practical Nurses (LPNs). Classroom space is available to rent for meetings.

Source: [www.southeast.edu/hebron-learning-center](http://www.southeast.edu/hebron-learning-center)



**TABLE 6.1: THAYER COUNTY EARLY CHILDHOOD CAPACITY, 2024**

	Facilities	Capacity
Child Care Center	2	75
Family Child Care Home I	9	90
Family Child Care Home II	1	12
Preschool	1	12
Provisional Child Care Ctr	1	65

Source: Nebraska Dept. of Health and Human Services, May 2024.

## Child Care

There are a number of child day care providers located throughout Thayer County. In Nebraska, anyone who provides child care to four or more children from different families must be licensed as a child care provider, by the Department of Health and Human Services.

There are five license types:

- **Family Child Care Home I:** This type of program is in the home of the provider. The maximum capacity is eight children of mixed ages and two additional school age children during non-school hours.
- **Family Child Care Home II:** This type of program is in the home of the provider or at another site. The maximum capacity is twelve children with two providers.
- **Child Care Center:** This type of program is licensed for 13 or more children while following the staff to child ratio per the state regulations.
- **School Age Only Center:** This type of program is licensed for 13 or more children who are attending or have attended school.

- **Preschool:** This type of program provides educational services where children do not nap and are fed a meal.
- **License Exempt:** Home care provided outside the client's home to a maximum of six children from one family or three or fewer children from more than one family.

The need for quality child day care was brought up repeatedly at the Town Hall meetings and in the surveys.

## HEALTH CARE

Public health addresses both maintaining health of residents and provision of health care. According to research sponsored by the Robert Wood Johnson Foundation, Thayer County ranks #17 (of 79 counties evaluated) in Nebraska for Health Factors, and #35 for Health Outcomes.

The Rankings consider health factors based on physical environment (air and water quality, housing and transit), social and economic factors (community safety, family and social support, income, employment, education), clinical care (access to care, quality of care), and health behaviors (alcohol and drug use, sexual activity, diet and exercise, tobacco use). Health outcomes are measured by length of life (50%) and quality of life (50%) indicators such as share of people reporting poor or fair health, number of unhealthy days, and share of low-birthweight newborns. The measurements are, of course only as good as the publicly available data sets which may

have large margins of error for smaller population communities.

Source: [www.countyhealthrankings.org](http://www.countyhealthrankings.org)

## Public Health

Public Health Solutions District Health Department (PHS) serves 54,3271 people within a five-county district comprised of Fillmore, Gage, Jefferson, Saline and Thayer counties in southeastern Nebraska. The mission of PHS is to prevent disease and injury, promote wellness, and protect the personal, community, and environmental health.

Source: [www.phsneb.org](http://www.phsneb.org)

## Thayer County Health Services

Thayer County Health Services is a comprehensive primary care system providing health and wellness services to the citizens of Thayer County and surrounding communities in Nebraska and Kansas. Begun in 1944, Thayer County Health Services admitted their first patient in 1948, when the American Lutheran Church sold a dormitory at the former Hebron College to the Hebron Chamber of Commerce.

The existing facility opened in 1968 with expansions in 1999, 2007, and 2015-18. Management is provided by CHI Catholic Health Initiatives of Lincoln, with support from the Foundation for Thayer County Health Services.

Medical services include a Basic (Level IV) Trauma Center 17-bed Critical Access Hospital and a clinic in Hebron, and three satellite clinics in Bruning, Davenport, and Deshler. TCHS is a county facility serving a 50-mile radius from Hebron and serves patients from over 288 communities.



Thayer County Health Services, Hebron  
Source: Marvin Planning Consultants

Thayer County Health Services (TCHS) provides ambulance service to the area. Besides its patient-centered inpatient facility, the hospital also supports a full spectrum of pre- and post-hospital services, along with programs designed to improve community health and maintain community wellness.

Source: [hayercountyhealth.com](http://hayercountyhealth.com)

### Regional Medical Facilities

The statewide trauma program ensures Nebraska hospitals meet the standards to be designated as a trauma center. Trauma designation is based on the resources a hospital has available and by successfully meeting regulatory requirements.

The Mary Lanning Memorial Hospital in Hastings is the nearest Level II Trauma Center, located approximately 70 miles northwest of Hebron. Level I and Level II trauma centers are located in Lincoln and Omaha.

## FACILITIES GOALS AND ACTIONS

### FACILITIES GOAL 6.1

Thayer County provides accessible public buildings and facilities required to provide public services to the citizens of the county.

#### Actions

- 6.1.1 Continue maintenance and repair of the historic Thayer County Courthouse and other county-owned facilities.
- 6.1.2 Coordinate facility needs with municipalities and look for opportunities for shared cost-savings.
- 6.1.3 Carefully review new development projects for potential impacts on public facilities.

### FACILITIES GOAL 6.2

Historic sites and places are protected and maintained.

#### Actions

- 6.2.1 Support efforts to designate and preserve historic buildings.
- 6.2.2 Continue support of the Thayer County Historical Society,

### FACILITIES GOAL 6.3

Thayer County has a modern, efficient Education system.

#### Actions

- 6.3.1 Continue support of K-12 education and coordination with public and parochial schools.
- 6.3.2 Include public school districts in review of large development projects, to assure accommodation of future students.
- 6.3.3 Encourage community college workforce training in Thayer County.
- 6.3.4 Encourage new and expanding daycare options.

### FACILITIES GOAL 6.4

Thayer County has a modern, efficient Health care system.

#### Actions

- 6.4.1 Continue support of Thayer County Health Services in meeting health care needs of residents.



The Parks and Recreation element includes a brief description of the facilities located throughout Thayer County, including the incorporated communities. This chapter reviews the County Fairgrounds, community parks and recreation facilities, attractions, and goals and policies.

Even though parks are typically located within municipalities, they also serve the needs of county residents residing outside of the municipalities. Parks and recreation provide residents with a variety of social, cultural, and recreational opportunities to lead to an improved quality of life.

## COUNTY FAIRGROUNDS

The Thayer County Agricultural Society was organized at Deshler in 1913, reviving the County Fair.

The Fairgrounds Exhibition Hall, an octagonal-shaped frame agricultural show barn, was built south of Deshler in 1914. It was destroyed when the swarm of tornados hit Deshler in 2003.

The Thayer County Fair is held annually each August, with 4-H

and open exhibits. The fair typically has a carnival and other special events as well.

The Thayer County Speedway is also located at the fairgrounds and features an 3/8 mile long dirt/clay oval racetrack. Several races are typically scheduled



Thayer County Fairgrounds, 1915  
Source: History Nebraska



each racing season. The Thayer County Activity Center at the Fairgrounds also offers indoor exhibit and meeting space (see *Chapter Six*).

Source: [www.thayercountyfair.com](http://www.thayercountyfair.com)

## COMMUNITY PARKS AND RECREATION

Respondents to the Thayer County Comprehensive Plan Survey report they undertake outdoor recreation, sports, and exercise all across Thayer County. Many go to town for entertainment, indoor exercise, and swimming.

### HEBRON

#### Archery Park

The Hebron Archery park is located near the Little Blue River on South 4th Street. The park has 14 fiberboard targets on skids ranging from 10 yards to 70 yards. 3D animal targets are available for request at the City office.

#### Hebron Community Pool

The new community pool opened in Hebron in May 2022 after a \$3.9 million construction project. The facility includes a water slide and a special area for young children.

#### Hebron Country Club

The 9-hole par 35 golf course is located on US 136 and is open to the public. Hebron golf course opened in 1955. The course rating is 34.0 and it has a slope rating of 110.

#### Hebron Sports and Rec Complex

Located at Euclid Avenue and 7th Street, the Hebron Sports and Rec Complex is a hub of activity for Hebron and the county. The



Thayer County Activity Center, Deshler  
Source: Thayer County Historical Society

Park amenities include:

- 2 Sand Volleyball Courts
- Grassed Infield- American Legion Field
- 2 baseball Fields- Coach Pitch, Pony & Pee Wee
- 2 Softball Fields
- Lighted Fields & 2 Batting Cages
- Playground Equipment
- Across From The City Pool
- Picnic Tables and Benches
- Concession Stand/ Restrooms

Source: [www.hebronnebraska.us/292/Hebron-Sports-Rec-Complex](http://www.hebronnebraska.us/292/Hebron-Sports-Rec-Complex)

#### Hebron City Parks

Riverside Park amenities include:

- 16-30 amp Camper Hookups
- Two Cement Pads
- Large Shelter
- Eight Picnic Tables
- Open Fire Pit
- Charcoal Grills
- Cement Pads with Picnic Tables and Awnings
- Restrooms with Showers
- View of the Ballpark
- Walking Distance from Pool



Hebron Community Pool  
Source: City of Hebron



Roosevelt Park amenities include:

- World's Largest Covered Porch Swing
- Gazebo
- Shelter
- Playground
- Public Restrooms at Fire Hall

Willard Park amenities include:

- Basketball courts
- Large Grassed Play Area
- Large Shelter
- Small shelters
- Playground
- Restrooms
- Four tennis courts

The Thayer County Walking Coalition is working to create a safe and connected trail system to serve all people who live, work, and play in Hebron. There is an existing walking trail running from Fourth Avenue to the Hebron Ball Park, with plans for five phases of connecting trails. (See also Chapter 13 Transportation.)

### Arrowhead Arboretum

Arrowhead Gardens Arboretum, located on Jefferson Avenue between 7th and 8th streets in Hebron, was established in the 1920's. The gardens are maintained by volunteers. Eleven different varieties of trees, six different varieties of native grasses and many types of plants may be found in the gardens.

## DESHLER

### Deshler City Parks

City Park is located on the south side of Deshler, next to the County Fairgrounds. Amenities include:

- 10 acres in area
- Free camping hook-ups
- Picnic areas
- Swimming



Arrowhead Arboretum, Hebron  
Source: Marvin Planning Consultants

- Horseshoes
- Sand Volleyball

The Rattlesnake Run Disc Golf Course offers a 3/4-mile long course thru the park, and the City Park Walking Trail offers a 3/4-mile long path.

Centennial Park at the water tower and Bicentennial Park next to the public library also

offer passive recreation space.

Source: [www.deshlerchamber.org/recreation.html](http://www.deshlerchamber.org/recreation.html)

### Centennial Park Arboretum

This arboretum, located at Centennial Park on the east side of Deshler off US 136, contains more than 15 Memorial Trees, 32 varieties of shrubs and a number of native grasses.



Deshler City Parks  
Source: Marvin Planning Consultants

## ATTRACTIONS

### BELVIDERE TRAIN WATCHING STATION

This open-air train watching station, located at the corner of C and 6th Street in Belvidere, was completed in 2012 with private donations and grants from the Union Pacific Rail Road and others. Rail road buffs will be able to view Union Pacific trains on a double wide track system (the second line was completed in 1999) about every 20-25 minutes. Belvidere was selected as a "Train Town USA" community in 2013. The site includes Thayer County's last depot and a wooden boxcar.



Belvidere Train Watching Station  
Source: Marvin Planning Consultants

### SPRING CREEK MODEL TRAINS

This model railroad hobby store is located in downtown Deshler, within sight of the old "Rock Island" railroad. The store draws visitors to the community from across the nation and internationally. The model railroading community is known for their support of hobby stores. In addition to the retail showroom, the proprietors manufacture custom model train equipment and exhibit at model railroad shows across the U.S.

Source: [www.springcreekmodeltrains.com](http://www.springcreekmodeltrains.com)

### MAJESTIC THEATRE

The Arts Council of Thayer County, a volunteer nonprofit group, was formed to operate the Majestic Theatre as a community theatre. In 2013, the group raised enough money to replace the outdated 35mm projector with a digital projector, and renovations were

completed including new seats and a new sound system.

The Majestic Theater shows current-run movies with affordable concessions. This board of 16 Thayer County residents plans to continue on and promote film and other performing and fine arts in Thayer County.

Source: [hebronmajestic.com](http://hebronmajestic.com)

### WORLD'S LARGEST COVERED PORCH SWING

Located in 5th and Jefferson in downtown Hebron, the World's Largest Covered Porch Swing is 32 feet long and can seat up to two dozen people at one time. The swing was built in 1985 at the Civilian Conservation Corps Camp and moved to Roosevelt Park in 1991. The site attracts



Majestic Theater, Hebron  
Source: Marvin Planning Consultants



visitors from many different places to stop and enjoy Thayer County.

## RECREATION AND WILDLIFE AREAS

There are several wildlife management areas (WMAs) in Thayer County, and one state recreation area (SMA) near Alexandria.

WMAs are managed by the Nebraska Game and Parks Commission's Wildlife Division for the enhancement of wildlife habitat and for public hunting, trapping, and fishing. They also provide opportunities for other activities, such as hiking, bird watching, nature study, and in some cases primitive camping. Hunters and anglers pay the entire bill for the acquisition, development and maintenance of these areas through the purchase of hunting, trapping and fishing permits, Habitat Stamps and through excise taxes on hunting and fishing equipment.

- Dry Sandy WMA, 21 acres near Bruning
- Father Hupp WMA, 160 acres near Carleton
- Little Blue WMA, 304 acres near Hebron
- Little Blue East WMA, 161 acres near Hebron
- Meridian WMA, 400 acres near Alexandria
- Prairie Marsh WMA, 73 acres near Carleton



Alexandria State Recreation Area  
Source: Nebraska Game and Parks

### ALEXANDRIA STATE RECREATION AREA

SRAs are areas of outdoor recreational value, managed by the Nebraska Game and Parks Commission. This includes all of the state's water-oriented parks.

Located east of Alexandria in Jefferson County, Nebraska Game and Parks' Alexandria State Recreation Area (SRA) is a peaceful, scenic recreation area encompasses 55 acres of land with two lakes totaling 46 acres of water. The area is fairly level with mature trees for shade and offers fishing and picnic shelters. There are also Electric Plus, Electric, and Basic campsites.

Source: [outdoornebraska.gov/alexandria](http://outdoornebraska.gov/alexandria)

### BRUNING DAM RECREATION AREA

The Bruning Dam is located two miles east, one mile north and 3/4 mile east of Bruning. The dam consists of 250 acres of surface water and 123 acres of public land, primarily in Fillmore County. The facility is owned and operated by the Little Blue Natural Resources District (NRD).

The Bruning Dam's primary purpose is flood control and groundwater recharge, as well as recreation. The area is used for fishing, water fowl and upland game hunting, archery for deer and turkey, horseback riding, trapping, and boating (less than five horsepower). In the winter, it is used for skating and ice fishing.

Source: [www.nrdnet.org/rec-area/bruning-dam](http://www.nrdnet.org/rec-area/bruning-dam)

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# PARKS AND RECREATION GOALS AND ACTIONS

## PARKS GOAL 7.1

Thayer County residents have access to a variety of parks and recreation facilities close to home.

### Actions

- 7.1.1 Discuss drafting a county-wide parks and recreation master plan with municipalities.
- 7.1.2 Support municipalities in maintaining city and village parks.
- 7.1.3 Support municipalities in development and/or extending pedestrian, bike, and equestrian trails systems.

## PARKS GOAL 7.2

The Thayer County Fairgrounds remains a safe and active facility for county residents.

### Actions

- 7.2.1 Work with the City of Deshler to assure the Fairgrounds meet the needs of users while minimizing impacts on neighbors.

## PARKS GOAL 7.3

Area attractions are well-promoted to local residents and regional visitors.

### Actions

- 7.3.1 Support local and regional marketing of Thayer County attractions.

## PARKS GOAL 7.4

Public Lands are maintained for the enjoyment of local residents.

### Actions

- 7.4.1 Work with the State of Nebraska on local access to and maintenance of State Recreation and Wildlife areas.





## Chapter Eight Public Safety

The protection of public safety is a key responsibility of local government and a key component of the Comprehensive Plan. The pattern of future growth and development can make the delivery of public safety more efficient, or can stretch resources even more than in the past.

This chapter describes current Thayer County law enforcement, fire protection, emergency medical services, and emergency management.

### COUNTY LAW ENFORCEMENT

The Thayer County Sheriff's Office provides law enforcement services across Thayer County. The Sheriff's Office and Jail facility is located on the same block as the Thayer County Courthouse in downtown Hebron.

In 2022, the Thayer County Sheriff's Office had 12 full-time employees and 1 part-time employees, including 8 sworn and 5 civilian employees. This was a rate of 1.4 full-time officers per 1,000 population. In 2020, the Thayer County Sheriff's Office had 14 full-time employees and 2

part-time employees. The Jail is an 8-bed facility, with prisoner transport to Saline or Jefferson County, Nebraska, as necessary. The Sheriff's office also contracts with municipalities in the place of local police departments. The Nebraska State Patrol also



Thayer County Sheriff's Office, 324 Olive Avenue, Hebron  
Source: Marvin Planning Consultants

maintains a presence throughout the region.

The Thayer County Courthouse and Thayer County Sheriff's Office/Jail have been identified as Critical Facilities for Thayer County. The Courthouse and Sheriff's Office have backup generator capacity (*Little Blue NRD & Lower Big Blue NRD Hazard Mitigation Plan 2021*).

Additional information on Emergency Management is included later in this chapter, and in Chapter 11 Hazard Mitigation.

## FIRE PROTECTION

Each of the municipalities in Thayer County have a fire department or district providing fire protection and response to their community and nearby rural areas of Thayer County as well as adjacent counties.

These first responders include:

- Alexandria Volunteer Rural Fire, Alexandria
- Belvidere Fire Department
- Bruning Fire & Rescue
- Byron Volunteer Fire Department
- Carleton Volunteer Fire Department
- Chester Volunteer Fire Department
- Davenport Volunteer Fire Department
- Deshler Fire Department
- Gilead Volunteer Fire Department
- Hebron Volunteer Fire Department
- Hubbell Volunteer Fire Department

### State Fire Marshal

The State Fire Marshal's office conducts fire safety inspections on most properties open to the public. The State Fire Code used in these inspections is outlined in Title 153, Chapter 1 of the Administrative Code. The fee structure used for these inspections is explained in Title 153, Chapter 20. The annual registration fees for Grain Elevators and Feed Mills and Underground Storage Tanks are explained in Titles 161 and 159 respectively.

With a few exceptions, the deputy will leave a fee card after doing an inspection. The owner/operator sends card to the Lincoln office with a check or money order for the indicated amount. If any deficiencies are found during the inspection process, written orders will be mailed to the facility. A follow-up inspection may be scheduled to insure the deficiencies are corrected. If it is necessary to do a third inspection, an additional fee is charged. Once payment is received and any deficiencies

are corrected a Certificate of Occupancy is issued

## EMERGENCY MEDICAL SERVICES

### FIRE DISTRICTS

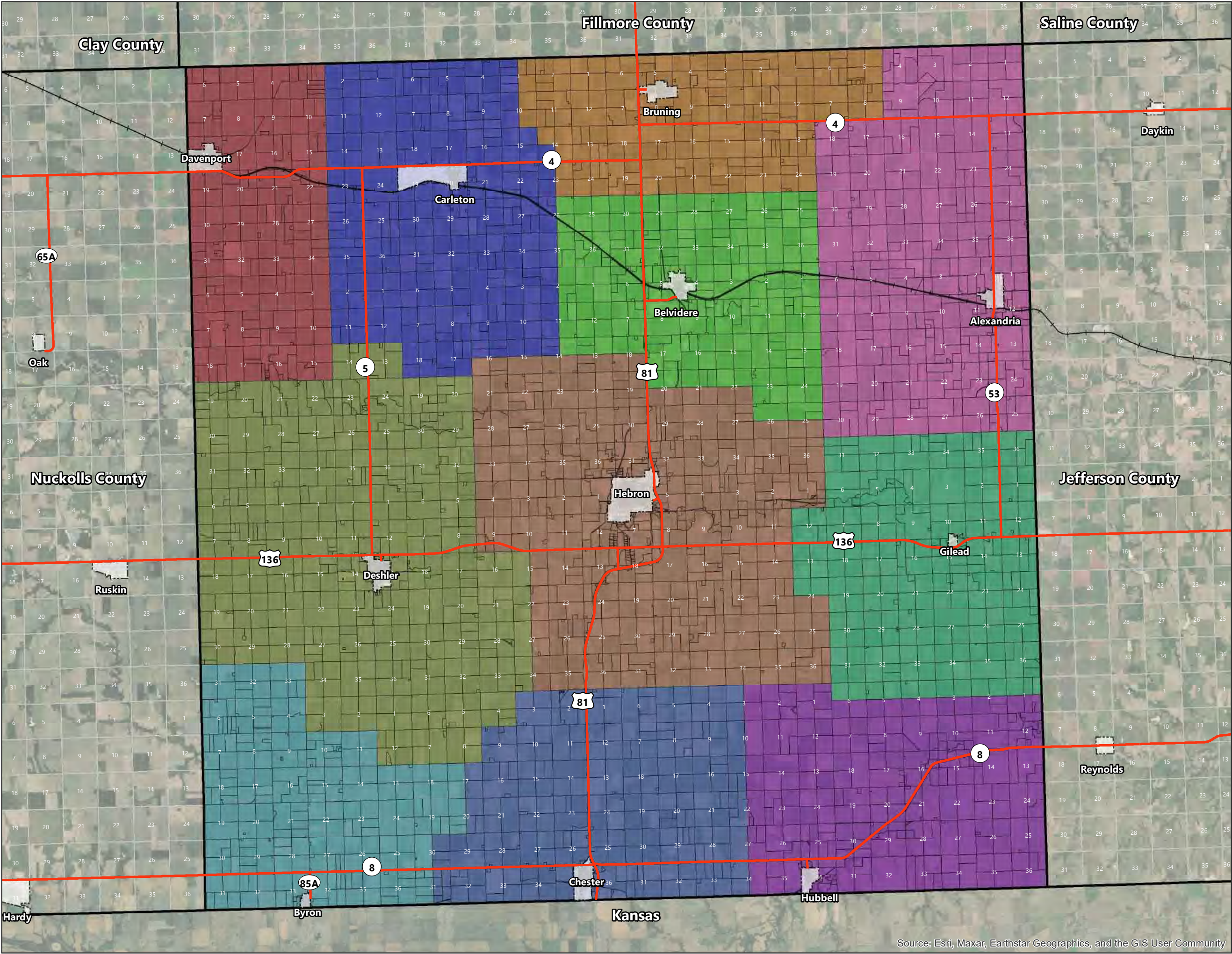
Several local fire districts also provide Emergency Medical Services (EMS). EMS response areas may be the same as the fire response areas or may cover a larger area. These include:

- Alexandria
- Bruning—Bruning fire district and generally the Belvidere rural response area north of the UP railroad
- Carleton
- Chester—Chester and Hubbell fire districts and the southern three sections of Byron's fire response area.
- Davenport
- Deshler—Deshler fire district and the northern rural portion of Byron's fire response area.
- Hebron—Hebron and Gilead fire districts, and generally the portion of Belvidere's fire district south of the UP railroad.



Fire Hall, Deshler  
Source: Marvin Planning Consultants





THAYER COUNTY, NEBRASKA  
COMPREHENSIVE PLAN  
FIG 8.X: FIRE PROTECTION

- LEGEND**
- Highways
  - Municipal Limits
  - Railroad
  - County Boundaries
  - Parcels

- Fire District**
- Alexandria
  - Belvidere
  - Bruning
  - Byron
  - Carleton
  - Chester
  - Davenport
  - Deshler
  - Gilead
  - Hebron
  - Hubbell
  - Sections

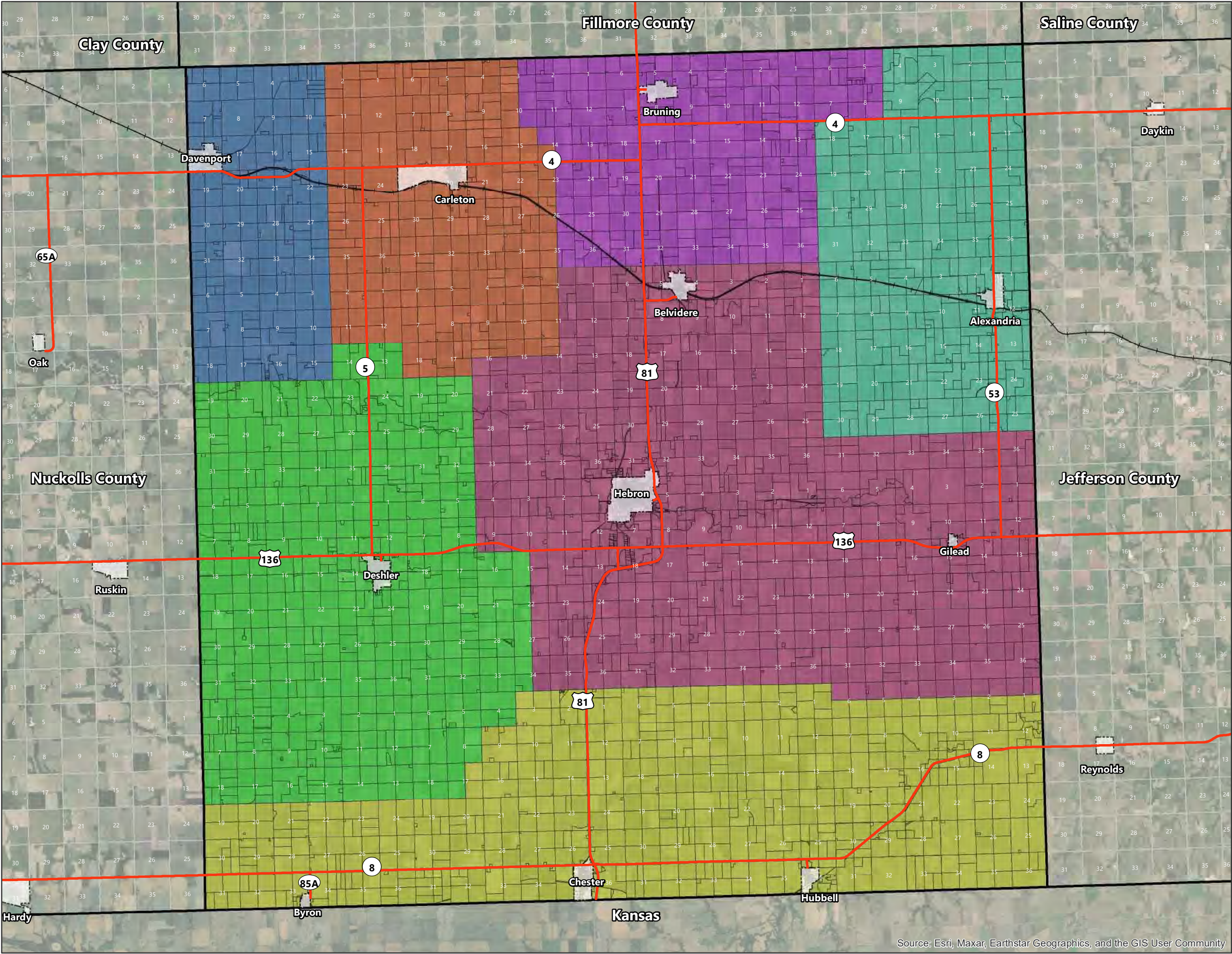
**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal Growth and Community Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.24.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





THAYER COUNTY, NEBRASKA

**COMPREHENSIVE PLAN**

**FIG 8.X: RESCUE/EMS RESPONSE AREAS**

**LEGEND**

- Highways
- Municipal Limits
- Railroad
- County Boundaries
- Parcels

**Rescue/EMS Response Area**

- Alexandria
- Bruning
- Carleton
- Chester
- Davenport
- Deshler
- Hebron
- Sections

**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal Growth and Community Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.24.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



## TCHS

As noted in Chapter Six, Public Facilities, Thayer County Health Services (TCHS) has a full advanced life support ambulance. On average there are 110 transports per year (Lincoln, Hastings, Omaha). It is equipped with Zoll Auto pulse, infusion pumps, transport ventilator, Zoll X series monitor (12-lead EKG capable) with the ability to wirelessly transmit EKG's to hospitals before the patient arrives.

TCHS has a rotation of on-call drivers and EMTs.

Source: [thayercountyhealth.com](http://thayercountyhealth.com)

## SOUTH CENTRAL EMS

South Central EMS also serves the South Central area of Nebraska, including school districts, hospitals, medical clinics, adult day centers, nursing homes, dialysis centers, doctor's offices and more. They also transport individuals and families to and from appointments.

South Central EMS is an Emergency Medical Transport Service fully staffed with qualified Paramedics, with locations in Ralston, Geneva, and Hastings, Nebraska.

Source: [southcentralems.com](http://southcentralems.com)



## EMERGENCY MANAGEMENT

Emergency management involves the coordination and integration of activities necessary to build, sustain, and improve the capabilities to prepare for, respond to, recover from, or mitigate against threatened or actual disasters or emergencies, regardless of cause. This includes man-made and natural disasters. The discipline and profession of emergency management applies science, technology, planning, and management to deal with extreme events which can injure or kill large numbers of people, do extensive damage to property, and disrupt community life.

Emergency management is integrated at the local, state, and federal levels. All disasters start at the local level. When a local disaster declaration is made because local resources have been overwhelmed, a request may be made for assistance from the Nebraska Emergency Management Agency (NEMA). When state resources become overwhelmed, a state disaster may be declared and the governor can request assistance from the Federal Emergency Management Agency (FEMA). Emergency response operates within the principles of the National Incident Management System (NIMS) and the Incident Command Systems (ICS).

Thayer County's Emergency Management office operates within the framework within which communities reduce vulnerability to hazards and cope with disasters:

**Mitigation:** identify hazards and activities to prevent/lessen the impact of a disaster on lives and property

**Preparedness:** assist individuals and communities take steps to be ready for a disaster

**Response:** support and coordinate local agency emergency response activities

**Recovery:** work to restore public services and return the community to normal.

For more information on the Mitigation element of emergency management in Thayer County, see Chapter 11 Hazard Mitigation.

## PUBLIC SAFETY GOALS AND ACTIONS

### SAFETY GOAL 8.1

Law Enforcement services are provided throughout the county.

#### Actions

- 8.1.1 Carefully review new development projects for potential impacts on public safety.
- 8.1.2 Support working cooperatively between municipalities and the County Sheriff for law enforcement.
- 8.1.3 Continue to regulate and mitigate nuisance and code enforcement cases.

### SAFETY GOAL 8.2

Fire Protection services are provided throughout the county.

#### Actions

- 8.2.1 Carefully review new development projects for potential impacts on fire protection and response.
- 8.2.2 Continue to support volunteer fire departments.
- 8.2.3 Encourage creation of local jobs where first responders can be available for response.

### SAFETY GOAL 8.3

Emergency Medical Services (EMS) are provided throughout the county.

#### Actions

- 8.3.1 Carefully review new development projects for potential impacts on emergency medical response.
- 8.3.2 Continue support for Emergency Medical Services.

### SAFETY GOAL 8.4

Emergency Management services are provided throughout the county.

#### Actions

- 8.4.1 Review new development projects for potential emergency management impacts.
- 8.4.2 Continue support for Emergency Management Director to provide services countywide.
- 8.4.3 Continue to participate in emergency management programs and exercises.



## Chapter Nine

# Communications, Utilities, and Energy

Communications, utilities, and energy are essential elements of a county's infrastructure. This chapter describes each of these service industries as they apply to Thayer County.

Communications includes traditional media such as newspapers, television and radio, and telephone service, as well as new media including broadband internet. Utilities includes public and private services including electricity and natural gas, water, and wastewater service. Energy includes both traditional carbon-based fuels and renewable energy sources such as wind, solar, and biofuels.

### COMMUNICATIONS

Communications services are constantly changing. Print, over-the-air, and telecommunications, are vital to the functioning of a dynamic community.

### NEWSPAPERS

There are currently 14 newspapers publishing daily or semi-daily print editions in Nebraska. The nearest daily newspaper is the *Hastings Tribune*.

#### Hebron Journal-Register

The Hebron Journal-Register publishes weekly in Hebron. The newspaper was formed in 1944 by the union of the Hebron Journal and Hebron Register.

The Journal began publication in 1871 (Figure 9.1). The first article by editor E.M. Correll began: "Our audience is expectantly waiting—some with only curiosity—some with the cold glitter of criticism in their steel like eyes, — and some, we hope, who anxiously wait trusting that the new candidate for public favor may receive success."

### TELEVISION AND RADIO

For broadcast marketing purposes, Thayer County is assigned to the Southeast Nebraska internal state region, Lincoln and Hastings—Kearney Plus designated market area (Nielsen). These areas include a large portion of central Nebraska. While there are no television stations based in Thayer County, local channels are broadcast from Grand Island, Hastings, or Lincoln.

While there are currently (as of spring 2023) no full-power local radio stations licensed in Thayer County, translator K202CJ broadcasts at 88.3 FM at Deshler. The closest radio station broadcasts at 92.1 FM from Belleville, Kansas. There is an AM/FM station in Superior owned by CK Broadcastings and an AM/FM station in Fairbury, owned by Flood Communications.



FIGURE 9.1: THE HEBRON JOURNAL, FEBRUARY 9, 1871



Source: Newspapers.com.

## TELEPHONE AND INTERNET

According to the US Census Bureau's ACS estimates, in 2011, there were 38 housing units in Thayer County with no access to a telephone. This statistic increased to 75 by 2021.

The ACS reported 1,696 of 2,056 households in the county had an internet subscription, including 1,463 with a cellular data plan, 1,195 with cable, fiber optic, or DSL hardwire, and 245 with satellite internet service (2021).

Windstream Nebraska is the Incumbent Local Exchange Carrier (ILEC) for telephone service in and around Alexandria, Bruning, Carleton,

Davenport, and Hebron (including Belvidere and Gilead), providing voice and data service. Great Plains Communications is ILEC for Deshler and the Byron and Chester exchanges (including Hubbell).

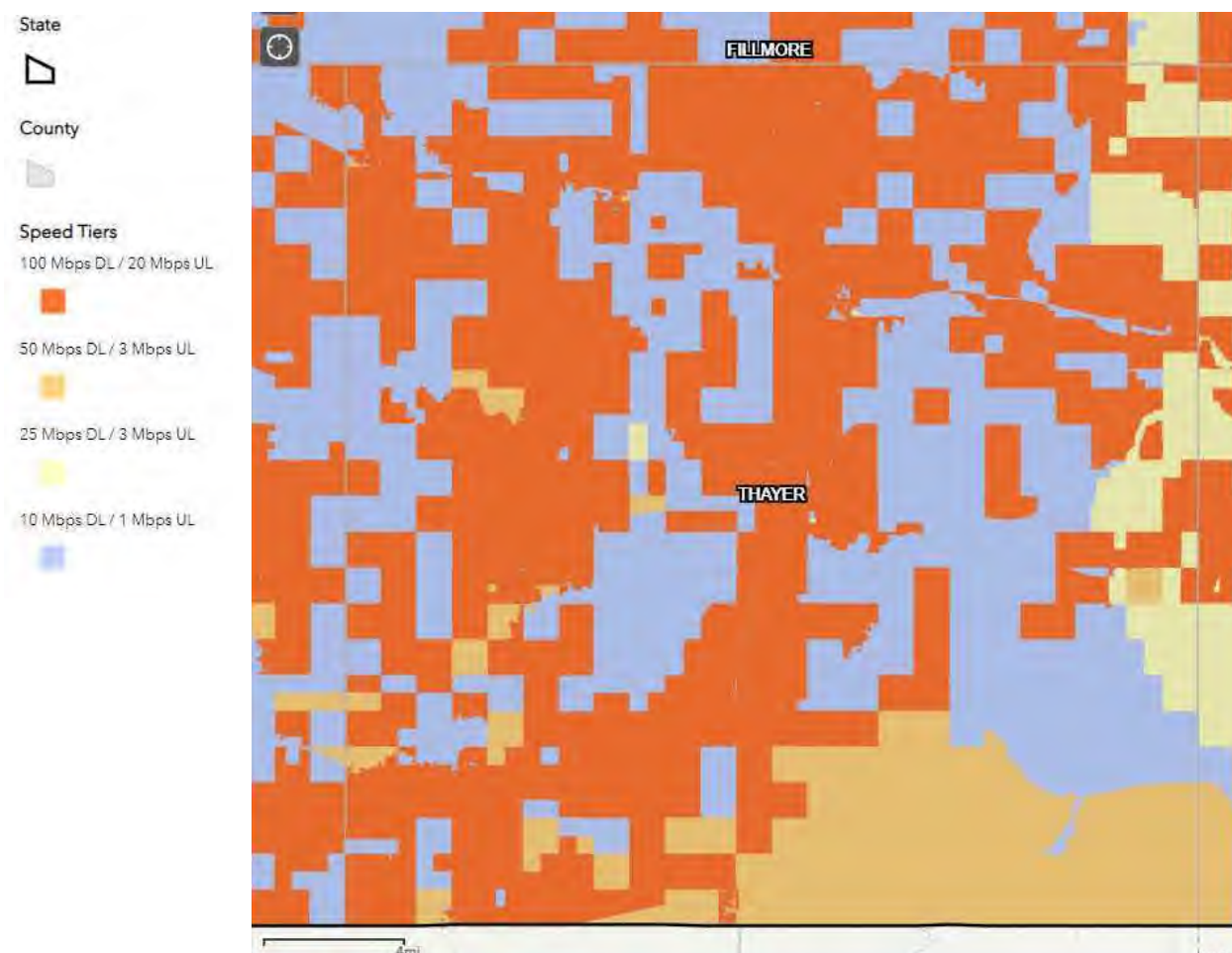
The Nebraska Broadband Mapping Project indicates Thayer County is served by minimum 10 Mbps download / 1 Mbps upload (Figure 9.2). However, actual speeds nor reliability of service is not guaranteed. Much of the county is mapped for 25 or 50 Mbps DL/3 Mbps UL. Both Great Plains and Windstream show they can provide 100 Mbps DL / 20 Mbps UL across both city and

unincorporated areas. Telecommunications service providers have continued to construct towers to improve voice and data cellular and fixed wireless service as well.

During public process to develop this plan, participants stated they were unable to receive the stated broadband speeds at their place of work or home, or the fees for service were unaffordable. They also stated wireless service, including fixed wireless, was unreliable with the variable topography and unstable weather patterns of south central Nebraska.

In 2024, Glenwood Telecommunications, Inc.

**FIGURE 9.2: BROADBAND SERVICE**



Source: Nebraska Broadband Mapping Project 2023



received a Nebraska Broadband Bridge Program Grant Award of \$1,376,220 to provide fiber broadband to at least 54 rural locations in Thayer County. Glenwood is a full-service telecommunications provider, serving residents and businesses in 14 Nebraska counties, with an office in Hebron. Thayer County EDC is also working to match funds with Glenwood, each providing 25% for the 50:50 match of the grant award. The project will extend about 50 miles of fiber northwest and east of Hebron.

Cell Towers

Verizon and Viaero have established wireless cellular service in the area. New technologies, such as 5G cellular service, generally require a larger number of shorter wireless towers. Thayer County, the cities, and villages, will likely be faced with an increasing number of requests to approve cellular and broadband antennae and towers. These requests must be reviewed in accordance with

Federal Communications Commissions (FCC) rules and regulations, as well as the laws of the State of Nebraska. The Federal Communications Act also preempts local decisions premised directly or indirectly on the environmental effects of radio frequency (RF) emissions, assuming the provider is in compliance with the Commission's RF rules.

Towers meeting certain height and location criteria must also pass Federal Aviation Administration (FAA) review. This assures safe aircraft operations.

The FCC sets a "shot clock" as a reasonable period of time within which a wireless infrastructure siting application must be acted upon. As of 2018, the FCC adopted 60 days for review of collocation of small wireless facilities and 90 days for review of attachment of small wireless facilities to a new structure. A 150-day shot clock

applies for review of other new wireless facility construction.

While local zoning regulations may apply standards similar to other similar structures, including aesthetics, zoning may not "materially inhibit" provision of services. Some jurisdictions even require "stealth" cell towers, which are designed to better match trees or structures such as silos, to reduce environmental impacts. Applications may be reviewed in a similar process as other projects, as long as the shot clock is maintained. Any adverse decision, however, must be accompanied by a substantial written record.

UTILITIES

Public and private utilities provide power, heat, and water to homes, businesses, and public places. They also treat wastewater, solid waste and recyclables.

TABLE 9.1: THAYER COUNTY HOUSE HEATING FUEL 2011-2021

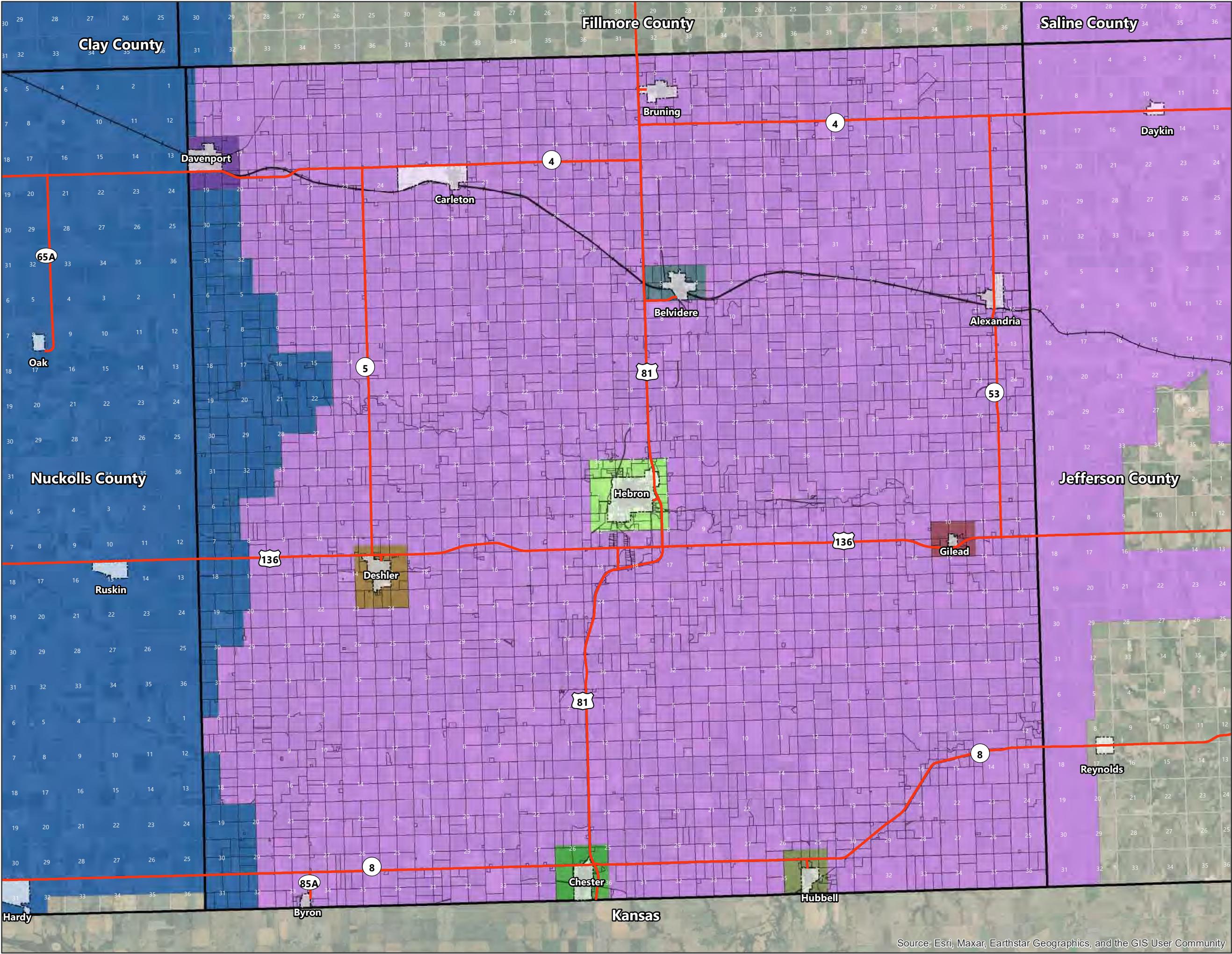
	2011	2021	Change 2011-2021
Occupied housing units	2,212	2,056	-7.05%
Utility gas	1,049	1,009	-3.81%
Bottled, tank, or LP gas	472	263	-44.28%
Electricity	603	669	10.95%
Fuel oil, kerosene, etc.	12	11	-8.33%
Coal or coke	0	0	n/a
Wood	50	46	-8.00%
Solar energy	0	0	n/a
Other fuel	26	47	80.77%
No fuel used	0	11	n/a

n/a– Not Available  
Source: Source: American Community Survey 2007-2011 & 2017-2021.



Stealth Cell Tower  
Source: Marvin Planning Consultants





THAYER COUNTY, NEBRASKA

**COMPREHENSIVE PLAN**

**FIG 9.X: POWER DISTRICTS**

**LEGEND**

- Highways
- Municipal Limits
- Railroad
- County Boundaries
- Parcels

**Power District**

- Belvidere
- Chester
- Davenport
- Deshler
- Gilead
- Hebron
- Hubbell
- Norris PPD
- South Central PPD
- Sections

**PROJECTION:** NE State Plane (Ft.)  
**DATUM:** NAD 83  
**DATE:** 6.24.24

**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal Growth and Community Planning*

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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## POWER AND NATURAL GAS

According to the US Census Bureau's ACS estimates, approximately 47% of housing units in Thayer County are heated by utility gas, compared to 60% statewide (Table 9.1). Approximately 21% use LP gas (propane), compared to 7% statewide. About 27% use electric heat, compared to 31% statewide.

The Norris Public Power District (PPD), based in Beatrice, provides electricity to most of Thayer County, including the city of Hebron. Norris Public Power District's electric system is a sub-transmission and distribution system consisting of 676 miles of 34.5 kV and 69 kV transmission lines, 5,538 miles of primary distribution lines, 76 distribution substations and 15 industrial substations. Of the 6,214 miles of distribution and transmission lines the District owns and operates, 684 miles are underground.

A tier along the western county line is served by South Central PPD of Nelson, Nebraska. Several municipalities also provide public power:

- Belvidere
- Chester
- Davenport
- Deshler
- Gilead
- Hubbell

Source: [www.nebraskamap.gov](http://www.nebraskamap.gov)

The Nebraska Public Power District provides electric power to the Norris PPD. The 34.5 kV and 69 kV transmission system is arranged to interconnect between the major delivery points and provide for reliability of power supply and flexibility of system operation. Norris Public



Water tower, Hebron  
Source: Marvin Planning Consultants

Power District serves a total of 48 communities at retail service and five communities at wholesale service.

Although half (50%) of Norris PPD's electric energy sales are from large industrial customers, the PPD's electric system is primarily a rural distribution system. The District serves approximately 24,700 customers in six counties.

Source: [www.nppd.com](http://www.nppd.com)

Black Hills Energy provides utility natural gas service in the western portion of Thayer County, including the city of Hebron.

Source: [www.blackhillsenergy.com](http://www.blackhillsenergy.com)

There are several commercial propane suppliers in Thayer County, as well as surrounding areas.

### EV Charging

As the number of Electric Vehicles (EVs) on the road increases, annual demands for electricity to charge them will

grow as well. There will be increasing demands on electrical infrastructure as home and public chargers are added to existing loads.

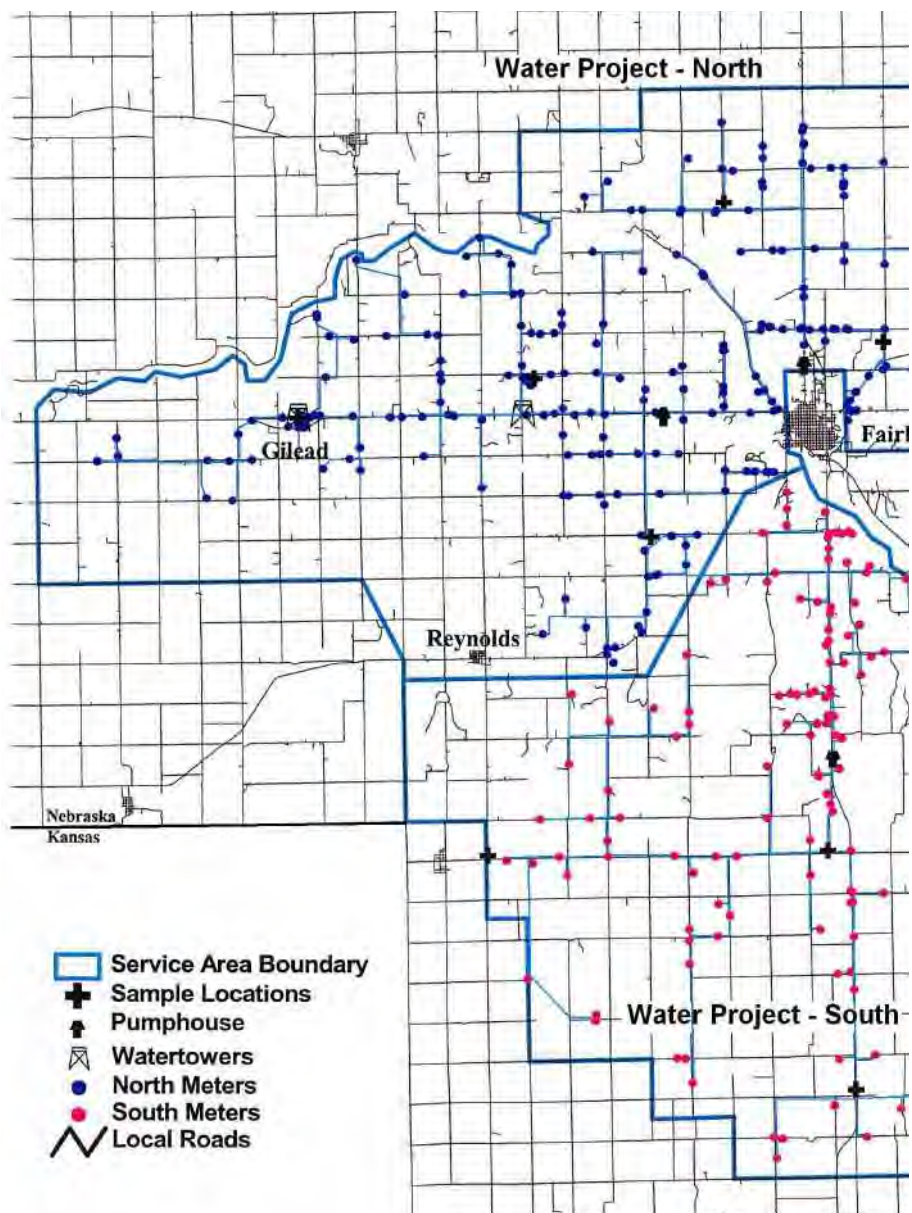
*Additional information on traditional and renewable energy generation is presented later in this chapter. Additional information on EVs is presented in Chapter 13 Transportation.*

## DOMESTIC WATER

Drinking water and irrigation water in Thayer County is typically supplied by groundwater using individual or shared wells. Nebraska state laws have provided for protection of groundwater supply under a permitting system for public water suppliers and industrial water users, along with a centralized repository of information about groundwater wells. The Nebraska Department of Natural Resources' Registered Groundwater Wells Database listed 2,744 records for wells entered since 1969 in Thayer County (as of 2/27/2024) aside



FIGURE 9.4: LITTLE BLUE NRD RURAL WATER DISTRICTS



Source: Little Blue Natural Resources District

from public water supply wells regulated by the US Environmental Protection Agency.

Source: [dnr.nebraska.gov/groundwater](https://dnr.nebraska.gov/groundwater)

Each of the incorporated municipalities in Thayer County, with the exception of Gilead, provide domestic drinking water with groundwater from public

water supply wells. According to the EPA's Safe Drinking Water Information System, Reinke Manufacturing Company, Inc. outside Deshler is permitted for a public supply well as a Non-Transient Non-Community Water System (#NE3150655).

Source: [www.epa.gov/ground-water-and-drinking-water](https://www.epa.gov/ground-water-and-drinking-water)

The Little Blue Public Water Project North serves the village of Gilead and the adjacent rural area (Figure 9.4). This rural water system was completed in 1976 with the objective of supplying continuous, quality water service to residents.

Source: [littlebluenrd.org/rural-water/](https://littlebluenrd.org/rural-water/)

## WASTEWATER

Homes and businesses outside municipalities treat wastewater with individual septic systems. Onsite wastewater treatment systems (OWTS) include septic tanks, holding tanks, small lagoons, and other decentralized wastewater treatment systems.

The State of Nebraska requires any building which generates wastewater to have an OWTS system, installed by a certified professional. Prior to construction of a development area where an OWTS is proposed on any lot less than three acres in size, the owner of the property must submit an application for subdivision review to the Nebraska Department of Environment and Energy (NDEE). Standards for the size of treatment systems and required setbacks are set by Title 124 of the Nebraska Administrative Code.

Most OWTS in Nebraska are constructed under "Authorization by Rule". However, some systems do require a construction and/or operations permit as a result of the quantity or quality of wastewater generated or side conditions not meeting "Authorization by Rule" requirements.

In new development, the use of environmentally sensitive methods of wastewater

treatment should be encouraged. Water conservation helps reduce impacts on surface and groundwater. Also, conservation of common open space provides greater buffers between water sources and wastewater infiltration.

Sanitary waste within communities is typically addressed via community-wide collection and treatment systems. Construction permits for municipal, industrial, and commercial wastewater works are issued after NDEE engineers review and approve construction plans and specifications for the project. New development should connect to municipal sewers whenever possible.

### **Constructed Wetlands**

Artificial wetlands are gaining growing acceptance for treatment of wastewater. This technique supplements rather than replaces septic treatment. The constructed wetlands provide further treatment for effluent and have been combined with aerobic treatment units (ATUs) before effluent is conducted to drainage areas.

### **Sanitary and Improvement Districts (SIDs)**

Sanitary and Improvement Districts in Nebraska are a special authority which allows a development group and/or property owners' association to establish a special taxing district for purposes of installing or improving infrastructure such as a water system and/or a sanitary sewer collection and treatment system. SID's may also construct and/or maintain streets within such a district. The creation of an SID is controlled by the District Courts of Nebraska.

## **SOLID WASTE**

There are currently no municipal solid waste landfill locations in Thayer County. The closest landfill, the Nebraska Ecology Systems, Inc. facility located near Geneva in Fillmore County, is non-operational.

The Land Management Division of the Nebraska Department of Environment and Energy has responsibility for waste management and remediation programs. The Division also administers the Waste Tire Management Program, and provides Waste Planning and Recycling programs.

## **ENERGY INFRASTRUCTURE**

This section is intended to meet the requirements for an energy element in Neb. Rev. Stat. §23-114.02, which "assesses energy infrastructure and energy use by sector, including residential, commercial, and industrial sectors; evaluates utilization of renewable energy sources; and promotes energy conservation measures that benefit the community".

### **ENERGY USE BY SECTOR**

According to Nebraska Energy Statistics, electricity use in Nebraska rose to 31,172 million kilowatthours in 2020, an increase of 2.6 percent from 30,383 million kilowatthours in 2019. The industrial sector used 37.1 percent, the residential sector used 33.7 percent, and the commercial sector used 29.2 percent. The use of electricity produced off-site is ultimately constrained by transmission capacity. Distributed generation of

electricity (from wind farms or solar farms) is also constrained by capacity of the regional transmission grid.

In 2020, Nebraska used 180.7 billion cubic feet of natural gas, a decrease of 2.8 percent from 2019. The industrial sector consumed 52.5 percent of total natural consumption in Nebraska in 2020. The residential sector consumed 20.5 percent, and the commercial sector consumed 17.5 percent. The electric power and transportation sectors accounted for the remainder of gas consumption.

Source: [neo.ne.gov](https://neo.ne.gov)

### **Residential Energy Use**

Energy is consumed in the residential sector primarily for space heating, water heating, air conditioning, refrigeration, cooking, clothes drying, and lighting. Fuel used for motor vehicles by household members is included in the transportation sector—electricity use will increase with increased use of electric vehicles (EVs) requiring home charging stations. Natural gas met almost one-half (47%) of residential energy needs in Nebraska in 2020, followed by electricity (42%).

As previously noted, Thayer County residents primarily utilize natural gas and propane for heating, as well as electricity. The source of residential heating fuel varies greatly by location. For example, 71% of the residences in Hubbell use LP gas, while only 8% of residences in Byron use LP gas.

Statewide, Black Hills Energy provides residential natural gas service to 254,647 customers, according to the Energy Information Administration (February 2022).

## Commercial Energy Use

Commercial uses include buildings such as retail stores, nonmanufacturing businesses, motels, health and education institutions for energy use reporting.. Government uses are included in this sector for these reports. Common uses of energy in the commercial sector include space heating, water heating, refrigeration, air conditioning, and cooking. Natural gas met almost one-half (47%) of commercial energy needs in Nebraska in 2020, followed by electricity (43%).

Statewide, Black Hills Energy provides natural gas service to 32,302 commercial customers, according to the Energy Information Administration (February 2022).

## Industrial Energy Use

Energy use in the industrial sector covers fuels for manufacturing, construction, mining, agriculture, and forestry. Energy to transport products is included in the transportation sector. Natural gas met 1/3 (34.6%) of industrial energy needs in Nebraska in 2020, followed by biofuels (32.7%), and electricity (13.5%).

Statewide, Black Hills Energy provides natural gas service to 5,086 industrial customers, according to the Energy Information Administration (February 2022).

## Energy Generation

Statewide, over 1/3 (36.9%) of Nebraska's electricity is generated by coal, according to the NDEED. Renewable wind energy is close behind, with capacity to generate 27.5% of the state's electricity. Natural gas is in third-place with 20% of generation.

Nebraska Public Power District, provides Norris PPD and other customers with wholesale power generated by a diverse mix of sources, including coal, nuclear, gas and oil (for peak demand), wind, hydropower, and solar.

- NPPD operates an oil fuel peaking unit at Hebron with 52 MW of capacity, in-service since July 1961.

NPPD is also a member of the Southwest Power Pool (SPP), a non-profit regional transmission organization in the central part of the United States.

## RENEWABLE ENERGY

Renewable energy is energy from naturally replenishing sources; virtually inexhaustible in duration but limited in the amount of energy available in the short-term. Statewide, Nebraska is moving towards renewable and away from legacy fuel sources. For example, while almost 75% of the state's electricity was generated by coal in 2011, only 50% came from coal in 2021.

The major types of renewable energy sources are:

- Biomass
- Hydropower
- Geothermal
- Wind
- Solar

Capacity of long-range power transmission lines can be a limiting factor for renewable energy production, since the electricity generated must be transferred into the regional or national power grid. Local, distributed power generation may be more practical in areas with limited access to the transmission grid.

## Biomass

Biomass is renewable organic material coming from plants and animals. Biomass was the largest source of total annual U.S. energy consumption until the mid-1800s. The use of biomass fuels for transportation and for electricity generation is increasing.

The Biomass category of renewable energy sources includes biofuels, such as ethanol and biodiesel, along with wood waste, landfill gas, and similar fuels. Most biofuels are used as transportation fuels, but they may also be used for heating and electricity generation. In 2021, there were 6 units in Nebraska producing electricity from biomass, and 11 from landfill gas.

Nebraska is the second largest producer of ethanol for fuel in the United States, after Iowa. While there are currently no ethanol production plants in Thayer County (as of spring 2023), there are several plants in the region, including Adams, Fairmont, York, Aurora, and Hastings.

Nebraska's first biodiesel plant recently broke ground in Adams County. Cargill and Loves Family are pursuing a joint project to construct a biodiesel plant at Hastings. The Heartwell Renewables plant broke ground in late 2022 with planned completion in 2024.

- **Carbon Sequestration:** Efforts are under way to capture and store carbon dioxide generated by Nebraska ethanol facilities. Carbon capture equipment will extract CO<sub>2</sub> from the ethanol production process and transfer the gas via a carbon dioxide pipeline to an



underground geologic sequestration site near the plant. It is likely carbon capture and storage (CSS) systems will continue to expand in scope and size. As noted by the Congressional Research Service (June 2022), "Transporting CO<sub>2</sub> in pipelines is similar to transporting fuels such as natural gas and oil; it requires attention to pipeline design, protection against corrosion, monitoring for leaks, and safeguards against overpressure... [the Pipelines and Hazardous Materials Safety Administration (PHMSA)] applies safety requirements to CO<sub>2</sub> pipelines similar to those for pipelines carrying hazardous liquids such as crude oil and anhydrous ammonia." No legislation has been enacted yet providing a permitting process at the state level in Nebraska.

- **Biogas and Anaerobic Digestion:** On-farm biogas production has a long history with recent technological innovation. A digester is a sealed vessel in which anaerobic digestion of organic matter occurs. The bacteria feed off manure and, in the process, release biogas (methane) as a by-product. Farmers can use digesters to improve the quality of manure and reduce odors, with the energy content of the methane being a by-product. Biogas generated from anaerobic digestion processes is a clean and environmentally friendly renewable fuel. There are many uses for this fuel, including use in engines, generation of electricity,

heat and hot water systems, and even refrigeration.

Source: [www.eia.gov/energyexplained/biomass](http://www.eia.gov/energyexplained/biomass)

## Hydropower

Hydropower was one of the first sources of energy used for electricity generation. Until 2019, hydropower was the largest source of total annual U.S. renewable electricity generation.

Nebraska has a long history of generating electricity with hydropower, which until recently was the largest source of renewable energy in the United States. In 2021, there were 20 units in Nebraska producing electricity with hydropower. Hydroelectric accounted for about 3% of Nebraska's annual electricity generation in 2021. There are no hydropower facilities in Thayer County.

Source: [www.eia.gov/energyexplained/hydropower](http://www.eia.gov/energyexplained/hydropower)

## Geothermal

Geothermal energy is heat within the earth. Geothermal energy is a renewable energy source because heat is continuously produced inside the earth. Wells, ranging from a few feet to several miles deep, can be drilled into underground reservoirs to tap steam and very hot water that can be brought to the surface for use in a variety of applications

People use geothermal heat for bathing, for heating buildings, and for generating electricity. Geothermal electricity generation requires water or steam at high temperatures (300° to 700°F). According to the U.S. Environmental

Protection Agency (EPA), geothermal heat pumps are the most energy-efficient, environmentally clean, and cost-effective systems for heating and cooling buildings.

Source: [www.eia.gov/energyexplained/geothermal](http://www.eia.gov/energyexplained/geothermal)

## Wind

The wind blows in Nebraska and an increasing share of Nebraska's energy comes from renewable wind energy. In 2021, there were 1,333 utility-scale wind turbines producing electricity in Nebraska. The state's wind generation grew from 3% of electricity generated in 2011 to 25% in 2021.

According to the US Department of Energy's Office of Energy Efficiency & Renewable Energy, "Areas with annual average wind speeds around 6.5 meters per second and greater at 80-m height are generally considered to have a resource suitable for wind development. Utility-scale, land-based wind turbines are typically installed between 80- and 100-m high although tower heights for new installations are increasing—up to 140 m—to gain access to better wind resources higher aloft." Figure 9.5 shows mapped windspeeds of approximately 8 m/s in Thayer County.

Individual sites may be powered by Small Wind Energy Systems, a type of wind energy conversion system (WECS) with a rated capacity of 100 kilowatts or less. Technological advancements are driving the growth of the small wind power market by making turbines more efficient and cost-effective. Small wind turbines can operate efficiently on wind speeds of just 9 miles per hour.

The location of large commercial utility-scale wind farms must be carefully planned. There are currently no installed utility-scale wind farms in Thayer County (as of spring 2023). There are several wind farms in the vicinity, including adjacent Fillmore County, and Jefferson County:

- Perennial Wind Farm: 3 turbines in Fillmore County, 6.9 megawatts.
- Steele Flatts Wind Farm: 44turbines between Steele City and Odell in Jefferson and Gage, 74.8 megawatts capacity.
- Big Blue: Planning stage for 90 turbines in Jefferson County, potential 300 megawatts capacity.

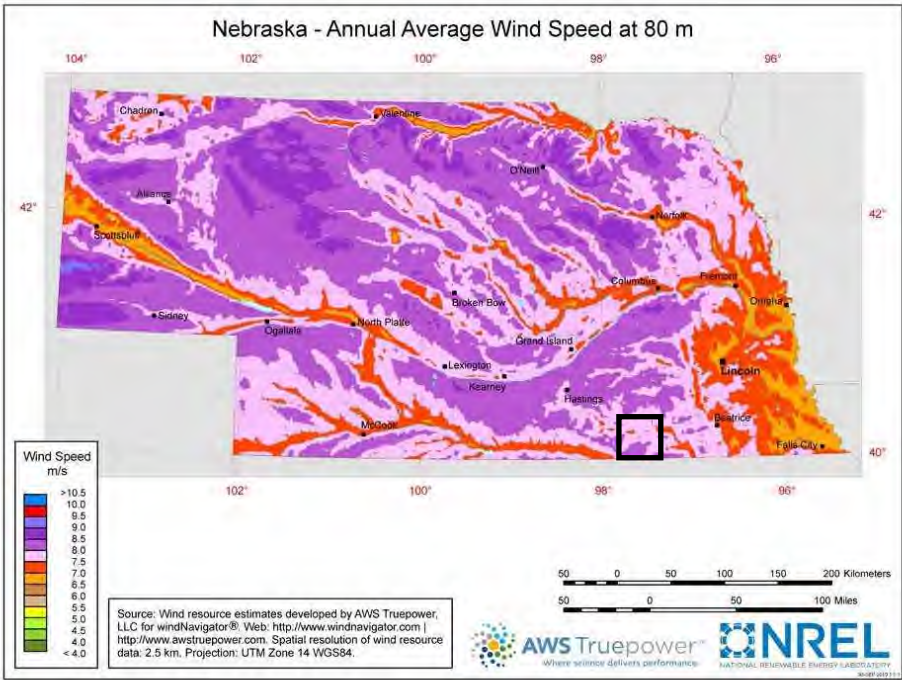
There are two basic types of wind turbines, horizontal-axis and vertical-axis. As the US Energy Information Administration explains:

*The size of wind turbines varies widely. The length of the blades is the biggest factor in determining the amount of electricity a wind turbine can generate. Small wind turbines that can power a single home may have an electricity generating capacity of 10 kilowatts (kW). The largest, utility-scale wind turbines in operation have electricity generating capacities of around 15,000 kilowatts (15 megawatts), and larger turbines are in development. Large turbines are often grouped together to create wind power plants, or wind farms, that provide power to electricity grids.*

### Wind Energy Concerns

Concerns have been raised about land use conflicts

**FIGURE 9.5: AVERAGE ANNUAL WIND SPEED AT 80M**



Source: National Renewable Energy Laboratory, 2010

between wind energy facilities and agricultural operations. For example, wind turbines limit the use of aerial application by fixed wing or helicopter operators. Comments by respondents to the Thayer County Comprehensive Plan Survey noted wind development as a threat to production agriculture operations.

Concerns have also been raised about impacts on viewsheds and wildlife of wind turbines. A majority of respondents to the Thayer County Comprehensive Plan Survey (53%) strongly agreed "I think large wind mills would ruin my view of the landscape", while 57% strongly disagreed with the statement "Wind farms can be attractive".

The Sierra Club estimates up to a million or more birds a year are killed by wind turbines each year, although many more are killed by power lines and other artificial causes. The American

Bird Conservancy and wind energy experts are working to reduce the rate with alternatives such as "No-blade" wind turbines.

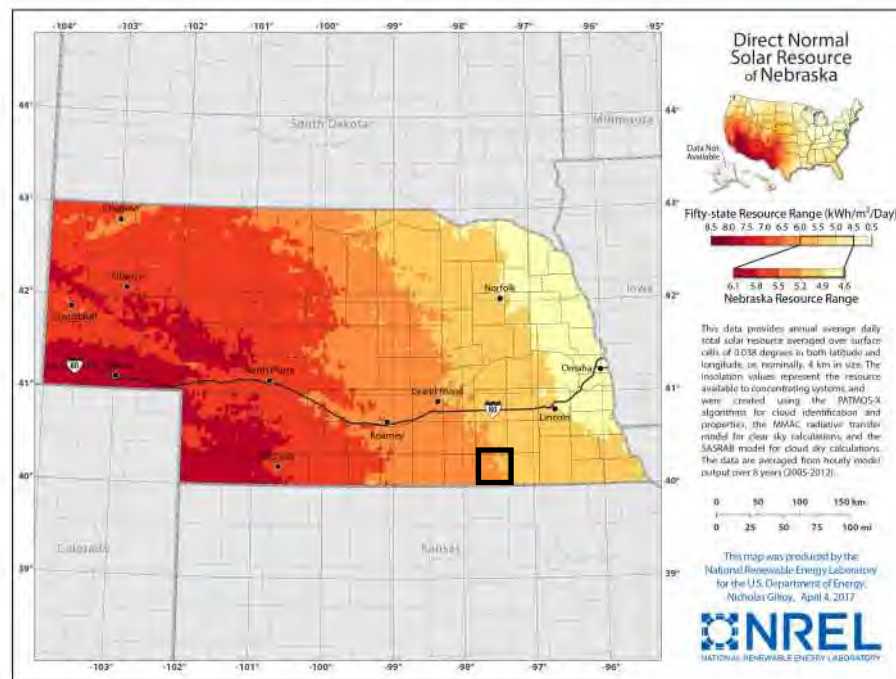
Source: [www.eia.gov/energyexplained/wind](http://www.eia.gov/energyexplained/wind) and [www.sierraclub.org](http://www.sierraclub.org)

### Solar

A photovoltaic (PV) cell, commonly called a solar cell, is a nonmechanical device which converts sunlight directly into electricity. Some PV cells can convert artificial light into electricity.

The efficiency at which PV cells convert sunlight to electricity varies by the type of semiconductor material and PV cell technology. The efficiency of commercially available PV modules averaged less than 10% in the mid-1980s, increased to around 15% by 2015, and is now approaching 20% for state-of-the art modules. Experimental PV cells and PV cells for niche

**FIGURE 9.6: DIRECT NORMAL SOLAR RESOURCE OF NEBRASKA**



Source: National Renewable Energy Laboratory, 2017

markets, such as space satellites, have achieved nearly 50% efficiency.

Rooftop solar has increasingly become an option for many homeowners and small businesses. The direction and pitch of the roof affect the amount of energy produced, as to nearby trees or other structures.

In 2021, there were 13 units in Nebraska producing utility-scale electricity with solar as the primary energy source. Only 0.2% of Nebraska's electricity was generated by solar in 2021, but the capacity doubled in just two years.

In general there is greater solar resource range in western Nebraska (Figure 9.6). However, solar is also being used to firm the variances in wind power generation and evening power

flows on the electric transmission grids, as well as diversifying generation portfolios. The American Farmland Trust has developed general principles for siting solar development on active farm land:

1. Prioritize solar siting on buildings and land not well suited for farming;
2. Safeguard the ability for land to be used for agriculture;
3. Grow agrivoltaics for agricultural production and solar energy;
4. Promote equity and farm viability.

One solar project has been approved in Thayer County. Today's Power Inc. applied for a Conditional Use Permit in October 2022, to construct a 1MW AC solar array, next to a substation off County Road 5500 near Deshler. Applicants stated

the project would supply power to Norris Electric Cooperative.

There are also community projects located nearby in Clay and Nuckolls County:

- Clay County: 1.0 megawatt solar farm, south of Saronville, in operation 2021.
- Superior (Nuckolls County): 1.0 megawatt capacity, in operation 2018.
- Superior: A 1,248 kilowatt solar array is planned.

Source: [www.eia.gov/energyexplained/solar](http://www.eia.gov/energyexplained/solar) and [farmland.org](http://farmland.org)

## Battery Backup Systems

Energy storage technologies, particularly battery energy storage systems, are growing rapidly and already play a crucial role in enhancing the electrical grid by supporting the deployment and integration of renewable energy sources — increasing reliability, controlling costs, and building a more resilient grid.

As technology changes rapidly, zoning, environmental review, and sound level considerations are needed for the effective integration of energy storage systems in various locations and applications. The International Fire Code, NFPA fire codes, and other standards have been developed to ensure safety in manufacturing, construction, installation, and operations.

Source: [cleanpower.org](http://cleanpower.org)

## Net Metering

Since 2009, private electricity generating facilities with capacity at or below 25 kilowatts may operate under Nebraska's net-metering statutes. Any excess generation produced by the system will be credited at the



utility's avoided cost rate and carried forward to the next billing period. Any excess remaining at the end of an annualized billing period is to be paid out to the customer.

## Solar/Wind Easements

Nebraska's solar and wind easement provisions allow property owners to create binding solar and wind easements for the purpose of protecting and maintaining proper access to sunlight and wind. Originally designed only to apply to solar, the laws were revised in March 1997 (LB 140, codified in Neb. Rev. Stat. §66-913 *et seq.*) to include wind. Counties and municipalities are permitted to develop regulations, or development plans protecting access to solar and wind energy resources if they choose to do so. Local governing bodies may also grant zoning exceptions to solar and wind energy systems which would be restricted under existing regulations, so long as the exception is not substantially detrimental to the public good.

LB 568, enacted in May 2009, made some revisions to the law and added additional provisions to govern the establishment and termination of wind agreements. Specifically, the bill provides the initial term of a wind agreement may not exceed forty years. Additionally, a wind agreement will terminate if development has not commenced within ten years of the effective date of the wind agreement. If all parties involved agree to extend this period, however, the agreement may be extended.

## Tax Benefits

The State of Nebraska assesses the "Nameplate Capacity Tax" which replaces personal property taxes on renewable energy systems, including biomass, landfill gas, wind, and solar electrical generation. As of 2020, the nameplate capacity tax is equal to \$3,518 per megawatt (MW) for the total nameplate capacity of renewable energy facilities. The Nebraska Department of Revenue distributes the tax proceeds to the county treasurer, for further distribution to political subdivisions such as schools and fire districts. Public facilities are exempt from the tax.

In 2019, qualifying facilities generated almost \$7 million in tax revenue for counties and local taxing authorities. Saline County, north east of Thayer County, estimates they will receive just over \$1 million in nameplate capacity tax revenue this year, the majority of which is distributed to school districts.

## CONSERVATION MEASURES

There are a number of different strategies which can be undertaken to improve energy efficiency and usage. These strategies range from simple (often less costly) to complex (often more costly). Unfortunately, not all of the solutions will have an immediate return on investment. Individual property owners and tenants will need to find strategies fitting their budgets to harvest long-term savings.

Some common ways to make a structure more energy efficient include:

- Converting incandescent light bulbs to Compact Florescent Lights (CFL) or Light Emitting Diodes (LED).
- Installing additional insulation.
- Replacing windows.
- Changing out older, less-efficient air conditioners and furnaces to newer high-efficiency units.
- Changing out older appliances with new EnergyStar rated appliances.
- Adding solar panels
- Adding individual-scale wind energy conversion systems (WECS).
- Installing a geothermal heating and cooling system.

## RESOURCES

### BROWNFIELDS ASSISTANCE

A brownfield is a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

The State of Nebraska offers assistance with redeveloping brownfield sites. For example, Section 128(a) Assessments are Environmental Site Assessments (ESAs) providing preliminary environmental information to determine if there is contamination on a property. The NDEE offers these assessments to communities at no cost.

These assessments are performed in accordance with the "all appropriate inquiry" requirements but may include additional activities such as nearby drinking

water well sampling and testing building materials for asbestos, lead-based paint and/or mold. The first part of the assessment examines the background, setting and past uses of a property. It includes a records review, site reconnaissance, interviews, and, as a final product, a report documenting the environmental conditions at the property.

The second part of the assessment examines and evaluates the environmental conditions identified in the initial assessment. Soil and groundwater sampling and analyses are conducted to determine whether contamination associated with any environmental conditions has occurred on the site. The results of the sampling and analyses are evaluated in the Assessment Report.

Source: [dee.ne.gov/](http://dee.ne.gov/)

## COMMUNICATIONS UTILITIES AND ENERGY INFRASTRUCTURE GOALS AND ACTIONS

### CUE GOAL 9.1

Residents have options for broadband and remote work.

#### Actions

- 9.1.1 Continue to support local news—in print, on air, and online.
- 9.1.2 Support improvements in high-speed wired and wireless communications.
- 9.1.3 Periodically review zoning regulations for conformance with broadband technological advances and FCC mandates.

### CUE GOAL 9.2

Utility Infrastructure is sufficient to meet the needs of Thayer County residents and employers.

#### Actions

- 9.2.1 Carefully review new development projects for potential impacts on utilities.
- 9.2.2 Work with municipalities as they maintain and extend powerlines to meet system needs.
- 9.2.3 Work with water providers to assure the quantity and quality of domestic water supply.
- 9.2.4 Assist property owners in conforming with State regulations for onsite wastewater treatment systems (OWTS).

### CUE GOAL 9.3

Energy Infrastructure is sufficient to meet the needs of Thayer County residents and employers.

#### Actions

- 9.3.1 Support Utility back-up and peaking generation facilities.
- 9.3.2 Promote consumer energy conservation measures, in partnership with utility providers.

### CUE GOAL 9.4

Renewable energy facilities—biomass, geothermal, wind, solar—are carefully planned.

#### Actions

- 9.4.1 Provide for individual property owners utilizing small-scale, distributed renewable energy generation, eligible for net metering.
- 9.4.2 Limit utility-scale renewable energy facilities to minimize impacts on existing residents and property-owners.
- 9.4.3 Periodically review zoning regulations for conformance with technological advances in renewable energy generation.

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## Chapter Ten

# Natural Resources and the Environment

Natural resources and the environment provide the foundation for land use and a thriving local economy. They are also the foundation of residents' local quality of life. Local residents and property owners are the primary stewards of Thayer County's land, natural resources, and the natural environment.

This chapter describes natural conditions of the county, water, wetlands, soils, other factors, environmental resources, and goals and policies. Much of this information is taken from the USDA's Soil Conservation Service (SCS) *Soil Survey of Thayer County, Nebraska*, published in 1968, and the online [Natural Resources Conservation Service \(NRCS\) Web Soil Survey](#) (Soil Survey Geographic Database—SSURGO), with additional updated data where available.

## NATURAL CONDITIONS

### CLIMATE

Thayer County is near the geographical center of the United States. Its climate is typical of areas near the center of a large continent: relatively warm summers, cold winters, and moderate rainfall highly variable in amounts. The average daily maximum temperature in July is 91.7°F and the minimum temperature in January is 12.6°F. The average annual precipitation was 27.87 inches based on period 1934-1963, with an average of 38 days of snow cover of one inch or more. Since 1991, the average maximum temp in summer is 86.6°F and average winter minimum was 16.7°F, with an annual average of 23 inches of snow at Hebron (NOAA National Centers for Environmental Information).

There are no topographic barriers to the north or south, and the wind shifts abruptly from south to north or from north to south and brings sharp changes in temperature. These changes are more noticeable in winter than in summer. Air masses moving into the region from the Pacific Ocean are moderated by the Rocky Mountains and arrive comparatively mild and dry. Nearly all of the moisture falling in the county is brought in on warm, moist winds from the Gulf of Mexico or from the Caribbean.

Usually more than three-fourths of the annual precipitation falls during the active growing season, April through September. Precipitation is usually gentle, steady, and well distributed early in spring. As spring advances, more and more of the moisture falls as erratic thundershowers, and by the latter part of May nearly all of the precipitation is associated with thunderstorms.

In most years, southerly winds prevail in summer and bring in warm, humid air, but in some years the winds are from desert regions to the southwest, where the air is hot and dry. At such times, the temperature is very high and the relative humidity is extremely low.

In some years, thunderstorms are severe in spring and early in summer, and some are accompanied by local downpours, hail, and damaging winds. Many of the hailstorms cover an area only half a mile to a mile wide and three to five miles long. Damage to crops is often severe.

Showers are lighter and less frequent in fall. Precipitation is generally light in winter, and most falls as snow. Snow is often carried in on a strong, northerly wind dropping the temperature sharply and piling the snow into drifts. The snow cover frequently disappears before the arrival of new snow.

Source: Soil Survey of Thayer County, Nebraska, USDA 1968.

**GEOLOGY**

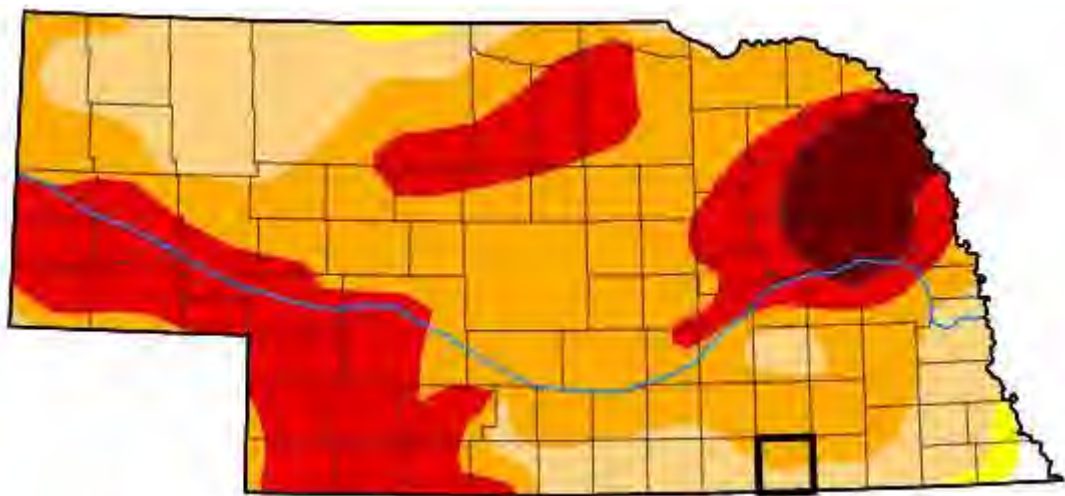
The ground under our feet and structures is divided into layers. First is the topsoil, a mix of mineral and organic elements. Then comes the soil, which is

largely mineral. Below this is the fractured and weathered parent material, which has little or no biological activity and lies directly over bedrock.

Soil is not static. Soil is formed by the action of processes on parent material. The characteristics of the soil are determined by:

- (1) the physical and mineralogical composition of the parent material;
- (2) the climate under which the soil material has accumulated;
- (3) the plant and animal life on and in the soil;
- (4) the relief, or lay of the land; and

**US Drought Monitor**



The U.S. Drought Monitor is a map released weekly, showing parts of the U.S. in drought. This is a typical map for 2023. The map is produced jointly by the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln, the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Department of Agriculture (USDA)

Intensity:

 None	 D2 Severe Drought
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>*

- (5) the length of time these forces have been active.

Over 80% of respondents to the Thayer County Comprehensive Plan Survey agrees soils are important or very important to Thayer County.

### Parent material

Thayer County is entirely within the Loess Plains, a part of the Great Plains physiographic province. However, the soils of Thayer County developed in several kinds of parent material—alluvium, loess, water-deposited sand and gravel, and residuum weathered from limestone and sandstone.

Climate affects the weathering of parent material directly through rainfall, fluctuation in temperature, and the working of wind. Water received as rainfall moves through the drainageways, continually shifting, sorting, and reworking unconsolidated material of all kinds. These sediments are deposited, picked up, and redeposited many times over by flowing streams.

The climate of Thayer County is characterized by moderately long and cold winters, cool springs with considerable precipitation, warm summers with many thunderstorms, and mild autumns with occasional rainy periods.

### Plant and animal life

The soils of Thayer County formed under mid and tall grasses. This kind of vegetation provides an abundant supply of organic matter affecting the physical and chemical properties of the soils. The fibrous roots of these grasses penetrate the soil, make it porous, and encourage

development of granular structure. The plant roots take up minerals in solution from the lower parts of the soil and eventually return them to the surface soil in the form of organic matter.

### Relief

Relief, or lay of the land, influences the formation of soil through its effect on runoff and drainage. Runoff is more rapid on steep slopes, and the soils are generally more severely eroded than in more gently sloping areas.

The elevation of the county ranges from about 1,360 feet where the Little Blue River crosses the eastern boundary of the county, to about 1,700 feet near Byron in the southwestern part. The average elevation as a whole is 1,540 feet.

The Little Blue River is the largest of the streams, draining the central part of the county. Big Sandy Creek and the South Fork of Big Sandy Creek drain the northern part. Rose Creek drains the southeast and Spring Creek, a tributary of the Little Blue River, drains the southwestern part of the county.

### Time

The time required for a soil to develop depends largely on the parent material. The youngest soils in Thayer County are those formed in alluvium. These soils have little or no horizon development, because of the brief time their parent materials have been in place.

The first permanent settlement in Thayer County was established in 1856 in the valley of the Big Sandy Creek near the present site of Alexandria. Vegetation at

the time consisted of mixed native grasses and strips of forest along drainages. Farms have replaced most grazing land.

Source: Soil Survey of Thayer County, Nebraska, USDA 1968.

## WATER

Thayer County is located in the Blue River watershed. The Little Blue begins south of Minden, Nebraska, and flows east-southeast past Hebron towards Marysville, Kansas. It joins the Big Blue River at Blue Rapids, Kansas.

### SURFACE WATER

Almost all respondents to the Thayer County Comprehensive Plan Survey (91%) agreed lakes, reservoir, and streambeds are important assets, and 58% strongly agreed “The aquifer is an important asset and should be preserved.” Over 70% agreed water is very important to Thayer County.

There is a USGS stream gauge on the Little Blue River at the county line near Deshler. The National Weather Service flood stage is 16 feet. The highest recorded peak state was 19.35 feet on May 28, 2019, and prior to this, 17.35 feet on September 3, 2018. On May 24, 2020, the river peaked at 15.96 feet.

### Little Blue NRD

The Little Blue Natural Resources District (NRD, headquartered in downtown Davenport,) is one of 23 Natural Resource Districts in Nebraska and covers all of Thayer County and portions of six other counties in the Little Blue watershed. The NRD is a local unit of government, working on a range of conservation works and programs such as soil



conservation, flood control, groundwater and surface water management, pollution control, fish and wildlife habitat, recreation facilities, and forestry and range management, among other interests.

The Little Blue River is hydrologically connected to the principal aquifer from central Adams County to its discharge point at the Kansas State Line. The NRD's Long Range Implementation Plan (FY2021-2025) is intended to meet the

requirements of state law, while providing the NRD's Board with an overview of objectives for orderly conservation and management of natural resources. The plan contains an overview of current programs and projects, and future objectives and plans of action across the district.

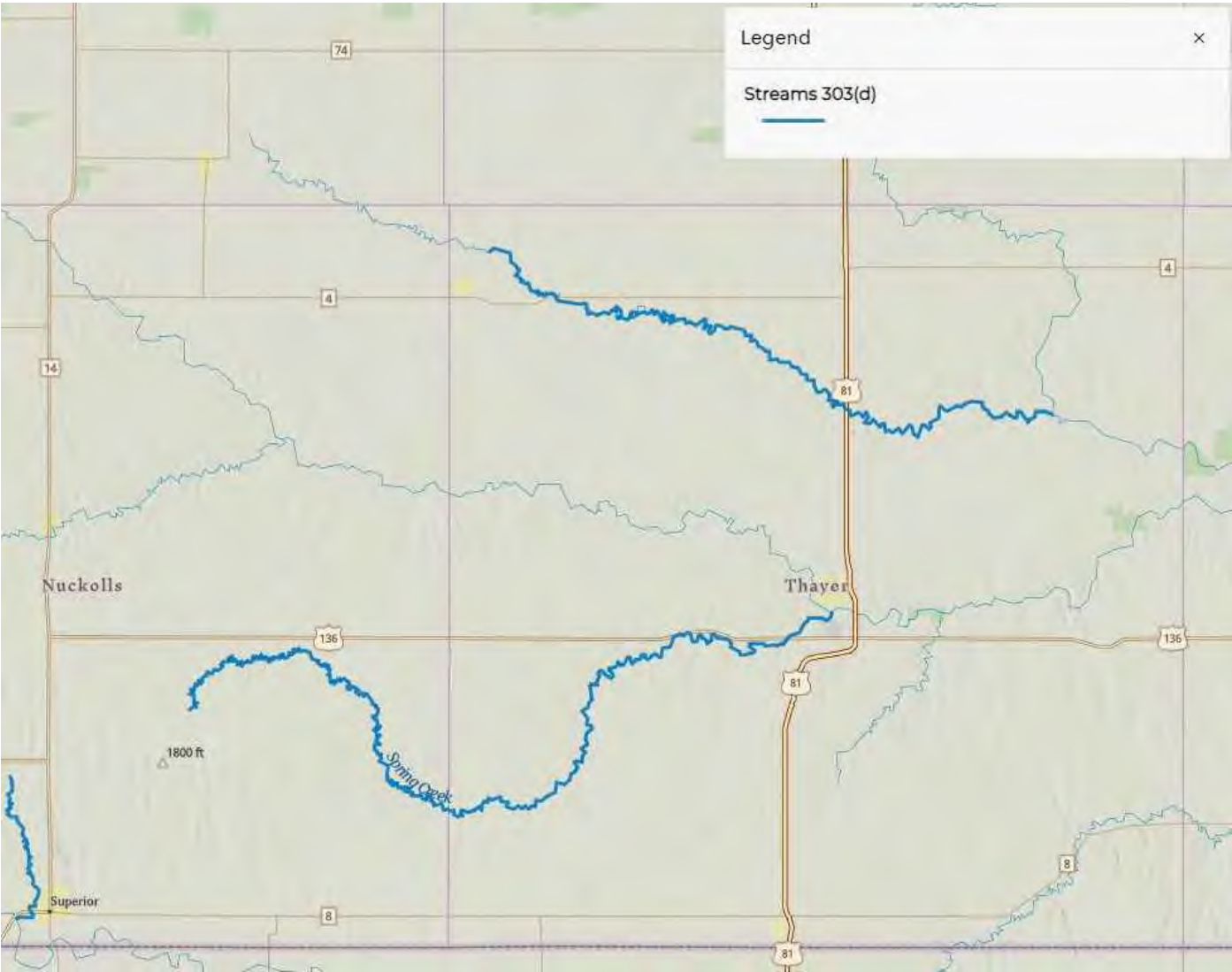
The Little Blue NRD *Voluntary Integrated Management Plan* was completed in cooperation with the Nebraska Department of Natural Resources (2019). The

management plan is structured to assure the long-term viability of agriculture, business and industry, municipalities, fisheries and wildlife, and society as a whole.

The plan includes goals, objectives, and action items, including:

- Goal 1: Better and more scientific data and methods to support wise management of interconnected groundwater and surface water

FIGURE 10.1: LISTED IMPAIRED WATERS



Source: NebraskaMap 2019

- Goal 2: Scientifically sound, locally-based management actions to protect interconnected groundwater and surface water
- Goal 3: Education efforts to raise the level of awareness about finite, interconnected groundwater and surface water resources

The states of Nebraska and Kansas participate in the Blue River Basin Compact, entered in 1971. The compact is intended to achieve an equitable apportionment of the waters of the Basin, and encourage pollution-abatement programs in each state. The State of Nebraska grants surface water permits for both irrigation uses and storage uses, as well as one permit each for a domestic or industrial use.

Source: [littlebluenrd.org](http://littlebluenrd.org)

### Impaired Waters

In Thayer County, Big Sandy Creek has been identified as an impaired water under Section 303(d) of the Clean Water Act and is required to have a Total Maximum Daily Load (TMDL) developed (Segment LB2-10100). Spring Creek is considered a major tributary. Aquatic life, water supply, and recreation were identified by the Nebraska Department of Environmental Quality (now Department of Environment and Energy) as beneficial uses which are impaired due to atrazine and E. coli.

The Total Maximum Daily Loads for Little Blue River were most recently developed in February

2013. The Implementation plan includes actions such as:

- USEPA Nonpoint Source Management Program funding
- USDA Natural Resource Conservation Service (NRCS) assistance programs
- National Pollutant Discharge Elimination System (NPDES) waste load allocations
- Confined Animal Feeding Operation (CAFO) regulation and implementation of best management practices (BMPs)

## GROUNDWATER

Within the watershed, the top of the groundwater aquifer slopes from north west Adams County to lower elevations in western Jefferson County. According to the *Voluntary Integrated Management Plan*, productivity of the High Plains Aquifer ranges from 100 gallons per minute (gpm) to 2,000 gpm, 800 to 1,200 gpm on average. A smaller aquifer extends across southern Thayer and Jefferson counties, which is an ancient alluvial paleovalley aquifer producing from 100 gpm to 1,200 gpm.

Historically, the supply of groundwater has been good in the south-central and northern parts of Thayer County. These areas are generally underlain by more than 50 feet of water-saturated sand and gravel, and irrigation wells of relatively large capacity can be dug. In the southwestern corner of the county, there are few areas where dependable irrigation wells can be dug, as well as an area from the east-central part

of the county southward to the southeastern corner.

The supply of good-quality water for domestic use is mostly adequate throughout the county. Groundwater is higher in mineral content in the southeastern part of the county where the water supply comes from bedrock. As noted in Chapter Nine, all of the municipalities in Thayer County provide domestic water service, except for Gilead which is served by a rural water system.

Source: Soil Survey of Thayer County, Nebraska, USDA 1968.

## WELLHEAD PROTECTION

Nebraska's Wellhead Protection Program (WHP) is a voluntary program which assists communities and other public water suppliers in preventing contamination of their water supplies. The Wellhead Protection Area Act sets up a process for public water supply systems to use if they choose to implement a local Wellhead Protection plan. The Nebraska Department of Environment & Energy (NDEE) is the lead agency for Wellhead Protection Plan (WHP) approval.

The goal of Nebraska's Wellhead Protection Program is to protect the land and groundwater surrounding public drinking water supply wells from contamination. Since approximately 85% of Nebraskans receive their drinking water from groundwater, preventing groundwater contamination is vital. The Wellhead Protection planning process includes identifying the land surrounding the public water supply wells to be protected, identifying potential sources of groundwater contamination within this area, and managing

the potential contaminant sources

According to NDEE, nine communities in Thayer County have an approved WHP, as of August 2023:

- Village of Alexandria
- Village of Belvidere
- Village of Bruning
- Village of Byron
- Village of Carleton
- Village of Chester
- City of Deshler
- City of Hebron
- Village of Hubbell

Each responsible jurisdiction should take action to implement their WHP, including:

1. Establish and maintain performance standards to protect groundwater sources.
2. Participate in emergency, contingency, and long-term planning for replacement sources of drinking water.
3. Work with state agencies to inform the public about the Wellhead Protection Plan.

Source: [dee.ne.gov](http://dee.ne.gov)

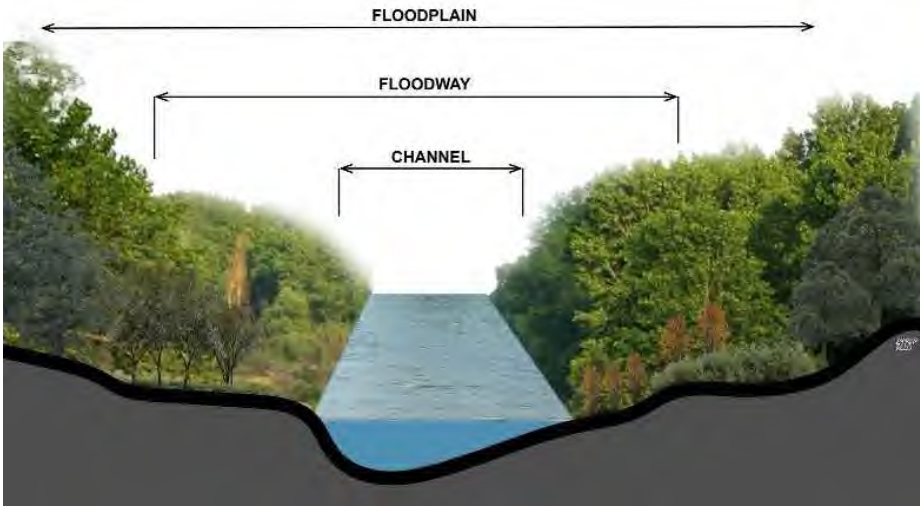
## FLOODPLAINS AND FLOODWAYS

A flood is a general and temporary condition of partial or complete inundation of normally dry land from flowing water, such as streams and rivers overflowing their banks, runoff from adjacent or surrounding slopes, or a combination of sources.

The floodplain, in general, contains three areas:

- **Floodway**, the channel of a watercourse and those portions of the adjoining floodplains which are required to carry and discharge a flood of 1-

FIGURE 10.2: FLOOD PLAIN CROSS SECTION



Source: National Wetlands Inventory

percent chance with no significant increase in the base flood elevation.

- **Regulatory Floodplain**, the low land near a watercourse which has been or may be covered by water from a flood event having a 1-percent chance in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. The regulatory floodplains is identified on Flood Insurance Rate Maps (FIRMs) as the Special Flood Hazard Area (SFHA).
- **Flood Fringe**, the portion of a floodplain which can be inundated by floodwaters but is not within the regulated floodway. The flood fringe serves as temporary storage for slow-moving or standing floodwaters.

The floodplain includes **both** the floodway and the flood fringe.

The floodplain area of greatest significance in terms of state and federal regulation is the 1%

or 100-year floodplain. This area is defined by the ground elevation in relation to the water elevation experienced during a base flood event. The 1% or 100-year floodplain is calculated to be the elevation level of flood water expected to be equaled or exceeded every 100 years on average. In other words, the 100 year flood is a 1% flood, meaning it defines a flood having a 1% chance of being equaled or exceeded in any single year.

Preserving the floodway and flood fringe are critical to limiting the level of property damage which can occur as well as the risk to life of the occupants of the area. These lands when not flooded may seem to be harmless, but it is those rare times threatening life and property which need to be anticipated.

*See Chapter 11 Hazards for more information on flood hazard mitigation and floodplain administration.*



## WETLANDS

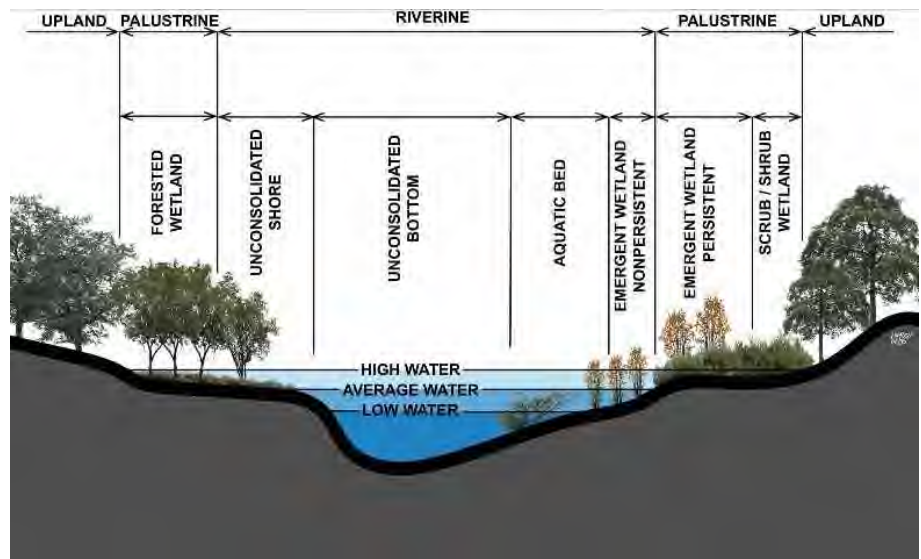
Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods during the year, including during the growing season. Water saturation (hydrology) largely determines the soil development and the types of plant and animal communities living in and on the soil.

Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions favoring the growth of specially adapted plants (hydrophytes) and promote the development of characteristic wetland (hydric) soils. Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance. Two general categories of wetlands are recognized: coastal or tidal wetlands and inland or non-tidal wetlands.

Many wetlands are seasonal (dry one or more seasons every year). The quantity of water present and the timing of its presence in part determine the functions of a wetland and its role in the environment. Wetlands can appear dry, at times, for significant parts of the year - such as vernal pools – and still provide habitat for wildlife adapted to breeding exclusively in these areas.

The federal government regulates certain types of wetlands under Section 404 of the Clean Water Act, depending on how “navigable waters” and “Waters of the United States” are defined. The US Supreme Court’s

FIGURE 10.3: RIVERINE WETLAND SYSTEM



Source: National Wetlands Inventory

2023 decision in *Sackett et ux v. EPA et al* narrowed the definition in practice of the Waters of the United States.

The federal government offers incentives and disincentives, cooperative programs, and property acquisition programs to mitigate actual and potential harm to wetland resources.

Wetlands are home to many species of wildlife. Wetlands also provide an important service to nearby areas by holding and retaining floodwaters. These waters are then slowly released as surface water, or are used to recharge groundwater supplies. Wetlands also help regulate stream flows during dry periods.

### NATIONAL WETLANDS INVENTORY

The U.S. Fish and Wildlife Service (FWS) compiles data on the characteristics, extent, and status of the Nation’s wetlands and deep-water habitats. This information is compiled and organized in the National Wetlands Inventory (NWI).

Inland wetlands found in Thayer County are most common along rivers and streams (riverine), including the Little Blue River. There are also sites with freshwater ponds, and freshwater emergent and forested/shrub wetlands.

Wetlands are categorized in several classifications, each more detailed and specific than the previous. The NWI uses five systems; marine, estuarine, riverine, lacustrine, and palustrine. Within each system, there are subsystems, classes, subclasses, and dominance types to describe different wetland characteristics. The system classification refers to wetlands sharing similar hydrologic, geomorphologic, chemical, or biological factors. The following are definitions and examples of three of the five systems used to describe wetlands. The Marine and Estuarine wetland systems are located in and near the open ocean; therefore, they do not occur in Nebraska. Further information, through NWI, on

specific classifications is available.

Figures 10.2, 10.3, and 10.4 depict common examples of the riverine, lacustrine, and palustrine wetlands, respectively. These figures were produced by the United States Fish and Wildlife Service, and are taken from their 1979 publication entitled "Classification of Wetlands and

Deepwater Habitats of the United States".

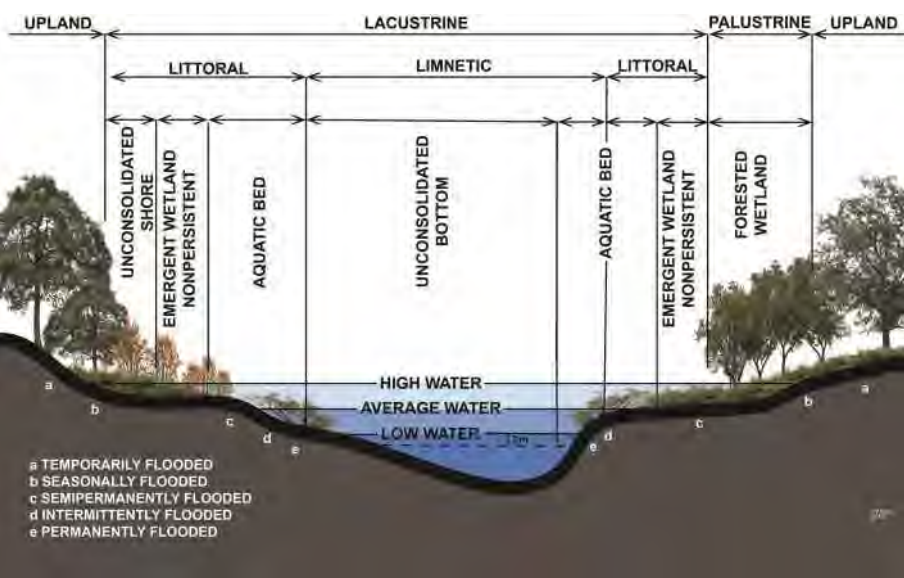
**Riverine Wetlands**

Figure 10.2 shows the riverine system including all wetlands occurring in channels, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens, and (2) habitats with water containing

ocean derived salts in excess of 0.5%. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water. Therefore, water is usually, but not always, flowing in the riverine system.

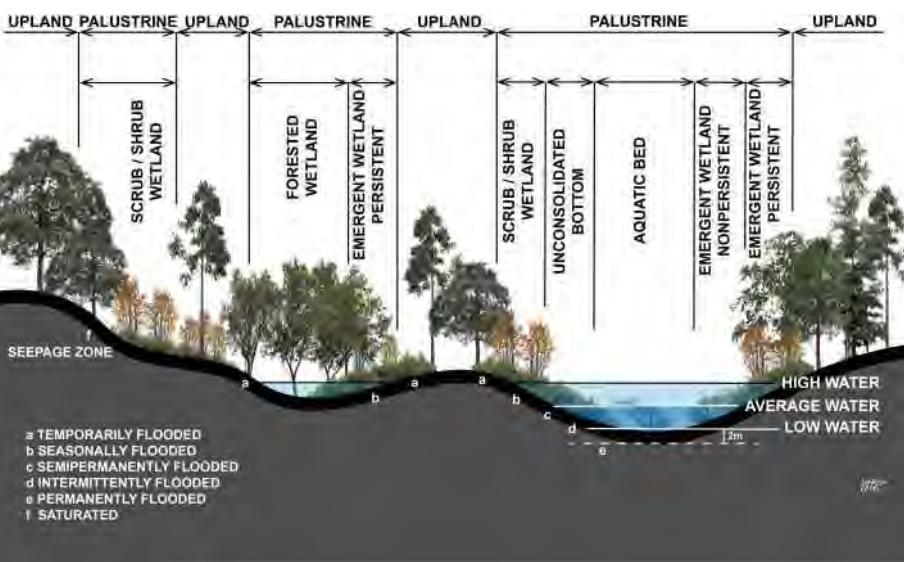
Springs discharging into a channel are also part of the riverine system. Uplands and palustrine wetlands may occur in the channel, but are not included in the riverine system. Palustrine Moss-Lichen Wetlands, Emergent Wetlands, Scrub-Shrub Wetlands, and Forested Wetlands may occur adjacent to the riverine system, often in a floodplain.

**FIGURE 10.4: LACUSTRINE WETLAND SYSTEM**



Source: National Wetlands Inventory

**FIGURE 10.5: PALUSTRINE WETLAND SYSTEM**



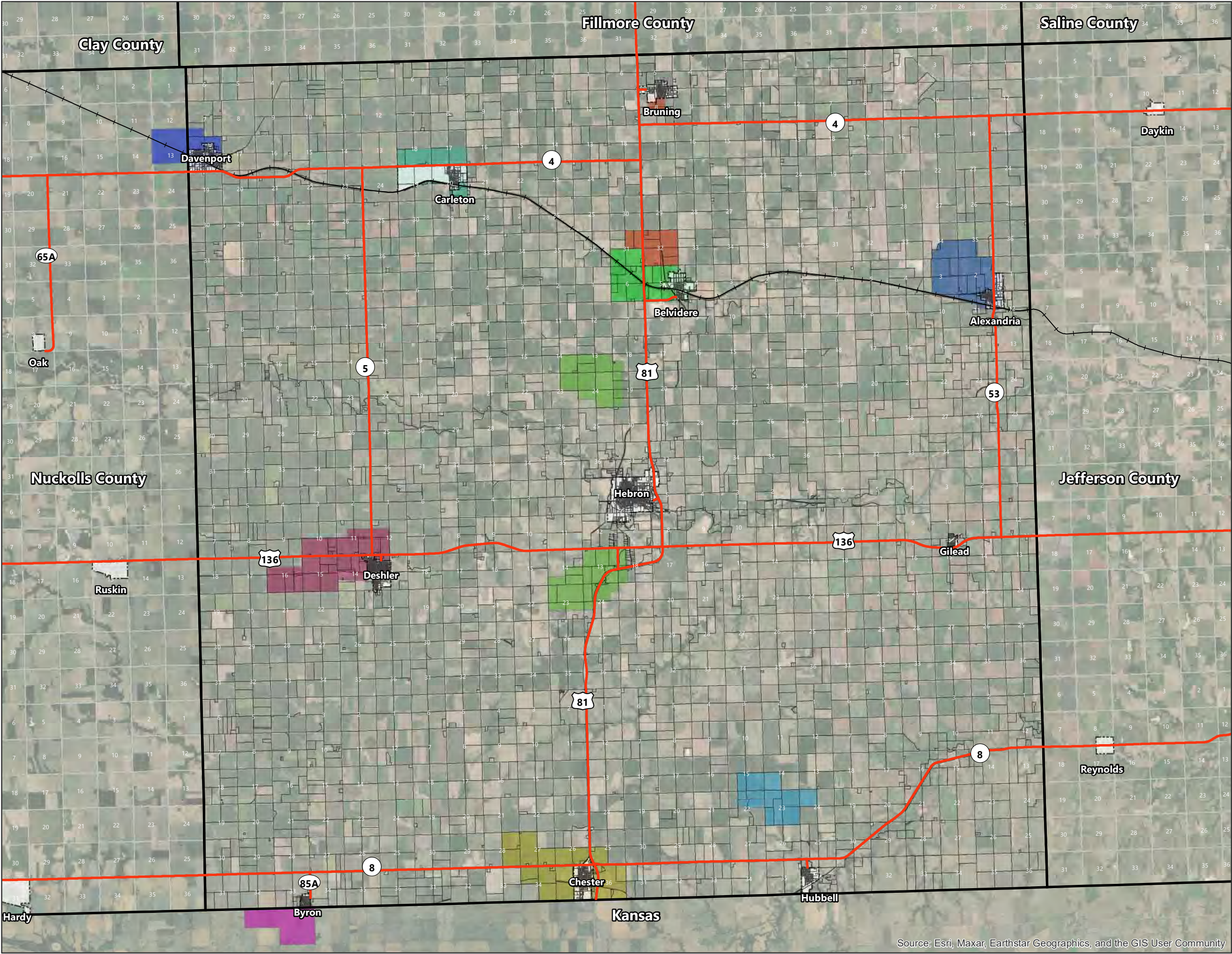
Source: National Wetlands Inventory

**Lacustrine Wetlands**

The Lacustrine System includes wetlands with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent moss or lichens with greater than 30% area coverage; and (3) total area exceeds 20 acres. Similar wetland areas totaling less than 20 acres are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 6.6 feet (2 meters) at low water.

The Lacustrine System includes permanently flooded lakes and reservoirs (e.g. Lake Superior, Michigan), intermittent lakes (e.g. playa lakes), and tidal lakes with ocean-derived salinities below 0.5% (e.g. Grand lake, Louisiana). Typically, there are extensive





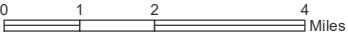
COMPREHENSIVE PLAN  
FIG X: WELLHEAD  
PROTECTION AREAS

LEGEND

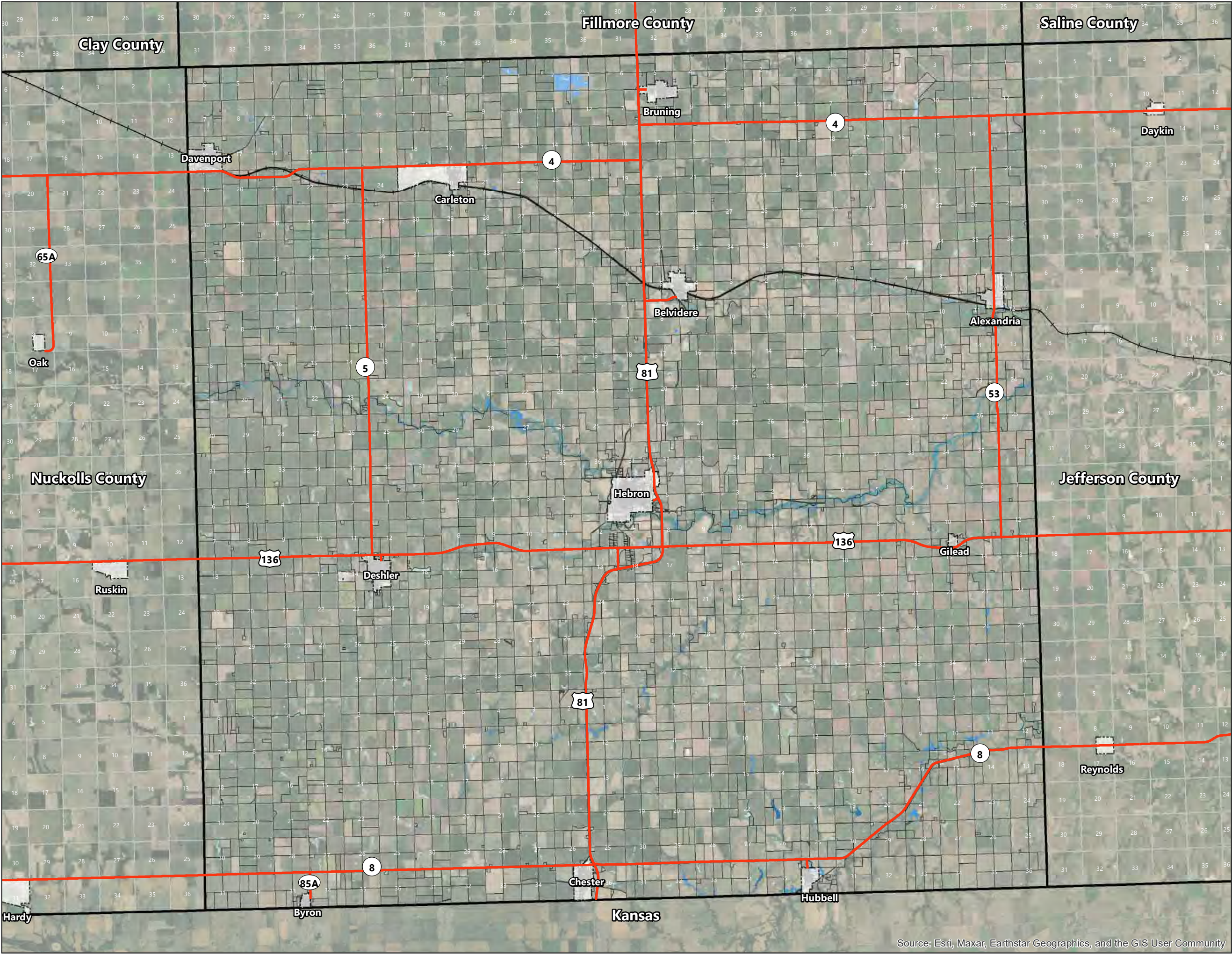
- Highways
- Railroad
- County Boundaries
- Parcels
- Municipal Limits
- Alexandria, Village of
- Belvidere, Village of
- Bruning, Village of
- Byron, Village of
- Carleton, Village of
- Chester, Village of
- Davenport, Village of
- Deshler, City of
- Hebron, City of
- Hubbell, Village of
- Sections



PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24







THAYER COUNTY, NEBRASKA

**COMPREHENSIVE PLAN**

**FIG X: NATIONAL WETLAND INVENTORY**

**LEGEND**

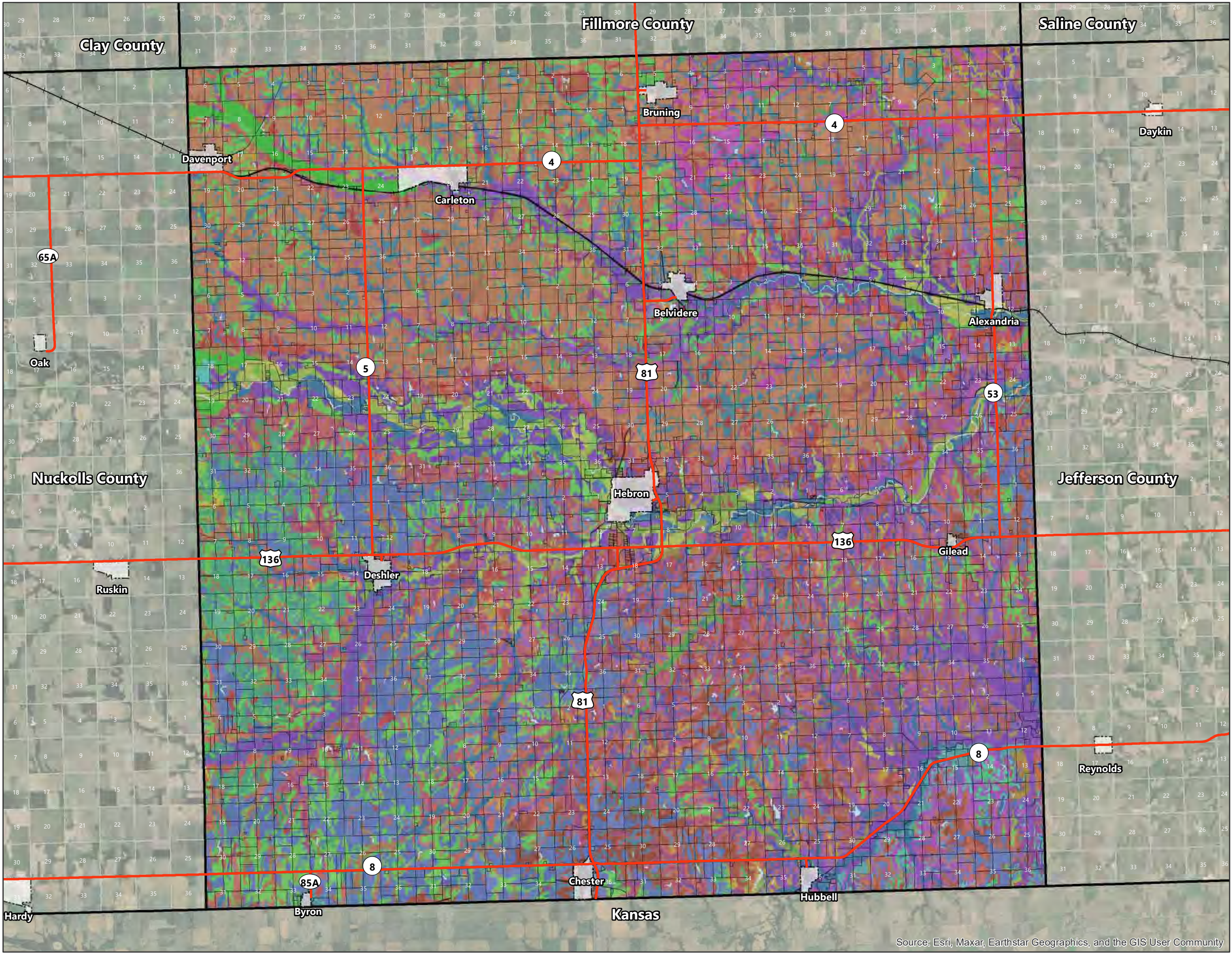
- Highways
- Municipal Limits
- Railroad
- County Boundaries
- Parcels
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Sections

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.24.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





THAYER COUNTY, NEBRASKA  
COMPREHENSIVE PLAN  
FIG X: GENERAL SOILS

- LEGEND**
- Highways
  - Municipal Limits
  - Railroad
  - County Boundaries
  - Parcels
  - Sections

**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal Growth and Comprehensive Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.24.24































0 1 2 4 Miles















General Soils

Map Unit Name

	Aquolls
	Arents, earthen dam
	Benfield silty clay loam, 6 to 11 percent slopes, eroded
	Butler silt loam, 0 to 1 percent slopes
	Cass fine sandy loam, occasionally flooded
	Cass loam, occasionally flooded
	Cass very fine sandy loam, rarely flooded
	Crete silt loam, 0 to 1 percent slopes
	Crete silt loam, 0 to 1 percent slopes, loess plains and breaks
	Crete silt loam, 1 to 3 percent slopes
	Crete silt loam, 1 to 3 percent slopes, loess plains and breaks
	Crete silty clay loam, 1 to 3 percent slopes
	Crete silty clay loam, 3 to 7 percent slopes, eroded
	Crete silty clay loam, 3 to 7 percent slopes, eroded, loess plains and breaks
	Detroit silt loam, 0 to 1 percent slopes
	Fillmore silt loam, frequently ponded
	Geary and Jansen soils, 11 to 30 percent slopes
	Geary and Jansen soils, 7 to 11 percent slopes
	Geary and Jansen soils, 7 to 11 percent slopes, eroded
	Geary and Jansen soils, 7 to 11 percent slopes, severely eroded
	Geary silty clay loam, 11 to 17 percent slopes, eroded
	Geary silty clay loam, 11 to 30 percent slopes
	Geary silty clay loam, 11 to 30 percent slopes, severely eroded
	Geary silty clay loam, 3 to 11 percent slopes, severely eroded
	Geary silty clay loam, 3 to 7 percent slopes, eroded
	Geary silty clay loam, 7 to 11 percent slopes, eroded
	Geary silty clay loam, 7 to 11 percent slopes, severely eroded
	Geary-Hobbs silt loams, 0 to 30 percent slopes
	Geary-Uly complex, 11 to 30 percent slopes

	Gothenburg loamy sand, frequently flooded
	Gravel pit
	Hall silt loam, 0 to 1 percent slopes
	Hastings silt loam, 0 to 1 percent slopes
	Hastings silt loam, 1 to 3 percent slopes
	Hastings silt loam, 3 to 7 percent slopes
	Hastings silt loam, 7 to 11 percent slopes
	Hastings silty clay loam, 0 to 1 percent slopes
	Hastings silty clay loam, 3 to 11 percent slopes, severely eroded
	Hastings silty clay loam, 3 to 7 percent slopes, eroded
	Hastings silty clay loam, 7 to 11 percent slopes, eroded
	Hastings soils, eroded
	Hobbs silt loam, channeled, frequently flooded
	Hobbs silt loam, channeled, occasionally flooded
	Hobbs silt loam, frequently flooded
	Hobbs silt loam, occasionally flooded
	Hord silt loam, 0 to 1 percent slopes, warm
	Jansen loam, 6 to 11 percent slopes
	Jansen sandy clay loam, 6 to 11 percent slopes, eroded
	Jansen-Meadin complex, 11 to 30 percent slopes, eroded
	Jansen-Meadin complex, 6 to 11 percent slopes, eroded
	Kipson silt loam, 7 to 30 percent slopes
	Kipson soils, 11 to 30 percent slopes
	Lamo silty clay loam, occasionally flooded
	Lancaster loam, 7 to 16 percent slopes, severely eroded
	Lancaster soils, 7 to 11 percent slopes, severely eroded
	Meadin loam, 2 to 30 percent slopes
	Meadin loam, 6 to 30 percent slopes
	Mine or quarry
	Miscellaneous water, sewage lagoon

	Muir silt loam, 1 to 3 percent slopes
	Muir silt loam, 3 to 7 percent slopes, eroded
	Muir silt loam, rarely flooded
	Muir-Meadin complex, 0 to 3 percent slopes
	Roxbury silty clay loam, rarely flooded
	Scott soils, frequently ponded
	Uly silt loam, 11 to 30 percent slopes, eroded
	Uly-Hobbs silt loams, 0 to 30 percent slopes
	Wakeen and Kipson silty clay loams, 6 to 11 percent slopes
	Wakeen and Kipson variant silty clay loams, 6 to 11 percent slopes, severely eroded
	Wakeen silty clay loam, 12 to 30 percent slopes
	Water



areas of deep water and there is considerable wave action. Islands of Palustrine wetlands may lie within the boundaries of the Lacustrine System.

### Palustrine Wetlands

The Palustrine System includes all non-tidal wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens, and all such wetlands occur in tidal areas where salinity due to ocean-derived salts is below 0.5%. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area is less than 20 acres; (2) lacking active wave-formed or bedrock shoreline features; (3) water depth in the deepest part of basin is less than 6.6 feet (2 meters) at low water; and (4) salinity due to ocean-derived salts is less than 0.5%.

The Palustrine System was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes the small, shallow, permanent, or intermittent water bodies often called ponds. These wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers.

### USFW Classification System

Stewart & Kantrud's developed a wetland classification system, published by USFW in the 1971. This system classifies wetland communities into several types, including:

- Type I: Ephemeral wetlands
- Type II: Temporary

- Type III: Seasonal
- Type IV: Semipermanent
- Type V: Permanent

This system is similar to, but different than, the "Circular 39" system first published in 1956. Stewart & Kantrud's Types III, IV, and V have been considered generally as "public waters wetlands" for the purpose of land use regulation.

## SOILS

The general soil map developed by the USDA SCS (now Natural Resources Conservation Service, NRCS) shows broad areas having a distinctive pattern of soils, relief, and drainage. Each map unit, or soil association, on the general soil map is a unique natural landscape. Typically, an association consists of one or more major soils and minor soils.

The soil series is the lowest category of the national soil classification system. The associations are named for the major soils—each series has an identifying place name (where it was first found) and is divided by texture of the surface soil. The soils making up one association can occur in other associations but in a different series pattern.

Soil surveys can be used for general farm and site planning. Onsite investigation is typically needed, such as soil quality assessments and conservation and engineering applications. While the engineering classification is based on exact composition of a particular soil, soil survey is an essential basis for development site planning.

Source: [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov)

## SOIL ASSOCIATIONS

### Aquoll Soils

Aquolls are wet Mollisols soils. Mollisols have a dark colored surface horizon relatively high in content of organic matter. The soils are base rich throughout and therefore quite fertile. Most support vegetation of grasses, sedges, and forbes.

### Arents Soils

Arents soils do not have diagnostic horizons because they have been deeply mixed by plowing, spading, or other methods of moving by humans. They are important soils for irrigated crop production. Arents soils are used mostly as cropland, urban land, or pasture. Some are used as wildlife habitat.

### Benfield Series

The Benfield series consists of moderately deep, well drained soils formed in pedisegment over residuum weathered from shales. Benfield soils are on hillslopes on uplands in Bluestem Hills. Slopes range from 3 to 35 percent.

Most areas are used for rangeland with some gentler slopes cultivated to wheat or grain sorghum. Native vegetation is tall prairie grasses.

### Butler Series

The Butler series consists of very deep, somewhat poorly drained soils formed in loess. Butler soils are on flat or slightly concave swales on loess uplands and loess-covered stream terraces on river valleys in the Central Loess Plains. Slopes are 0 to 2 percent.

Nearly all is cultivated. Sorghum and winter wheat are the principal dryland crops. Corn, soybeans, sorghum, and alfalfa are the principal crops where the soils are irrigated.

**TABLE 10.1A: SOIL TYPES**

Map Unit	Soil Unit Name	Acres	Percent of County
2376	Roxbury silty clay loam, rarely flooded	867	0.2%
2824	Uly silt loam, 11 to 30 percent slopes, eroded	126	0.0%
2834	Uly-Hobbs silt loams, 0 to 30 percent slopes	5,007	1.4%
2900	Wakeen and Kipson silty clay loams, 6 to 11 percent slopes	1,045	0.3%
2901	Wakeen and Kipson variant silty clay loams, 6 to 11 percent slopes, severely eroded	329	0.1%
2905	Wakeen silty clay loam, 12 to 30 percent slopes	417	0.1%
3186	Jansen loam, 6 to 11 percent slopes	743	0.2%
3188	Jansen sandy clay loam, 6 to 11 percent slopes, eroded	918	0.2%
3190	Jansen-Meadin complex, 6 to 11 percent slopes, eroded	8,365	2.3%
3191	Jansen-Meadin complex, 11 to 30 percent slopes, eroded	9,286	2.5%
3246	Meadin loam, 2 to 30 percent slopes	4,191	1.1%
3247	Meadin loam, 6 to 30 percent slopes	25	0.0%
3518	Lamo silty clay loam, occasionally flooded	1,479	0.4%
3521	Cass fine sandy loam, occasionally flooded	1,009	0.3%
3545	Hobbs silt loam, channeled, frequently flooded	1,316	0.4%
3553	Hobbs silt loam, frequently flooded	2,242	0.6%
3557	Hobbs silt loam, channeled, occasionally flooded	219	0.1%
3561	Hobbs silt loam, occasionally flooded	12,069	3.3%
3726	Detroit silt loam, 0 to 1 percent slopes	1,654	0.4%
3770	Muir silt loam, 3 to 7 percent slopes, eroded	352	0.1%
3775	Muir silt loam, rarely flooded	17,375	4.7%
3776	Muir silt loam, 1 to 3 percent slopes	6,232	1.7%
3779	Muir-Meadin complex, 0 to 3 percent slopes	1,587	0.4%
3800	Crete silt loam, 0 to 1 percent slopes, loess plains and breaks	28,105	7.6%
3801	Crete silt loam, 1 to 3 percent slopes, loess plains and breaks	8,060	2.2%
3802	Crete silty clay loam, 3 to 7 percent slopes, eroded, loess plains and breaks	756	0.2%
3820	Butler silt loam, 0 to 1 percent slopes	8,005	2.2%
3824	Crete silt loam, 0 to 1 percent slopes	55,827	15.2%
3825	Crete silt loam, 1 to 3 percent slopes	5,080	1.4%
3829	Crete silty clay loam, 1 to 3 percent slopes	5	0.0%
3831	Crete silty clay loam, 3 to 7 percent slopes, eroded	322	0.1%
3833	Geary-Uly complex, 11 to 30 percent slopes	38	0.0%
3834	Geary silty clay loam, 3 to 11 percent slopes, severely eroded	289	0.1%
3837	Geary silty clay loam, 11 to 17 percent slopes, eroded	4	0.0%
3839	Geary silty clay loam, 11 to 30 percent slopes	16,085	4.4%
3840	Geary silty clay loam, 7 to 11 percent slopes, eroded	8,520	2.3%

Source: USDA Natural Resources Conservation Service.



**TABLE 10.1B: SOIL TYPES**

Map Unit	Soil Unit Name	Acres	Percent of County
3841	Geary silty clay loam, 11 to 30 percent slopes, severely eroded	4,288	1.2%
3846	Geary silty clay loam, 3 to 7 percent slopes, eroded	6,788	1.8%
3851	Geary-Hobbs silt loams, 0 to 30 percent slopes	228	0.1%
3857	Geary and Jansen soils, 7 to 11 percent slopes	39	0.0%
3860	Geary and Jansen soils, 11 to 30 percent slopes	45	0.0%
3861	Geary and Jansen soils, 7 to 11 percent slopes, eroded	10	0.0%
3862	Geary and Jansen soils, 7 to 11 percent slopes, severely eroded	27	0.0%
3864	Hastings silt loam, 0 to 1 percent slopes	5,519	1.5%
3866	Hastings silt loam, 1 to 3 percent slopes	32,168	8.7%
3867	Hastings silty clay loam, 3 to 11 percent slopes, severely eroded	84	0.0%
3868	Hastings silt loam, 3 to 7 percent slopes	3,324	0.9%
3869	Hastings silt loam, 7 to 11 percent slopes	3,874	1.1%
3870	Hastings silty clay loam, 3 to 7 percent slopes, eroded	45,420	12.3%
3873	Hastings silty clay loam, 0 to 1 percent slopes	919	0.2%
3914	Scott soils, frequently ponded	196	0.1%
3952	Fillmore silt loam, frequently ponded	2,101	0.6%
3955	Geary silty clay loam, 7 to 11 percent slopes, severely eroded	19,412	5.3%
3962	Hastings silty clay loam, 7 to 11 percent slopes, eroded	1,323	0.4%
3969	Hastings soils, eroded	20,051	5.4%
4161	Kipson silt loam, 7 to 30 percent slopes	1,255	0.3%
4162	Kipson soils, 11 to 30 percent slopes	2,453	0.7%
4174	Lancaster loam, 7 to 16 percent slopes, severely eroded	218	0.1%
4175	Lancaster soils, 7 to 11 percent slopes, severely eroded	47	0.0%
7552	Benfield silty clay loam, 6 to 11 percent slopes, eroded	114	0.0%
8436	Cass loam, occasionally flooded	200	0.1%
8441	Cass very fine sandy loam, rarely flooded	4,328	1.2%
8493	Gothenburg loamy sand, frequently flooded	602	0.2%
8840	Hall silt loam, 0 to 1 percent slopes	172	0.0%
8866	Hord silt loam, 0 to 1 percent slopes, warm	2,360	0.6%
9970	Aquolls	6	0.0%
9971	Arents, earthen dam	20	0.0%
9975	Mine or quarry	14	0.0%
9983	Gravel pit	450	0.1%
9986	Miscellaneous water, sewage lagoon	36	0.0%
9999	Water	1,998	0.5%
	<b>Total for Thayer County</b>	<b>368,034</b>	<b>100.0%</b>

Source: USDA Natural Resources Conservation Service.

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### **Cass Series**

The Cass series consists of deep, well drained soils. They formed in alluvium on floodplains in Central Nebraska Loess Hills. Slopes range from 0 to 3 percent.

Most areas are cultivated, and much of it is irrigated. The main crops are corn, alfalfa, and sorghum. The native vegetation is tall prairie grasses and deciduous trees along streams.

### **Crete Series**

The Crete series consists of very deep, moderately well drained soils formed in loess. Crete soils are on interfluvies and hillslopes on loess uplands and loess-covered stream terraces on river valleys in Central Loess Plains. Slopes range from 0 to 11 percent.

Most areas are cropped. The main crops are corn, soybeans, sorghum and wheat.

### **Detroit Series**

The Detroit series consists of very deep, moderately well drained soils formed in alluvium. Detroit soils are on stream terraces on river valleys of the Central Kansas Sandstone Hills. Slope ranges from 0 to 2 percent.

Most of the soils are cultivated. Principal crops are wheat, alfalfa, and sorghums. Native vegetation was tall grasses with some deciduous trees.

### **Fillmore Series**

The Fillmore series consists of very deep, somewhat poorly drained soils formed in loess. Fillmore soils are in closed depressions on loess uplands and loess-covered stream terraces on river valleys in the Central Loess Plains. Slopes are 0 to 2 percent.

Most areas are cultivated. The main crops are corn, soybeans, sorghum, and wheat. The native vegetation is short and mid-prairie grasses.

### **Geary Series**

The Geary series consists of very deep, well drained soils formed in loess. Geary soils are on hillslopes on uplands in the Central Kansas Sandstone Hills, MLRA 74. Slopes range from 0 to 30 percent.

Most areas are cultivated. The principal crops are wheat and grain sorghum.

### **Gothenburg Series**

The Gothenburg series consists of soils which are very shallow over gravelly coarse sand. They are poorly drained soils. These soils formed in alluvium on river valley flood plains. Slopes range from 0 to 2 percent.

Range and habitat for wildlife. Vegetation is mainly switchgrass, mixed with cottonwood and cedar trees on the higher areas, and prairie cordgrass, sedges, annual grasses, and willow trees on the lower areas. Annual grasses, weeds, sedges, and shrubs are common.

### **Hall Series**

The Hall series consists of very deep well drained soils formed in loess or alluvium. These soils are on uplands and stream terraces of Central Nebraska Loess Hills. Slope ranges from 0 to 6 percent.

Nearly all the acreage is in cultivated cropland. Much of the cropland is irrigated. Corn, grain sorghum, soybeans, and alfalfa are the principal crops. A small acreage is still in native

grass, mainly mid and tall species.

### **Hastings Series**

The Hastings series consists of very deep, well drained soils formed in loess. Hastings soils are on interfluvies and hillslopes on loess uplands in the Central Loess Plains. Slopes range from 0 to 17 percent.

Most areas are cultivated. Common crops are corn, grain sorghum, winter wheat, soybeans, and alfalfa.

### **Hobbs Series**

The Hobbs series consists of very deep, well drained soils formed in stratified, silty alluvium. These soils are on flood plains, foot slopes, and alluvial fans in river valleys of Central Loess Plains. Slopes range from 0 to 6 percent.

Where the areas are sufficiently wide and flooding is not too severe, these soils are used for cultivated crops, both dryland and irrigated. The main crops are corn, soybeans, grain sorghum, and alfalfa. The native vegetation species are big bluestem, switchgrass, western wheatgrass, and little bluestem, with scattered deciduous trees.

### **Hord Series**

The Hord series consists of very deep, well drained, moderately permeable soils formed in mixed loess and alluvium on foot slopes and stream terraces. Slope is dominantly less than 1 percent, but can range from 0 to 7 percent.

Nearly all the acreage is in cultivated crops and much of it is irrigated. Corn, grain sorghum, soybeans and alfalfa are the principal crops. Minor crops are winter wheat and introduced



TABLE 10.2A: SOIL LIMITATIONS

Thayer County Soil Symbol/ Soil Name	Dwellings without Basements		Dwellings with Basements		Septic tank and absorption fields		Sewage Lagoons		Sanitary Landfill		Small Commercial Businesses	
	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions
2376 - Roxbury	2	1,2,3,4	2	1,2,3,4	1	1,4,7	1	1,4,8	2	1,3,4,10	2	1,2,3,4
2824 - Uly	2	1,2,4,5	2	1,2,5	2	1,5,7	2	1,5,8	2	1,5,10	2	1,2,5
2834 - Uly-Hobbs	2	1,2,5	2	1,2,5	2	1,5,7	2	1,5,8	2	1,5,10	2	1,2,5
2900 - Wakeen and Kipson	1	5,6	1	5,6	2	5,6,7	2	5,6,8	2	5,6,10,11	2	5,6
2901 - Wakeen and Kipson	1	5,6	1	5,6	2	5,6,7	2	5,6,8	2	5,6,10,11	2	5,6
2905 - Wakeen	2	2,5	2	2,5,6	2	5,6,7	2	5,6	2	5,6,10,11	2	2,5
3186 - Jansen	1	2,5	1	5	2	5,7,8	2	5,8	2	5,8,10,11	2	2,5
3188 - Jansen	1	5	1	5	2	5,7,8	2	5,8	2	8,10,11	2	5
3190 - Jansen-Meadin	0	-	0	-	2	8,9	2	5,8	2	5,8,10,12	2	5
3191 - Jansen-Meadin	2	5	2	5	2	5,8,9	2	5,8	2	5,8,10,12	2	5
3246 - Meadin	2	5	2	5	2	5,8,9	2	5,8	2	5,8,10,12	2	5
3247 - Meadin	2	5	2	5	2	5,8,9	2	5,8	2	1,4,10,12	2	5
3518 - Lamo	2	1,2,4	2	1,2,3,4	2	1,4,7	2	1,4	2	1,3,4,6,8,10,11,12	2	1,2,4
3521 - Cass	2	1,2,3,4	2	1,2,3,4	2	1,3,4,6,7,8,9	2	1,3,4,5,6,8	2	1,4,10	2	1,2,3,4
3545 - Hobbs	2	1,4	2	1,4	2	1,4,7	2	1,4,8	2	1,4,10	2	1,4
3553 - Hobbs	2	1,4	2	1,4	2	1,4,7	2	1,4,8	2	1,10	2	1,4
3557 - Hobbs	2	1,3,4	2	1,3,4	2	1,3,4,7	2	1,3,4,8	2	1,4,10	2	1,3,4
3561 - Hobbs	2	1,2,4	2	1,4	2	1,4,7	2	1,4,8	1	1,10,11	2	1,2,5
3726 - Detroit	2	1,2	2	1,2	2	7	1	1,8	1	1,10,11	2	1,2
3770 - Muir	1	2	1	2	1	7	1	1,5,8	1	1,10,11	1	2,5
3775 - Muir	2	1,2,3,4	2	1,2,3,4	1	1,7	1	1,8	1	1,10,11	2	1,2,3,4
3776 - Muir	2	1,2,3,4	2	1,2,3,4	1	1,7	1	1,8	2	1,10,12	2	1,2,3,4
3779 - Muir-Meadin	0	-	0	-	2	1,7,8,9	2	1,8	1	1,10,12	0	-
3800 - Crete	2	2,3,4	2	2,3,4	2	3,4,7	1	8	1	10,11	2	2,3,4
3801 - Crete	2	2,3,4	2	1,2,3,4	2	1,3,4,7	1	8	1	10,11	2	1,2,3,4
3802 Crete	2	1,2,3,4	1	2,6	2	1,3,4,6,7	1	5,8	2	10,11	2	1,2,3,4,5
3820 - Butler	2	2,3,4	2	2,3,4	2	3,4,7	2	3,4,8	1	3,4,10,11	2	2,3,4
3824 - Crete	2	2,3,4	2	2,3,4	2	3,4,7	1	8	1	10,11	2	2,3,4

Source: USDA Natural Resources Conservation Service.

TABLE 10.2B: SOIL LIMITATIONS

Soil Symbol/Soil Name	Dwellings without Basements		Dwellings with Basements		Septic tank and absorption fields		Sewage Lagoons		Sanitary Landfill		Small Commercial Businesses	
	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions
3824 - Crete	2	2,3,4	2	2,3,4	2	3,4,7	1	8	1	10,11	2	2,3,4
3825 - Crete	2	2,3,4	2	2,3,4	2	3,4,7	1	8	1	10,11	2	2,3,4
3829 - Crete	2	2,3,4	2	2,3,4	2	3,4,7	1	8	1	10,11	2	2,3,4
3831 - Crete	2	1,2	1	2	2	1,7	1	5,8	2	10,11	2	1,2,5
3833 - Geary-Uly	2	1,2,5	2	1,2,5	2	1,5,7	2	1,5,8	1	1,5,10,11	2	1,2,4,5
3834 - Geary	1	2	1	2	1	7	2	5,8	1	10,11	1	2,4
3837 - Geary	1	2,5	1	2,5	1	5,7	2	1,5,8	2	5,10,11	2	1,2,5
3839 - Geary	2	1,2,5	2	2,5	2	1,5,7,8,9	2	1,5,8	1	1,5,8,10,12	2	1,2,5
3840 - Geary	1	2,5	1	2,5	1	5,7	2	1,4,5,8	2	5,10,11	2	1,2,4,5
3841 - Geary	2	2,5	2	2,5	2	5,7,8,9	2	5,8	1	5,8,10,12	2	2,5
3846 - Geary	1	2	1	2,6	1	7	1	5,8	2	10,11	1	2,5
3851 - Geary-Hobbs	2	1,2,4,5	2	1,2,4,5	2	1,4,5,7	2	1,4,5,8	2	1,5,10,11	2	1,2,4,5
3857 - Geary and Jansen	1	2,5	1	2,5	2	5,7,8,9	2	5,8	2	5,8,10,12	2	2,5
3860 - Geary and Jansen	2	1,2,5	2	1,2,5	2	1,5,7,8,9	2	1,5,8	1	1,5,8,10,11,12	2	1,2,5
3861 - Geary and Jansen	1	2,5	1	2,5	2	5,7,8,9	2	5,8	2	5,10,11	2	2,5
3862 - Geary and Jansen	1	2,5	1	2,5	2	5,8,9	2	5,8	1	5,8,10,12	2	2,5
3864 - Hastings	2	2,3,4	1	2	2	3,4,7	1	8	1	10,11	2	2,3,4
3866 - Hastings	2	2,3,4	1	2	2	3,4,7	1	8	1	10,11	2	2,3,4
3867 - Hastings	1	2	0	-	2	7	2	5,8	1	10	1	2,5
3868 - Hastings	1	2	1	2	2	1,4,7	1	5,8	1	10,11	1	2,5
3869 - Hastings	1	2,5	1	2,5	2	1,4,7	2	1,4,5,8	1	5,10,11	2	1,2,4
3870 - Hastings	1	2	1	2	2	1,4,7	1	5,8	1	10,11	1	2,5
3873 - Hastings	2	2	1	2	2	7	1	8	1	10,11	2	2
3914 - Scott	2	2,3,4	2	2,3,4	2	3,4,7	2	3,4,8	2	3,4,10,11	2	2,3,4
3952 - Fillmore	2	2,3,4	2	2,3,4	2	3,4,7	2	3,4,8	2	3,4,10,11	2	2,3,4
3955 - Geary	1	2,5	1	2,5	1	5,7	2	5,8	1	5,10,11	2	2,5
3962 - Hastings	1	2,5	1	2,5	2	1,4,5,7	2	1,4,5,8	1	5,10,11	2	1,4,5
3969 - Hastings	1	2	1	2	2	7	2	5	1	10,11	1	2,5

Source: USDA Natural Resources Conservation Service.



TABLE 10.2C: SOIL LIMITATIONS

Soil Symbol/Soil Name	Dwellings without Basements		Dwellings with Basements		Septic tank and absorption fields		Sewage Lagoons		Sanitary Landfill		Small Commercial Businesses	
	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions
4161 - Kipson	2	5,6	2	5,6	2	5,6,7	2	5,6,8	2	5,6,10,11	2	5,6
4162 - Kipson	2	5,6	2	2,6	2	5,6	2	5,6,8	2	5,6,10,11	2	5,6
4174 - Lancaster	1	5	1	5,6	2	5,6,7	2	5,6,8	2	5,6,10	2	5
4175 - Lancaster	1	2,5	1	2,5,6	2	5,6,7	2	5,6,8	2	5,6,10	2	2,5
7552 - Benfield	2	2,5,6	2	2,5,6	2	5,6,7	2	5,6,8	2	5,6,10,11	2	2,5,6
8436 - Cass	2	1	2	1	2	1,8	2	1,8	2	1,8,10	2	1
8441 - Cass	2	1,4	2	1,4	2	1,4,8	2	1,4,8	2	1,8,10,12	2	1,4
8493 - Gothenburg	2	1,4	2	1,4	2	1,4,8,9	2	1,4,8	2	1,4,8,12	2	1,4
8840 - Hall	0	-	0	-	2	7	1	8	1	10	0	-
8866 - Hord	0	-	0	-	1	7	1	8	1	10	0	-

Source: USDA Natural Resources Conservation Service.

Legend for Table 10.2

Suitability	Limiting Conditions
Green = Not Limited	1. Flooding
Yellow = Somewhat Limited	2. Shrink-Swell
Red = Very Limited	3. Ponding
	4. Depth to saturated zone
	5. Slope
	6. Depth to Bedrock
	7. Slow Water Movement
	8. Seepage
	9. Filtering Capacity
	10. Dusty
	11. Too Clayey
	12. Too Sandy

Soil Limiting Conditions

**Depth to Bedrock (6)** means typically a soil that has limited distance to bedrock of some kind. **Depth to Saturated Zone (4)** refers to soils which do not drain well or have a low permeability. This conditions creates an above average existence of wet soils.

**Flooding (1)** is defined as soils located in areas which are prone to flooding.

**Filtering Capacity (9)** means soils with rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

**Ponding (3)** means soils subject to frequent floods and ponding.

**Seepage (8)** means the movement of water through the soil. Seepage adversely affects the specified use.

**Shrink-Swell (2)** means the shrinking of soil when dry and swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Slope (5)** means the inclination of the land surface from the horizontal. Within Knox County the class of slopes are:

Nearly level	0 to 1 percent
	0 to 2 percent
Very gently sloping	1 to 3 percent
Gently sloping	2 to 6 percent
	3 to 6 percent
Strongly sloping	6 to 9 percent
	6 to 11 percent
Moderately sloping	9 to 20 percent
	11 to 15 percent
Steep	15 to 30 percent

**Slow Water Movement (7)** means soils that do not allow reasonable downward movement of water, with limited permeability.

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pasture grasses. A small acreage is in native grass.

### **Jansen Series**

The Jansen series consists of very deep, well drained moderately permeable soils formed in loamy sediments over alluvial sand and gravel. These upland soils have slopes ranging from 0 to 30 percent.

Cropped to milo, wheat and alfalfa. Some areas are irrigated. Native vegetation is short, mid and tall grasses, and includes big bluestem, little bluestem, switchgrass, sideoats grama, western wheatgrass, blue grama and sand dropseed.

### **Kipson Series**

The Kipson series consists of shallow and very shallow, somewhat excessively drained soils formed in residuum weathered from calcareous silty shales. Kipson soils are on hillslopes on uplands in the Central Kansas Sandstone Hills. Slopes range from 1 to 70 percent.

Mostly used for native rangeland. Native vegetation is mid and short grasses with some tall grasses.

### **Lamo Series**

The Lamo series consists of very deep, somewhat poorly drained soils formed in calcareous loamy alluvium. The soils have moderately slow permeability. These soils are on flood plains and have slopes of 0 to 2 percent.

The somewhat poorly drained Lamo soils are used mainly for cultivated crops. Many areas are irrigated. The most common crops are corn, alfalfa, grain

sorghum, and soybeans. Native vegetation is primarily tall prairie grasses such as big bluestem, switchgrass, indiangrass, prairie cordgrass, sedges, and Canada wildrye.

### **Lancaster Series**

The Lancaster series consists of moderately deep, well drained soils formed in residuum from sandstone and sandy shales. Lancaster soils are on hillslopes on uplands in Central Kansas Sandstone Hills. Slopes range from 1 to 20 percent.

Most gentle slopes are cultivated. Principal crops are wheat and sorghums. Steeper slopes are usually in range. Native vegetation is dominated by mid and tall grasses; big bluestem, indiangrass, and little bluestem are most common.

### **Meadin Series**

The Meadin series consists of very deep, excessively drained, rapidly permeable soils formed in loamy and sandy material over gravelly sand. These upland soils have slopes ranging from 0 to 35 percent.

Meadin soils are used mainly as range. The soils are generally not suited to cultivation except where irrigated.

### **Muir Series**

The Muir series consists of very deep, well drained, moderately permeable soils formed in alluvium. These soils are on risers and treads of stream terraces in river valleys in the Central Kansas Sandstone Hills. Slopes range from 0 to 7 percent.

Most areas of Muir soils are cultivated and some of the acreage is irrigated. Corn, sorghum, wheat, and alfalfa are

the principal crops. Native vegetation is tall prairie grasses and a few deciduous trees.

### **Roxbury Series**

The Roxbury series consists of very deep, moderately well drained or well drained, moderately permeable soils formed in calcareous silty alluvium on floodplains and alluvial fans on the Rolling Plains and Breaks. Slopes range from 0 to 8 percent.

Most areas of Roxbury soils are cultivated. Principal crops are alfalfa, corn, sorghum, and wheat. Native vegetation is tall and midgrasses.

### **Scott Series**

The Scott series consists of very deep, poorly and very poorly drained soils formed in loess. Scott soils are in closed depressions on loess uplands and stream terraces in the Central Loess Plains, MLRA 75. Slopes range from 0 to 1 percent.

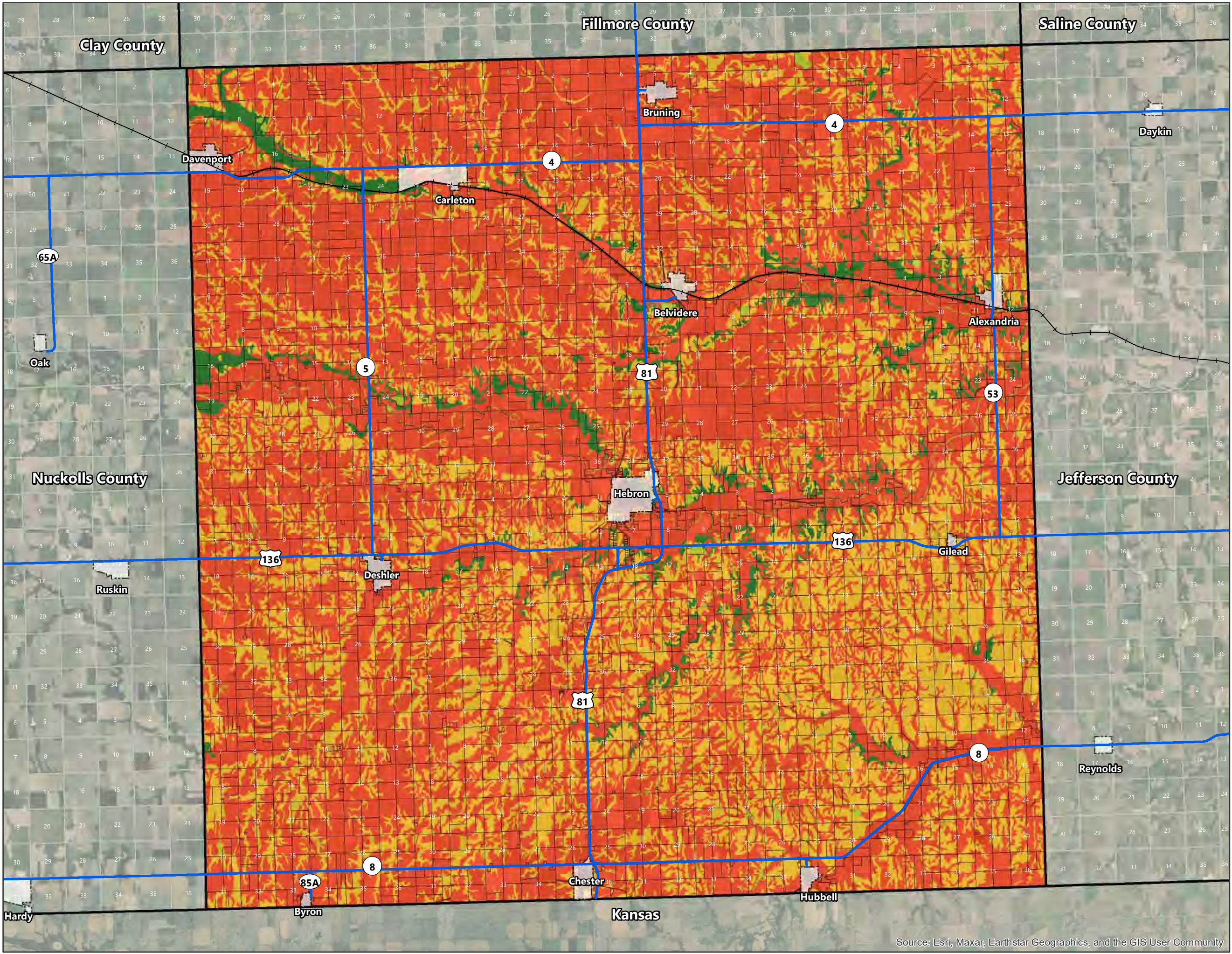
Most areas are in pasture or wildlife habitat and used for livestock grazing and waterfowl. The plant community consists mainly of smartweed, curly dock, barnyard grass, plains coropsis, perennial bursage, sedges, and spikerush. Reed canarygrass has been seeded in some areas. Minor use is cropping.

### **Uly Series**

The Uly series includes very deep, well drained formed in loess on uplands. Slopes range from 0 to 30 percent.

Most of the acreage of these soils is in native grass. Big bluestem, little bluestem,





THAYER COUNTY, NEBRASKA  
COMPREHENSIVE PLAN  
FIG X: DWELLINGS  
WITHOUT BASEMENTS

- LEGEND**
- Highways
  - Railroad
  - Municipal Limits
  - County Boundaries
  - Parcels
- Rating**
- Not limited
  - Not rated
  - Somewhat limited
  - Very limited
  - Sections

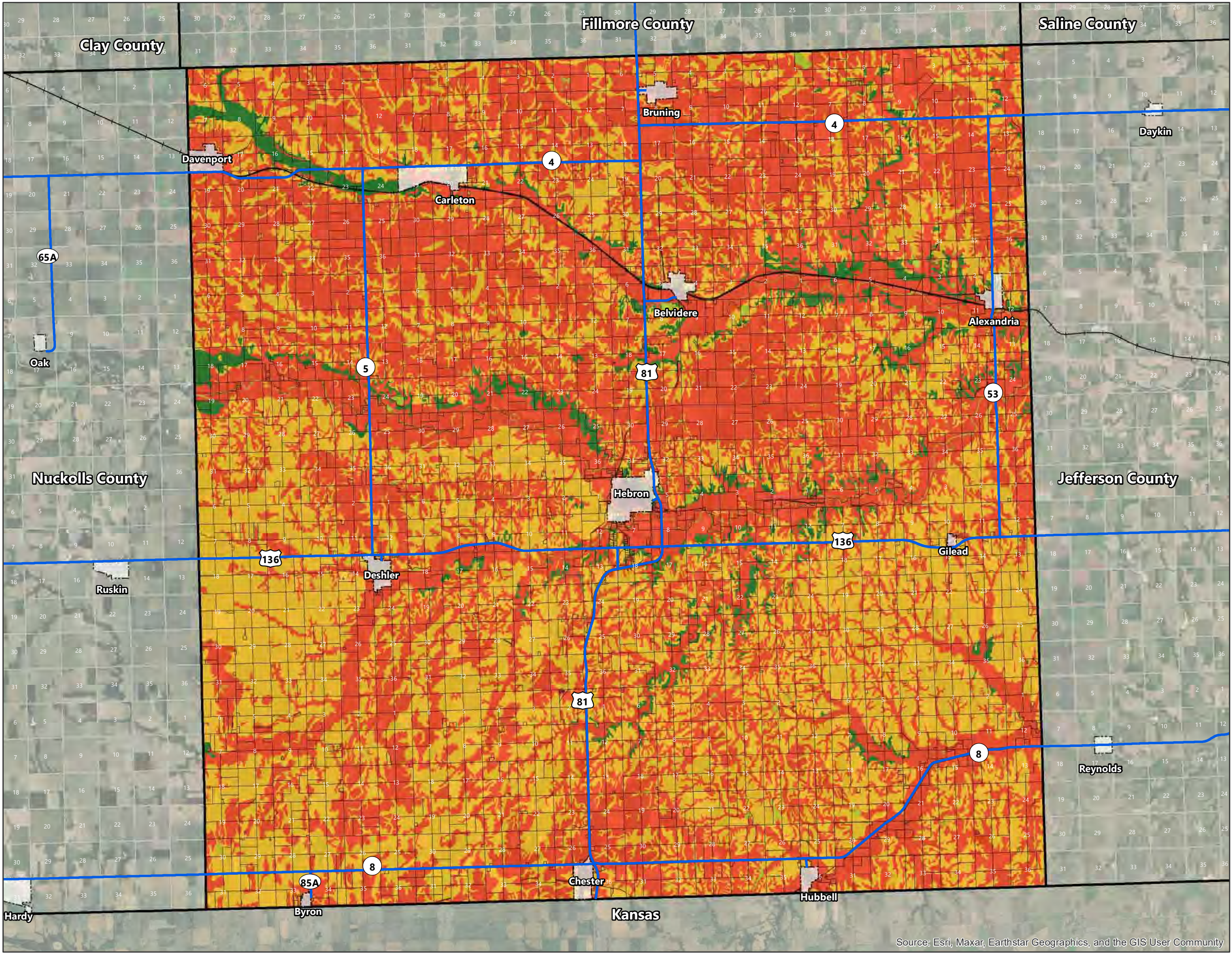
**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal Growth and Comprehensive Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





THAYER COUNTY, NEBRASKA

COMPREHENSIVE PLAN

FIG X: DWELLINGS WITH BASEMENTS

**LEGEND**

- Highways
- Municipal Limits
- Railroad
- County Boundaries
- Parcels
- Rating**
  - Not limited
  - Not rated
  - Somewhat limited
  - Very limited
- Sections

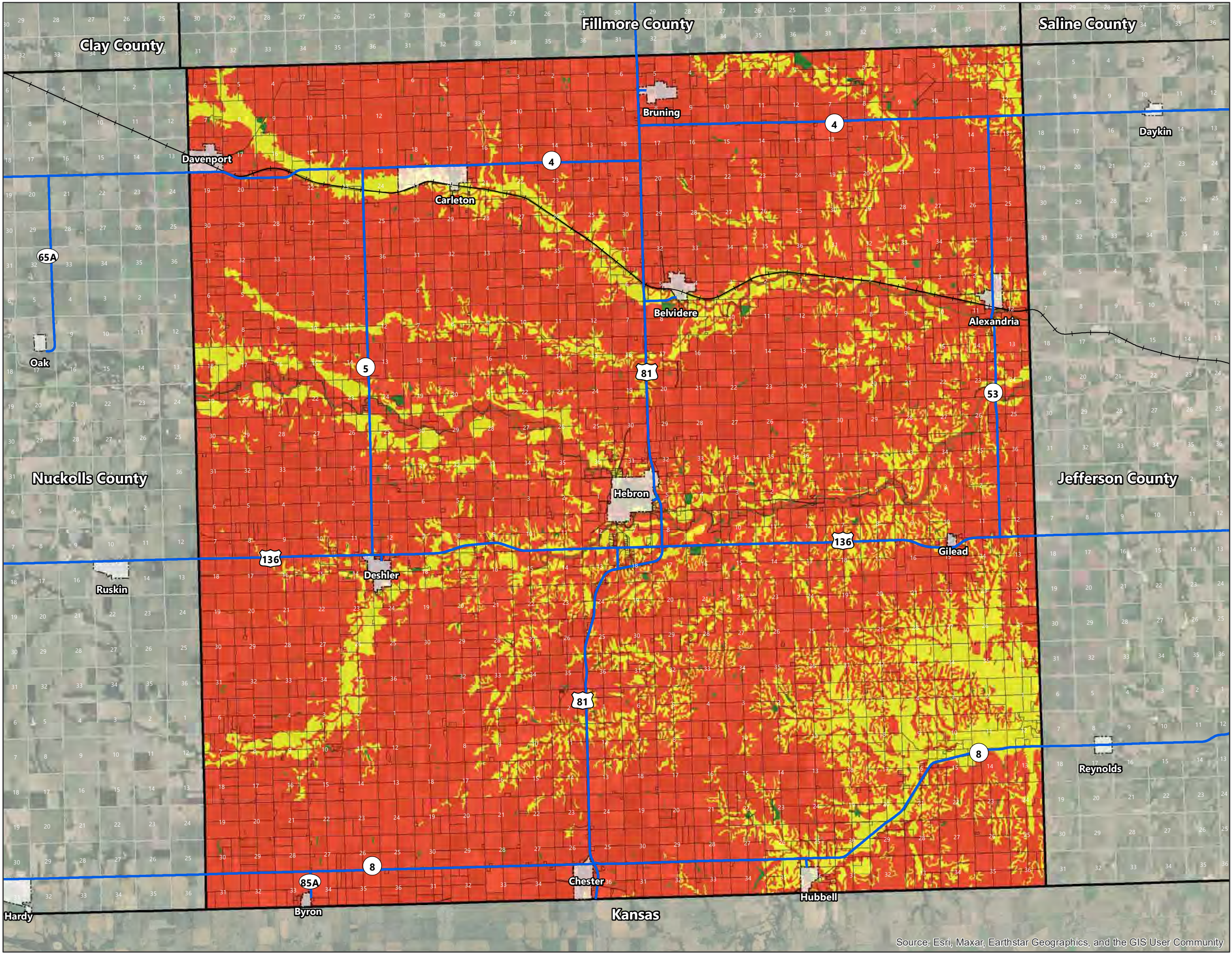
**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal, County and Regional Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.24.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





THAYER COUNTY, NEBRASKA

**COMPREHENSIVE PLAN**

**FIG X: SEPTIC TANK**

**ABSORPTION**

**LEGEND**

- Highways
- Railroad
- Municipal Limits
- County Boundaries
- Parcels

**Rating**

- Not rated
- Somewhat limited
- Very limited
- Sections

**MPC**

**MARVIN PLANNING CONSULTANTS**

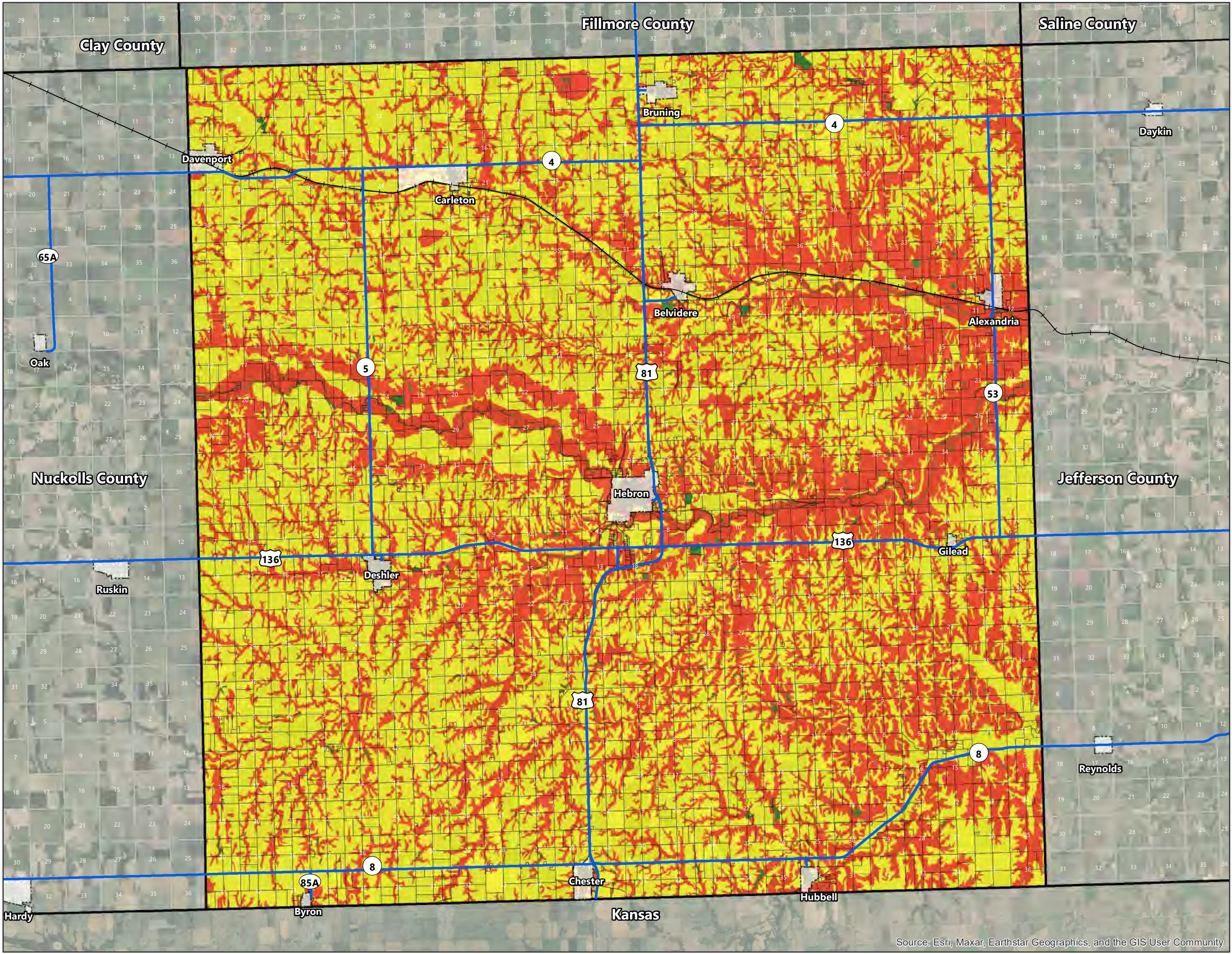
*Specializing in Municipal Growth and Comprehensive Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





THAYER COUNTY, NEBRASKA

**COMPREHENSIVE PLAN**

**FIG X: SEWAGE LAGOONS**

**LEGEND**

- Highways
- Railroad
- Municipal Limits
- County Boundaries
- Parcels

**Rating**

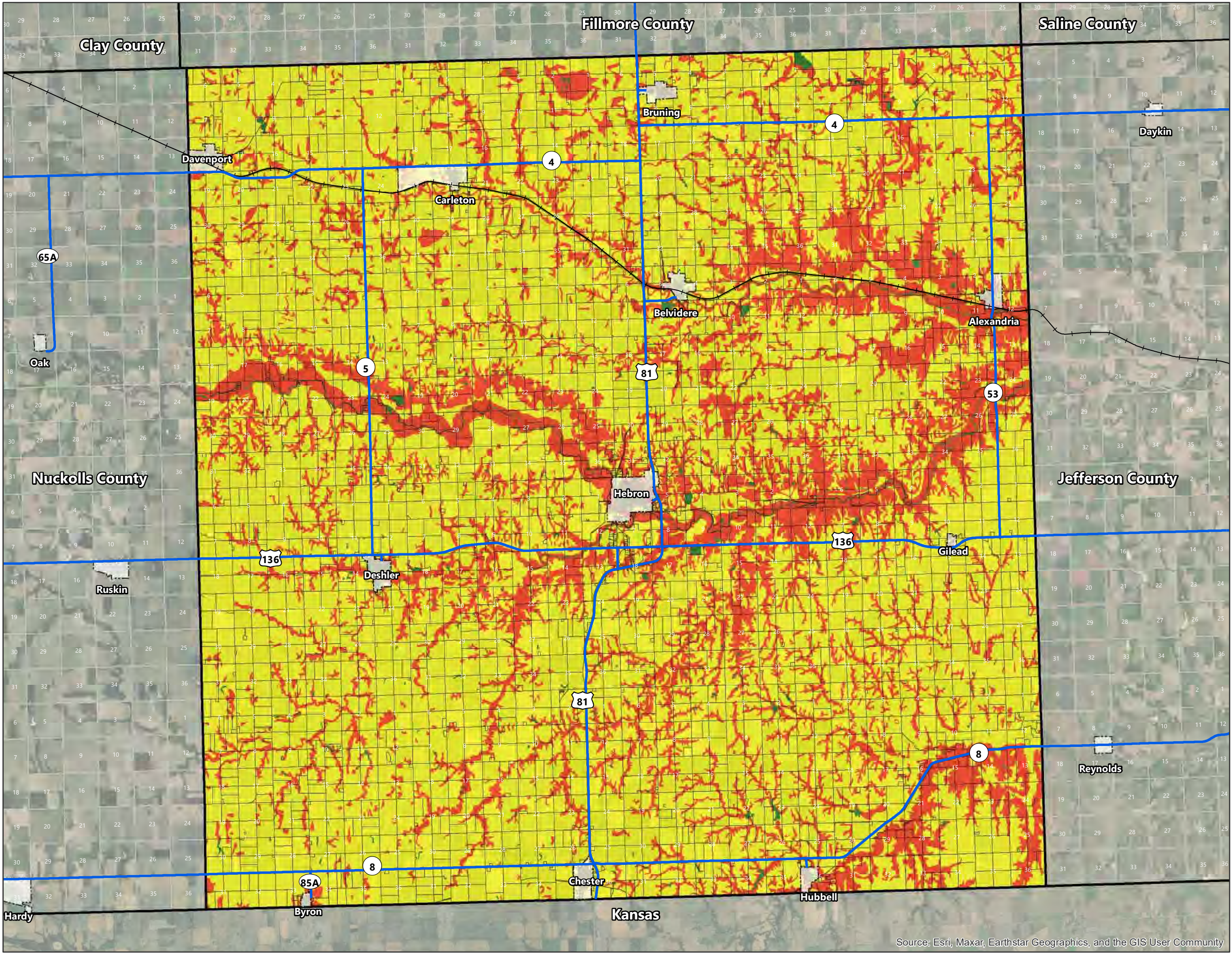
- Not rated
- Somewhat limited
- Very limited
- Sections

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





THAYER COUNTY, NEBRASKA  
COMPREHENSIVE PLAN  
FIG X: SANITARY LANDFILLS

**LEGEND**

- Highways
- Railroad
- Municipal Limits
- County Boundaries
- Parcels

**Rating**

- Not rated
- Somewhat limited
- Very limited
- Sections

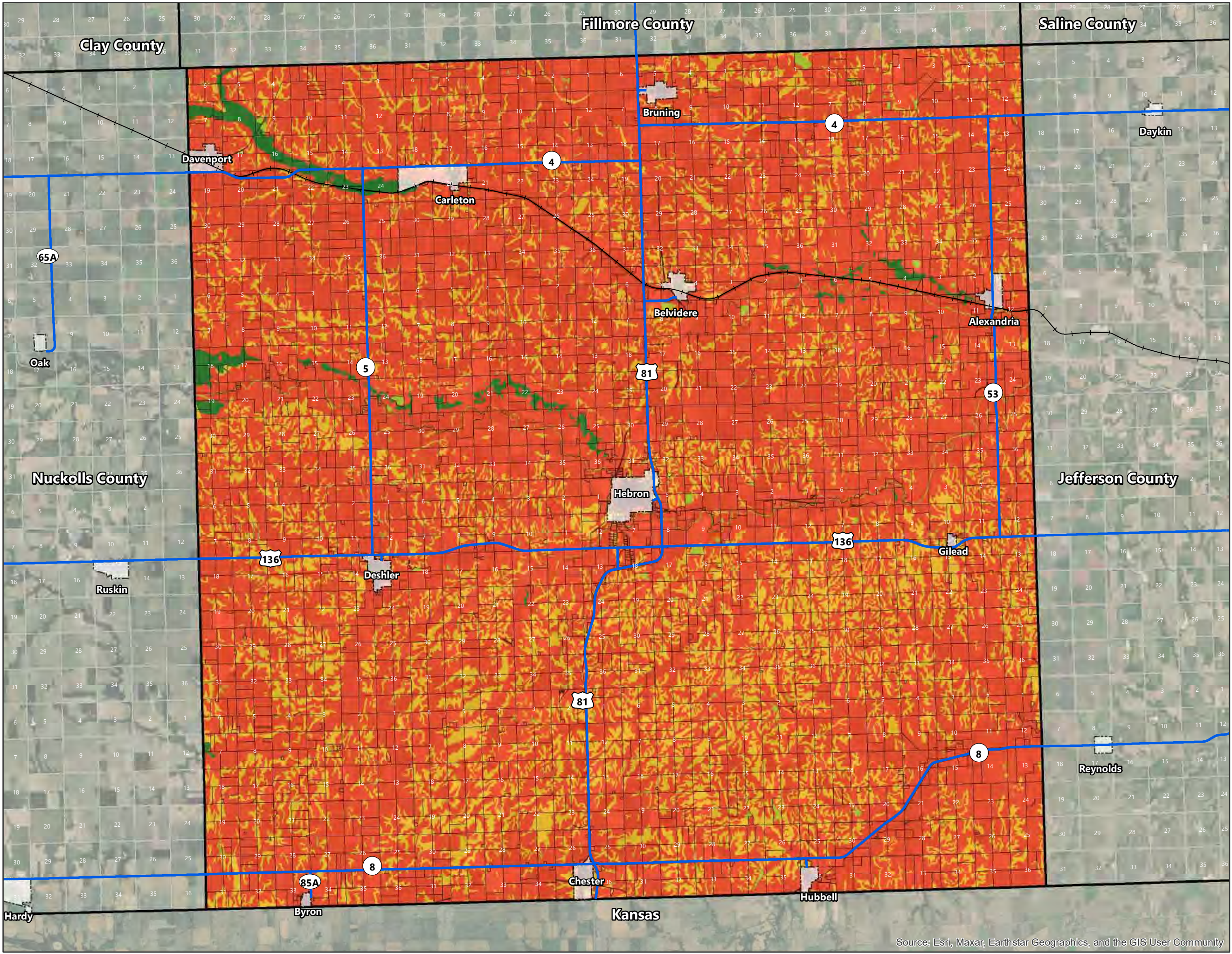
**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal, County and Regional Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





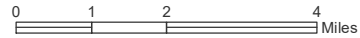
THAYER COUNTY, NEBRASKA  
**COMPREHENSIVE PLAN**  
**FIG X: SMALL COMMERCIAL BUILDINGS**

**LEGEND**

- Highways
- Railroad
- Municipal Limits
- County Boundaries
- Parcels
- Rating**
  - Not limited
  - Not rated
  - Somewhat limited
  - Very limited
- Sections



PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



sideoats grama, blue grama, and western wheatgrass are the dominant species. Cultivated areas are cropped mainly to corn, winter wheat, sorghum, and alfalfa.

### Wakeen Series

The Wakeen series consists of well drained soils are moderately deep over chalky limestone. These soils are on plains, knolls and ridgetops in the Rolling Plains and Breaks. Slopes range from 1 to 20 percent.

Gentle slopes are mostly cropped and steeper slopes are usually in native range. Principal crops are winter wheat and sorghum. Native vegetation is tall and mid prairie grasses.

Source: USDA NRCS Official Soil Series Descriptions (OSDs)

## SOIL SUITABILITY AND LIMITATIONS

The characteristics of soils play a major role in determining the potential compatibility of certain uses on the land. Soil limitations do not generally prohibit certain uses of land; however, they indicate the need for site-specific study and often special engineering solutions to overcome those limitations.

USDA NRCS' Web Soil Survey (based on the earlier county-level soil surveys) includes data on suitability and limitations of use. The ratings are identical to these shown by the Soil Data Viewer tool. A selection of data is shown here for categories most relevant to land use and development. Additional information is available at the NRCS website.

Soil limitations are shown in Table 10.2. These interpretations by

NRCS are based on the engineering properties of soils, on test data for soils in the survey area and others nearby or adjoining, and on the experience of engineers and soil scientists. Soil limitations are indicated by the ratings Not Limited, Somewhat Limited, and Very Limited.

- **Not Limited** means soil properties are generally favorable for the stated use, or in other words, which limitations are minor and easily overcome.
- **Somewhat Limited** means some soil properties are unfavorable but can be overcome or modified by special planning and design.
- **Very Limited** means soil properties may be so unfavorable and difficult to correct or overcome as to require various degrees of soil reclamation, special designs, or intensive maintenance.

### Dwellings without Basements

Soil limitations for dwellings without basements are shown in Table 10.2. The table provides the suitability and conditions by soil types.

#### Very Limited Conditions

A majority of the soil types in Thayer County are considered Very Limited for a Dwelling Unit without a Basement. There are five major conditions impacting the soils (not all five are present in any one soil type).

Conditions present in the different soils include:

- Flooding
- Shrink-Swell
- Ponding

- Depth to saturation zone
- Slope

These conditions may or may not eliminate the ability of a land owner to build a slab-on-grade dwelling, but specific conditions will need to be engineered to overcome potential problems in the future.

#### Somewhat Limited Conditions

Besides the Severe soils, there are some soils considered Somewhat Limited which is less of an issue for development. The conditions which are contributing to the Somewhat Limited classification include:

- Shrink-Swell
- Slope
- Depth to bedrock

#### Not Limited Conditions

A few soil types present to general limits to construction of dwellings without basements, including Jansen-Meadin (3190), Muir-Meadin (3779), Hall (8840), and Hord (8866). It should be noted other units of these soil types do present different profiles for soil suitability and limitations, as shown in Table 10.2.

### Dwellings with Basements

Soil limitations for dwellings with basements are shown in Table 10.2. Suitability and conditions for basements are very similar to dwellings without basements.

#### Very Limited Conditions

A majority of the soil types in Thayer County are Very Limited for a Dwelling Unit with a Basement. There are several major conditions impacting the soils (not all are present in any one soil type).

Conditions present in the different soils include:

- Flooding
- Shrink-Swell
- Ponding
- Depth to saturation zone
- Slope
- Depth to bedrock

These conditions may or may not eliminate the ability of a land owner to build a dwelling subgrade, but specific conditions will need to be engineered to overcome potential problems in the future.

### Somewhat Limited Conditions

Besides the Severe soils, there are some soils considered Somewhat Limited which is less of an issue for development. The conditions contributing to the Somewhat Limited classification include:

- Shrink-Swell
- Slope
- Depth to bedrock

### Not Limited Conditions

A few soil types present no general limits to construction of dwellings without basements, including Jansen-Meadin (3190), Muir-Meadin (3779), Hasings (3867), Hall (8840), and Hord (8866).

## Septic Tank and Absorption Fields

Soil limitations for dwellings with basements are shown in Table 10.2.

### Very Limited Conditions

A majority of the soil types in Thayer County are considered Very Limited for septic tanks and absorption fields. There are several major conditions impacting the soils (not all are present in any one soil type).

Conditions present in the different soils include:

- Flooding

- Ponding
- Depth to saturated zone
- Slope
- Depth to Bedrock
- Slow Water Movement
- Seepage
- Filtering Capacity

These conditions may or may not eliminate the ability of a land owner to use a septic tank and absorption field, but specific conditions will need to be engineered to overcome potential problems.

### Somewhat Limited Conditions

Besides the Severe soils, there are some soils considered Somewhat Limited which is less of an issue. The conditions are contributing to the Somewhat Limited classification include:

- Flooding
- Depth to saturated zone
- Slope
- Slow Water Movement

## Sewage Lagoons

Soil limitations for sewage lagoons are shown in Table 10.2.

### Very Limited Conditions

A majority of the soil types in Thayer County are considered Very Limited for sewage lagoons. There are several major conditions impacting soils (not all are present in any one soil type).

Conditions present in the different soils include:

- Flooding
- Ponding
- Depth to saturated zone
- Slope
- Depth to Bedrock
- Seepage

These conditions may or may not eliminate the ability of a

land owner to use a sewage lagoon, but specific conditions will need to be engineered to overcome potential problems.

### Somewhat Limited Conditions

Besides the Severe soils, there are some soils considered Somewhat Limited which is less of an issue. The conditions are contributing to the Somewhat Limited classification include:

- Flooding
- Depth to saturated zone
- Slope
- Seepage

## Sanitary Landfill

Soil limitations for sanitary landfills are shown in Table 10.2.

### Very Limited Conditions

A majority of the soil types in Thayer County are considered Very Limited for a sanitary landfill. While these include fewer soil types, there are many major conditions impacting soils (not all are present in any one soil type).

Conditions present in the different soils include:

- Flooding
- Ponding
- Depth to saturated zone
- Slope
- Depth to Bedrock
- Seepage
- Dusty
- Too Clayey
- Too Sandy

These conditions may or may not eliminate the ability to construct a sanitary landfill, but specific conditions will need to be engineered to overcome potential problems.

### Somewhat Limited Conditions

Besides the Severe soils, there are some soils considered Somewhat Limited which is less of an issue.



**TABLE 10.3A: SOIL PERMEABILITY BY SOIL TYPE**

Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/	Shrink-Swell potential	Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/	Shrink-Swell potential		
2376	Roxbury silty clay loam, rarely flooded	0-8	.6-2	Moderate	3726	Detroit silt loam, 0 to 1 percent slopes	0-6	.6-2	Moderate		
		8-22	.6-2	Low			6-16	.2-.6	Moderate		
		22-33	.6-2	Low			16-21	.06-.2	High		
		33-56	.6-2	Low			21-37	.06-.2	High		
		56-79	.6-2	Low			37-53	.2-.6	High		
2824	Uly silt loam, 11 to 30 percent slopes, eroded	0-9	.6-2	Low	3770	Muir silt loam, 3 to 7 percent slopes, eroded	53-79	.6-2	Moderate		
		9-25	.6-2	Low			0-7	.6-2	Low		
		25-79	.6-2	Low			7-14	.6-2	Moderate		
2834	Uly-Hobbs silt loams, 0 to 30 percent slopes	0-9	.6-2	Moderate			14-26	.6-2	Moderate		
		9-25	.6-2	Low			26-37	.6-2	Moderate		
		25-79	.6-2	Low			37-79	.6-2	Low		
		0-6	.6-2	Low	3775	Muir silt loam, rarely flooded	0-7	.6-2	Low		
		6-79	.6-2	Low			7-18	.6-2	Low		
2900	Wakeen and Kipson silty clay loams, 6 to 11 percent slopes	0-10	.2-.6	Moderate			18-36	.6-2	Low		
		10-23	.2-.6	Low			36-48	.6-2	Low		
		23-36	.2-.6	Low			48-79	.6-2	Low		
		36-46	-	-	3776	Muir silt loam, 1 to 3 percent slopes	0-7	.6-2	Low		
		0-8	.6-2	Low			7-18	.6-2	Moderate		
		8-13	.6-2	Low			18-36	.6-2	Moderate		
		13-16	.6-2	Low			36-48	.6-2	Moderate		
		16-39	-	-			48-79	.6-2	Low		
2901	Wakeen and Kipson variant silty clay loams, 6 to 11 percent slopes, severely eroded	0-10	.2-.6	Low	3779	Muir-Meadin complex, 0 to 3 percent slopes	0-10	2-6	Low		
		10-20	.2-.6	Low			10-15	2-6	Low		
		20-30	.2-.6	Low			15-30	20-100	Low		
		30-46	-	-			30-79	20-100	Low		
		0-10	.6-2	Low			0-7	.6-2	Low		
		10-13	.6-2	Low			7-18	.6-2	Moderate		
		13-39	-	-			18-36	.6-2	Moderate		
2905	2905—Wakeen silty clay loam, 12 to 30 percent slopes	0-6	.2-.6	Moderate			36-48	.6-2	Moderate		
		6-24	.2-.6	Moderate			48-79	.6-2	Low		
		24-28	-	-	3800	Crete silt loam, 0 to 1 percent slopes, loess plains and breaks	0-6	.6-2	Low		
		3186	Jansen loam, 6 to 11 percent slopes	0-8			2-6	Low	6-15	.2-.6	Moderate
8-26	.6-2			Moderate			15-25	.06-.2	Very High		
26-60	20-100			Low			25-33	.06-.2	High		
3188	Jansen sandy clay loam, 6 to 11 percent slopes, eroded	0-6	2-6	Low			33-40	.2-.6	Moderate		
		6-24	.6-2	Moderate			40-79	.6-2	Moderate		
		24-60	20-100	Low	3801	Crete silt loam, 1 to 3 percent slopes, loess plains and breaks	0-6	.6-2	Low		
3190	Jansen-Meadin complex, 6 to 11 percent slopes, eroded	0-6	2-6	Low			6-12	.2-.6	Moderate		
		6-15	.6-2	Moderate			12-23	.06-.2	Very High		
		15-21	20-100	Low			23-31	.06-.2	High		
		21-60	20-100	Low			31-39	.2-.6	Moderate		
		0-8	2-6	Low			39-79	.6-2	Moderate		
		8-13	2-6	Low	3802	Crete silty clay loam, 3 to 7 percent slopes, eroded, loess plains and breaks	0-6	.2-.6	Moderate		
		13-60	20-100	Low			6-15	.06-.2	Very High		
3191	Jansen-Meadin complex, 11 to 30 percent slopes, eroded	0-4	2-6	Low			15-24	.06-.2	High		
		4-12	.6-2	Moderate			24-30	.2-.6	Moderate		
		12-18	6-20	Low			30-79	.6-2	Moderate		
		18-60	20-100	Low	3820	Butler silt loam, 0 to 1 percent slopes	0-9	.6-2	Low		
		0-6	2-6	Low			9-13	.6-2	Low		
6-11	2-6	Low	13-34	.06-.2			Very High				
11-60	20-100	Low	34-41	.2-.6			High				
3246	Meadin loam, 2 to 30 percent slopes	0-11	2-6	Low			41-79	.6-2	Low		
		11-15	2-6	Low	3824	Crete silt loam, 0 to 1 percent slopes	0-6	.6-2	Low		
		15-60	20-100	Low			6-15	.2-.6	Moderate		
3247	Meadin loam, 6 to 30 percent slopes	0-9	.6-2	Low			15-25	.06-.2	Very High		
		9-15	6-20	Low			25-33	.06-.2	High		
		15-80	20-100	Low			33-40	.2-.6	Moderate		
3518	Lamo silty clay loam, occasionally flooded	0-19	.2-.6	Moderate			40-79	.6-2	Moderate		
		19-60	.2-.6	Moderate	3825	Crete silt loam, 1 to 3 percent slopes	0-6	.6-2	Low		
3521	Cass fine sandy loam, occasionally flooded	0-12	2-6	Low			6-12	.2-.6	Moderate		
		12-20	2-6	Low			12-23	.06-.2	Very High		
		20-36	2-6	Low			23-31	.06-.2	High		
		36-79	6-20	Low			31-39	.2-.6	Moderate		
3545	Hobbs silt loam, channeled, frequently flooded	0-6	.6-2	Low			39-79	.6-2	Moderate		
		6-79	.6-2	Low	3829	Crete silty clay loam, 1 to 3 percent slopes	0-6	.2-.6	Moderate		
3553	Hobbs silt loam, frequently flooded	0-6	.6-2	Low			6-12	.2-.6	Moderate		
		6-79	.6-2	Low			12-23	.06-.2	Very High		
3557	Hobbs silt loam, channeled, occasionally flooded	0-7	.6-2	Low			23-31	.06-.2	High		
		7-51	.6-2	Low			31-39	.2-.6	Moderate		
		51-60	.6-2	Low			39-79	.6-2	Moderate		
3561	Hobbs silt loam, occasionally flooded	0-6	.6-2	Low	3831	Crete silty clay loam, 3 to 7 percent slopes, eroded	0-6	.2-.6	Moderate		
		6-79	.6-2	Low			6-15	.06-.2	Very High		
Source: USDA Natural Resources Conservation Service.							15-24	.06-.2	High		
							24-30	.2-.6	Moderate		
							30-79	.6-2	Moderate		

**TABLE 10.3B: SOIL PERMEABILITY BY SOIL TYPE**

Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/)	Shrink-Swell potential	Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/)	Shrink-Swell potential
3833	Geary-Uly complex, 11 to 30 percent slopes	0-7	.6-2	Moderate	3861	Geary and Jansen soils, 7 to 11 percent slopes, eroded	0-8	.6-2	Moderate
		7-11	.6-2	Moderate			8-24	.2-.6	Moderate
		11-27	.2-.6	Moderate			24-33	.6-2	Moderate
		27-34	.6-2	Moderate			33-38	.6-2	Moderate
		34-42	.6-2	Moderate			38-79	.6-2	Moderate
		42-79	.6-2	Moderate			0-5	.6-2	Low
		0-8	.6-2	Moderate			5-8	.6-2	Low
		8-13	.6-2	Moderate			8-24	.6-2	Moderate
		13-20	.6-2	Moderate			24-30	20-100	Low
		20-26	.6-2	Moderate			30-79	20-100	Low
		26-79	.6-2	Low	3862	Geary and Jansen soils, 7 to 11 percent slopes, severely eroded	0-6	.6-2	Moderate
3834	Geary silty clay loam, 3 to 11 percent slopes, severely eroded	0-6	.6-2	Moderate			6-17	.2-.6	Moderate
		6-17	.2-.6	Moderate			17-25	.6-2	Moderate
		17-25	.6-2	Moderate			25-32	.6-2	Moderate
		25-32	.6-2	Moderate			32-79	.6-2	Moderate
		32-79	.6-2	Moderate			0-6	.6-2	Low
3837	Geary silty clay loam, 11 to 17 percent slopes, eroded	0-6	.6-2	Moderate			6-23	.6-2	Moderate
		6-17	.2-.6	Moderate			23-29	20-100	Low
		17-25	.6-2	Moderate			29-79	20-100	Low
		25-32	.6-2	Moderate	3864	Hastings silt loam, 0 to 1 percent slopes	0-6	.6-2	Low
		32-79	.6-2	Moderate			6-13	.2-.6	Moderate
3839	Geary silty clay loam, 11 to 30 percent slopes	0-11	.6-2	Moderate			13-17	.2-.6	High
		11-27	.2-.6	Moderate			17-32	.2-.6	High
		27-34	.6-2	Moderate			32-39	.2-.6	Moderate
		34-42	.6-2	Moderate			39-79	.6-2	Low
		42-79	.6-2	Moderate	3866	Hastings silt loam, 1 to 3 percent slopes	0-6	.6-2	Low
3840	Geary silty clay loam, 7 to 11 percent slopes, eroded	0-6	.6-2	Moderate			6-11	.2-.6	Moderate
		6-22	.2-.6	Moderate			11-14	.2-.6	High
		22-33	.6-2	Moderate			14-31	.2-.6	High
		33-38	.6-2	Moderate			31-38	.2-.6	Moderate
		38-79	.6-2	Moderate			38-79	.6-2	Low
3841	Geary silty clay loam, 11 to 30 percent slopes, severely eroded	0-6	.6-2	Moderate	3867	Hastings silty clay loam, 3 to 11 percent slopes, severely eroded	0-5	.2-.6	Moderate
		6-17	.2-.6	Moderate			5-30	.2-.6	Moderate
		17-25	.6-2	Moderate			30-60	.6-2	-
		25-32	.6-2	Moderate	3868	Hastings silt loam, 3 to 7 percent slopes	0-10	.6-2	Low
		32-79	.6-2	Moderate			10-14	.2-.6	Moderate
3846	Geary silty clay loam, 3 to 7 percent slopes, eroded	0-6	.6-2	Moderate			14-32	.2-.6	High
		6-22	.2-.6	Moderate			32-38	.2-.6	Moderate
		22-33	.6-2	Moderate			38-79	.6-2	Low
		33-38	.6-2	Moderate	3869	Hastings silt loam, 7 to 11 percent slopes	0-8	.6-2	Low
		38-79	.6-2	Moderate			8-14	.2-.6	Moderate
3851	Geary-Hobbs silt loams, 0 to 30 percent slopes	0-7	.6-2	Moderate			14-32	.2-.6	High
		7-11	.6-2	Moderate			32-38	.2-.6	Moderate
		11-31	.2-.6	Moderate			38-79	.6-2	Low
		31-43	.6-2	Moderate	3870	Hastings silty clay loam, 3 to 7 percent slopes, eroded	0-8	.2-.6	Low
		43-51	.6-2	Moderate			8-14	.2-.6	Moderate
3857	Geary and Jansen soils, 7 to 11 percent slopes	51-79	.6-2	Moderate			14-32	.2-.6	High
		0-7	.6-2	Moderate			32-38	.2-.6	Moderate
		7-24	.6-2	Moderate			38-79	.6-2	Low
		24-39	.6-2	Moderate	3873	Hastings silty clay loam, 0 to 1 percent slopes	0-13	.2-.6	Moderate
		39-79	.6-2	Moderate			13-28	.2-.6	High
3860	Geary and Jansen soils, 11 to 30 percent slopes	0-7	.6-2	Moderate			28-60	.6-2	Moderate
		7-11	.6-2	Moderate	3914	Scott soils, frequently ponded	0-6	.6-2	Low
		11-27	.2-.6	Moderate			6-30	0-.06	Very High
		27-34	.6-2	Moderate			30-48	.2-.6	Moderate
		34-42	.6-2	Moderate			48-60	.6-2	Moderate
		42-79	.6-2	Moderate	3952	Fillmore silt loam, frequently ponded	0-9	.6-2	Low
		0-8	.6-2	Low			9-14	.6-2	Low
		8-13	.6-2	Low			14-39	0-.06	High
		13-30	.6-2	Moderate			39-49	.2-.6	Moderate
		30-37	20-100	Low			49-79	.2-.6	Low
		37-79	20-100	Low	3955	Geary silty clay loam, 7 to 11 percent slopes, severely eroded	0-6	.6-2	Moderate
3860	Geary and Jansen soils, 11 to 30 percent slopes	0-7	.6-2	Moderate			6-17	.2-.6	Moderate
		7-11	.6-2	Moderate			17-25	.6-2	Moderate
		11-24	.2-.6	Moderate			25-32	.6-2	Moderate
		24-32	.6-2	Moderate			32-79	.6-2	Moderate
		32-38	.6-2	Moderate	3962	Hastings silty clay loam, 7 to 11 percent slopes, eroded	0-8	.2-.6	Moderate
		38-79	.6-2	Moderate			8-14	.2-.6	High
		0-7	.6-2	Low			14-32	.2-.6	High
		7-11	.6-2	Low			32-38	.2-.6	Moderate
		11-28	.6-2	Moderate			38-79	.6-2	Low
		28-35	20-100	Low	3962	Hastings silty clay loam, 7 to 11 percent slopes, eroded	0-8	.2-.6	Moderate
		35-79	20-100	Low			8-14	.2-.6	High
3860	Geary and Jansen soils, 11 to 30 percent slopes	0-7	.6-2	Moderate			14-32	.2-.6	High
		7-11	.6-2	Moderate			32-38	.2-.6	Moderate
		11-24	.2-.6	Moderate			38-79	.6-2	Low
		24-32	.6-2	Moderate			0-6	.6-2	Low
		32-38	.6-2	Moderate			6-30	0-.06	Very High
		38-79	.6-2	Moderate			30-48	.2-.6	Moderate
		0-7	.6-2	Low			48-60	.6-2	Moderate
		7-11	.6-2	Low			0-9	.6-2	Low
		11-28	.6-2	Moderate			9-14	.6-2	Low
		28-35	20-100	Low			14-39	0-.06	High
		35-79	20-100	Low			39-49	.2-.6	Moderate

Source: USDA Natural Resources Conservation Service.



**TABLE 10.3C: SOIL PERMEABILITY BY SOIL TYPE**

Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/)	Shrink-Swell potential
3969	Hastings soils, eroded	0-5	.2-.6	Moderate
		5-22	.06-.2	High
		22-60	.2-.6	Moderate
4161	Kipson silt loam, 7 to 30 percent slopes	0-8	.6-2	Low
		8-13	.6-2	Low
		13-16	.6-2	Low
		16-39	-	-
4162	Kipson soils, 11 to 30 percent slopes	0-8	.6-2	Low
		8-13	.6-2	Low
		13-16	.6-2	Low
		16-39	-	-
4174	Lancaster loam, 7 to 16 percent slopes, severely eroded	0-5	.6-2	Low
		5-11	.6-2	Moderate
		11-26	2-6	Low
		26-30	-	-
4175	Lancaster soils, 7 to 11 percent slopes, severely eroded	0-4	2-6	Low
		4-24	.6-2	Moderate
		24-60	-	-
7552	Benfield silty clay loam, 6 to 11 percent slopes, eroded	0-6	.2-.6	Moderate
		6-14	.06-.2	Moderate
		14-24	.06-.2	Moderate
		24-31	.06-.2	Moderate
		31-37	.06-.2	Low
		37-47	-	-
8436	Cass loam, occasionally flooded	0-11	.6-2	Low
		11-48	2-6	Low
		48-60	6-20	Low
8441	Cass very fine sandy loam, rarely flooded	0-16	2-6	Low
		16-28	2-6	Low
		28-60	6-20	Low
8493	Gothenburg loamy sand, frequently flooded	0-8	6-20	Low
		8-60	20-100	Low
8840	Hall silt loam, 0 to 1 percent slopes	0-25	.6-2	Low
		25-45	.2-.6	Moderate
		45-80	.6-2	Low
8866	Hord silt loam, 0 to 1 percent slopes, warm	0-20	.6-2	Low
		20-36	.6-2	Low
		36-79	.6-2	Low

Source: USDA Natural Resources Conservation Service.

The conditions contributing to the Somewhat Limited classification include:

- Flooding
- Ponding
- Depth to saturated zone
- Slope
- Seepage
- Dusty
- Too Clayey
- Too Sandy

### Small Commercial Businesses

Soil limitations for small commercial businesses are shown in Table 10.2.

### Very Limited Conditions

A majority of the soil types in Thayer County are considered Very Limited for a Small Commercial Business. There are several major conditions impacting the soils (not all are present in any one soil type).

Conditions present in the different soils include:

- Flooding
- Shrink-Swell
- Ponding
- Depth to saturation zone
- Slope
- Depth to Bedrock

These conditions may or may not constrain the ability of a land owner to construct small

commercial structures, but specific conditions will need to be engineered to overcome potential problems.

### Somewhat Limited Conditions

Besides the Severe soils, there are some soils considered Somewhat Limited which is less of a concern for development. The conditions contributing to the Somewhat Limited classification include:

- Shrink-Swell
- Depth to saturated zone
- Slope

### Not Limited Conditions

A few soil types present to general limits to construction of dwellings without basements, including Muir-Meadin (3779), Hall (8840), and Hord (8866). It should be noted other units of these soil types do present different profiles for soil suitability and limitations, as shown in Table 10.2.

## SOIL PERMEABILITY

USDA NRCS divides soils into hydrologic soil groups (HSGs), based on low to high runoff potential. Each official soil series description includes drainage and saturated hydraulic conductivity (permeability) based on the characteristics of water movement through the soil.

Shrink-swell potential is a related factor, based on the volume change occurring as a result of changes in moisture content of the soil. The ability of soil to drastically change volume can cause damage to existing structures, such as cracks in foundations.

Table 10.3 presents the NRCS permeability ratings and shrink-swell potential by soil type. High shrink-swell potential is highlighted by red text.

## OTHER FACTORS IMPACTING LAND USE

Certain uses of land are specifically impacted by natural resources and environmental factors. These uses also affect multiple elements of the comprehensive plan, from economic development to transportation.

### PRIME FARMLAND

Prime farmland is directly tied to specific soils and their composition. According to the USDA, "prime farmland" is:

*land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. It must also be available for these uses. It has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and*

*sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.*

Prime farmland is generally the highest and best use of land meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited. The USDA recognizes government at local, state, and federal levels must encourage and facilitate the wise use of the nation's prime farmland, and recognize individual efforts to this end.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties which are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They either are used for producing food or fiber or are available for these uses. Urban or built-up



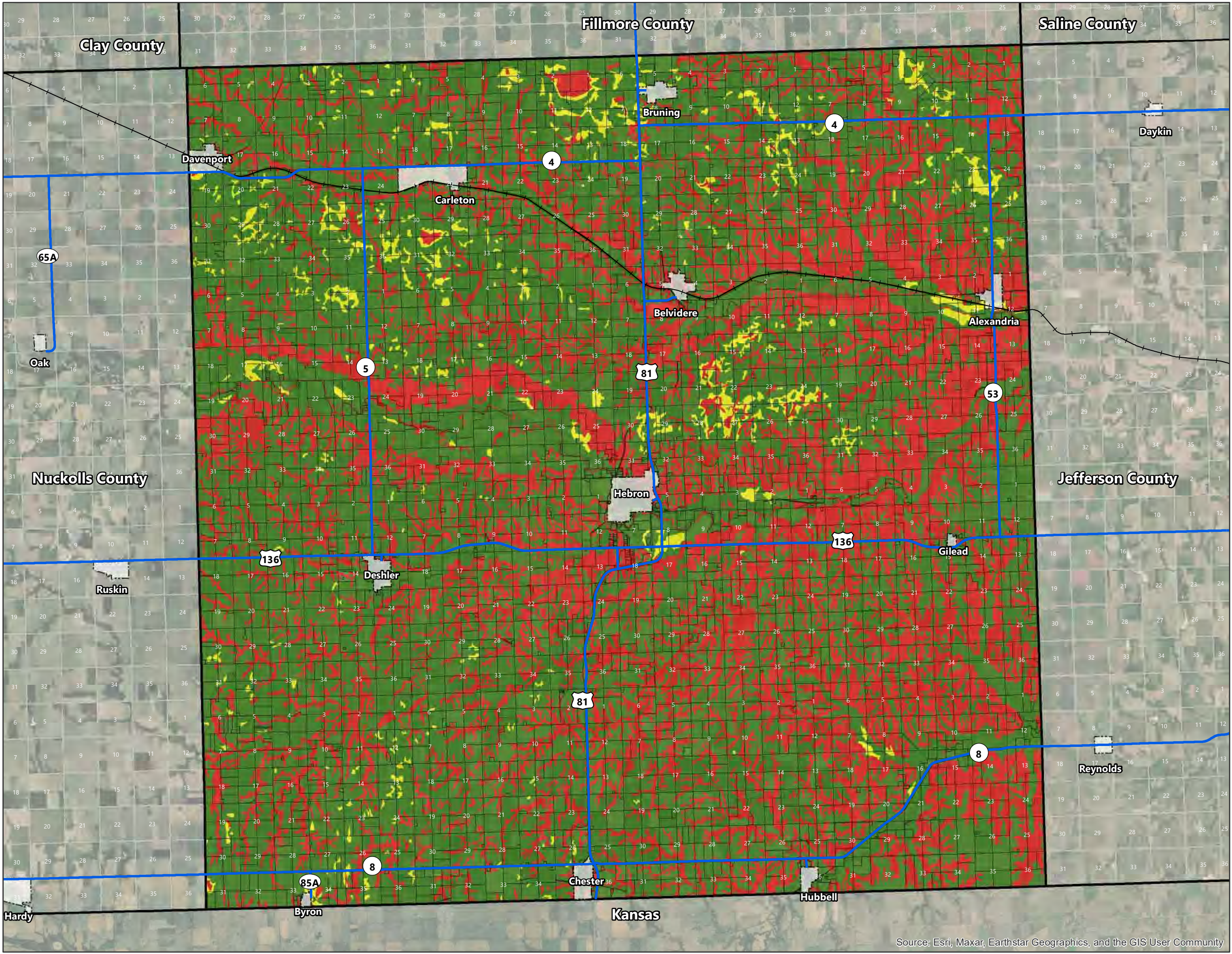
land and water areas cannot be considered prime farmland.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 6 percent.

Soils which have a high water table, are subject to flooding, or are droughty may qualify as prime farmland soils if the limitations or hazards are overcome by drainage, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information on the criteria for prime farmland can be obtained at the local office of the NRCS.

Conversion of prime farmland to urban and industrial uses has been a trend in land use in parts of the county. The loss of prime farmland to other uses tends to put pressure on marginal lands,





THAYER COUNTY, NEBRASKA  
COMPREHENSIVE PLAN  
FIG X: PRIME FARMLAND

**LEGEND**

- Highways
- Railroad
- Municipal Limits
- County Boundaries
- Parcels

**Rating**

- All areas are prime farmland
- Prime farmland if drained
- Not prime farmland
- Sections

**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal Growth and Comprehensive Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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which generally are wet, more erodible, droughty, or difficult to cultivate and less productive than prime farmland.

## AFOs

Confined Animal Feeding Operations (CAFOs) are agricultural operations where animals are kept and raised in confined situations. The US EPA regulates CAFOs (as defined by the Clean Water Act) through the NPDES permitting program as point sources of potential pollution. The State of Nebraska's manure regulations are spelled out in Title 130 of the Nebraska Administrative Code for Livestock Waste Control. The Department of Environment and Energy is the primary regulatory authority in Nebraska.

Livestock operations (CAFOs) are defined by the number of animals as small, medium or large, which determines which rules apply. The need to obtain a State permit is based on the potential for contamination of the waters of the State. A nutrient management plan may be required or recommended depending on the situation.

Currently, the Thayer County Zoning Resolution permits CAFOs with provisions for minimum separation distances from certain neighboring uses based on CAFO size, the type of waste handling facility, and wind direction. These separation distances range from 0.125 to 1.75 miles. Development of new Class I and Class II CAFOs is also subject to separation distances tested by applying the Odor Footprint Tool, prepared by the Biological Systems Engineering Department of the University of Nebraska, for the 96% annoyance free standard.

Neighboring property owners do have the option to grant the CAFO an impact easement to reduce the required separation distance.

The Zoning Resolution also provides for the expansion of an existing CAFO and associated waste handling (animal units and/or land area) with certain limitations.

Thayer County is designated by the Nebraska Department of Agriculture (NDA) as a Livestock Friendly County, and the NDA evaluates county zoning regulations which apply to livestock operations.

## 30x30

The federal government has a long history of conservation of public lands. The 30 by 30 initiative is a recent concept to designate 30% of land and water around the world as protected areas by 2030. In 2021, the Biden administration directed federal departments to recommend steps to achieve this goal in the United States.

In May 2021, a report was issued, *Conserving and Restoring America the Beautiful*. This document called for a locally led and voluntary, nationwide effort to conserve, connect, and restore public and private land, waters, and wildlife. As American Farm Bureau Federation President Zippy Duvall commented, "The report is a philosophical document that emphasizes important principles such as incentive-based voluntary

conservation, protecting personal and property rights and continued ranching on public lands, but it lacks specifics."

In the first year, the administration reported progress in six focus areas:

- Creating more parks and safe outdoor opportunities
- Support for Tribally-led conservation and restoration priorities
- Expanding collaborative conservation of fish and wildlife habitats and corridors
- Increasing access for outdoor recreation
- Incentivizing voluntary conservation efforts of fishers, ranchers, farmers, and forest owners
- Creating jobs in restoration and resilience

The 30x30 initiative is a federal and international effort. It is not sponsored by the State of Nebraska, nor policy of the State or local government. There are a number of other initiatives for

land conservation and wildlife stewardship which have found support by local elected officials in Nebraska.

## ENVIRONMENTAL RESOURCES

### CONSERVATION EASEMENTS

Conservation easements have become a popular incentive-based strategy for land conservation. As the Lincoln Institute of Land Policy has noted, “Beyond tax credits, tax deductions, and other public subsidies that provide financial incentive for landowners to enter into conservation partnerships, this phenomenon is fueled by the perception that conservation easements are a win-win strategy in land protection, benefiting both landowners and the environment.”

Agricultural easements are a valuable tool for farmers and ranchers, allowing them to exercise private property rights while keeping land in agricultural production.

Yet the governing laws and conventions can be problematic. Easements can conserve sensitive lands, yet wildlife and land or water easements can also take productive farmland out of production.

Easements can also have impacts on tax revenues if the market value of land is reduced. Local school districts and units of government rely on these tax revenues to provide essential services. However, local service providers would face even greater impacts if these sensitive

lands were converted to dispersed housing sites demanding the full range of public services.

### Review Process

Nebraska Revised States §76-2,111 *et seq.* (Reissue 1997) sets out a process for review of conservation easements under the Conservation and Preservation Easements Act.

- “Conservation Easement” is defined as “an easement, restriction, covenant, or condition...in real property” protecting “natural, scenic, or open condition, assuring its availability for agricultural, horticultural, forest, recreational, wildlife habitat, or open space use, protecting air quality, water quality, or other natural resources...”
- “Preservation Easement” is defined similarly, to protect “historical, architectural, archaeological, or cultural aspects of real property...”

§76-2,112(3) requires “each conservation or preservation easement shall be approved by the appropriate governing body.” If the property in question is partially or entirely within a city or village ETJ, then the city or village is the governing body for this review.

The process outlined is:

1. The governing body refers the proposed easement to the local planning commission with jurisdiction over the property.
2. The planning commission has 60 days to provide comments regarding the conformity of the easement to the comprehensive plan.

3. The governing body shall receive the comments of the local planning commission.

Approval of a proposed easement may only be denied upon a finding of fact the acquisition is “not in the public interest” when:

1. A comprehensive plan for the area which had been officially adopted and was in force at the time of the conveyance, or
2. Any national, state, regional, or local program furthering conservation or preservation, or
3. any known proposal by a governmental body for use of the land.

Any state agency can accept a conservation or preservation easement after soliciting comments from the local planning commission, without approval by the local governing body.

These issues require careful consideration of future land use impacts. For the purposes of this comprehensive plan, the following review criteria may be considered:

1. Agricultural easements protect and enhance farming and ranching operations and property rights as they currently exist. These activities are generally by-right under the zoning ordinance, and these easements should be considered conforming to the Thayer County Comprehensive Plan.
2. Wildlife and land or water easements generally restrict use of land. While the property owner is voluntarily separating their bundle of



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private property rights, taking land out of production also impacts the agricultural economy and property values. Potential impacts of these easements on adjacent property should be reviewed for the public record.

3. The alternative to an easement may be fee simple acquisition by a private non-profit entity or a governmental body, or development of the property. A conservation or preservation easement may have lesser community impacts than fee simple acquisition.

Review of a conservation easement must be based in a substantial evidentiary record. The planning commission comments must be made in writing.—statute specifies comments, not necessarily a recommendation. As well, the governing body's decision should be supported by evidence received. In the case of a decision to deny acquisition of an easement, there must be a clear statement of reasoning citing the criteria in statute, and how the proposed easement fails to meet the criteria.

### **Conservation Reserve Program**

The Conservation Reserve Program (CRP) is a federal program overseen by the United States Department of Agriculture Farm Service Agency (FSA) paying a yearly rental payment in exchange for farmers removing environmentally sensitive land from agricultural production and planting species which will improve environmental quality.

Landowners can learn how CRP can increase their income with flexible programs fitting their land and operations by visiting their local USDA Field Office or talking with a Nebraska Game and Parks Commission or Pheasants Forever biologist. Biologists provide free one-on-one technical assistance.

Source: [outdoornebraska.gov/crp](https://outdoornebraska.gov/crp)

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# NATURAL RESOURCES AND ENVIRONMENT GOALS AND ACTIONS

## NRE GOAL 10.1

Thayer County continues to protect groundwater quantity and quality.

### Actions

- 10.1.1 Work with water providers to assure the quantity and quality of domestic water supply.
- 10.1.2 Assist property owners in conforming with State regulations for onsite wastewater treatment systems.
- 10.2.3 Work with NDEE and municipalities on implementation of Wellhead Protection Plans.

## NRE GOAL 10.2

The Little Blue River watershed is properly managed.

### Actions

- 10.2.1 Work with Little Blue NRD on implementation of their goals, objectives, and action items.

## NRE GOAL 10.3

Impacts of impaired waters on Big Sandy Creek and Spring Creek are minimized.

### Actions

- 10.2.1 Work with NDEE and other agencies on mitigation of Total Maximum Daily Loads (TMDLs) in Thayer County.

## NRE GOAL 10.4

Wetlands are protected to the extent required by Federal law.

### Actions

- 10.4.1 Work with NDEE to maintain conformance with state and federal wetland regulations.
- 10.4.2 Carefully review new development projects for potential impacts on wetlands.

## NRE GOAL 10.5

Soils are protected from degradation and erosion.

### Actions

- 10.5.1 Work with NRCS on prevention of soil erosion.
- 10.5.2 Carefully review new development projects for potential impacts on soils.

## NRE GOAL 10.6

Commercial crop and animal agriculture remains a viable, long-range land use.

### Actions

- 10.6.1 Carefully review new development projects for potential impacts on agriculture and prime farmland.
- 10.6.2 Consider impacts of conservation easements on long-term agricultural operations.
- 10.6.3 Regularly review impacts of local regulations on agricultural operations and structures.





## Chapter Eleven

# Hazard Mitigation

Hazard Mitigation involves approaches and strategies which help eliminate short and long-term risks caused by natural and man-made hazards and disasters. Hazard mitigation plans provide a framework for decision-making throughout the community.

The incident of hazards and potential damage caused can be avoided, or at least lessened, with thoughtful land use and development practices. Hazard mitigation informs the entire emergency management cycle (see *Chapter Eight Public Safety*).

This chapter summarizes findings of the *Little Blue NRD and Lower Big Blue NRD Hazard Mitigation Plan* (2021), and references resources for mitigation planning. The Federal Emergency Management Agency (FEMA) requires hazard mitigation plans be updated every five years to reflect changing conditions. This

Comprehensive Plan should itself be updated to reflect any changes in the hazard mitigation plan.

### HAZARD MITIGATION PLAN

The *Little Blue NRD and Lower Big Blue NRD Hazard Mitigation Plan* was updated in 2021 by JEO Consulting Group, and approved by FEMA in compliance with requirements of the Disaster Mitigation Act of 2000. Developing a hazard mitigation plan is not only good public policy for a resilient community, but participation in and adoption of a hazard mitigation plan is also required to become eligible for certain federal funding sources.

Little Blue Natural Resources District (NRD) and Lower Big Blue NRD sponsor the hazard mitigation plan process as independent jurisdictions.

Thayer County participated in the 2021 update, along with the municipalities of:

- Village of Alexandria
- Village of Belvidere
- Village of Bruning
- Village of Chester
- Village of Davenport
- City of Deshler
- City of Hebron
- Village of Hubbell

The villages of Byron, Carleton, and Gilead did not participate in the 2021 update.

The hazard mitigation plan includes goals, objectives, and action items, including:

- Goal 1: Protect the health and safety of the public
- Goal 2: Protect critical facilities, critical infrastructure, and maintain their operation after a hazard
- Goal 3: Protect existing properties and natural resources

- Goal 4: Promote multi-agency coordination and resources

### HAZARD RISK ASSESSMENT

The hazard mitigation plan identified historical incidents of different hazards in a risk assessment by county. From 1996 to 2020, Thayer County experienced the following hazard events, as documented by the NCEI Storm Events Database:

- Agricultural Disease: 41 incidents
- Dam Failure: 4 events
- Drought: 493 of 1,504 months
- Earthquakes (none)
- Extreme Heat: Average 9 days per year
- Flooding: 13 flash flood and 6 general flood events
- Grass/Wildfire: 237 incidents, with 1 death and 6 injuries
- Hazardous Materials: 8 chemical spills
- Levee Failure (none)
- Public Health Emergency: 4 deaths
- Severe Thunderstorms: 201 incidents of hail, plus heavy rain, lightning, and wind
- Severe Winter Storms: 8 blizzard events, plus extreme cold, heavy snow, ice and winter storms
- Terrorism: One event
- Tornadoes and High Winds: 31 tornadoes with 1 death and 8 injuries, and 15 wind events.

### PRIORITY HAZARDS

Each participating entity ranked hazards with the potential to affect the specific jurisdiction.

**Thayer County**  
Agricultural and Animal and Plant Disease

Drought and Extreme Heat  
Flooding  
Grass/Wildfire  
Severe Thunderstorms  
Severe Winter Storms  
Tornadoes and High Winds

**Alexandria**  
Flooding  
Hazardous Materials  
Severe Winter Storms  
Tornadoes and High Winds

**Belvidere**  
Flooding  
Severe Thunderstorms  
Severe Winter Storms  
Tornadoes and High Winds

**Bruning**  
Flooding  
Hazardous Materials  
Severe Thunderstorms  
Severe Winter Storms  
Tornadoes and High Winds

**Chester**  
Grass/Wildfire  
Severe Thunderstorms  
Severe Winter Storms  
Tornadoes and High Winds

**Davenport**  
Grass/Wildfire  
Hazardous Materials  
Severe Winter Storms  
Tornadoes and High Winds

**Deshler**  
Flooding  
Hazardous Materials  
Severe Winter Storms  
Tornadoes and High Winds

**Hebron**  
Dam Failure  
Flooding  
Hazardous Materials  
Tornadoes and High Winds

**Hubbell**  
Flooding  
Severe Thunderstorms  
Tornadoes and High Winds

*The following narrative is taken directly from the hazard mitigation plan's **Thayer County Community Profile**:*

### Agricultural Animal and Plant Disease

Because of the importance of agriculture for Thayer County's economy, diseases affecting local cattle, hogs, and dairy cattle can result in fewer sales and lower income for farmers. Lower incomes may trickle down and affect the entire local economy, including local businesses.

While no major disease outbreaks have affected operations in the county in the past, Thayer County is part of an animal agricultural emergency plan with the Nebraska Department of Agriculture. Educational programs are conducted by the agency, and the US Department of Agriculture. Paratuberculosis, Enzootic Bovine Leukosis, Seneca Valley Virus, and Bovine Viral Diarrhea have all been reported in the county.

### Drought and Extreme Heat

Like most of southeastern Nebraska, drought is a significant concern in Thayer County, due to economic losses and increased fire danger from dried fuels. The county has experienced several wildfires recently, resulting in losses of crops and grasslands, and threatening local residences. Drought is defined as a lack of rain over a given period of time. According to the NCEI, drought conditions have contributed to over \$35,000,000 in property damages, primarily on road infrastructure stress and irrigation equipment. The USDA Risk Management Agency reported over \$16 million in crop



damages from drought and over \$1 million in crop damages from extreme heat.

Thayer County does not have a drought monitoring board, or a drought response plan but both have been identified as needs in the future. It also does not have a water conservation program, or a landscape ordinance requiring native plantings or establishing irrigation limits. The municipal water supply consists of deep wells supplying most municipal operations and rural residences in the county. The supply is sufficient in most areas of the county, though there are areas where both water supply and quality are problematic.

### **Flooding**

Flash flooding and riverine flooding are both significant concerns in the county, but riverine flooding happens the most frequently. Flooding is a particular worry in the county, and Thayer County has allocated a significant amount of personnel and time trying to restore service following major flood events. The Little Blue River, and Spring, Dry, Rose, and Big Sandy Creeks can cause severe flooding to lowland areas in the county, as any land adjacent to these areas are prone to flooding. The high hazard dam, Hebron Dam, is also located in the county, north of Hebron.

Riverine flooding has affected the county in 2019, 2016, 2015, 2003, 2000, and 1997. Damaging flooding occurred in Thayer County on May 6-7, 2015, when bridges and roads were closed or washed out, livestock drowned, and 50 residences were heavily damaged. Travel to the local hospital was impeded during this event, as the bridge leading to

### **Improvements in the floodplain**

There were 343 improved structures located in the county's mapped floodplain—approximately 15% of all improvements in Thayer County—with a value of over \$30 million. There is one NFIP Repetitive Loss Structure in Thayer County and one in the City of Hebron. (JEO Consulting group analysis)

the hospital was washed out. The flooding caused more than \$1.5 million in damage to public infrastructure. The March 2019 flood event also contributed to significant damages across the county. Long term impacts to waterways caused significant flow restrictions and contributed to repeated flooding throughout the rest of the year and through 2020. Thayer County replaced two bridges and removed and decommissioned another one. FEMA assistance was used on one bridge while the other two projects were denied.

Thayer County participates in the National Flood Insurance Program (NFIP) and, as of November 2020, had six policies in force for \$688,500. Thayer County has been working with communities and throughout the county to up size or replace culverts and box culverts to address issues identified during the 2019 floods. Local first responders have contributed in the development of a Flood Response Plan for EMS units. A concern identified has been the lack of access to the Thayer

County Hospital when transportation corridors are blocked by flood waters. Thayer County would like to hold an emergency exercise to test the plan and train with EMS units. Other needs include to update and track maintenance records for all county bridges, map county bridges, and invest in the salamander tracking system for employees and equipment.

### **Grass/Wildfire**

The main concern regarding grass and wildfires in Thayer County is the difficulty of dousing these fires in areas with a limited water supply and difficulty in access due to their remote location. A fire in April 2014 with a fire fanned by high winds traveled across the county and blocked several roads. A separate fire in March 2010 burned many acres of pastureland. The county has a volunteer fire department. It does not have a Wildland Urban Interface Code.

Past events have burned over 2,800 acres in the county and have lead to one fatality and six injuries. In the past few years there have been several large fires which have required up to 15 fire departments in the surrounding areas to respond. Local farmers also assist by disking fields to prevent continual spread of fire. The local planning team identified the need to bolster the mutual aid agreements in the county to improve available resources.

### **Severe Thunderstorms**

Severe thunderstorms are frequent occurrences in Thayer County and include hail, heavy rain, lightning, and strong winds. Thayer County's main concerns regarding these storms are their

unpredictability to track, and potential for damage and loss of life, loss of crops, and personal property damage to livestock. Per the National Climatic Data Center, straight-line thunderstorm winds in the county frequently exceed 60 mph and 70 mph, and have been known to even reach 90 mph. In particular, storms in the county on May 6-7, 2015, produced 13 inches of rain, severe flooding affecting areas even outside of the floodplain, and tornadoes. Thayer County also stated 2019 was one of the most active weather event years in recent memory. There county lacks enough community shelters to ensure the safety of persons without their own shelters or basements, and has insufficient community warning systems. Recent hailstorms in the county have damaged the roofs, sidewalls, and windows of homes and buildings. Hail has a large economic impact on the county because many losses are not covered by insurance.

Critical electronic municipal records are protected with surge protectors. The county courthouse and 9-1-1 dispatch center are fully supported by a backup generator. Few if any of the power lines in the county are buried – possibly less than one percent. Hazardous trees in the county are removed by Norris Public Power District, which services the county. Not all critical facilities have weather radios; however, the county will be distributing 112 weather radios to critical facilities as well as the general public in March 2021 per a HMGP project. Currently, critical facilities in the county are not fitted with hail resistant building materials, and have experienced damage from hail to their roofs, windows, and

water infiltration systems from hail damage. County facilities are insured against hail damage. The town does not have a tree board. Residents do not receive information regarding hail resistant building materials. Thayer County is exploring options to update outdoor warning sirens for remote control and installing additional community shelters for the general public to use.

### **Severe Winter Storms**

Thayer County's concerns about severe winter weather include power losses impacting the safety and comfort of residents who must ride out the storms and very cold weather in their homes, without heat or water; and medical emergencies during the storms, when conditions impede the abilities of responders to transport patients due to hazardous road conditions. A severe winter storm in 1999 led to one injury from a vehicle accident on icy roads. Less than one percent of the power lines in town are buried. Power lines are frequently knocked down in these storms. Thayer County needs to continue burying power lines to reduce future outage risks. Thayer County has purchased a backup generator to provide power to the courthouse, jail, and dispatch.

### **Tornadoes and High Winds**

Thayer County, like all of Nebraska, is prone to damaging high winds and tornadoes. Most notably, an F-2 tornado on June 22, 2003 caused more than \$10 million in damage in the county. In Deshler, the tornado killed one person in his garage before he could get to shelter, injured seven people, damaged 400

homes (four of them completely), and destroyed six businesses. More recently, an EF-2 tornado on May 6, 2015 was part of a multi-day tornado outbreak sequence in the Great Plains affected the county, and caused damage near Deshler. One residence was destroyed by this tornado. Thayer County's main concerns about tornadoes are loss of life due to a lack of safe rooms and residential shelters, and due to travelers through the county not finding a safe place to take cover.

Thayer County does not operate any community safe rooms, which means residents must rely on their own or a neighbor's basement or shelter, or basement in a public building, in case of a tornado. Thayer County Emergency Management offers text alerts for severe weather. Rotary Clubs and youth groups promote emergency preparedness in the community. Thayer County is part of the Southeast Nebraska Planning, Exercise, and Training Region, and through this partnership has mutual aid agreements in place with 14 counties. All of the communities within Thayer County also have mutual aid agreements with other jurisdictions. Thayer County backs-up its electronic municipal records and has identified the need to design and construct additional storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, or other areas.

### **MITIGATION STRATEGY**

The primary focus of the mitigation strategy is to identify action items to reduce the effects and impacts from the



TABLE 11.1A: HAZARD MITIGATION STRATEGY

**Continued Mitigation Actions**

MITIGATION ACTION	EMERGENCY OPERATIONS
DESCRIPTION	Identify and establish an Emergency Operations Center in Hebron
HAZARD(S)	All hazards
ESTIMATED COST	\$50,000
FUNDING	County funds, HMGP, BRIC
TIMELINE	1 year
PRIORITY	High
LEAD AGENCY	Thayer County EMA
STATUS	The County is currently working on identifying a permanent location.

MITIGATION ACTION	SAFE ROOMS/STORM SHELTER
DESCRIPTION	Design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, and other areas, in cities in Thayer County.
HAZARD(S)	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
ESTIMATED COST	\$200-\$250 per square foot
FUNDING	General Fund, HMGP, BRIC
TIMELINE	2-5 years
PRIORITY	High
LEAD AGENCY	Thayer County Roads Dept, Thayer County EMA
STATUS	The County is currently working to identify suitable locations.

MITIGATION ACTION	STORMWATER SYSTEM AND DRAINAGE IMPROVEMENTS
DESCRIPTION	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)	Flooding
ESTIMATED COST	\$300,000
FUNDING	County Funds, BRIC, FMA
TIMELINE	2-5 years
PRIORITY	High
LEAD AGENCY	Thayer County Roads Dept.
STATUS	County is currently working on FFF (Find, Fix, and Finish) issues found from the 2019 flood events.

Source: Little Blue NRD and Lower Big Blue NRD Hazard Mitigation Plan (2021).

TABLE 11.1B: HAZARD MITIGATION STRATEGY

## New Mitigation Actions – 2021 Plan

MITIGATION ACTION	ALERT SIRENS
DESCRIPTION	Install and link outdoor warning sirens to local dispatch center for the ability to sound siren in the event of a severe weather event or other outdoor emergency.
HAZARD(S)	All hazards
ESTIMATED COST	\$300,000
FUNDING	County funds, HMA
TIMELINE	5+ years
PRIORITY	Medium
LEAD AGENCY	Emergency Management
STATUS	This is a new mitigation action.

MITIGATION ACTION	COMPREHENSIVE DISASTER/EMERGENCY RESPONSE PLAN AND EXERCISE
DESCRIPTION	Develop and practice an emergency response plan specifically for Agricultural and Animal Disease and Drought and Extreme Heat
HAZARD(S)	Agricultural Plant and Animal Disease, Drought and Extreme Heat
ESTIMATED COST	\$30,000
FUNDING	County funds
TIMELINE	5+ years
PRIORITY	Medium
LEAD AGENCY	Emergency Management
STATUS	This is a new mitigation action.

MITIGATION ACTION	GRASS/WILDFIRE TRAINING
DESCRIPTION	Provide additional training to local firefighters to increase capabilities in grass and wildfire fighting. Particularly additional training for air assists.
HAZARD(S)	Grass/Wildfire
ESTIMATED COST	\$30,000
FUNDING	County funds, South East PET Region
TIMELINE	2-5 years
PRIORITY	High
LEAD AGENCY	Emergency Management
STATUS	This is a new mitigation action.

Source: Little Blue NRD and Lower Big Blue NRD Hazard Mitigation Plan (2021).



identified top hazards of concern per community. These action items should help reduce impacts on existing infrastructure and property in a cost effective and technically feasible manner. A plethora of mitigation actions were considered in the mitigation plan development process. These range from adding additional personnel for emergency response and new alert sirens to zoning ordinance updates.

Actions to implement the Hazard Mitigation Strategy for Thayer County are presented in Table 11.1. Each municipality which participated in the 2021 update to the hazard mitigation plan has its own mitigation strategy spelled out in the Thayer County Appendix to the Hazard Mitigation Plan.

## PLAN MAINTENANCE

The hazard mitigation plan should be reviewed and updated after major disaster events, and after no longer than five years from adoption. The local planning team is responsible for reviewing and updating the hazard mitigation plan's community profile as changes occur or after a major event.

This comprehensive plan should also be reviewed regularly and updated when the hazard mitigation plan is revised.

## FLOODPLAIN ADMINISTRATION

The Thayer County Zoning and Planning Administrator also serves as Floodplain Administrator for Thayer County and each of the municipalities in the county. In 2023, the Administrator worked with the NRD and FEMA to update Thayer County's floodplain development regulations, while this comprehensive plan update was in process. The Administrator has worked to update floodplain regulations for each of the municipalities, to assure continued compliance with NFIP requirements and good planning process.

## NATIONAL FLOOD INSURANCE PROGRAM

Thayer County has met the minimum requirements of the National Flood Insurance Program with several options in the regulations to better assure safety of life and property in the floodplain. The Initial Flood Insurance Rate Map (FIRM) for Thayer County became effective 9/30/04, and is currently in effect subject to map amendments. There was one NFIP Repetitive Loss Structure located in unincorporated Thayer County as of February 2020. A Repetitive Loss Structure is a structure covered by flood insurance which has incurred flood-related damage on two occasions during a 10-year period, each resulting in at least \$1,000 claim payment.

All of the municipalities in the county except for the Village of Gilead participate in the NFIP. Gilead was sanctioned by FEMA

9/30/05, although there is no mapped floodplain within municipal limits.

- Alexandria, Belvidere, and Carleton are impacted by the Big Sandy Creek floodplain.
- Deshler is impacted by the Spring Creek floodplain.
- Hebron is impacted by both the Little Blue River and Spring Creek, which meet near Riverside Park—there is Regulatory Floodway mapped in Hebron. There was one NFIP Repetitive Loss structure in the city as of 2020.
- Hubbell is substantially impacted by the Rose Creek floodplain.

A drainage-wide floodplain study is under way which will likely result in a comprehensive update of the FIRMs.

# RESOURCES

FEMA and the American Planning Association work together to provide resources to communities for hazard mitigation planning. Their report *Hazard Mitigation: Integrating Best Practices into Planning* (2010), identifies effective multi-jurisdictional hazard mitigation strategies and tools based on a series of case studies for large and small towns and rural jurisdictions across the United States.

In 2020, the APA adopted a Hazard Mitigation Policy Guide, which includes 13 Guiding Policies on hazard mitigation. The guide supplements and updates APA's earlier report, with a focus on recent severe hazard occurrences. Plans need to consider not just mitigation, but adaptation to changing conditions and situations.

Source: [www.planning.org/nationalcenters/hazards](http://www.planning.org/nationalcenters/hazards)

# HAZARD MITIGATION GOALS AND ACTIONS

## MITIGATION GOAL 11.1

Thayer County and its communities provide adequate support for goals and objectives of the hazard mitigation plan.

### Actions

11.1.1 See Table 11.1.

## MITIGATION GOAL 11.2

Thayer County and its communities maintain (or come into) conformance with the National Flood Insurance Program (NFIP).

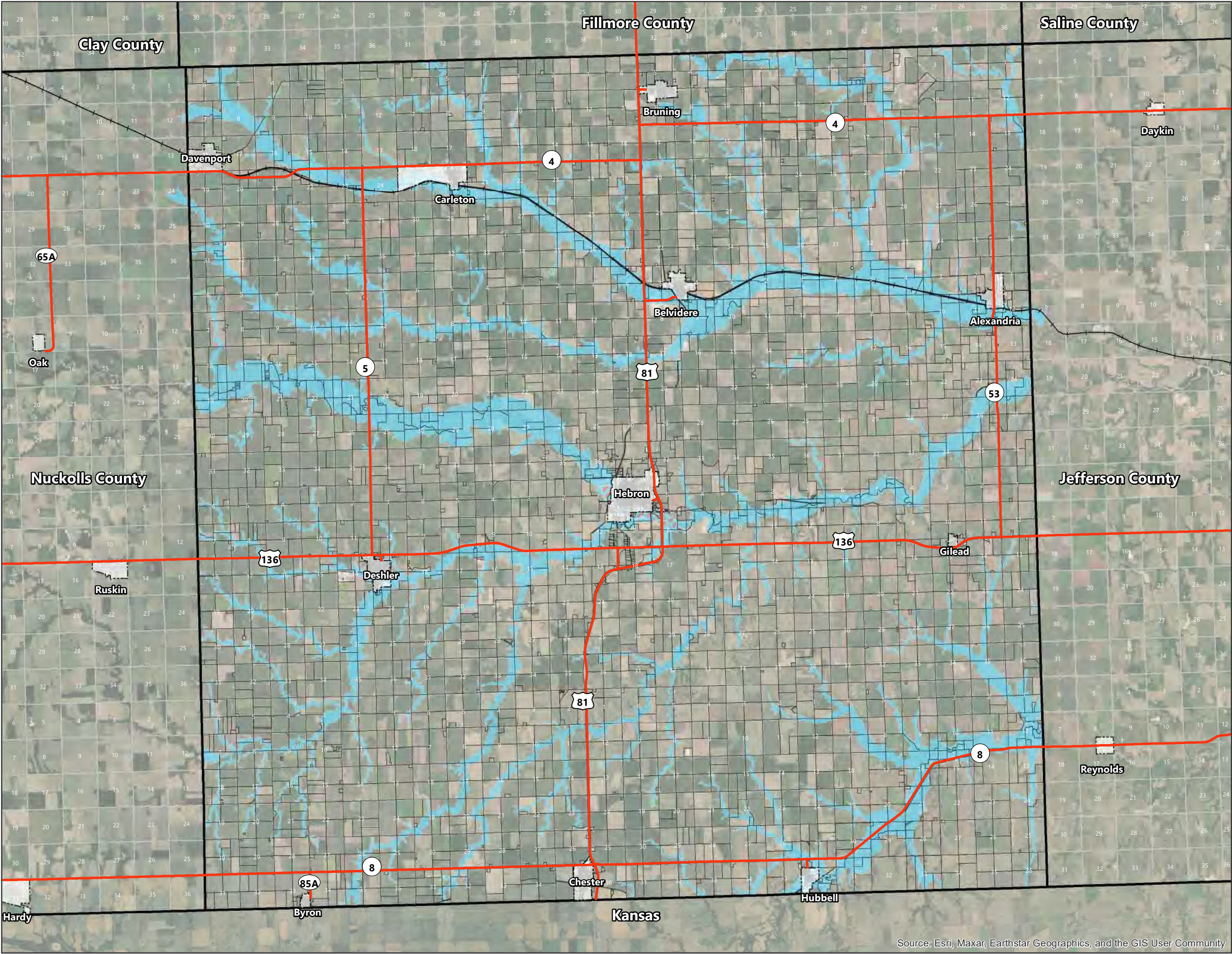
### Actions

11.2.1 Continue to work with municipalities to provide for cooperative Floodplain Administration.

11.2.2 The Floodplain Administrator should pursue floodplain mapping with FEMA and the State of Nebraska for the county and municipalities.

11.2.3 The County Board should support participation by the Floodplain Administrator in specialized training opportunities for flood mitigation.





THAYER COUNTY, NEBRASKA  
COMPREHENSIVE PLAN  
FLOODPLAIN

- LEGEND**
- Highways
  - Municipal Limits
  - Railroad
  - County Boundaries
  - Parcels
- Floodplain**
- 1% Annual Chance Flood Hazard
  - 0.2% Annual Chance Flood Hazard
  - Floodway
  - Sections

**MPC**  
MARVIN PLANNING CONSULTANTS  
*Specializing in Municipal Growth and Community Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.24.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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For Two Sided Printing





Land use is the primary focus of the Comprehensive Plan. This element provides a general guide for future decision making. The Comprehensive Plan is not regulatory; however, the Plan reflects the community's preferences for the future. The Comprehensive Plan plays a fundamental role as the substantive basis for regulations implementing the plan such as zoning, subdivision, and floodplain management.

It is essential the Land Use element reflect the needs and preferences of Thayer County's residents and property owners, while being clear about the constraints of the land. This chapter addresses the statutory requirements of the land use element, describes existing land use, and presents the future land use plan.

## LAND USE ELEMENT

This chapter is intended to meet the requirements for a land-use element in Neb. Rev. Stat. §23-114.02, "which designates the proposed general distribution, general location, and extent of the uses of land for agriculture, housing, commerce, industry, recreation, education, public buildings and lands, and other categories of public and private use of land."

The land use element is based on an understanding of the distribution, location, and extent of different types of existing land use. The other elements presented so far in this plan, from demographics to natural resources, inform the analysis of existing land use to determine recommendations for the future land use plan.

## EXISTING LAND USE

Land in Thayer County is used for many different purposes. Existing land use includes both the use of buildings and parcels of land. The use of land is constantly changing—this plan presents a snapshot in time of existing land use. Despite change, it is essential to have a solid understanding of existing land use at a point in time to carefully consider future land use plans.

Thayer County's predominate land use is production agriculture and uses associated with agriculture. A majority of respondents to the Thayer County Comprehensive Plan Survey (88%) agree or strongly agree "Thayer County has a likable rural and small-town atmosphere." In 2020, there were 8.8 residents per square mile on average, countywide.

The majority of housing, over 60%, is located within the county's cities and villages. However, there are many homes located on active farms and ranches, and some homes on small-acreage rural lots.

The Marvin Planning Consultants team analyzed data provided by the Thayer County Assessor's Office to produce base maps of every parcel of land in the county. After consulting satellite aerial mapping online, the team conducted a windshield survey of each of the cities and villages in the county, and spot-checked locations in the extraterritorial zoning jurisdictions and rural areas. Draft maps were provided to the County Zoning Administrator, the County Advisory Committee, city planning commissions, and village officials to spot check and verify. Every attempt was made to assure the Existing Land Use Map is as accurate as possible as of spring 2023.

Overall, the development patterns in Thayer County is influenced by topography, soils, water, and infrastructure including roads, power, water, and suitability for wastewater treatment. This is how all of the previous elements of the comprehensive plan come to implementation in land use policy.

## EXISTING LAND USE CATEGORIES

The most common land use patterns fall into several general categories. Some parcels may include multiple uses, in which case the primary use or use of the majority of the property is mapped. Some parcels are

mixed use, in which case also the primary use is mapped. The use of land is constantly changing. As such, the short- and long-term success of the county is directly contingent upon maintaining flexibility while avoiding undue impacts on property rights and property values.

The utilization of land is best described in specific categories providing broad descriptions where numerous businesses, institutions, and structures can be grouped. For the purposes of the Comprehensive Plan, the following land use classifications are used:

- Agricultural
- Residential
- Commercial
- Industrial
- Parks/Recreation
- Public/Institutional
- Right-of-Way

### Agricultural

Agricultural land use covers the wide variety of farming and ranching operations and farmsteads. This includes row crops, alfalfa, and pastureland, as well as small and large animal feeding operations. Thayer County is an agricultural-based county, accounting for the majority of land use. As discussed in Chapter 10, prime farmland is best suited to producing food, feed, forage, fiber, and oilseed crops—Agriculture should be considered the highest and best use for prime farmland in most cases.

Some areas of vacant land without structures or other uses are included in this category although they may not be actively farmed. These parcels

are more common closer to municipalities, typically being held in anticipation of future development. Every effort was made to distinguish the most current use of property on the existing land use map.

### Residential

Residential land use in the county is mapped for small parcels used primarily for housing. This includes small parcels separated from an agricultural operation, since they could be sold separately. These parcels may be acreage tracts or rural residential subdivision developments.

The countywide land use map presents single-family and multi-family dwellings in one residential category. Land use maps for the individual municipalities show a greater level of detail between single-family and multi-family units.

### Commercial

Commercial land use includes local retail and services facilities. This includes, for example, convenience stores or retail stores contained completely inside a structure. Commercial uses tend to be located near urban areas or in proximity to major roads for accessibility.

### Industrial

Industrial land use includes both light and heavy industry, ranging from manufacturing to outdoor storage, grain elevators, and salvage yards. Industrial uses tend to have external effects on neighbors, including sight impacts, smells, and other noxious effects. These uses require careful siting to mitigate impacts on infrastructure and adjacent residents and property owners.



## Parks/Recreation

Parks and Recreation land uses cover public parks, dedicated open space, and state wildlife management areas. Most park property is located within the municipalities.

## Public/Institutional

Public and Institutional land use accounts for public property (other than parks and recreation or rights-of-way). Public land use includes city/village property, as well as county, state, and federal facilities. Institutional land use includes property typically exempt from taxation, such as churches, as well as non-profit organizations which may or may not be taxed.

## Right-of-Way

The right-of-way existing land use category accounts for highway, road, and railroad rights-of-way.

## PHYSICAL CHARACTER OF THAYER COUNTY

The topography, hydrology, and soil types, as modified by infrastructure—roads, bridges, utilities—make up the physical character of Thayer County. This provides the foundation for use of the land now and into the future.

Defining characteristics of the county include:

- Prime farmland, both irrigated and dryland
- Floodplains along the Little Blue River and tributaries
- US Highway 81 north-south highway corridor adjacent to Bruning, Belvidere, Hebron, and Chester
- US 136 east-west corridor, adjacent to Deshler, Hebron, and Gilead
- Highway 4 east-west corridor connecting Bruning, Carleton, and Davenport
- Highway 8 east-west corridor connecting Byron, Chester, and Hubbell
- Highway 53 north-south thru Alexandria
- Highway 5 north from Deshler
- Population and economic trends affecting the county.

*See Chapter 15 Transportation for more information on roads and highways.*

## FUTURE LAND USE PLAN

The Future Land Use Plan is the foundation of land use policy and regulations in the county. The Future Land Use Plan implements the goals and objectives of the residents and property owners of Thayer County, as expressed in the Comprehensive Plan.

The Future Land Use Plan is based upon existing conditions and projected future conditions of the county. It both reflects those trends as well as assisting decision makers in determining the type, direction, and timing of future growth and development.

The Future Land Use Map illustrates the plan. Several factors contribute to this map:

- Current use of land within County jurisdiction, as well as Municipal jurisdictions (Extraterritorial Jurisdictions or ETJs)
- Desired characteristics of growth
- Future development patterns
- Physical character and constraints of the land as well as infrastructure

## EXTRATERRITORIAL JURISDICTION

Each of the incorporated communities in Thayer County (as cities of the second class and villages) have the option to plan for and enforce land use regulations within one-mile of their corporate limits (see Neb. Rev. Stat. §17-1001 *et seq.*). While municipalities have jurisdiction over unincorporated property within their ETJs, this plan is intended to work cooperatively towards mutual goals and objectives of Thayer County, its cities, and its villages. This was the primary motivation for a joint effort to update the County Comprehensive Plan in coordination with the comprehensive plans of each municipality at the same time.

## FUTURE LAND USE CATEGORIES

The future land use areas mapped include the categories of existing land use, and broad areas reflecting policy direction.

Future land use categories include:

- Agriculture Primary
- Agriculture Transitional
- Rural Residential
- Commercial/Industrial
- Flex Corridor
- Parks/Recreation
- Public/Institutional
- Wellhead Protection Overlay
- Airport Hazard Overlay

The Future Land Use Plan is intended to be a general guide to future land uses balancing private sector development with the public interest, so the county

## Agriculture Primary

### General Purpose

This land use district provides for all agriculture. In this "ag first" district, agricultural activities should be given primary consideration. This area is where livestock production and feeding operations are allowed and non-farm residential development is discouraged.

### Compatible Uses

1. By-right Agricultural use, including
  - Accessory ag buildings, and crop and grazing lands
  - Non-commercial grain, hay, and produce storage
  - Irrigation facilities
  - Wholesale tree farms, plant nurseries, and vineyards
  - Land application of manure within NDEE requirements
2. Livestock operations, within necessary setbacks
3. Commercial uses related to agriculture (such as grain storage and elevators, veterinary clinics, farm machinery repair, fertilizer plants, etc.) when odors and hazards are mitigated
4. Agri-Tourism activities (such as game farms, fishing, vineyards and wineries, etc.)
5. Residential dwellings associated with an Agricultural use.
6. Single acreage development, including home occupations
7. Public facilities (such as road maintenance storage, fire stations, public utility substations, wildlife areas, etc.)
8. Religious and educational facilities
9. Kennels, within performance standards
10. Commercial sand and gravel mining
11. Renewable Energy facilities (Biomass, geothermal, solar, wind), within performance standards
12. Adult entertainment where appropriate

### Incompatible Uses

1. Residential/Acreages not associated with a farming operation
2. Large commercial development

### Issues

1. Groundwater / Rural Water availability
2. Suitability for onsite wastewater treatment systems (septic)
3. Proximity of conflicting uses such as acreages near livestock confinements, mining, renewable energy facilities, etc.
4. Conservation easements
5. Soil conditions
6. Site drainage
7. Wetlands
8. Flood hazard areas
9. Wellhead protection areas
10. Site access (public roads)

### Special Policies

1. Minimum lot sizes should be kept at the lowest possible size accommodating both private water and onsite wastewater treatment systems (OWTS).
2. Residential densities no more than 2 dwelling units per 1/4 section of land, to allow room for continued ag operations.
3. Separation distances should be applied to rural acreages and uses with off-site impacts.
4. New parcels should not impact ability to irrigate remainder ag land.







## Agriculture Transitional

### General Purpose

The Transitional Agriculture category represents the area where agriculture is protected, but may be limited due to proximity to cities and villages. This land use district is intended to allow development of non-ag uses while minimizing conflicts with agriculture.

### Compatible Uses

1. By-right Agricultural use, including
  - Accessory ag buildings, and crop and grazing lands
  - Non-commercial grain, hay, and produce storage
  - Irrigation facilities
  - Wholesale tree farms, plant nurseries, and vineyards
  - Land application of manure within NDEE requirements
2. Livestock operations (smaller scale) within necessary setbacks
3. Commercial uses related to agriculture (such as grain storage and elevators, veterinary clinics, farm machinery repair, fertilizer plants, etc.) when odors and hazards are mitigated
4. Agri-Tourism activities (such as game farms, farmstands, vineyards and wineries, etc.), and public and private recreational uses.
5. Single acreage development, including home occupations
6. Public facilities (such as road maintenance storage, fire stations, public utility substations, wildlife areas, etc.)
7. Religious and educational facilities
8. Kennels, within performance standards
9. Commercial sand and gravel mining
10. Renewable Energy facilities, within performance standards
11. Adult entertainment where appropriate

### Incompatible Uses

1. Large scale residential development
2. Larger livestock operations which cannot mitigate odor impacts
3. Large commercial development

### Issues

1. Groundwater / Rural Water / Municipal water availability
2. Suitability for onsite wastewater treatment systems (septic)
3. Proximity to existing livestock confinements, mining, renewable energy facilities, etc.
4. Natural amenities such as trees, ponds, and streams
5. Conservation Easements
6. Site drainage
7. Wetlands
8. Flood hazard areas
9. Wellhead protection areas
10. Site access (public roads)

### Special Policies

1. Lot sizes may vary depending upon the source of potable water and OWTS/sewer service.
2. Residential densities no more than 4 dwelling units per 1/4 section.
3. Cluster developments should be considered and used whenever soils, topography, natural amenities warrant.
4. Separation distances should be applied to rural acreages and uses with off-site impacts.

## Rural Residential

### General Purpose

The Rural Residential land use category represents areas in the county where small lot residential development may be appropriate, especially in proximity to cities and villages. There may also be areas which are, for demonstrable reasons, not well-suited to agriculture which are also not constrained by soils or floodplains. These areas should be designed as clustered developments to conserve agricultural land and open space.

### Compatible Uses

1. Residential development
2. Mixed-use developments incorporating:
  - Residential as predominate use
  - Small-scale commercial in support of residential use
  - Public amenities such as parks, community centers, etc.
3. Ag production (smaller scale)
4. Agri-Tourism activities (such as farmstands, wineries, etc.)
5. Public facilities (such as road maintenance storage, fire stations, public utility substations, etc.)
6. Religious and educational facilities
7. Home occupations
8. On-Site Renewable Energy facilities, within performance standards

### Incompatible Uses

1. Major agricultural operations
2. Livestock operations
3. Large commercial development
4. Industrial development

### Issues

1. Groundwater / Municipal water availability
2. Suitability for onsite wastewater treatment systems (septic)
3. Proximity to existing livestock facilities and/or industrial sites
4. Natural amenities such as trees, ponds, and streams
5. Conservation easements
6. Site drainage
7. Wetlands
8. Flood hazard areas
9. Wellhead protection areas
10. Site access (public roads)

### Special Policies

1. Lot size may vary depending upon the source of drinking water and OWTS/sewer service.
2. Residential densities within this land use category should be no more than 8 dwelling units per 1/4 section.
3. Cluster development should be considered whenever soils, topography, natural amenities warrant.







## Commercial/Industrial

### General Purpose

The Commercial/Industrial land use district is intended to provide for commercial and industrial uses, and mixed-use residential development, countywide.

### Compatible Uses

1. General commercial uses, providing goods and services to local communities
2. Manufacturing and warehousing (including value-added agricultural processing)
3. Commercial grain storage and services (such as at locations along active and historic rail corridors)
4. Auto-oriented uses (such as auto sales or repairs) with sufficient buffering of neighboring property
5. Mixed use residential
6. Public facilities (such as road maintenance storage, fire stations, public utility substations, community centers, etc.)
7. Religious and educational uses and structures
8. On-Site Renewable Energy facilities, within performance standards
9. Adult entertainment where appropriate

### Incompatible Uses

1. Livestock operations
2. Single-family residential development

### Issues

1. Groundwater / Municipal water availability
2. Suitability for onsite wastewater treatment systems (septic)
3. Topography
4. Site drainage
5. Wetlands
6. Flood hazard areas
7. Wellhead protection areas
8. Site access (public roads)
9. Need to buffer incompatible uses to mitigate off-site impacts (noise, smell, traffic, visual blight)
10. Off-site commercial advertising (billboards) may lead to blight conditions.

### Special Policies

1. Minimum lot sizes based upon adequate space for vehicular movement, parking, and drinking water/wastewater treatment systems.
2. Developments of one acre or more may be required to meet the standards of NPDES permitting.
3. Developments which create more than a 5% increase in runoff may be required to construct a detention basin to control runoff.

## Flex Corridor

### General Purpose

The Flex Corridor land use district is intended to accommodate a flexible blend of agricultural, commercial, and industrial uses which require direct access to highways and primary arterial transportation routes, while minimizing potential conflicts. These areas are primarily along US Highway 81 near Bruning, Belvidere, and Hebron, and Nebraska Highway 4 south and east of Bruning.

### Compatible Uses

1. By-right Agricultural use, including
  - Farm buildings, and crop and grazing lands
  - Non-commercial grain, hay, and produce storage
  - Irrigation facilities
  - Wholesale tree farms, plant nurseries, and vineyards
2. Commercial uses serving the traveling public (i.e. truck stops, restaurants, lodging, electric vehicle charging stations)
3. Manufacturing and warehousing
4. Commercial grain storage and processing, bulk fertilizer and fuel plants, livestock auction barns, veterinary clinics, etc. when off-site impacts and hazards are mitigated
5. Farm machinery and vehicle sales and service
6. Off-site commercial advertising (billboards)
7. Agri-Tourism activities (such as farmstands, vineyards, etc.)
8. Non-agricultural related commercial and industrial uses, where impacts on adjacent property can be mitigated
9. Existing residential uses
10. Public facilities (such as road maintenance storage, fire stations, public utility substations, community centers, etc.)
11. Religious and Educational uses and structures
12. On-Site Renewable Energy facilities, within performance standards
13. Adult entertainment where appropriate

### Incompatible Uses

1. Livestock operations
2. Residential development

### Issues

1. Groundwater / Municipal water availability and connections
2. Suitability for onsite wastewater treatment systems (septic)
3. Natural amenities such as trees, ponds, and streams
4. Site drainage
5. Flood hazard areas
6. Wellhead protection areas
7. Access to State highways
8. Billboards may lead to blight conditions.

### Special Policies

1. Minimum lot size based upon adequate space for vehicular movement, parking, and drinking water/wastewater treatment.
2. Developments of one acre or more may be required to meet the standards of NPDES permitting.
3. Developments which create more than a 5% increase in runoff may be required to construct a detention basin to control runoff.
4. General commercial retail and services should be encouraged to locate in local municipalities with infrastructure.







## Parks/Recreation

### General Purpose

The Parks and Recreation land use district provides for parks and recreation land uses. In the unincorporated county, these tend to be larger tracts such as wildlife management areas.

### Compatible Uses

1. Local and County parks and recreation areas
2. Golf courses and accessory uses
3. Non-profit conservation lands
4. State and Federal recreation and wildlife management areas.

### Incompatible Uses

1. Larger livestock operations which cannot mitigate odor impacts
2. Large commercial development
3. Industrial development

### Issues

1. Conservation easements may have long-term impacts on property tax revenues.
2. Considerations for drinking water/wastewater treatment.



## Public/Institutional

### General Purpose

The Public and Institutional district provides for public land use. In the unincorporated county, these tend to be larger facilities owned and operated by a public or non-profit entity.

### Compatible Uses

1. Local and County buildings and facilities
2. State and Federal buildings and facilities.
3. Non-profit buildings and facilities

### Incompatible Uses

1. Larger livestock operations which cannot mitigate odor impacts

### Issues

1. Public and non-profit land holdings may have long-term impacts on property tax revenues.
2. Considerations for drinking water/wastewater treatment.



## Wellhead Protection Areas (Overlay)

### General Purpose

Wellhead Protection Areas are established for the protection of public water supplies. These areas are identified to inform zoning and land use development decisions.

As noted in Chapter 10, nine municipalities in Thayer County have an approved Wellhead Protection Plan (WHP), as of March 2023:

- Village of Alexandria
- Village of Belvidere
- Village of Bruning
- Village of Byron
- Village of Carleton
- Village of Chester
- City of Deshler
- City of Hebron
- Village of Hubbell

Each municipality or other publicly-owned water supply system shall execute an interlocal agreement with Thayer County for administration of regulations within the Wellhead Protection Overlay District, incorporated into the zoning ordinance.

### Compatible Uses

1. Determined by underlying zoning, with certain exceptions

### Incompatible Uses

1. Common potential groundwater contaminant sources (agricultural, commercial, industrial)
2. Confined Animal Feeding Operations (CAFOs)
3. Landfills and refuse recycling centers



## Airport Hazard Area (Overlay)

### General Purpose

Airport hazard areas recognize the need to protect aircraft and land use in airport approach paths. This area is identified to inform zoning and land use development decisions.

As noted in Chapter 13 Transportation, there is a public use airport south of Hebron, and a private-use airport between Chester and Hubbell. The Federal Aviation Administration (FAA) establishes requirements for construction near airports.

### Compatible Uses

1. Determined by underlying zoning
2. Uses which can coexist with aviation noise and navigation airspace (14 CFR Part 77 "imaginary surfaces")

### Incompatible Uses

1. Towers and other large structures with the potential to create hazards to aircraft.
2. Visual obstructions such as open mining which produce dust, or uses creating glare and light emissions (including LED-illuminated billboards)
3. Wildlife and bird attractants
4. Residential development
5. Dense commercial development





can effectively and efficiently deliver public services to all citizens of Thayer County.

## COMMUNITY CHARACTER

### CONSERVATION DEVELOPMENT

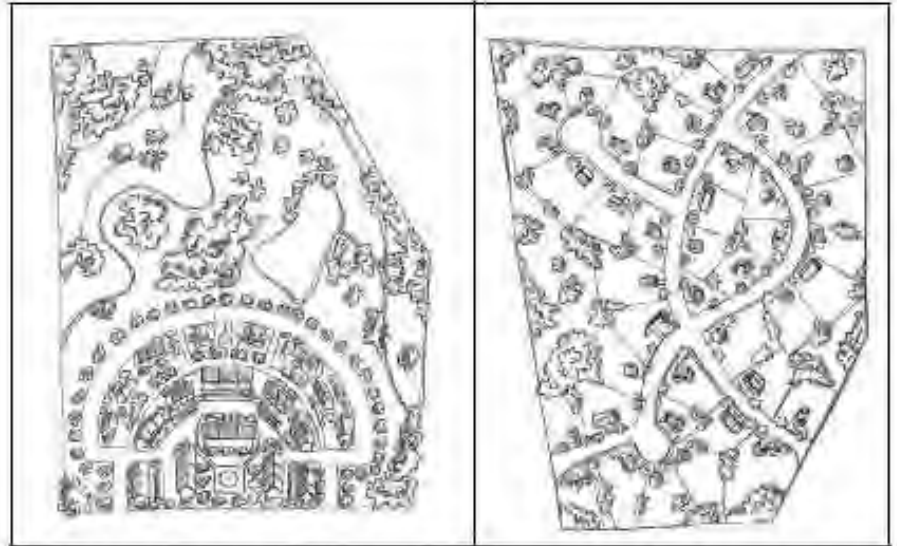
Conservation development is a customized approach to residential or commercial subdivision of land, where parcels are clustered into a smaller area to conserve agricultural or natural areas. Conserved areas may be prime farmland, wetlands and floodplains, or areas with steep slopes or soils unsuitable for building. The smaller developed area reduces costs for infrastructure such as roads and provides a variety of lot options for home builders and buyers.

Implementation of Conservation Development is often accomplished through a specific stand-alone or overlay zoning district, or adoption of Planned Unit Development (PUD) zoning and subdivision ordinance provisions.

### LAND USE AND ZONING

Thayer County and each of the municipalities in the county have adopted zoning regulations. These regulations require zoning permits for new development. Currently, the Thayer County Zoning Administrator also administers zoning review for each of the villages in the county, as well as serving as floodplain administrator.

In 2022, the Thayer County Zoning Administrator processed 54 zoning permits, down from 61



*Conservation subdivisions (left) feature smaller lots with a high percentage of open space. Conventional subdivisions (right) feature large lots with little common open space. A conventional subdivision is subject to all of the base zoning district standards, such as minimum lot size, front setbacks, landscaping, and adequacy of public facilities.*

Source: Robert H. Freilich and S. Mark White, *21st Century Land Development Code*, APA Planners Press, 2008.

in 2020. Approximately 40% of projects were in the unincorporated county and 60% in the villages. Bruning had the most permits (11) and has generally had the most development activity over the last 20 years.

The first implementation action of the comprehensive plan will be to review and update the zoning regulations.

The Zoning Administrator also works with the villages to update their comprehensive plans and zoning regulations. The Zoning Administrator should continue to monitor annexations, and make sure the Joint Planning Commission is involved in review and update of municipal boundaries, extra-

territorial jurisdiction, and zoning on the County and local Official Zoning Maps.

## LAND USE GOALS AND ACTIONS

### LAND USE GOAL 12.1

Future growth and development has adequate land available while avoiding land use conflicts and incompatible impacts.

#### Actions

- 12.1.1 Carefully review new development projects for conformance with the Comprehensive Plan.

- 12.1.2 Developers are prepared to pay the cost of necessary and required on-site and off-site improvement.
- 12.1.3 Work with property owners to clean up deteriorated and dilapidated properties.
- 12.1.4 Continue participation in the National Flood Insurance Program (NFIP).
- 12.1.5 Post planning & zoning requirements and other development information on the City website.
- 12.1.6 Regularly review and update land use regulations (zoning and subdivision ordinances) and application materials.

## LAND USE GOAL 12.2

New development is focused within Thayer County's cities and villages.

### Actions

- 12.2.1 New development is encouraged and supported within cities and villages where urban services are available.
- 12.2.2 New development should be contiguous to existing developed areas, and avoid "leapfrog" patterns inefficient for public services.
- 12.2.3 Support annexation by cities and villages to minimize the County's cost of public services.
- 12.2.4 Work with NDEE and municipalities on implementation of Wellhead Protection Plans.

## LAND USE GOAL 12.3

Agriculture is the predominate use in Agriculture land use districts.

### Actions

- 12.3.1 Recognize production agriculture as the highest and best use of land in the Agriculture land use district.
- 12.3.2 Encourage development of value-added agricultural processing.
- 12.3.3 Carefully review new development projects for potential impacts on production agriculture.
- 12.3.4 Minimize regulatory burden of production agriculture in ag areas.

## LAND USE GOAL 12.4

Agriculture is protected from premature development in the Agriculture Transition land use district.

### Actions

- 12.4.1 Carefully review new development projects near communities and highways for transitional impacts on agriculture.
- 12.4.2 Mitigate impacts of development on existing land use near developed areas.

## LAND USE GOAL 12.5

Residential development is protected from conflicting land uses in the Rural Residential land use district.

### Actions

- 12.5.1 Assure residential development is separated from more intensive uses.

- 12.5.2 Encourage development of "Missing Middle" housing types across the county where infrastructure is available.

## LAND USE GOAL 12.6

Employers have adequate land available in Commercial/Industrial and Flex Corridor land use districts.

### Actions

- 12.6.1 Work with municipalities to provide infrastructure for commercial and industrial development in appropriate locations.
- 12.6.2 Carefully review new commercial/industrial development projects for potential impacts on existing residents and property owners.
- 12.6.3 Regularly review zoning district standards and maps to provide locations for hazardous materials facilities buffered from other development.

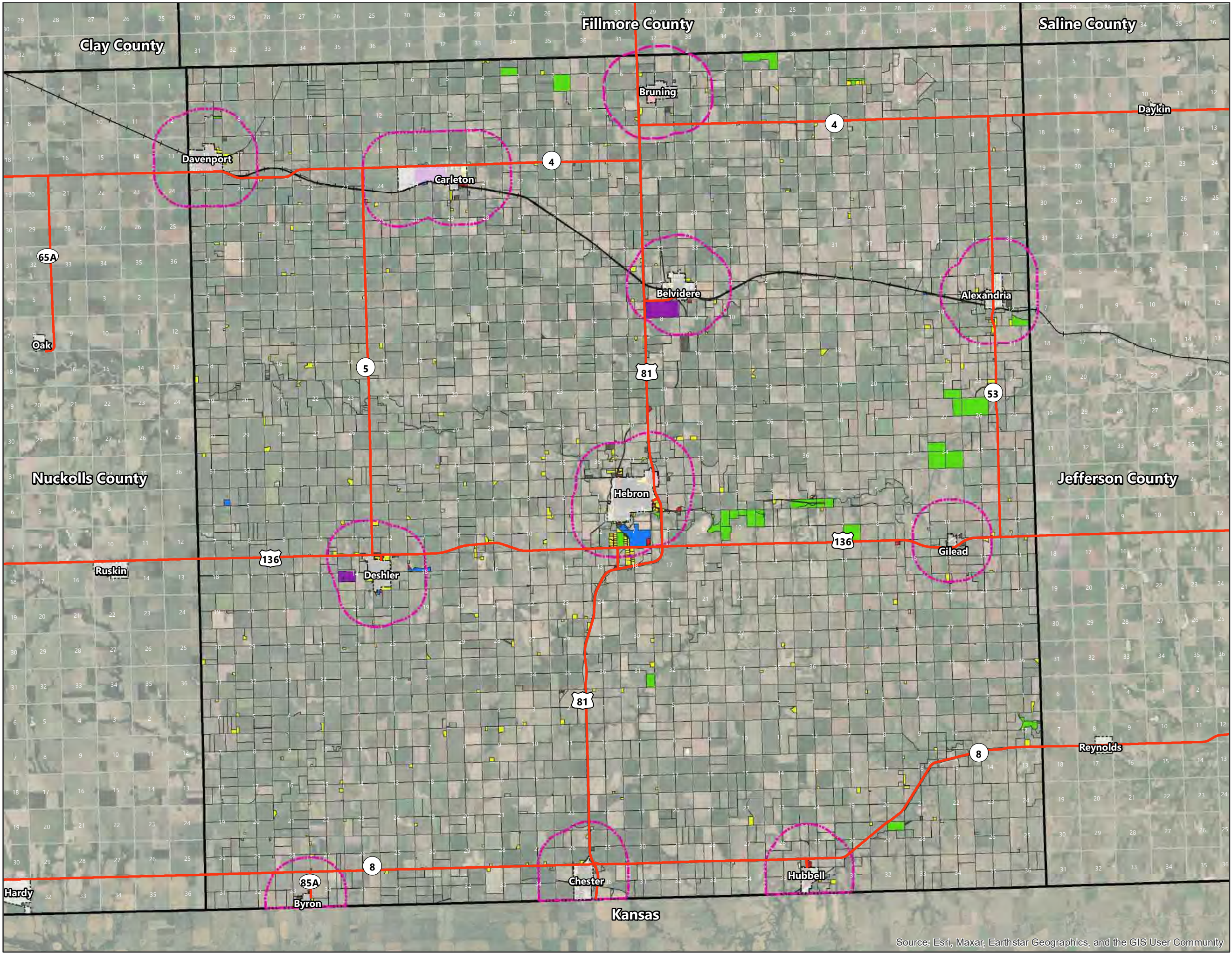
## LAND USE GOAL 12.7

Parks/Recreation and Public/Institutional uses are provided for by those land use districts and land in other appropriate districts.

### Actions

- 12.7.1 Support municipalities in development of parks and trails systems.
- 12.7.2 Work with public school districts and community college on long-term facilities siting.





THAYER COUNTY, NEBRASKA

**COMPREHENSIVE PLAN**

**EXISTING LAND USE**

**LEGEND**

- Highways
- Municipal Limits
- 1-Mile ETJ
- 1-Mile ETJ
- Railroad
- County Boundaries
- Parcels
- Sections

**Land Use**

- Agricultural
- Residential
- Commercial
- Industrial
- Parks/Recreation
- Public/Institutional
- Public
- Exempt

**MPC**

**MARVIN PLANNING CONSULTANTS**

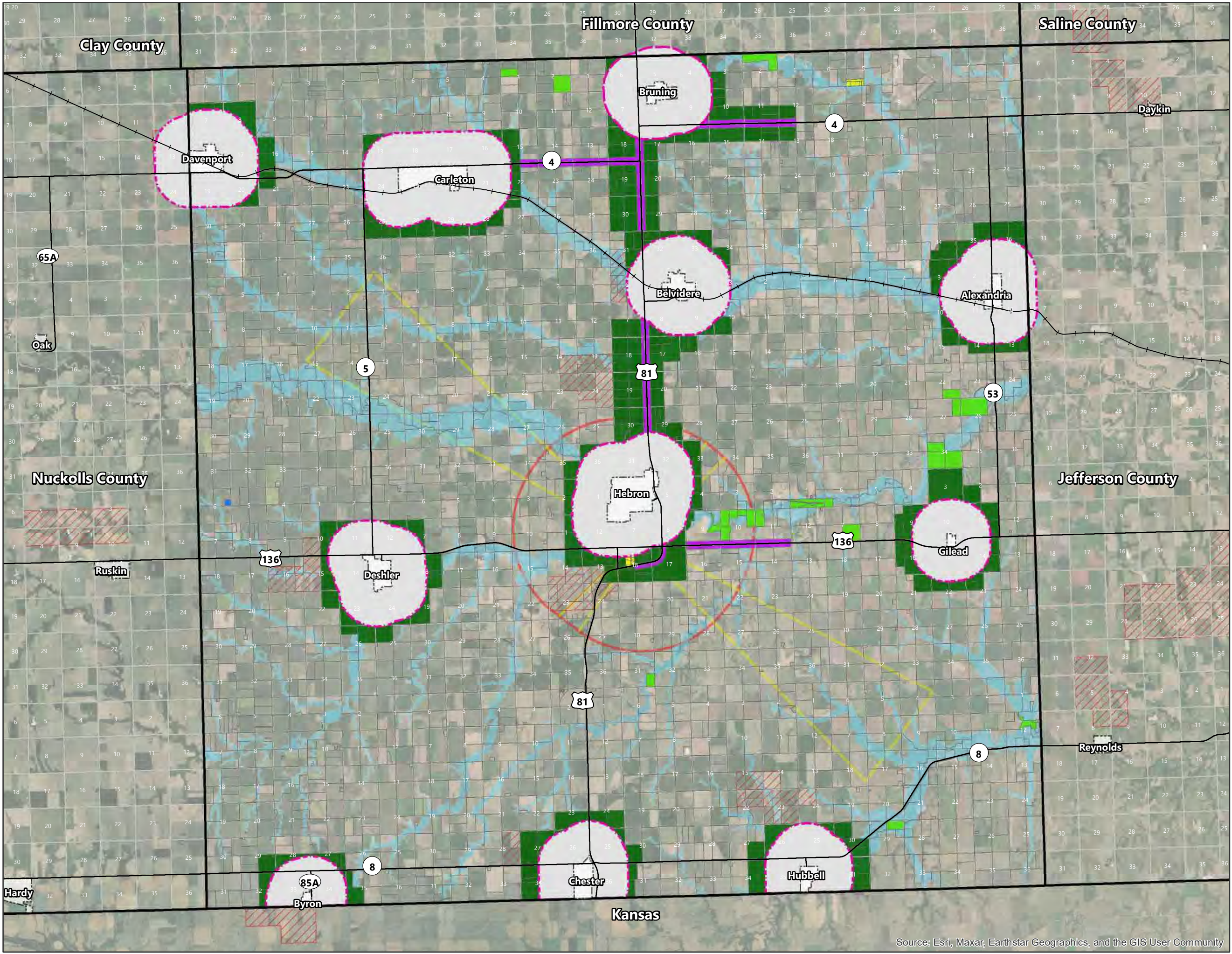
*Specializing in Municipal Growth and Community Planning*

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24

0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





THAYER COUNTY, NEBRASKA

COMPREHENSIVE PLAN

FUTURE LAND USE DRAFT

LEGEND

Highways

Railroad

Municipal Limits

County Boundaries

1-Mile ETJ

Parcels

Sections

Land Use

Agriculture Primary

Transitional Agriculture

Rural Residential

Flex Corridor

Parks/Recreation

Public/Institutional

WHPA Overlay

WHPA Overlay

Flood Hazard Area Overlay

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Floodway

Airport Overlay

Approach Zone

3-Mile Turning Zone

Operation Zone

Transition Zone

MPC

MARVIN PLANNING CONSULTANTS

Specializing in Municipal Growth and Comprehensive Planning

PROJECTION: NE State Plane (Ft.)  
DATUM: NAD 83  
DATE: 6.25.24

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0 1 2 4 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





# Chapter Thirteen Transportation

## PLANES, TRAINS, AND AUTOMOBILES

Transportation determines land use as much as any other element in the comprehensive plan. As they say, the value of land is all about “Location, location, location!”. Transportation infrastructure in rural Nebraska includes highways, railroads, and air transport networks.

Land use and transportation create the pattern for future development and are interdependent with one another. For example, improved roads attract more intense land use into areas which may not provide other necessary infrastructure, or may not be compatible with existing land uses.

This chapter is intended to meet the requirements for a transportation element in Neb. Rev. Stat. §23-114.02, including “The general location, character, and extent of existing and proposed major streets, roads, and highways, and air and other transportation routes and facilities.”

## HIGHWAYS

Streets, roads, and highways are classified by function:

- Freeway—major roadway for state or regional access
- Arterial—major road with high volumes of traffic, primarily connecting places to each other
- Collector—street with less traffic, connecting local traffic to arterial roads
- Local—street with low traffic volumes and slow design speeds, primarily uses for direct access to property.

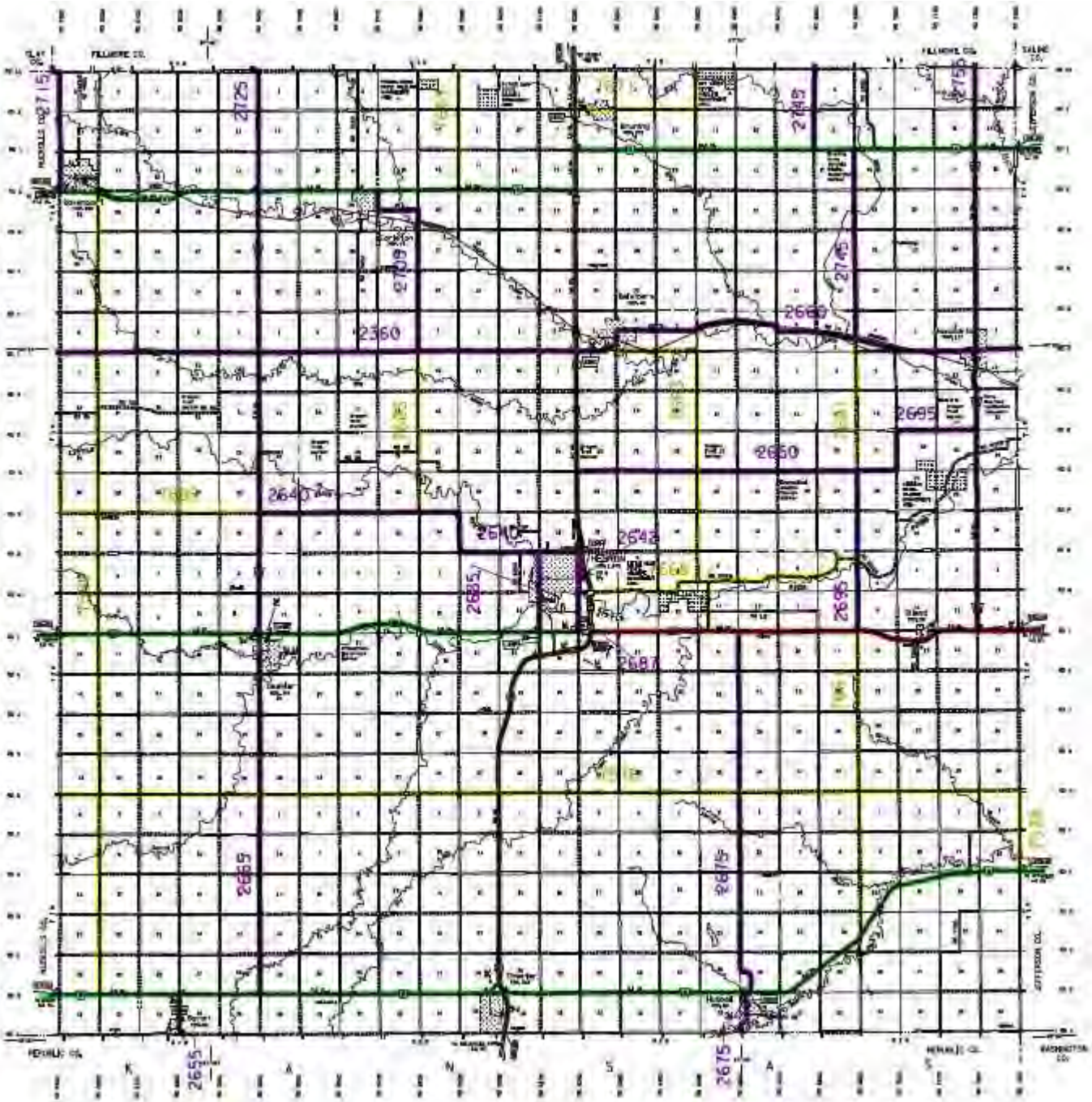
Thayer County's primary road network is based on US Highway 81 running north and south and US Highway 136 running east and west, with both intersecting at Hebron (Figure 13.1). US 81 connects Thayer County to Interstate 80 at York, Nebraska, 50 miles to the north, and to Interstate 70 at Salina, Kansas, 90 miles to the south.

US 81 is a four-lane divided highway through Thayer County and is functionally classified as a Freeway or Expressway. The highway runs west of the villages of Bruning and Belvidere, and east of Hebron and Chester.

US 136 is two-lanes classified as a principal arterial east of Hebron, and a minor arterial west of Hebron. This state highway runs along the south side of Gilead and Hebron, and the north side of Deshler.



FIGURE 13.1: THAYER COUNTY NATIONAL FUNCTIONAL CLASSIFICATION



**LEGEND**

**NATIONAL FUNCTIONAL CLASSIFICATION**

INTERSTATE	—————
OTHER FREEWAYS & EXPRESSWAYS	—————
OTHER PRINCIPAL ARTERIALS	—————
MINOR ARTERIAL	—————
MAJOR COLLECTOR	—————
MINOR COLLECTOR	—————
URBANIZED BOUNDARY	—————

All Roads Not Otherwise Indicated Are Classified As Local.  
FHWA Approval: September 25, 2014.

Source: Nebraska Department of Roads



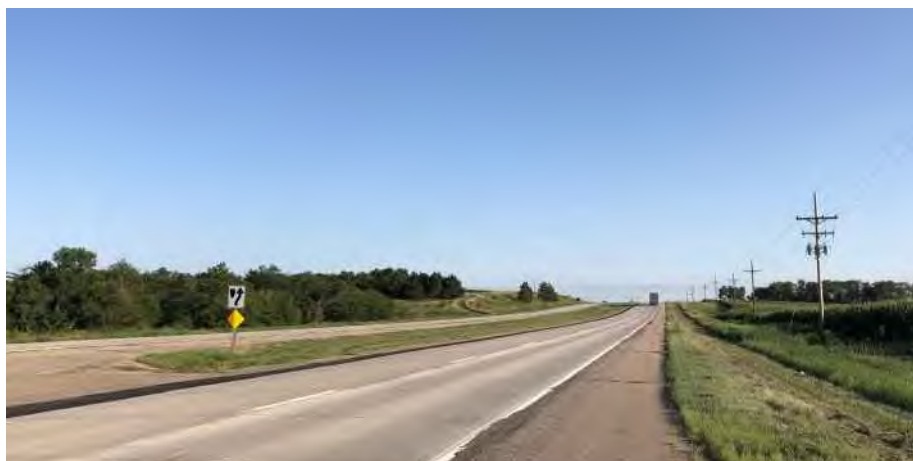
Also running east and west are State Highway 4 (a primary arterial) through the upper portion of the county; and Highway 8 (also a primary arterial) through the lower portion of the county. Highway 4 runs south of Bruning, on the north side of Carleton, and along the south side of Davenport. Highway 8 runs north of Byron, Chester, and Hubbell.

Highway 5 and Highway 53 run north and south through the county, both classified as major collector roads. Highway 53 serves Alexandria. County Road 5400 continues the collector designation south of Deshler and north of Highway 4.

About half (49%) of respondents to the Thayer County Comprehensive Plan Survey disagree or strongly disagree with the assessment "County roads are in good condition."

## COUNTY ROADS

Several County Roads are functionally classified as major or minor collector roads.



US 81 in Thayer County  
Source: Marvin Planning Consultants

As documented in *The Little Blue NRD and Lower Big Blue NRD Hazard Mitigation Plan (2021)*, several local roads were noted as vital for travel and have been impacted during flooding, including:

- Rd Z from Rd 5000 to Rd 5100
- Rd X from Rd 6900 to Rd 7000
- Rd D From Rd 4900 to Rd 5000
- Rd C from Rd 6500 to Rd 6600
- Rd A from Rd 5500 to Rd 5600
- Rd 6700 from Rd P to River Rd
- Rd 6700 from Rd P to River Rd
- Rd 6700 from Rd P to River Rd
- Rd 5900 From Hwy 136 to Rd K
- Rd 5600 from Rd P to Rd Q
- Rd 5200 from Hwy 4 to Rd Y
- Rd 4900 From Rd M to Rd N
- Rd 4900 from Rd L to Rd M
- Rd 4900 from Rd K to Rd L
- Rd 4900 From Hwy 136 to Rd K
- Rd 6200 from Rd G to Rd H
- Rd E From 5200 to 5300
- Rd 5100 from Rd J to Rd K
- Rd 6100 from Hwy 136 to Lincoln Ave
- 4th St from Holdrege to Park Ave



County Road and Bridge, Rural Thayer County  
Source: Marvin Planning Consultants

As noted in Chapter Six, the Bruning-Davenport and Shickley school districts have a number of cooperative programs and activities. Currently, County Road 5400 north of Highway 4 is functionally classified as a Major Collector, yet remains a gravel road. Thayer and Fillmore counties should study this route for paving in the future.

## Frontage on a Public Road

New homes should have access to an existing public road, other than a roadway designated by the Thayer County Board of Commissioners as a minimum

maintenance road or other unimproved roadway.

One and Six-Year Plans

The Thayer County Roads Superintendent develops the *One and Six-Year Road Plan* for the county, which is adopted by the County Board. The current plan lists four priority projects for 2023, including a \$175,000 bridge match near Davenport, and three culvert projects corrugated metal pipe or CMP). There are 13 projects listed over the six years through 2028.

NDOT

Thayer County is located in the Nebraska Department of Transportation (NeDOT) District 4, headquartered in Grand Island. NDOT's Surface Transportation Program Book for Fiscal Year (FY) 2024 (the "six-year plan") includes several projects in Thayer County.

Construction Program:

- US 81 Belvidere North Bridges, \$11,965,000
- US 136 Nuckolls County Line-L85F (13.5) resurfacing, bridges, \$17,770,000, FY2024

Asset Preservation Projects:

- US 81 Kansas line-Hebron South (8.1 miles) concrete repair
- US 81 Chester North Bridge
- US 81 Little Blue River Bridge North (1.8 miles) intersections
- US 81 Bruning North & South (10.0 miles) resurfacing, culverts
- US 136 US 81-Gilead (6.5 miles) milling, resurfacing, bridges
- US 136 Gilead East (4.1 miles) resurfacing
- Highway 4 Davenport East (13.0 miles) resurfacing



Off-site Commercial Advertising on US 81  
Source: Marvin Planning Consultants

- Highway 4 N-4/US-81 Jct East (10.9 miles) resurfacing
- Highway 5 Deshler North (11.0 miles) resurfacing
- Highway 8/US 81—Thayer/ Jefferson County Line (14.3 miles) resurfacing
- Highway 53 Alexandria North (4.9 miles) resurfacing

RCUT Intersections

The Little Blue River Bridge North project (HSIP-81-1 (129) is a Highway Safety Improvement Program project proposed along US 81 through Hebron. The project \$4.411 million project would replace the existing intersections at River Road, Spur S-85H, Dove Rd, and Old US-81, with new RCUT intersections. Currently the project is included on Nebraska's Statewide Transportation Improvement Program (STIP) for FY25.

Restricted Crossing U-Turn (RCUT) Intersections have been suggested by engineers to decrease right-angle crashes on four-lane divided highways. An alternative to roundabouts

or expensive grade-separated crossings, an RCUT intersection requires motorists approaching divided highways from a side road to turn right on (instead of crossing) the highway, then make a U-turn at a designated median opening.

Billboards

Off-site commercial advertising, commonly referred to as "billboards" advertise goods or services which are not sold or produced on the premises where the sign is located. The Federal Highway Beautification Act (HBA) of 1965 regulated the location of billboards on federal-aid highways. The "Kerr Amendment" allowed outdoor advertising in commercial and industrial zones. Many communities do not allow billboards, due to concerns with distracted driving and visual blight as a form of visual pollution. The National Association of Realtors has reported nearby billboards hurt residential property values.

In 2022, the US Supreme Court ruled in the case of City of Austin



v. Reagan National Advertising local sign codes may continue to strictly regulate off-premise advertising. Thayer County may want to revisit current zoning for signage to offer greater protection to adjacent property values.

## TRANSIT

Blue Rivers Public Transportation System serves Thayer County on a demand-response, portal-to-portal basis. They require 24-hours advance notice to schedule rides with a vehicle stationed in Hebron.

Inter-City (West) provides transportation to Lincoln, Fairbury, and Beatrice.

Source: [www.braaa.org](http://www.braaa.org)

## MULTI-MODAL

Multi-modal transportation planning creates communities where it is possible to get around by walking, bicycling and public transport. Many State and county roads are designed to favor high-speed motorized traffic, without considering those walking and bicycling. As the community ages, building streets for multiple modes of transportation becomes all the more important.

Young people need to be able to get around town without relying on drivers. As well, many older people may prefer not to drive, or may become unable to drive. Trail development is becoming an economic development attraction as young families consider options for where to live. It is said designing transportation systems for those 8 years old and those 80 years old assures safe options for all of a community's residents.

## SIDEWALKS AND TRAILS

Many communities have invested in good places to walk or ride a bicycle. A complete network creates safe, comfortable, and accessible multimodal routes for people walking and bicycling.

Most of Thayer County's municipalities have a basic sidewalk network. However, many of these sidewalks are aging and segments are often missing, forcing people to walk in the streets. Also, too few intersections have accessible curb ramps, creating an obstacle for users with strollers and wheelchairs, or who simply find curbs difficult to maneuver.

Multi-user trails are becoming a popular piece of infrastructure for everyday transportation as well as exercise and recreation. The City of Hebron, for example, has installed a concrete trail along the Little Blue River south of downtown, extending to Riverside Park (see also *Chapter Seven Parks and Recreation*).

## Accessibility

The Americans with Disabilities Act (ADA) was signed by President George H.W. Bush in 1990. The ADA is intended to make sure people with disabilities have the same rights and opportunities as everyone else.

The NDOT Roadway Design Manual (May 2022) provides guidance for design of pedestrian and bicycle facilities in conformance with ADA. This includes having a transition plan when structural modifications are required to provide accessibility, including curb ramps.

Sidewalks on rights-of-way and bridges must be at least four-feet wide, provided there are larger passing spaces every 200 feet. (Driveways may be considered as passing spaces.) A shared-use path must be a minimum 10 feet wide, with 11-14 feet preferred in certain situations.



River walk trail, Hebron  
Source: Marvin Planning Consultants

## RAILROADS

The Union Pacific (UP) Railroad, headquartered in Omaha, Nebraska, operates the rail line running east and west through Thayer County, passing through the communities of Alexandria, Belvidere, Carleton, and Davenport. This line connects the UP's Heartland division at Marysville, Kansas, to Gibbon Junction on the UP mainline west of Grand Island in the Great Plains division. This section is approved for heavy axle rail cars which can handle up to 286,000 lbs. or 315,000 lbs. gross weight.

UP provides a number of community-oriented programs in their service area. This includes the UP Foundation, economic development, and sustainability programs. UP also provides a comprehensive public safety program.

Source: [www.up.com](http://www.up.com)

### Railroad Crossings

US 81 has a grade-separated crossing over the UP Railroad tracks near Belvidere. There are at-grade crossings throughout the county, as well as in the villages of Alexandria, Belvidere, Carleton, and Davenport. Highway 4 has an at-grade crossing between Carleton and Davenport.

## AIR TRAVEL

As Thayer County EDA has noted, "Municipal airports in rural areas, especially those dependent on agriculture, are an integral economic piece to the growth and sustainability of local businesses across industries/sectors."



Union Pacific Railroad, Alexandria  
Source: Marvin Planning Consultants

FIGURE 13.2: OMAHA SECTIONAL AERONAUTICAL CHART



Source: Federal Aviation Administration



The Federal Aviation Administration regulates air travel and provides funding for airport improvements. Through federal grant assurances, airport sponsors and owners are obligated to pursue all reasonable and appropriate actions to secure and promote compatible land use and development within their local areas. Careful land use planning benefits air travel by preservation of aircraft operations, protection of airport approaches, reduced potential for litigation, and avoidance of hazardous wildlife attractants.

## AIRPORTS

Hebron Municipal (HJH) airport is a public-use facility located south of the City of Hebron on US 136. The airport has a powerful impact on the agricultural sector, with well-established agricultural sprayers, including larger turbine planes and one helicopter spraying service. HJH is at 1,468 feet elevation. Runway 12/30 is 3600 x 60 ft concrete surface with MIRL runway lights. Cross-runway 03/21 is 2513 x 150 ft turf surface. Magnetic north is 4°E off true north at this location.

The airport is owned by the Hebron Airport Authority. The airport is currently (spring 2023) unattended, although jet fuel is available by self service. Aircraft operations average about 105 per week in 2021, with 89% local general aviation, 10% transient general aviation, and 1% military. Several companies are based out of the Hebron Airport, and hangar space is available.

Fairbury Municipal Airport (KFBY) is located 19 nautical miles (nm) east of HJH. Belleville Municipal Airport (KRPB) is located 20nm south. Superior Municipal Airport

(12K) is located 23 nm west. Fairmont State Airport (KFMZ) is located 26nm north.

Source: [hebronairport.com](http://hebronairport.com)

The nearest scheduled passenger air service is available at Grand Island, Lincoln, and Omaha, Nebraska.

## Private-Use Airports

The Sutton private-use airport is located northeast of Chester, activated in 1973. It has a 1,400' turf runway. Private-use airports must comply with [14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation](#). The developer must separately notify Nebraska's state aviation agency and also comply with any local law, ordinance, or state and federal regulations. This includes the zoning ordinance for County or municipal (ETJ) jurisdiction.

## RESOURCES

### ELECTRIC VEHICLE CHARGING STATIONS

Electric vehicles (EVs, also known as battery-electric vehicles) require off-board electric charging stations. Although the majority of EV owners charge at home, public charging and workplace charging stations are necessary for trips away from home.

There are currently three types of EV charging stations:

- **Level 1 chargers** use typical electric outlets (120V);
- **Level 2 chargers** are typically freestanding or hanging, and require a higher level of service (240V);
- **Level 3 or DC fast chargers** are freestanding stations. They can take around 30 minutes to charge a vehicle but require a very high level of service (480V).

General public charging uses Level 2 or DC fast charging, while Level 1 stations are typically



Electric Vehicle Charging Stations, Hebron  
Source: Marvin Planning Consultants

located in a home garage or place of business. Charging stations should typically be located where vehicle owners are highly concentrated and parked for long periods of time. Public charging stations should also be located along highway corridors.

According to the US Department of Energy, the only public EV charging station location in Thayer County is the 81 Express station on US 81 in Hebron. There are three chargers at this location—a small Level 2 (J1772 connection) charger and two DC Fast Charge (CHAdeMO and CCS connection) stations, operated by ChargePoint. A Level 2 charging station typically provides approximately 25 miles of range per hour of charging, while DC charging stations provide 100 to 200 miles range for 30 minutes of charging.

Currently, NDOT is focusing electric charging infrastructure funding on the designated Alternative Fuel Corridor (AFC) along I-80 and in the Omaha area. Additional state and federal funding programs may be available in the future.

The Thayer County Zoning Ordinance should be reviewed to provide guidelines for EV charging stations to be located in safe locations, integrated with parking requirements.

Source: [afdc.energy.gov/fuels/electricity\\_basics.html](https://afdc.energy.gov/fuels/electricity_basics.html)

## TRANSPORTATION GOALS AND ACTIONS

### TRANSPORT GOAL 13.1

Thayer County's highway network continues to meet the needs of local users and those passing through the county.

#### Actions

- 13.1.1 Annually review the County's One and Six Year Plan for conformance with the Comprehensive Plan.
- 13.1.2 Continue regular maintenance of roads countywide.
- 13.1.3 Prioritize paving and drainage improvements in growth areas
- 13.1.4 Work with Nebraska DOT on improving State roads and highways.
- 13.1.5 Encourage new development to locate on existing improved routes, while limiting direct access on arterial routes.
- 13.1.6 Continue to restrict development on designated Minimum Maintenance roads.
- 13.1.7 As the industry evolves, review zoning requirements of EV charging stations.

### TRANSPORT GOAL 13.2

Multi-modal transportation infrastructure is provided for walking, bicycling, and public transportation where appropriate.

#### Actions

- 13.1.1 Support Blue Rivers Public Transportation System.
- 13.2.2 Support municipal investments in sidewalks and trails countywide.
- 13.2.3 Assure County facilities meet ADA accessibility requirements.

### TRANSPORT GOAL 13.3

Commercial rail service continues to be available to Thayer County agriculture and industry.

#### Actions

- 13.3.1 Support efforts to work with UPRR to assure service continues in Thayer County.
- 13.3.2 Work with UPRR to improve railroad crossing safety.

### TRANSPORT GOAL 13.4

The public airport is protected from conflicting uses.

#### Actions

- 13.4.1 Support maintenance and improvement of Hebron Municipal Airport.
- 13.4.2 Review projects near airports for compliance with Airport Hazard Overlay requirements.
- 13.4.3 Discourage new tall structures, including towers, near airports in Thayer County.





## Chapter Fourteen Implementation

Successful community plans have the same key ingredients: "2% inspiration and 98% perspiration." This section of the plan contains the inspiration of the many county officials and residents who have participated in the planning process. However, the ultimate success of this plan remains in the dedication offered by each and every resident.

There are numerous goals and actions in this plan. These items should inform annual workplans and budget setting to assure progress continues to bring the plan to life.

### **ACTION PLAN**

The Comprehensive Plan is not intended to sit on a shelf. The plan is intended to be put into action.

The action plan for County implementation is a combination of goals and action items, with provisions to bring the plan to life while evaluating development proposals. Goals and action items specific to each plan element are included in the relevant chapter.

### **CAPITAL IMPROVEMENTS PROGRAM (CIP)**

The Capital Improvements Program (CIP) is an annual plan assessing capital needs and prioritizing tasks to meet these needs in the County's budget. Programming in the CIP should cover facilities (county courthouse, Sheriff's office, highway shop, etc.), capital

equipment, parks and recreation, utilities, trails, transit, and other capital facilities. The process should be coordinated with the One-and-Six Year plan for roads.

### **EVALUATION OF DEVELOPMENT PROPOSALS**

Development proposal applications should be carefully reviewed against the goals and policies of the Thayer County Comprehensive Plan, as well as the specific requirements of the development regulations. This plan is not regulatory; however, the underlying regulations are based on compatibility with this plan. Each development application should address how the specific proposal meets the policies of the comprehensive plan.

In cases in which a proposal is counter to the policies of this

plan, the developer should be encouraged to bring the proposal into conformance. On the other hand, approval of a proposal which is not in conformance would point to the need to review and update the plan to better serve the citizens of Thayer County.

**COMPREHENSIVE PLAN  
MAINTENANCE**

**Annual Review of the Plan**

A relevant, up to date plan is critical to the on-going planning success. To maintain both public and private sector confidence; evaluate the effectiveness of planning activities; and, most importantly, make mid-plan corrections on the use of county resources, the plan must remain current. The annual review should be performed each January to begin the calendar year. This review should result in a report from the Planning Commission and Staff to the County Board and the citizens of Thayer County.

**Unanticipated  
Opportunities**

If major new, innovative development and/or redevelopment opportunities arise which impact any number of elements of the plan and which are determined to be of importance, a plan amendment may be proposed and considered separate from the Annual Review and other proposed Comprehensive Plan amendments. The Comprehensive Plan amendment process should adhere to the adoption process specified by Nebraska law and provide for the organized participation and involvement of citizens.

**Ten Year Review**

As discussed in the Introduction, the Thayer County Comprehensive Plan is a 20-year plan. However, the County should review the plan annually and update the document at least every 10 years (2033), or when major, unanticipated opportunity arises. Completing updates every ten years or so will allow the County to incorporate ideas and developments not known at the time of the comprehensive planning process.

**IMPLEMENTATION  
GOALS AND ACTIONS**

**IMPLEMENTATION GOAL  
14.1**

Development regulations are updated and maintained.

**IMPLEMENTATION GOAL  
14.2**

The Planning Commission reviews this plan regularly.

**Action Items**

This plan recommends several immediate tasks as implementation action items. These include:

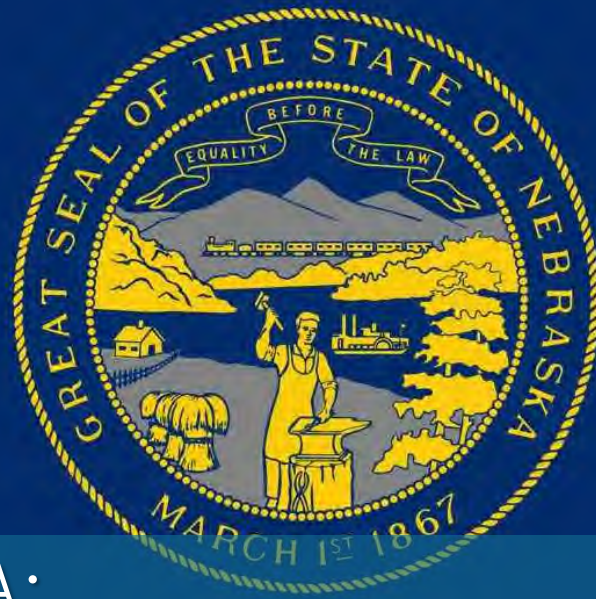
- 1. Zoning Regulations
- 2. Subdivision Regulations
- 3. Floodplain Regulations & Mapping
- 4. Capital Improvements Program
- 5. Plan Maintenance

The County Board will have a critical role in implementation of this plan through the annual budgeting process. County elected officials, staff, and volunteers take the primary role in implementation of the comprehensive plan.

Other action items are referenced in support of activities by other entities supporting implementation of this plan.

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## Appendix A: *Public Participation*

As noted in Chapter Two, there were several ongoing efforts to support Community Engagement in the Thayer County Comprehensive Plan. Additional details on these efforts are included here.

### COMPREHENSIVE PLAN SURVEY

The planning team developed an extensive public survey to encourage public participation by local residents and employers, people working and shopping in the county, and people with ties to the county such as those who grew up there or were considering retiring in the area.

The survey was released at the Town Hall meetings in January 2023. The survey used the SurveyMonkey online platform. Paper copies were also made available across the county and in each community. The survey

was held open through May 1, 2023. Results include:

- There were 204 responses
- 27.14% of respondents were from Rural Thayer County, with an equal number from Hebron, and 14.57% from Deshler.
- 26.29% answering have lived in Thayer County for 50+ years, with 13.92% answering 21-30 years.
- 25.64% were 55-64 years old.
- 31.44% had 2 children, and 23.71% had 3 children.
- 65.19% of those answering reported their children were grown.
- 35.54% reported their children were grown and living elsewhere in Nebraska, with 31.01% having children at home.
- 50.26% were employed full-time, and 23.08% retired.
- 26.42% worked in Agriculture, 12.95% in Education and health care.

Complete results of the survey are available from the Thayer County Zoning Administrator on request.

### TOWN HALL MEETINGS

In addition to individual and small group meetings, the planning team hosted two rounds of Town Hall public participation meetings. This first two meetings were held on January 17, 2023, at the Thayer County Event Center, which is part of the County Fairgrounds in Deshler. The third and fourth meetings a week later on January 24, 2023. The morning meeting was held at the Davenport Village Office. The evening meeting was held at the Bruning Fire hall.

These meeting were an integral part of the planning process.

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## SWOT ANALYSIS

Participants engaged in a conversation regarding the strengths, weaknesses, opportunities, and threats, related to the growth and development of Thayer County and its communities. Marvin Planning Consultants staff facilitated and recorded comments.

### Strengths

In general, strengths are local assets in which Thayer County has a competitive advantage, and things which draw people to the County.

- Ag- Production agriculture, ag technology (precision ag needs broadband)
  - ◆ Family Farms
- UP Railroad
  - ◆ Grain/ag products
  - ◆ Railroad tourism
- Commercial Ag storage
  - ◆ Potential for value-added ag
- Manufacturing--especially Deshler/Hebron area
  - ◆ Reinke Manufacturing has an international market
  - ◆ MetalQuest, Hebron
  - ◆ Norder Supply, Bruning
  - ◆ Metal-Tech Partners in Bruning & Geneva
- Local Business
- EDA has programs/funding for down payment assistance (new)
- Hospital (Hebron) & Clinics--Davenport & Bruning
  - ◆ Assisted Living / Nursing Homes--Deshler is city-owned; Hebron
- Small community feel
- Alexandria State Lakes Recreation Area (east in Jefferson County)
- Groundwater—quantity and quality

- ◆ Good drinking water in places
- Have most amenities you need without hustle and bustle
  - ◆ Safe for kids to play in their own yards
- Active faith communities
- Small town life, know your neighbors, can leave your house unlocked, safe, not a lot of traffic.
- The “country” is always nearby
- School systems--innovative leadership
  - ◆ Private school
  - ◆ Childcare and pre-school
- SeCC / CCC-Hastings
- Community Foundations
- Bruning—housing supply, lot cleanup
- Deshler—grocery, schools
- Deshler—vacant property ordinance; they reach out to owners to figure out what their plan is for the house/property. They want it so they can give information to prospective buyers or owners
- Deshler—Spring Creek Model Trains retail store attracts customers internationally

### Weaknesses

Weaknesses are areas where Thayer County has a competitive disadvantage, and things which may keep people from moving to the County.

- Lack of Housing
  - ◆ Rental market is tight
  - ◆ Older homes don't meet modern family needs
  - ◆ Zoning may not buffer residential areas from industrial aesthetics & hazards

- ◆ Need housing near schools (keep small town schools open)
- ◆ Need more buildable lots (cities/villages)
- Housing blight
  - ◆ Abandoned/neglected
  - ◆ Absentee owners
  - ◆ Cost of enforcement
  - ◆ Conflict-enforcement, people don't want to maintain their property
  - ◆ Need for Rental housing rehab -- grants? Programs?
- Commercial blight
  - ◆ Abandoned/neglected
  - ◆ Downtown vacancies
  - ◆ Gifts to municipality still require maintenance
  - ◆ Modern building codes don't work on old brick
  - ◆ Demo vs. rehab? Would rather have people maintain property, demolition as last resort
  - ◆ Mismatch between building inventory and business needs—need turnkey commercial space
- Grant-writing capacity
  - ◆ Household income data discrepancies
  - ◆ Changing requirements for CDBG revolving funds
- Lack of Employees / workforce shortage
- Need childcare—high priority
- Infrastructure is aging—some places keep up better with maintenance
- Cities and villages feel they need to chase sales tax
- Lack of Recreation for adults (empty nesters)
- Swimming pools need constant maintenance/renovation



- Need larger-tract Business/Industrial park close to transportation corridors
- Stay out of floodplains
- People expect services
  - ◆ Need Lodging/BnBs
  - ◆ Variety of restaurants, esp. in the evening.
- Public transportation is limited
- Things which used to be considered amenities are now considered necessities
- Need zoning clarity—balancing uses isn't the same in a small town
- Highway 81 diverting business from downtown districts
- Limited broadband access -- few options even for just television
  - ◆ Non-compete agreements result in limited services--need multi-jurisdictional cooperation
- Need land for new development near cities and villages

## Opportunities

Opportunities are regional, national, or international trends which may bring growth and development to Thayer County, with some hard work and determination.

- Broadband as 21st Century Utility
  - ◆ Fiber is better service, but too expensive yet to drop everywhere
  - ◆ Broadband service varies across the county
  - ◆ FCC maps are not accurate
  - ◆ Need strong internet and broadband for work from home (WFH)
- Return to Small Town Lifestyle / Small Town Quality of Life
  - ◆ Sense of Community
  - ◆ Young families returning

- ◆ Youth attraction/retention post high school
- ◆ Attracting and retaining retirees
- ◆ Cost of living is low
- ◆ Idea--railroad enthusiast event w/Spring Creek Model Trains & Belvidere Train Watching Station; Countywide train celebration
- Have a strong local economic development program
- Job opportunities
  - ◆ Help with career paths
  - ◆ Work with existing manufacturers to provide workforce training
  - ◆ Develop a mentorship program for business development
- Entrepreneurialism—grow and start your own business
- Location on prime North-South / East-West corridors between Interstates—Focus on the Hwy 81 four-lane corridor
  - ◆ Bring business/industry to the infrastructure, rather than serving scattered sites out in county
  - ◆ Opportunities for tourist/traveler services and lodging
  - ◆ Build on Oregon Trail and Pony Express
  - ◆ Monument Road
- Opportunities to provide more variety in dining & lodging
- Infill Development / redevelop infill lots
- Some cities have municipal water/lagoon capacity for growth

- Solar Development on marginal land—eg York solar farm on landfill
  - ◆ Some prefer solar to wind
  - ◆ Some rely on wind farm lease payments
- Ideas for future
  - Need creative solutions
  - Entrepreneurship
  - Automation—ie new laser cutters help do more with less labor
- Deshler—area to grow
  - Grow east; south is floodplain, northeast is subdivided.
  - Opportunities for workforce housing

## Threats

Threats are outside forces which provide challenges to continued local growth and development—they are also challenges to be overcome with hard work and determination.

- Generational change/passing down businesses—owners close to retirement need to find someone to take over the business
- Need young leaders—leadership development
- Broadband fiber/wireless infrastructure is expensive—rural communities get overlooked
  - ◆ Great Plains Communications and Glenwood will not work together/cross territories
- Fewer Volunteers, esp. Fire/EMS
  - ◆ Increasing requirements
  - ◆ Decreasing volunteerism
- Natural and Manmade Hazards
  - ◆ Flooding
  - ◆ Wildfire
  - ◆ Tornado
  - ◆ Public health
  - ◆ Infrastructure / electricity / heat

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- Disinvestment in small towns
  - Workforce life cycle
    - ◆ Aging population / business owners—need transition planning
  - Some places have nitrates in groundwater (and surface water)
  - 30x30
  - Wind turbines—aesthetics/loss of ag land
    - ◆ Can't fly crop dusters
  - Accommodating electric vehicles
    - ◆ Need charging stations
    - ◆ Fire hazards
  - Infrastructure is becoming more costly to install and much more costly to maintain.
  - Keeping up with the Region.