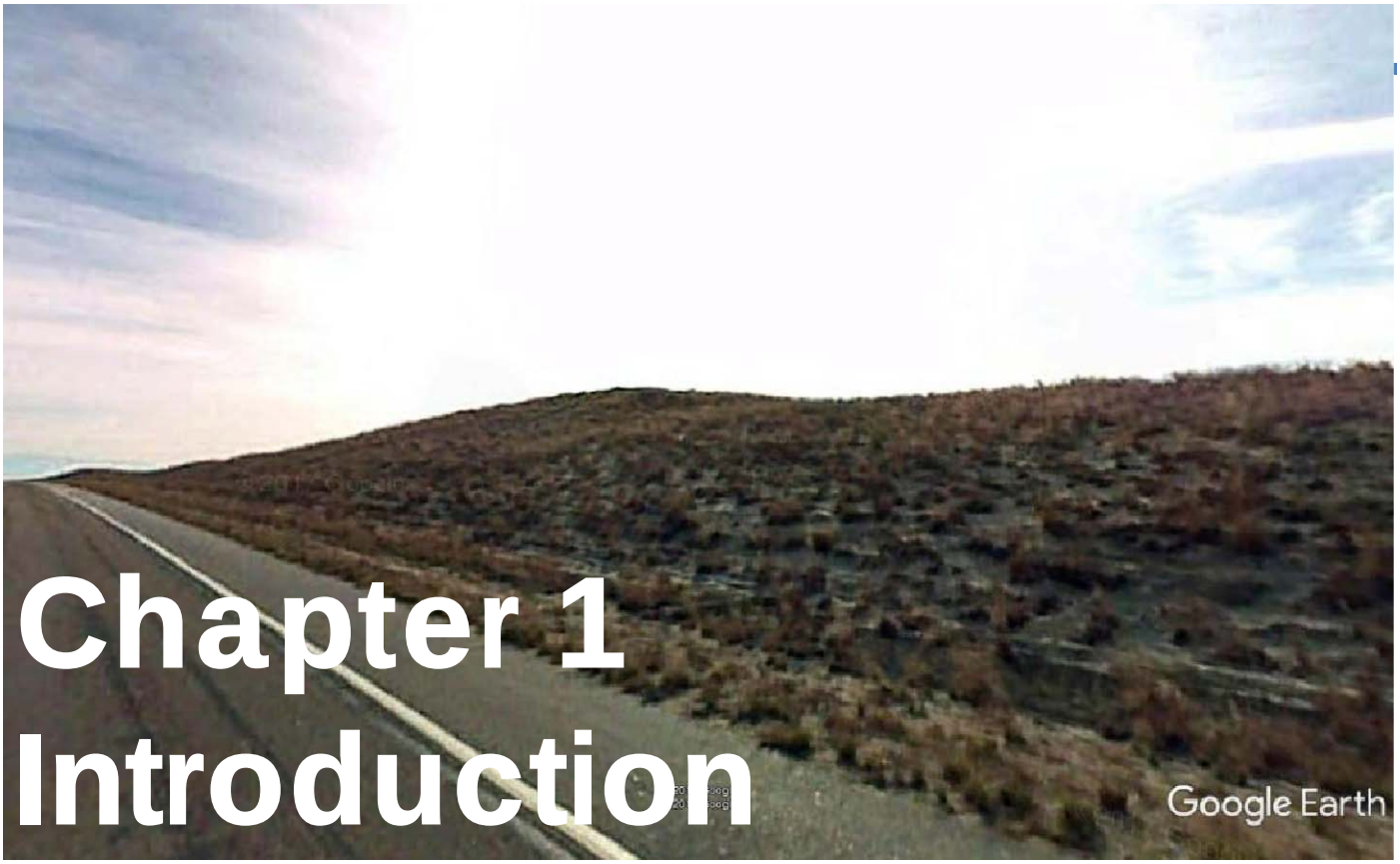
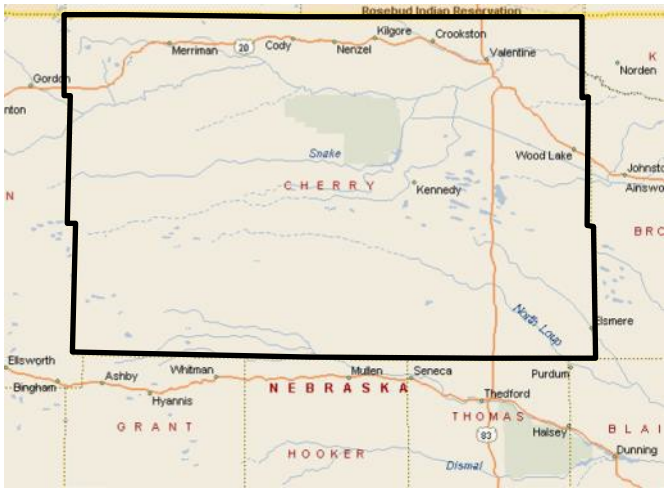


Chapter 1 Introduction

Location

Cherry County is located in north central Nebraska, along the Nebraska-South Dakota state line. The county is bounded on the north by the State of South Dakota and the Rosebud Indian Reservation; on the east by Brown County and Keya Paha County; on the south by Grant, Hooker, Thomas, and Blaine counties. Counties; on the west by Sheridan County.



The county has seven highways crossing the county including Nebraska Highways 12, 61, 67, Spur 16B, Spur 16 F, US Highway 20 and US Highway 83. The county is home to the communities of Cody, Crookston, Kilgore, Merriman, Nenzel, and Valentine (county seat); plus, the unincorporated communities of Brownlee and Eli.

Comprehensive Development Planning

The Cherry County Comprehensive Development Plan is designed to promote orderly growth and development for the county, as well as providing policy guidelines to enable citizens and elected officials to make informed decisions about the future of the county.

The Comprehensive Development Plan will provide a guideline for the location of future developments and uses within the planning jurisdiction of Cherry County. The Comprehensive Development Plan is intended to encourage a strong economic base for the County so all goals can be achieved.

The Comprehensive Development Plan is intended as an information and management tool for County leaders to use in their decision-making process when considering future developments. The Comprehensive Development Plan is not a static document; it should evolve as changes in the land use, population or local economy occur during the planning period.

The Planning Process

The Comprehensive Development Plan begins with the development of 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, the data collection phase will be occurring. Data is collected to provide a snapshot of the past and present conditions within the county. Analysis of data provides the basis for developing forecasts for future land use demands, as well as future needs regarding housing and facilities.

The Comprehensive Development Plan is a **blueprint**....designed to identify, assess, and develop actions and policies in the areas of population, land use, transportation, housing, economic development, county facilities, and utilities. The Comprehensive Development Plan contains recommendations, when implemented, that will be of value to the County and its residents.

The Comprehensive Development Plan identifies the tools, programs, and methods necessary to carry out the recommendations. Nevertheless, the implementation of the 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 the County.

Plan Preparation

The Plan was prepared under the direction of Cherry County Planning Commission, with the assistance and participation of the Cherry County Board of Commissioners; County staff; the Plan Review Committee and citizens of Cherry County. The time period for achieving the goals, programs, and developments identified in the Cherry County Comprehensive Plan is 20 years. However, the County should review the Plan annually and update the document every 10 years (2030), 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.

Comprehensive Plan Components

Nebraska State Statutes require the inclusion of certain elements in a Comprehensive Plan. A "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." The Comprehensive Plan is comprised of the following chapters and sections:

- Introduction Chapter
- Community Engagement Chapter
- Population Statistics Chapter
- Housing Chapter
- Economics/Economic Development Chapter
- County Facilities Chapter
- Energy Chapter
- Natural Resources/Environmental Chapter
- Land Use Chapter
- Transportation Chapter
- Implementation Chapter

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 Cherry County to closely monitor population, housing and

economic conditions that may impact 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 Development Plan for the future, to

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

enhance the quality of life, and to raise the standard of living for all residents.

The Comprehensive Development Plan records where Cherry County has been, where it is now, and where it likely will be in the future. Having this record in the Comprehensive Development Plan

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

will serve to inform County officials as much as possible.

The Comprehensive Development Plan is an information and management tool for County leaders to use in their decision-making process when considering future developments. The Comprehensive Development 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

Planned growth will make Knox 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.

Cherry County's evolution as it achieves its physical, social, and economic goals.

JURISDICTIONAL ORGANIZATION

The Cherry County Board of Commissioners, which is a board of elected officials, performs the governmental functions for the County. Each incorporated community in Cherry County also has elected officials and officers overseeing how their community is governed.

The planning and zoning jurisdiction of Cherry 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.

PAGE INTENTIALLY LEFT BLANK

Chapter 2 Population

Population Profile

Population is the major catalyst driving everything in a municipality or a county including housing, local employment, economies and fiscal stability. It is critical to understand how past population trends when applied to the future impacts the overall area. Cherry County needs to understand where the County has been, where it is currently, and where it appears to be going.

Understanding the historic populations aid in identifying where the population may go in the future and aids in determining potential impacts on future housing, retail, medical, employment, and educational needs within Cherry County. In addition, when future populations appear to be declining, it provides a benchmark from which to direct and gauge economic development activities.

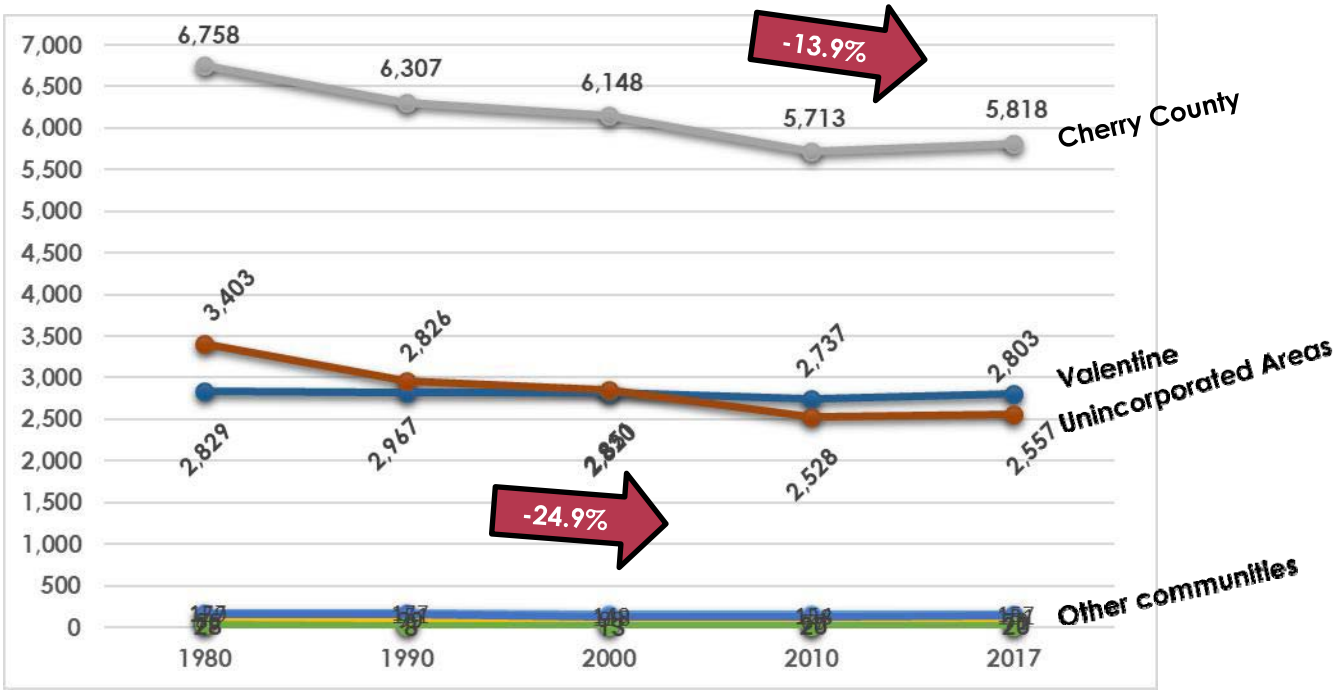
Projections provide an estimate for the County to base future land use and development decisions. However, population projections are only estimates and unforeseen factors may affect projections significantly.

Population Trends and Analysis

The population from 1980 until the 2017 estimates can be found in Figure 2.1 for Cherry County, the incorporated communities within the county, and the unincorporated areas. The data provide a look at where the county has been and allows for the eventual projection of populations in the County. Figure 3.2 contains the population data for each community, for the same period, but shown at a legible scale.

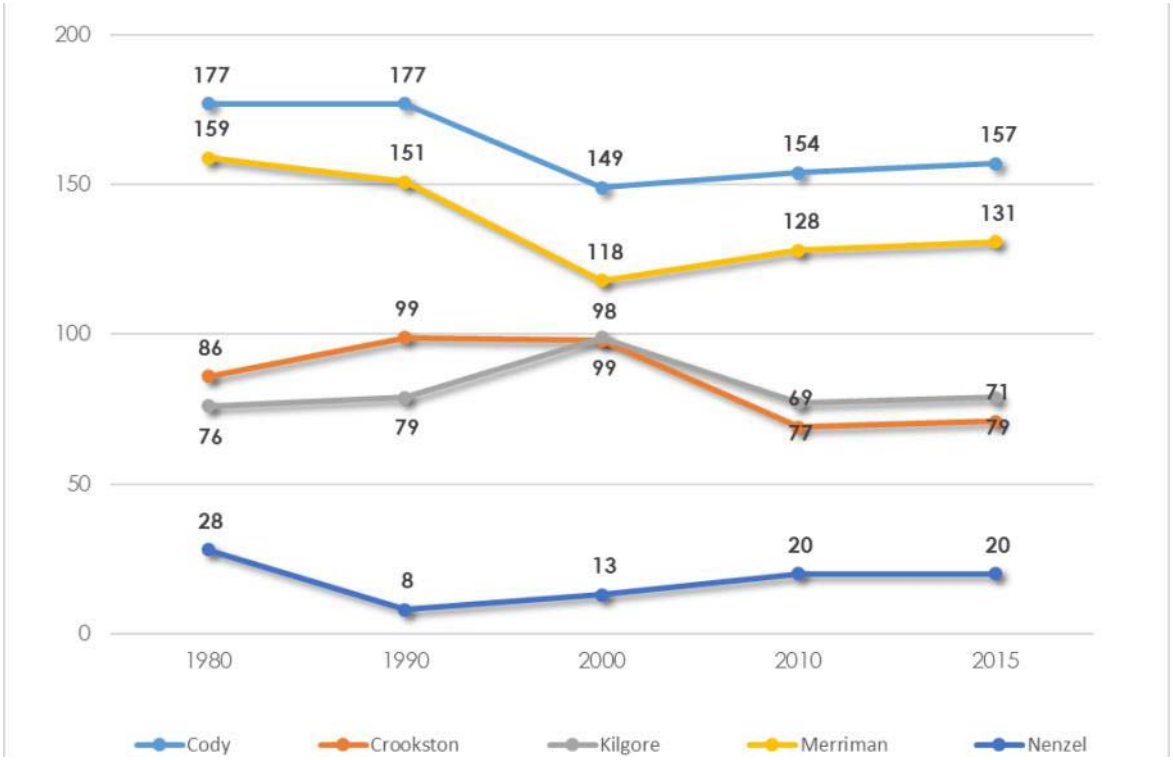
Overall, Cherry County has seen a –13.9% (-940 people) decline in population from 1980 to 2017. This decrease was based upon a combined decrease in population in Valentine and the unincorporated portions of the county. The unincorporated portions of Cherry County declined by 846 people or –24.9% from 1980 to 2017; while, Valentine saw a decrease of 56 people or –2.0%. Growth within the smaller municipalities has predominately been declines, however, their decline has been a little flatter than the unincorporated areas and the County as a whole.

FIGURE 2.1: POPULATION TRENDS AND ANALYSIS CHERRY COUNTY 1980 TO 2017



Source: U.S. Census Bureau 1980 - 1990, 2000, 2010, 2017

FIGURE 2.2: COMMUNITY POPULATIONS CHERRY COUNTY 1980 TO 2017

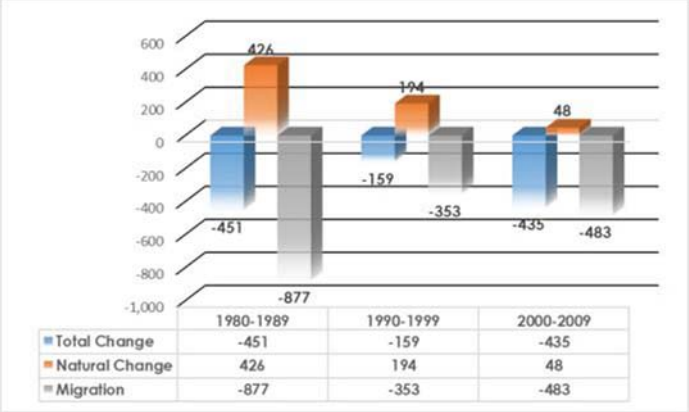


Source: U.S. Census Bureau 1980 - 1990, 2000, 2010, 2017

Migration Analysis

Migration Analysis is a toll which allows the County to understand critical dynamics of the population shifts. Total Migration indicates the population size migrating in or out of the County over a given period of time.

Figure 2.3: Migration Analysis Cherry County 1980 to 2010



Sources: Nebraska DED 1994-2009
Nebraska DHHS, Vital Statistics Reports, 1980 – 1994

Figure 2.3 indicates the overall population change, countywide, as well as the two key components of population change, migration and natural change.

Overall from 1980 to 2010, Cherry County has declined by 940 people. The overall decline was mostly associated with out-migration, which saw 1,713 people move out of Cherry County over the 30 year period.

During the 30 year period births exceeded deaths every decade between 1980 and 2000. During the time period, there were 668 more births in Cherry County than deaths.

Age Structure Analysis

Age structure is another important component of population analysis. By analyzing age structure, one can determine a key dynamic affecting the population of Cherry County. Note: the data in Figure 2.3 is based on a calendar year and the data in Table 2.1 is as of April 1, 2000 and 2010; therefore the numbers may be slightly skewed.

Each age group affects the population in a number of different ways. For example, the existence of large younger age groups (20-44 years) means there is a greater ability to sustain future population growth compared to large older age groups. Understanding what is happening within the age groups of the county's population is necessary to effectively plan for the future.

Table 2.1: Age/Sex Characteristics

	Male and Female Populations			2000-2010	
Age in 2000	2000 population	Age in 2010	2010 population	Cohort Change	% Change
		0-4	310	310	
		5-9	358	358	
0-4	380	10-14	358	-22	-5.8%
5-9	433	15-19	344	-89	-20.6%
10-14	516	20-24	228	-288	-55.8%
15-19	451	25-29	285	-166	-36.8%
20-24	263	30-34	307	44	16.7%
25-29	349	35-39	324	-25	-7.2%
30-34	334	40-44	315	-19	-5.7%
35-44	887	45-54	911	24	2.7%
45-54	834	55-64	783	-51	-6.1%
55-64	639	65-74	593	-46	-7.2%
65-74	534	75-84	416	-118	-22.1%
75 & older	528	85 and over	181	-347	-65.7%
Total	6,148		5,713	-435	-7.1%

Source: U.S. Census Bureau 2000 and 2010

Table 2.1 contains the age group structure for Cherry County in 2000 and 2010. The examination of age structure provides an understanding of where some of the population shifts are occurring. These data allow for a better understanding of what could occur in the future. Reviewing population in this manner permits a detailed analysis of which specific groups are moving in and out of the county. Negative changes in a group indicate out-migration or a combination of out-migration and deaths.

Cherry County saw growth in four age groups. The 0 -4 and 5-9 groups are always an increase, since these individuals were not alive for the 2000 Census. Outside of the 2010 age groups of 0-4 and 5-9 years, the other increases were in the 30-24 and 45-54 age groups. Overall, there was an increase of 736 persons in these age groups. When you eliminate the first two younger populations, there were 68 people that actually moved into Cherry County during this period. This population increase consisted primarily of family aged adults and children.

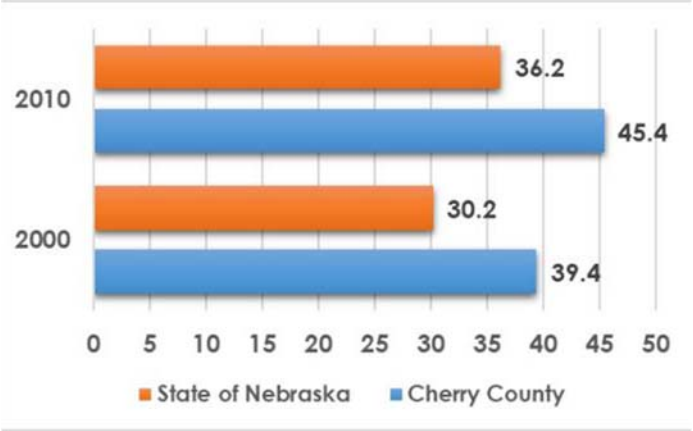
There were 10 age groups from 2000 that declined by 2010. The group with the greatest loss was the 85 years+ (2010), which lost 347 persons over the period. This loss can be attributed to two causes: 1) people moving on after 75 years to other communities and senior care facilities, or 2) a dying population base. The latter is likely the largest

reason since between 2000 and 2010 there were 501 resident deaths in Cherry County. Overall, Cherry County saw significant decreases in key age groups with nearly all of the losses attributed to out-migration.

Median Age

Between 1960 and 2010, the median age in Cherry County increased from 39.4 years to 45.4 years. This increase equaled 5.0 years or 12.7% for the period. During this same period, the state of Nebraska saw a similar increase in the Median Age going from 30.2 in 2000 to 36.2 in 2010 or an increase of 6 years or 19.9%.

Figure 2.4: Median Age - 2000 to 2010



Source: U.S. Census Bureau 2000-2010

Dependency Ratio

Dependency ratios examine the portion of Cherry County supporting age groups historically dependent upon others for survival (those under 18 years and those 65 years and older). See the box above for details on calculating the ratio. The importance of this ratio focuses on the number of dependent persons and is there enough employed persons in the county to support these populations as well as themselves.

Figures 2.5 and 2.6 indicate the dependency ratios for 2000 and 2010 in Cherry County. The portion of persons less than 18 years of age decreased by 18.1% between 2000 and 2010; while those aged 65 years and older increased by 20.2% overall.

In 2000, Cherry County had a Dependency Ratio of 0.80 (44.3%/55.7%); however, by 2010 the Ratio had decreased to 0.75 (42.9%/57.1%). This is supported by the slight decrease in the 18 and under age group, plus the slight increase in the 65 and older group.

Dependency Ratio

The dependency ratio examines the portion of a community's earnings that is spent supporting age groups typically and historically dependent on the incomes of others.

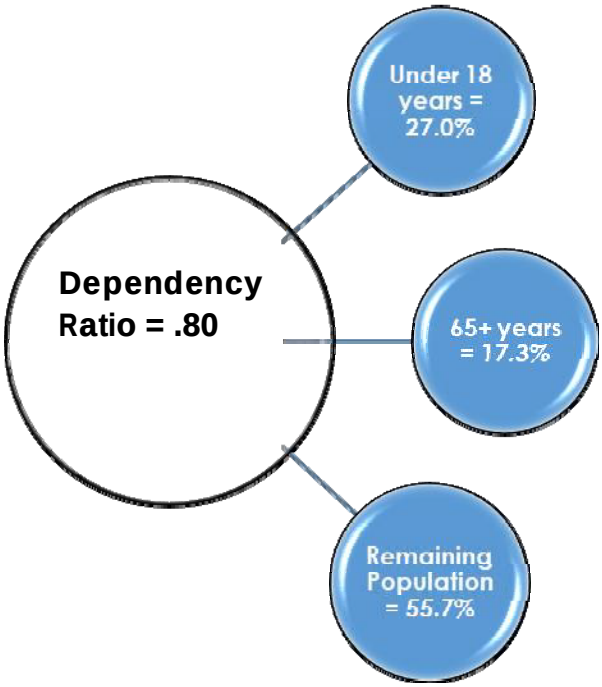
< 1: **1 Independent resident is able to support more than 1 Dependent resident**

=1: **1 Independent resident able to support 1 Dependent resident**

>1: **1 Independent resident able to support less than 1 Dependent resident**

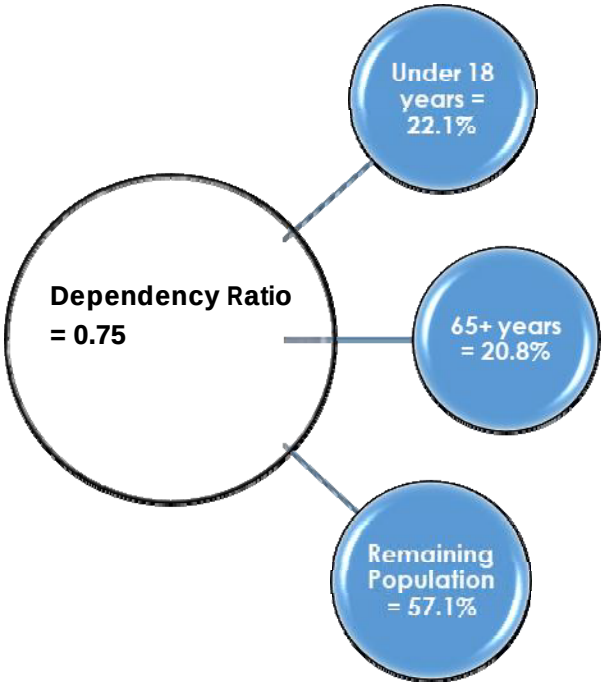
$$\frac{\text{(\%18 years and younger + \%65 years and older)}}{\text{\% of remaining population}}$$

Figure 2.5: Dependency Ratio - 2000



Source: U.S. Census Bureau 2000-2010

FIGURE 2.6: DEPENDENCY RATIO – 2010



Source: U.S. Census Bureau 2000-2010

ETHNICITY

Cherry County during the past decade has seen a slight shift in ethnicity within the County. Analysis of the ethnicity provides more detail as to the changes being seen in a county. Ethnicity is more than additional people living in the county since these new residents bring their own cultures and beliefs to the area; some of these may not mesh well with those already in place. The changes in Cherry County saw increases in all non-white ethnic groups between 2000 and 2010; except for the Asian and Pacific Islander which lost six people.

TABLE 2.2: POPULATION BY ETHNICITY

Race	2000		2010		2000-2010	
	Number	% of total	Number	% of total	Net Change	% change
White, not Hispanic	5,791	94.2	5,180	90.7	-611	-10.6
Black or African Am.	4	0.1	13	0.2	9	225.0
Am. Indian & AK. Nativ e	200	3.3	335	5.9	135	67.5
Asian & Pacific Islander	27	0.4	21	0.4	-6	-22.2
Other, not Hispanic	20	0.3	23	0.4	3	15.0
Hispanic	57	0.9	95	1.7	38	66.7
Mexican	39	0.6	51	0.9	12	30.8
Puerto Rican	7	0.1	8	0.1	1	14.3
Cuban	0	0.0	0	0.0	0	-
Other Hispanic	11	0.2	36	0.6	25	227.3

Source: U.S. Census 2000 and 2010

The largest change (numerically) was the American Indian and Alaskan Native population. The American Indian and Alaskan Native population grew by 135 people between 2000 and 2010 or 67.5%.

The second largest change (numerically) was the Hispanic population, primarily Other Hispanics. The Hispanic population grew by 38 people between 2000 and 2010, the largest was those of other Hispanic ethnicity which accounted for 25 of the 38 new people.

In addition, the White population had a 10.6% decrease overall, which equaled 611 fewer Caucasian people in the County. The County, communities, and school districts need to track these changes annually in order to minimize any potential fiscal impacts.

POPULATION PROJECTIONS

Population projections are estimates based upon past and present circumstances. The use of population projections allows Cherry County to estimate the potential population in future years by looking at past trends. By scrutinizing population changes in this manner, the County will be able to develop a baseline of change from which future scenarios can be generated. A number of factors (demographics, economics, social, etc.) may affect projections positively or negatively.

At the present time, these projections are the best crystal ball Cherry County has for predicting future population changes. There are many methods to project the future population trends; the projection technique used below are intended to give Cherry County a broad overview of the possible population changes that could occur in the future.

TREND LINE ANALYSIS

Trend Line Analysis is a process of projecting future populations based upon changes during a specified period of time. In the analysis of Cherry County, four different trend lines were reviewed: 2000 to 2010, 1980 to 2010, 1990 to 2010, and 1960 to 2010. A review of these trend lines indicates Cherry County will see varied levels of population changes between now and 2040. The following projections summarize the decennial population for Cherry County through 2040.

SUMMARY OF POPULATION PROJECTIONS

Three population projection scenarios were selected and include (1) a Low Series; (2) a Medium Series; and, (3) a High Series.

Low = *2000 to 2010*

2020	5,309 persons
2030	4,933 persons
2040	4,584 persons

Cherry County Trend Analysis

Year	1960 to 2010	Year	1990 to 2010
2010	5,713 persons	2010	5,713 persons
2020	5,312 persons	2020	5,437 persons
2030	4,960 persons	2030	5,175 persons
2040	4,593 persons	2040	4,925 persons
Year	**1980 to 2010**	**Year**	**2000 to 2010**
2010	5,713 persons	2010	5,713 persons
2020	5,402 persons	2020	5,309 persons
2030	5,108 persons	2030	4,933 persons
2040	4,830 persons	2040	4,584 persons

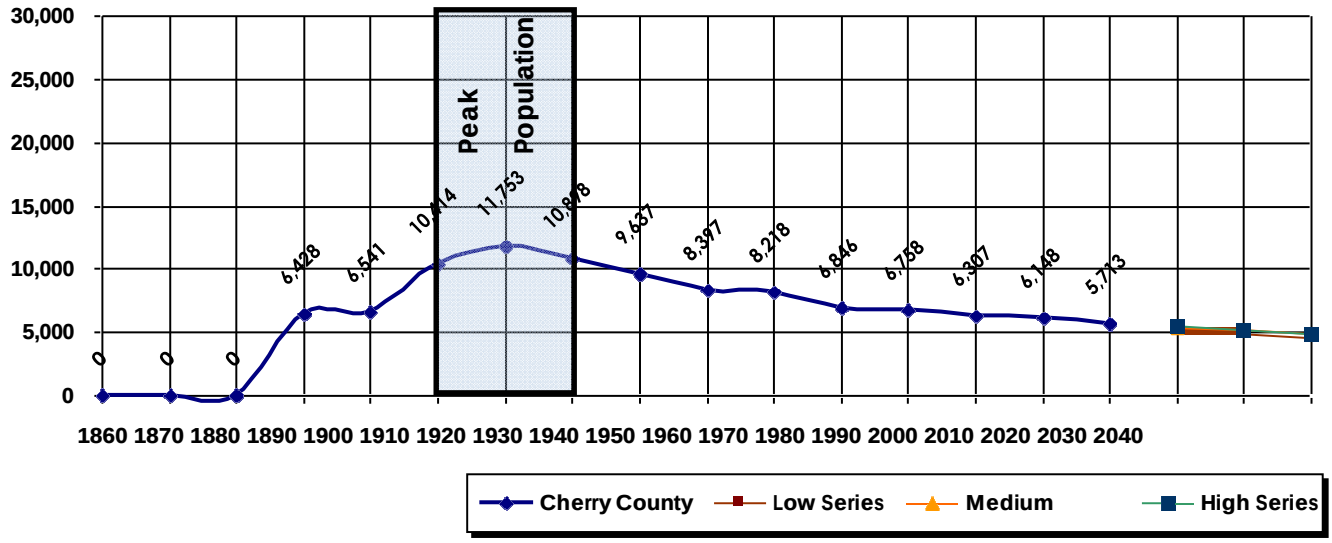
Medium = *1980 to 2010*

2020	5,402 persons
2030	5,108 persons
2040	4,830 persons

High = 1990 to 2010

2020	5,437 persons
2030	5,175 persons
2040	4,925 persons

FIGURE 2.7: POPULATION AND PROJECTIONS



Source: Nebraska Department of Economic Development

Figure 2.7 reviews the population history of Cherry County between 1860 and 2010, and identifies the three population projection scenarios into the years 2020, 2030, and 2040. Figure 2.7 also indicates the peak population for Cherry County occurred between 1910 and 1930. Since 1930, the population of the County has been on a declining trend line.

Chapter 3 Housing

Housing Profile

The Housing Profile identifies existing housing characteristics and conditions for Cherry County. The primary goal of the housing profile is to allow the County to examine past and present conditions; while, identifying potential needs including provisions for safe, decent, sanitary, and affordable housing for every family and individual residing within the County.

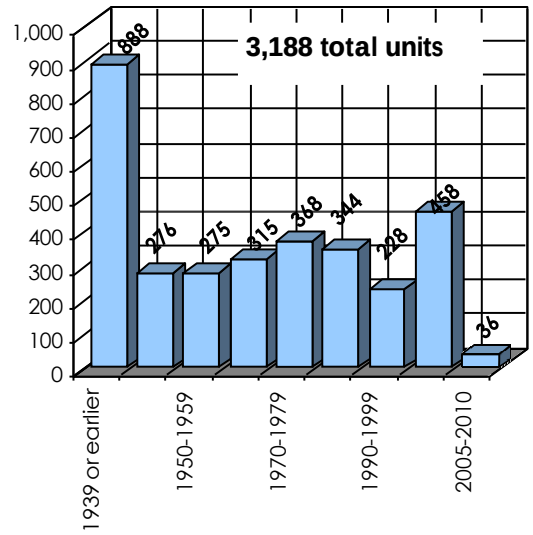
Projecting future housing needs requires several factors to be considered. These factors include population change, household income, employment rates, land use patterns, and residents' attitudes.

The following tables and figures provide the information to aid in determining future housing needs and develop policies designed to accomplish the housing goals for Cherry County.

Age of Existing Housing Stock

An analysis of the housing stock age can reveal a great deal about population and economic conditions of the past. Examining the housing stock is important in order to understand the overall quality of housing in Cherry County.

Figure 3.1: Age of Existing Housing Stock Cherry County 2010



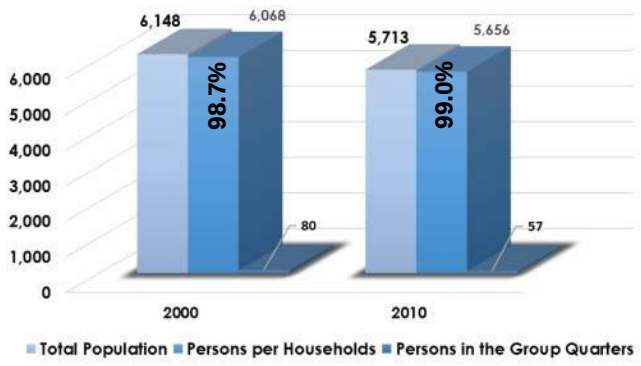
Sources: U.S. Census Bureau
American Community Survey 2010

Figure 3.1 indicates 888 homes, or 27.9% of Cherry County's 3,188 total housing units, 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.

Cherry County saw very positive construction activity between 1940 and 1990 with 1,578 (49.5%) homes constructed. This was especially true between 1970 and 1990 which saw 712 (22.3%) new homes built during the two decades. These data indicate the economy was relatively good during these decades. Between 2000 and 2004, Cherry County saw an oddity compared to several other counties in Nebraska, it actually had its largest number of homes constructed with 458 or 14.3% of the total.

A total of 66.6% of all housing units in Cherry County were constructed prior to 1980. Due to the age of these homes, there may be a need for special weatherization programs in the County and communities to bring these homes up to current energy efficiency standards.

FIGURE 3.2: HOUSING POPULATIONS



Sources: U.S. Census Bureau
American Community Survey 2010

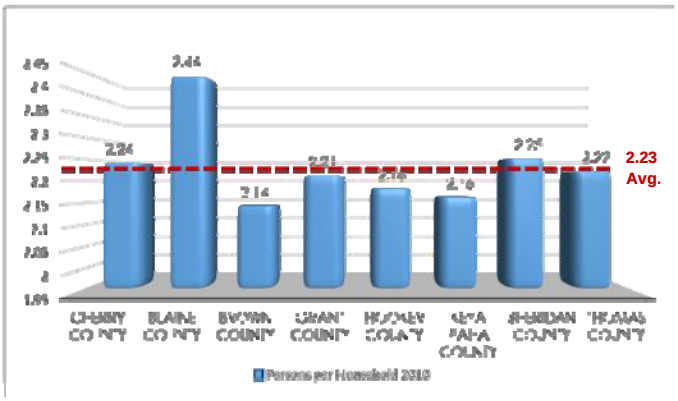
HOUSING CHARACTERISTICS

Figures 3.2 through 3.10 identify several different housing characteristics in Cherry County. The figures indicate the breakdown between owner– and renter-occupied housing as well as the number of people living in group quarters.

Persons in Households/Group Quarters

In 2010 there were 412 fewer people living in households than in 2000, this represents a change of –6.8%. Between 2000 and 2010, the number of people living in group quarters went from 80 people in 2000 to 57 in 2010, a change of –28.8%.

FIGURE 3.3: PERSONS PER HOUSEHOLD - 2010



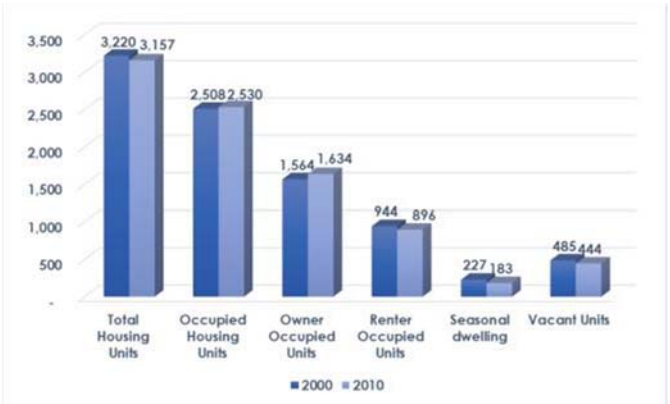
Sources: U.S. Census Bureau, American Community Survey 2010

Persons per Household

Figure 3.3 also includes the number of persons per household. The average persons per household in Cherry County in 2010 was 2.24 persons. The trend nationally has been towards a declining household size; however, the persons per household in Cherry County is average for the entire north-central Nebraska region. The region average is 2.23 persons per household. The surrounding counties in 2010 were:

- Blaine County has 2.44 persons/household
- Brown County has 2.14 persons/household
- Grant County has 2.21 persons/household
- Hooker County has 2.18 persons/household
- Keya Paha County has 2.16 persons/household
- Sheridan County has 2.25 persons/household
- Thomas County has 2.22 persons/household

FIGURE 3.4: OCCUPIED VS. VACANT HOUSING

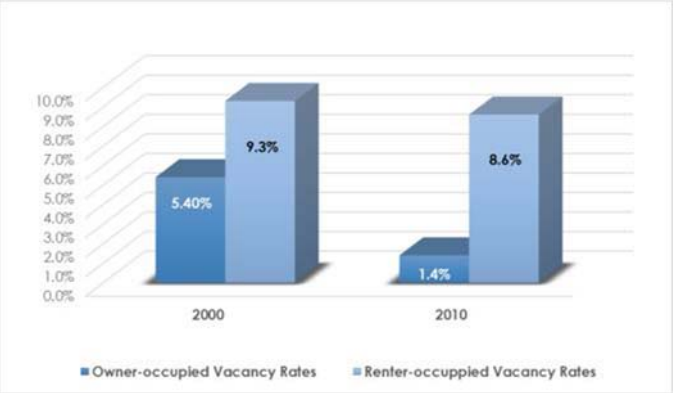


Sources: U.S. Census Bureau, American Community Survey 2000/2010

Occupied vs. Vacant Housing Units

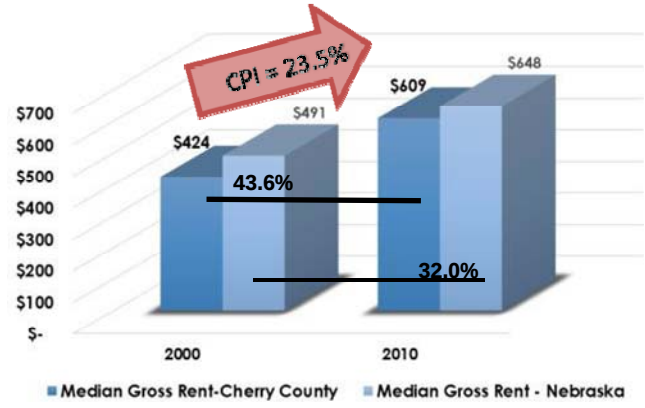
Occupied housing units in the County increased by 0.9% between 2000 to 2010; this was a 22 unit increase over 2000. During the same time frame, vacant housing units declined from 485 units to 444 units or –8.5%. Vacancies, both owner– and renter-occupied, saw declines; the largest decrease was in the owner-occupied vacancies which went from 5.4% in 2000 to 1.4% in 2020. The overall percentage for owner– and renter-occupied units in 2010 was at 1.4% and 8.6% respectively.

FIGURE 3.5: VACANCY RATES BY TYPE OF UNIT



Sources: U.S. Census Bureau, American Community Survey

FIGURE 3.6: MEDIAN GROSS RENT CHERRY COUNTY AND NEBRASKA 2000-2010



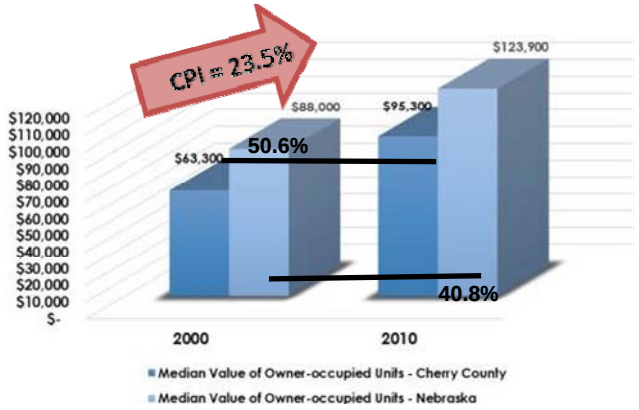
Sources: U.S. Census Bureau, American Community Survey 2000/2010

Median Gross Rent

Median gross rent in Cherry County increased from $424 per month in 2000 to $609 per month in 2010, or 43.6%. The State's median monthly gross rent increased by 32.0%. This indicates Cherry County has seen a gross rent increase 1.4 times more than the State. However, the County's median gross rent was 86.4% of the State's median gross rent in 2000 and 94.0% in 2010.

Comparing changes in monthly rents between 2000 and 2010, with the Consumer Price Index (CPI), enables the local housing market to be compared to national economic conditions. Inflation between 2000 and 2010 increased at a rate of 23.5%, indicating Cherry County's rents increased by nearly double the rate of inflation for the 10-year period. Thus on average, Cherry County tenants were paying considerably more in monthly rents in 2010, in terms of real dollars, than they were in 2000. Landlords were potentially making more on their investment.

FIGURE 4.7: MEDIAN VALUE OWNER-OCCUPIED CHERRY COUNTY AND NEBRASKA 2000-2010



Sources: U.S. Census Bureau, American Community Survey 2000/2010

Median Value of Owner-Occupied Units

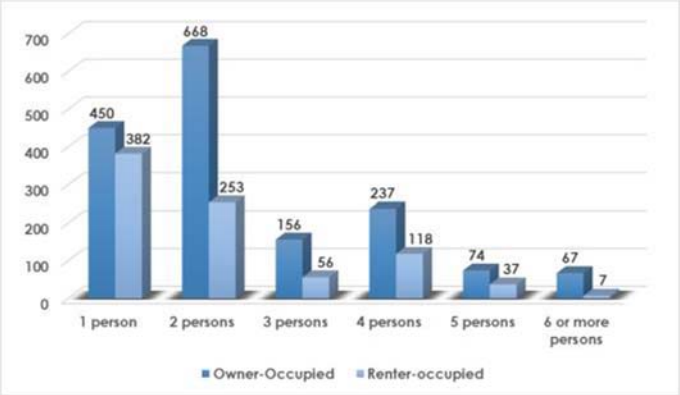
The Median value of owner-occupied housing units in Cherry County increased from $63,300 in 2000 to $95,300 in 2010, and represents an increase of 50.6%. The median value for owner-occupied housing units in the State showed an increase of 40.8%. Housing values in Cherry County grew at approximately 1.25 times faster than the state. In addition, the median value of an owner-occupied unit in Cherry County was 71.9% of the state median in 2000 and 76.9% in 2010.

In comparison to the CPI, the local value of owner-occupied housing increased at a rate greater than the CPI. This indicates housing values in the County were worth more in 2010 compared to 2000 dollars.

Persons Per Household

Figure 3.8 and 3.9 show tenure (owner-occupied and renter-occupied) of households by number and age of persons in each housing unit. Analyzing these data gives Cherry County the opportunity to determine where there may be a need for additional housing.

FIGURE 3.8: PERSONS BY HOUSEHOLD TYPE - 2010

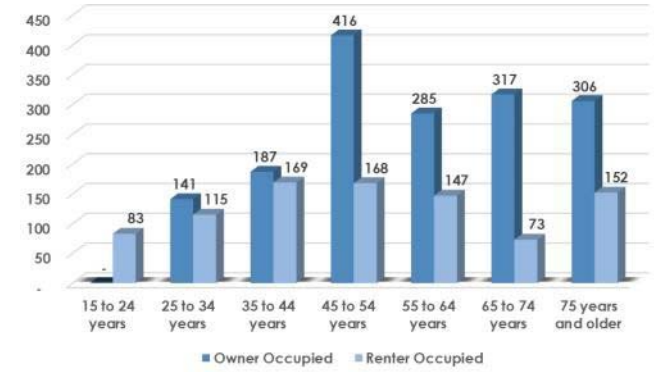


Sources: American Community Survey 2010

In 2010, the largest section of owner-occupied housing in Cherry County was in the two-person household, with 668 units or 40.4% of the total owner -occupied units. By comparison, the largest household size for rentals was the single-person households with 382 renter-occupied housing units, or 44.8% of the total renter-occupied units.

In 2010, the age cohorts representing the largest home ownership group were those 45 to 54 years. Of the total residents living in owner-occupied housing units, 25.2% were between 45 and 54 years of age. The 65 to 74 year group was second with 19.2% of the total owner-occupied units.

FIGURE 3.9: AGE BY HOUSEHOLD TYPE - 2010

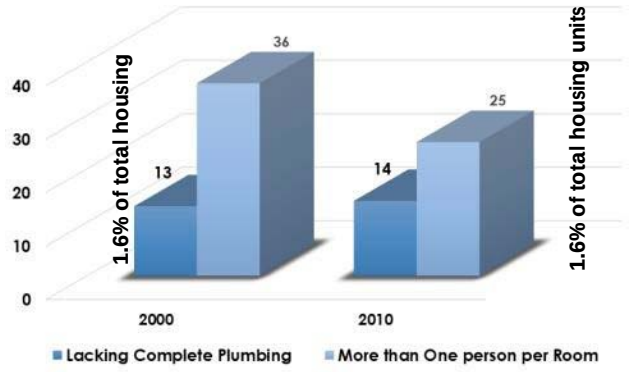


Sources: American Community Survey 2010

The renter-occupied housing was also dominated by the four different cohort groups; 35 to 44 (18.6%), 45 to 54 years (18.5%), 55 to 64 years (16.2%) and 75 years and older (16.8%). These four cohorts represent 70.1% of all the renter-occupied units in 2010.

Cherry County was comprised of 1,753 1- or 2-person households, or 70.0% of all households; which represents 7/10 households in Cherry County. Countywide, households with 5- or more persons accounted for 185 units, or 7.4% of the total.

FIGURE 3.10: SUBSTANDARD HOUSING CONDITIONS



Sources: U.S. Census Bureau 2000, ACS 2010

Substandard Housing

According to the U.S. Department of Housing and Urban Development (HUD) guidelines, housing units lacking complete plumbing or that 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 Cherry County, 49 units were substandard in 2000. This figure was reached by adding the number of housing units meeting one criterion to the number of housing units meeting the other criterion. However, the largest amount of substandard units was based on overcrowding with 36 units.

In 2010, the total number of substandard housing units decreased to 39 units. The primary contributing factor was overcrowding, which accounted for nearly 64.1% of the substandard issue.

What these data fail to consider are housing units that have met both criterion and counted twice. Even so, the County should not assume these data overestimate the number of substandard housing. Housing units containing major defects requiring rehabilitation or upgrading to meet building, electrical, or plumbing codes should also be

included in an analysis of substandard housing. A comprehensive survey of the entire housing stock should be completed every five years to determine and identify the housing units that would benefit from remodeling or rehabilitation work. This process will help ensure that a county maintains a high quality of life for its residents through protecting the quality and quantity of its housing stock.

PAGE INTENTIALLY LEFT BLANK

Chapter 4 Economy and Economic Development

Economic and Employment Profile

Economic data are collected in order to understand local changes in economic activity and employment needs and opportunities within Cherry County. In this section, employment by industry, household income statistics, and commuter analyses were reviewed for Cherry County and Nebraska.

Income Statistics

Income statistics for households are important in determining the earning power of households in a county. The data within show household income levels for Cherry County in comparison to the state. These data were reviewed to determine whether households experienced income increases at a rate comparable to the state of Nebraska and the Consumer Price Index (CPI).

Figure 4.1 indicates the number of households in each income range for Cherry County for 2000 and 2010. In 2000, the household income range most commonly reported was $15,000 to $24,999, which accounted for 20.1% of all households.

In 2010, the income range reported most was the $50,000 to $74,999 and represented 23.8% of the total households.

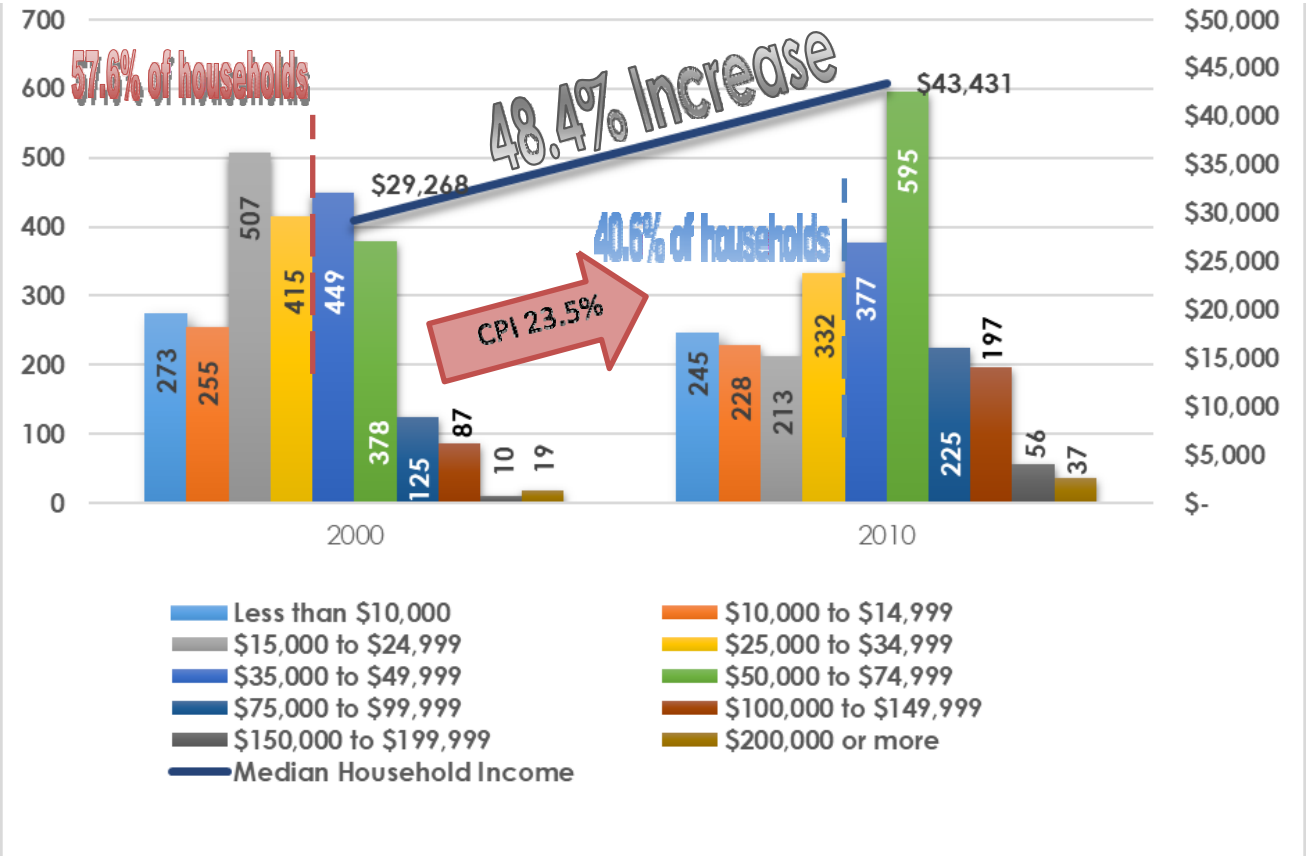
Those households earning less than $15,000 decreased from 20.9% in 2000 to 18.9% in 2010. The level of change was based upon more households moving into the middle to lower-high income ranges. However, those households earning less than $15,000 account for the poorest of the poor in the county.

In addition, the households earning less than $35,000 in 2000 accounted for 57.6% of the households. By 2010 these households had decreased to 40.6% of the households.

The median household income for Cherry County was $29,268 in 2000, which was considerably less than State median income of $39,250. By 2010, the median household income increased to $43,431 or an increase of 48.4%. However, the 2010 median household income was still less than the 2000 State of Nebraska median household income.

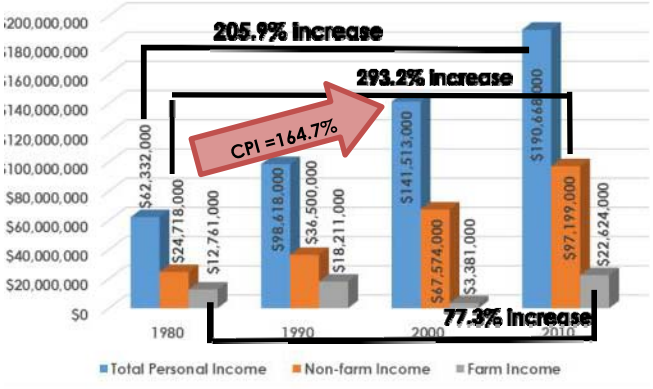
The CPI for this period was 23.5%, which indicates household incomes in Cherry County exceeded inflation. Therefore, households were actually earning more in real dollars in 2010 than in 2000. This difference basically indicates for every $1.00 earned in a household during 2000, it was earning over $2.00 in 2010.

FIGURE 4.1: HOUSEHOLD INCOME



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

FIGURE 4.2: INCOME BY SOURCE 1980 TO 2010



Source: BEA, Regional Economic Information System, 2016

Income Source/Public Assistance

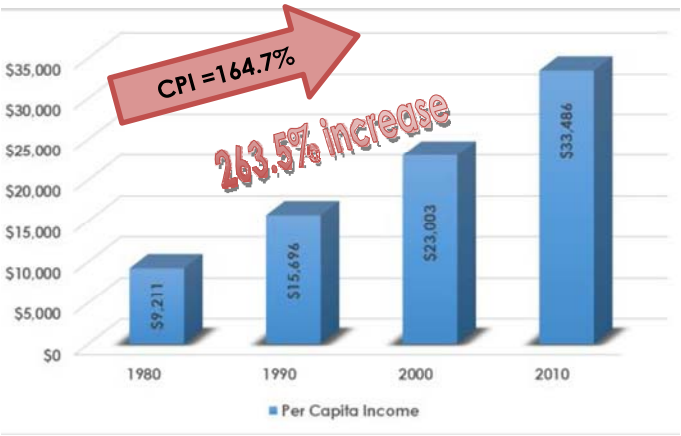
The graph to the left shows personal income by source for Cherry County. These data are compared to the CPI, in order to determine if increases are consistent with inflation and in terms of real dollars. Between 1980 and 2010, the CPI was 164.7%.

Overall Personal Income in Cherry County went from $62,332,000, in 1980, to $190,668,000, in 2010 or an overall increase of 205.9%. Total personal income for the county increased by 1.25 times the rate of inflation over the 30 year period.

Non-farm and Farm Income

Non-farm income increased from $24,718,000 in 1980 to $97,199,000 in 2010, or an increase of 293.2%, which was 1.8 times the CPI. By 2010, farm income had risen from $12,761,000 to $22,624,000, or 77.3%, which is over one-half the CPI.

FIGURE 4.3: PER CAPITA INCOME



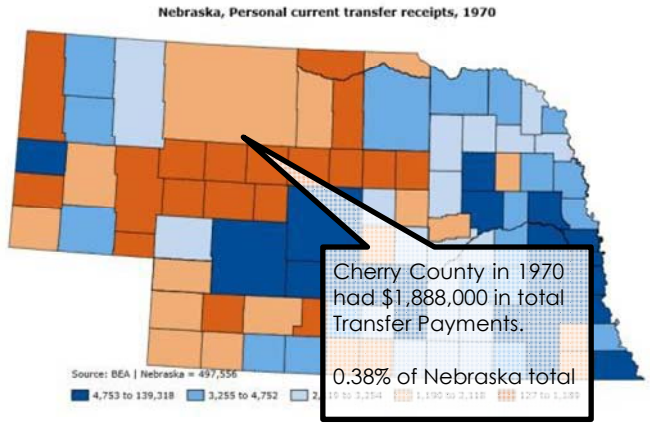
Source: BEA, Regional Economic Information System

Per Capita Income

The per capita income in Cherry County increased from $9,211 in 1980 to $33,486 in 2010, or an increase of 263.5%, which was 1.6 times the CPI. Cherry County's per capita income was 83.7% of the state's per capita income level of $40,023.

Another income source deserving examination is the amount of Transfer Payments to individuals in Cherry County from 1970 to 2010, which is provided in Figure 4.4 and 4.5. Note the total amount of Transfer Payments equals Government Payments to Individuals plus Payments to Non-Profit Institutions plus Business Payments.

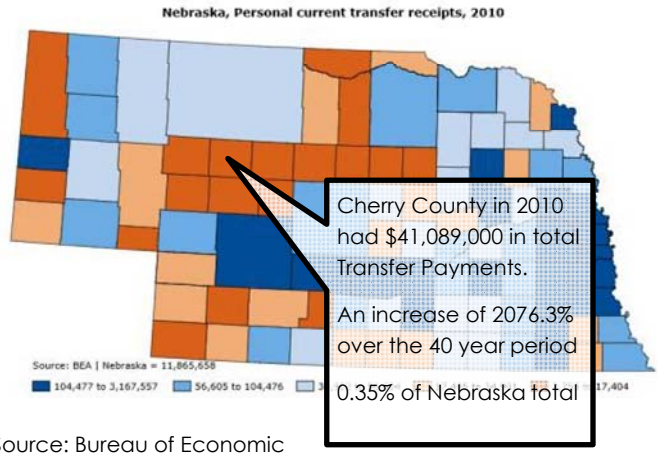
FIGURE 4.4: TRANSFER PAYMENTS 1970



Source: Bureau of Economic Analysis, Regional Economic Information System, 2019

In 1970, Total Transfer Payments to Cherry County added up to $1,888,000. By 2010, Total Transfer Payments to Cherry County were $41,089,000, or an increase of 2,074.7%. Figure 4.6 shows in 2010, transfer payments per capita in Cherry County were $7,216.

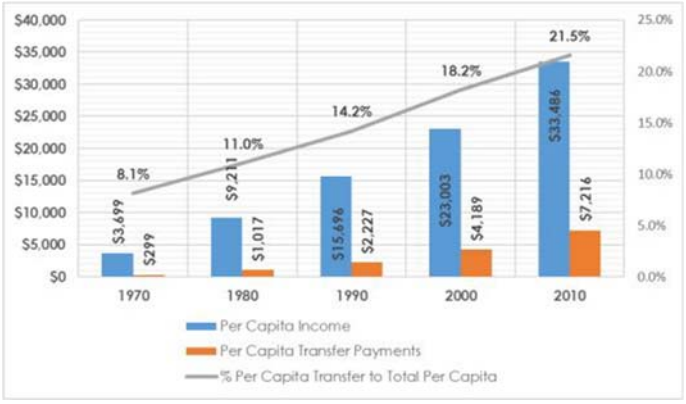
FIGURE 4.5: TRANSFER PAYMENTS 2010



Source: Bureau of Economic Analysis, Regional Economic

The trend for transfer payments per capita between 1970 and 2010 indicates payments increased significantly to individuals in Cherry County, increasing by nearly 2,100% in 40 years. However, transfer payments, as a proportion of per capita income, increased at a much lower rate between 1970 and 2010. In 1970, transfer payments comprised 8.1% of total per capita income, and in 2010, transfer payments were 21.5% of total per capita income, which is an annual increase of 4.1%.

FIGURE 4.6: TRANSFER PAYMENTS PER CAPITA



Source: Bureau of Economic Analysis, Regional Economic Information System, 2019

Industry Employment

Analyzing employment by industry assists a community in determining the key components of their labor force. This section indicates the type of industries making up the local economy, as well as identifying particular occupations employing residents. Figure 4.7 indicates employment size by industry for Cherry County for 2000 and 2010 (these data indicate the types of jobs residents have, not the number of jobs locally).

The employment sector with the most employees in 2000 was Ag./forestry/Fishing/and Hunting and Mining. This sector employed 920 people or 28.8% of the total employed residents in 2000. In 2010, the largest employment sector was still Educational, health, and social services with 796 employees or 25.0% of the total. Cherry County has seen major fluctuations during the time period in Figure 4.7.

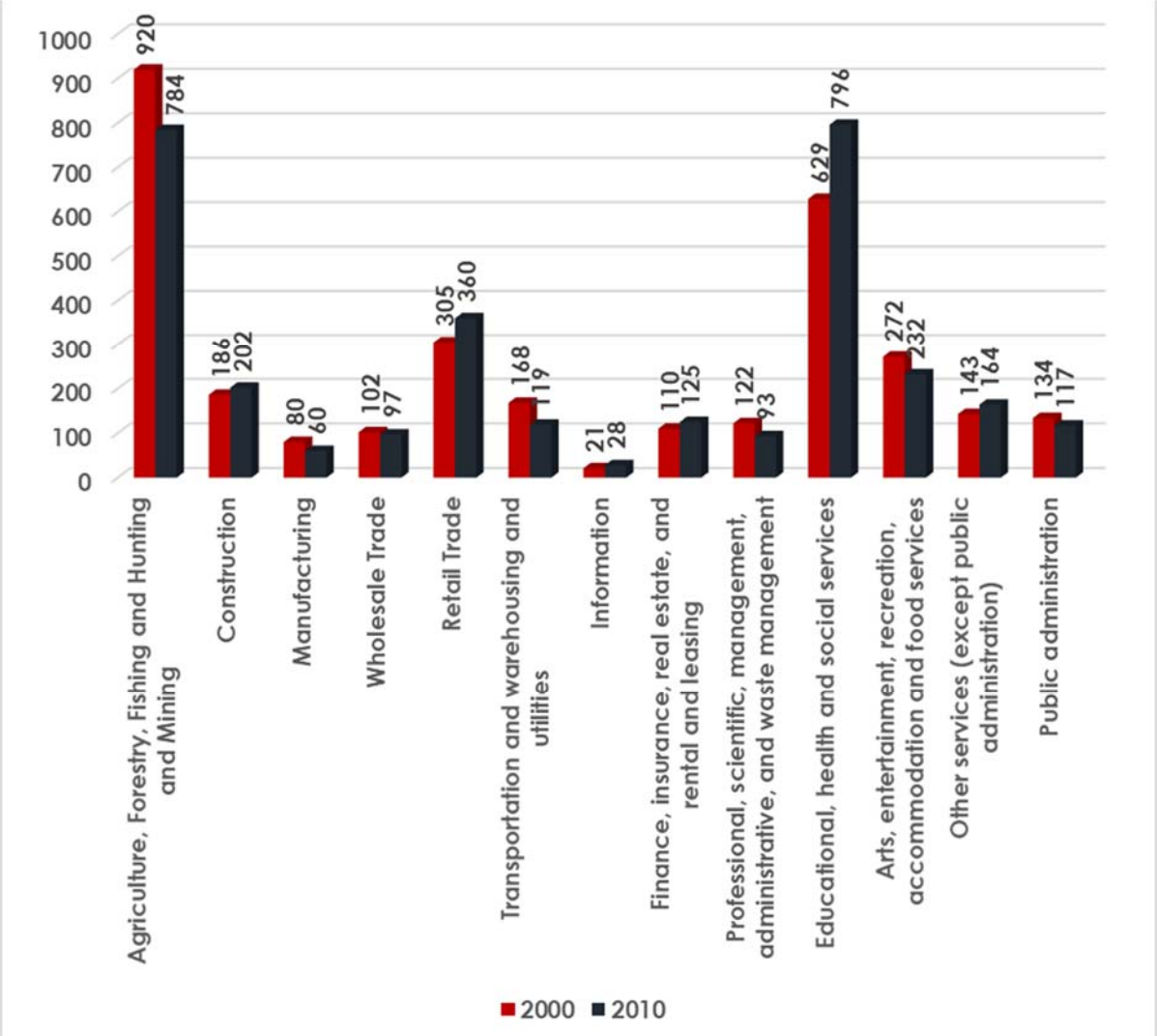
Overall the top five industries in Cherry County for 2000 were as follows:

Industry	*People*
• Ag./forestry/Fishing/and Hunting and Mining	920
• Educational, health, and social services	629
• Retail Trade	305
• Arts, Entertainment, recreation, accommodations and food services	272
• Construction	186

By 2010, the overall top five industries in Cherry County were as follows:

Industry	*People*
• Educational, health, and social services	796
• Ag./forestry/Fishing/and Hunting and Mining	784
• Retail Trade	360
• Arts, Entertainment, recreation, accommodations and food services	232
• Construction	202

FIGURE 4.7: EMPLOYMENT BY INDUSTRY (NUMBERS)



Source: U.S. Census Bureau 2000, American Community Survey 2005-2009

Regional Basic/Non-Basic Analysis

The following data examine five occupational areas established by the U.S. Census Bureau to evaluate trends in employment and the area economy. Basic employment and non-basic employment are defined as follows:

> ***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.***

In order to establish a number of Basic jobs, a comparative segment or entity must be selected. For purposes of this analysis, the state of Nebraska will be used. This allows the analysis to establish where Cherry County is seeing exports from the state as a whole.

TABLE 4.1: BASIC/NON-BASIC BY OCCUPATIONS - 2010

Location	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
Cherry County	**40.8%**	**17.5%**	19.5%	**15.8%**	6.4%	**6.7**
Keya Paha County	**51.7%**	**18.7%**	8.0%	**19.2%**	2.5%	**2.5**
Brown County	30.0%	**18.2%**	17.0%	**21.0%**	13.8%	**6.8**
Sheridan County	**39.8%**	**16.3%**	21.2%	**15.9%**	6.9%	**8.2**
Grant County	34.2%	**17.0%**	20.7%	**15.5%**	12.7%	**15.1**
Hooker County	**37.0%**	**18.4%**	11.3%	**27.7%**	5.6%	**3.5**
Thomas County	**40.6%**	9.9%	22.9%	**12.7%**	**13.9%**	**10.8**
Blaine County	**44.9%**	12.2%	10.2%	**21.1%**	11.6%	**3.7**
Nebraska	34.8%	16.2%	25.0%	10.1%	13.8%	NA

Source: American Community Survey 2006-2010

This analysis is used to further understand which occupational areas are exporting goods and services outside the area, thus importing dollars into the local economy. The five occupational categories used in the analysis are listed below:

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

A related concept to the basic/non-basic distinction 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 that the loss of one basic job will have a large potential impact on the local economy if changes in employment occur. The rationale behind this analysis is that if basic jobs bring new money into a local economy, that money becomes the wages for workers in that economy. Therefore, more money brought in by basic jobs creates more non-basic jobs that are supported.

Basic Employment

The occupation categories are compared to the same categories for the state and where Cherry County's percentage exceeds the state's percentage there is Basic employment. Table 4.1 indicates there are three categories having Basic employment with the largest being Management business, Science, and Arts Occupations The other two occupation sectors are Natural Resources, construction and maintenance occupations. And Service occupations.

Overall, 13.0% of the employment base in Cherry County is tied to the exportation of goods or services. The county needs to continually work on their Business Retention and Expansion process in order to make these employers stay in Cherry County.

Base Multiplier

The information in Table 4.1 shows Cherry County has a base multiplier of 6.7, which means for every job considered to be basic, 6.7 other jobs in the county are supported and/or impacted. This is illustrated by comparing the basic and non-basic percentages against each other. Therefore, if Cherry County lost just one of the jobs tied to exports then there is the potential to lose approximately 6.7 other jobs from the non-basic employment side.

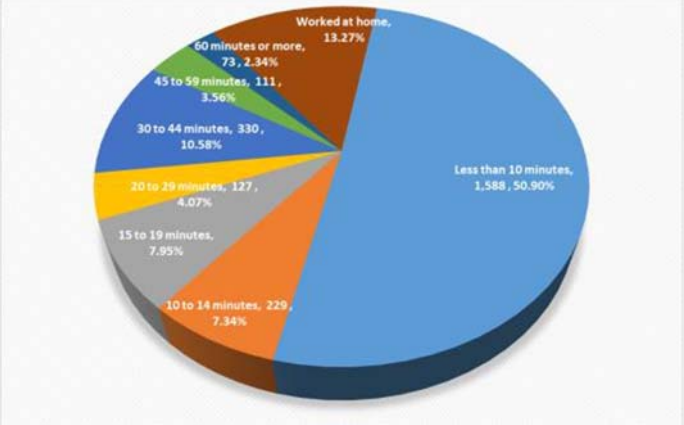
There is no magical multiplier a county can aim to achieve. Every county is different and the dynamics involved are different. The unique and ever changing dynamics are what make a particular county unique and attractive to different employers. It is critical for a county to determine their future vision for business and industry and work towards that end. As previously mentioned it is also critical to diligently work towards a successful Business Retention and Expansion program to support those employers already located in the county. Some counties become too focused on attracting the next big catch and forget about the opportunities existing employers can offer through expansion of their operations.

Commuter Trends

Figure 4.9 show the commuter characteristics for Cherry County in 2010. Travel time to work is another factor used to gauge where Cherry County's workforce is employed. Figure 4.9 shows how many residents of Cherry County travel to work in each of several time categories.

Figure 4.9 indicates, in 2010, 58.24% of the commuters were traveling 10 minutes or less to work. In addition, 13.27% work from home. Those traveling 20 minutes or more to work totaled 641 people or 20.55% of those driving to work.

Figure 4.8: Travel Time to Work - 2010



Source: American Community Survey 2005-2010

Agricultural Profile

Table 4.2 identifies key components affecting Cherry County's agricultural profile. This Table examines the number of farms, size of these farms, cropland data, and certain value criteria for these farms. The data are for 1997 through 2017.

Number of Farms

The table indicates the number of farms within Cherry County decreased between 1997 and 2017, which was the norm throughout Nebraska. The total number of farms decreased from 672 in 1997 to 567 in 2017, a change of –15.6%.

Land in Farms/Average size of Farms/Cropland

Table 4.2 also shows the total land in farms within Cherry County. From 1997 to 2017, Cherry County actually had an decrease in the total land considered to be in farms. The overall decrease was 8.2% or an approximate decrease of 318,870 acres. The total land in farms accounts for 92.7% of the total acres in Cherry County, which is a decrease from 101.0% in 1997.

The average size of each farm increased from 5,777 acres in 1997 to 6,284 in 2017. This trend has been the norm across Nebraska and the United States for the last several decades. The overall increase was 8.8%. The total cropland in Cherry County decreased from 395,141 acres in 1997 to 383,698 acres in 2017.

The next data to review is harvested cropland. Harvested cropland is as it sounds, cropland actually harvested and yielded a crop. In 1997, the Harvested Cropland in Cherry County was 358,232 (90.6%) of Total Cropland and only 9.2% of the Total Land in Farms). By 2017 the Harvested Cropland decreased to 331,558 acres (86.4%) of Total Cropland and only 9.3% of the Total Land in Farms).

Estimated Market Value

Table 4.2 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 $200. The average value increased in every Census of Agriculture until it reached an average per acre of $933 in 2017; an increase of 366.5%. The CPI for this same period was approximately 46.7%; therefore the average value per acre increased nearly 10 times the rate of inflation in Cherry County.

The increase in the average per acre also translates into an increase in the average per farm. The average value per farm in 1997 was $1,153,465 and increased to $5,862,309 in 2017, an overall increase of 408.2%. Again, this increase exceeded the CPI and the rate of inflation for the period. The average per farm, statewide, was $550,705 in 1997 and $2,674,492 in 2017, an increase of 385.6%. Therefore, the average farm value in Cherry County is over double the state average and the value has been growing at a greater rate than the state.

Table 4.3 indicates the number of farms by size from 1997 to 2017. The category with the only increase was in the farms averaging with 1,000 acres or more, increasing by 248 farms or 240.8%. However, all other farm sizes indicated decreases in the number of farms within Cherry County. The farm size indicating the greatest decrease was the 180 to 499 acres which lost 260 farms or a decrease of 86.1%. Overall, Cherry County went from 971 farms in 1997 to 567 farms in 2017 or a change of –41.6% for the period.

TABLE 4.3: NUMBER OF FARMS BY SIZE CHERRY COUNTY 1992 TO 2017

Farm Size (acres)	1997	2002	2007	2012	2017	% Change 1997-2017
1 to 9	48	4	26	59	18	-62.5%
10 to 49	73	30	32	25	43	-41.1%
50 to 179	223	47	68	39	67	-70.0%
180 to 499	302	35	40	42	42	-86.1%
500 to 999	222	58	44	29	46	-79.3%
1,000 or more	103	383	350	372	351	240.8%
Total	**971**	**557**	**560**	**566**	**567**	**-41.6%**

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

Table 4.4 indicates the number of farms and livestock by type for Cherry County between 1997 and 2017. The predominant livestock raised in Cherry County have been cattle and calves. Cattle and calves have been followed closely by Beef Cows. Both types of livestock production saw decreases in the total operations in place. Both of these operation types saw an increase in the Average Number of Livestock Per Farm; Cow and calves went from 554 animals in 1997 to 637 per farm in 2017, which is the peak during the period. Beef Cows went from 308 per farm in 1997 to an undisclosed average per farm in 2017. There was one category which actually saw an increase in both farms and animals; Chickens (layers and pullets).

TABLE 4.2: AGRICULTURAL PROFILE CHERRY COUNTY 1997 TO 2017

Agricultural Characteristics	1997	2002	2007	2012	2017	% Change 1997-2017
Number of Farms	672	557	560	566	567	-15.6%
Land in Farms (acres)	3,881,831	3,777,285	3,759,629	3,756,545	3,562,961	-8.2%
Av erage size of farms (acres)	5,777	6,781	6,714	6,637	6,284	8.8%
Total area for Cherry County	3,845,197	3,845,197	3,845,197	3,845,197	3,845,197	0.0%
Percentage of land in farms	101.0%	98.2%	97.8%	97.7%	92.7%	-8.2%
Total cropland (acres)	395,141	425,907	414,749	358,507	383,698	-2.9%
Harv ested cropland (acres)	358,232	334,745	319,873	326,998	331,558	-7.4%
Estimated Market Value of Land & Bldg (av g./farm) $	1,153,465	1,088,912	2,725,129	3,521,118	5,862,309	408.2%
Estimated Market Value of Land & Bldg (av g./acre) $	200	225	406	531	933	366.5%

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

TABLE 4.4: NUMBER FARMS AND LIVESTOCK BY TYPE

Type of Livestock	1997	2002	2007	2012	2017	% Change 1997 to 2017
Cattle and Calves						
farms	586	475	430	461	447	-23.7%
animals	324,871	291,535	264,458	261,834	284,602	-12.4%
average per farm	554	614	615	568	637	14.8%
Beef Cows						
farms	544	456	407	403	419	-23.0%
animals	167,527	161,744	149,401	135,852	(D)	#VALUE!
average per farm	308	355	367	337	-	#VALUE!
Milk cows						
farms	30	22	6	12	2	-93.3%
animals	170	92	13	24	(D)	#VALUE!
average per farm	6	4	2	2	-	#VALUE!
Hogs and Pigs						
farms	9	3	4	8	8	-11.1%
animals	905	(D)	(D)	140	100	-89.0%
average per farm	101	-	-	18	13	-87.6%
Sheep and lambs						
farms	9	5	7	2	8	-11.1%
animals	300	26	135	(D)	304	1.3%
average per farm	33	5	19	-	38	14.0%
Chickens (layers and pullets)						
farms	20	16	18	31	40	100.0%
animals	531	246	243	751	605	-
average per farm	27	15	14	24	15	-
Chickens (broilers)						
farms	1	-	-	1	-	-
animals	(D)	-	-	(D)	-	-
average per farm	-	-	-	-	-	-

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

Table 4.5 indicates the number of farms and crop by type for the period from 1997 to 2017. The table shows the prominent crops grown in the county. In addition, the table indicates the total number of farms producing the specific crop and finally an average per farm.

Corn and soybeans have been the two most frequently raised crops in Cherry County since 1997. Three of the eight categories shown increased in acres farmed; these include Corn for Grain, Corn for Silage, and Soybeans. The crop with the largest percentage increase (acres) was Soybeans at 1,956.4%, while Corn for Grain increased by 87.5% and Corn for Silage increased by 20.7%.

Comparing Table 4.4 and 4.5, the noted increase in Corn for Silage is directly connected to the increase in Beef Cows shown in Table 4.4.

Agriculture has historically been a major part of the Cherry County economy. It appears its importance will only grow during the planning period of this document. It will be critical to maintain a balance in the type of livestock and grains raised in order to minimize future economic downturns.

TABLE 4.5: NUMBER FARMS AND CROPS BY TYPE

Type of Crop	1997	2002	2007	2012	2017	% Change 1997 to 2017
Corn for Grain						
farms	46	24	38	48	41	-10.9%
acres	13,236	9,950	20,315	26,919	24,821	87.5%
average per farm	288	415	535	561	605	110.4%
Corn for Silage						
farms	18	19	17	16	21	16.7%
acres	2,034	3,211	2,265	2,172	2,455	20.7%
average per farm	113	169	133	136	117	3.5%
Sorghum						
farms	2	1	1	-	3	50.0%
acres	(D)	(D)	(D)	-	150	#VALUE!
average per farm	-	-	-	-	50	#VALUE!
Wheat						
farms	13	9	8	6	8	-38.5%
acres	3,394	1,877	3,975	1,959	3,108	-8.4%
average per farm	261	209	497	327	389	48.8%
Oats						
farms	5	6	3	4	5	0.0%
acres	754	560	(D)	329	751	-0.4%
average per farm	151	93	-	82	150	-0.4%
Soybeans						
farms	5	3	3	7	11	120.0%
acres	225	840	380	3,052	4,627	1956.4%
average per farm	45	280	127	436	421	834.7%
Dry Edible Beans excluding Limas						
farms	-	6	3	3	4	-
acres	-	3,250	(D)	3,019	3,180	-
average per farm	-	542	-	1,006	795	-
Potatoes						
farms	-	1	1	2	1	-
acres	-	(D)	(D)	(D)	(D)	-
average per farm	-	-	-	-	-	-

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

GOALS AND POLICIES

Economic Development

Economic Development Goal 1

This Plan and zoning regulations should promote economic development and diversification of the local economy, but only in ways consistent with the other goals set forth in the Plan.

Economic Development Policies and Strategies

ECON-1.1 Encourage additional tourism by promoting points of interest, recreation, hunting, fishing and the scenic beauty of the Sandhills and the Niobrara River valley.

ECON-1.2 Encourage the development of new or expanded businesses in the County in areas along the highways serving the County near the municipalities in order to expand employment opportunities without the need for expansion of tax supported facilities or services.

PAGE INTENTIALLY LEFT BLANK

Chapter 5
County Facilities

County Facilities

State and local governments provide a number of services to their citizens and are referred to as public facilities. Public facilities represent a wide range of buildings and services built and maintained by the different levels of government.

It is important for all levels of government to anticipate the future demand for their services if they are to remain strong and vital. The analysis of existing facilities and future services are contained in the County Facilities Chapter. Alternatively, in some instances, there are a number of services not provided by the local or state governmental body and are provided by non-governmental private or non-profit organizations for the community as a whole. These organizations are important providers of services and are in integral part of the community.

County Facilities Plan

The Facilities Plan component of a Comprehensive Development Plan reviews present public and private facilities and services.

The Facilities Plan for Cherry County is divided into the following categories:

- County Buildings
- Historic Sites and Places
- Education
- Health Care

County Buildings

County Courthouse

The original Cherry County Courthouse in Valentine was completed in 1901. This original courthouse was a masonry structure building. The courthouse had an annex constructed, in 1954, next to the 1901 structure. The annex contained many of the offices as well as the county jail.

Photograph 6.1 Cherry County Courthouse Complex
Source: Google Earth

In 2011, the county finished a new Justice Center which contains as an addition to the existing County Courthouse Annex, a new Justice Center was constructed. The new facility includes a 30-bed jail, law enforcement offices, courtroom and support offices, new entrance, lobby and circulation space. Areas of the existing courthouse

Annex were also renovated to provide law enforcement space.
Source: https://www.beckenhauerconstruction.com/cherry-county-justice-center

The courthouse houses the offices of the Clerk, Assessor, Treasurer, Clerk of the District Court, County Court, Election Commissioner, Board of Supervisors, Emergency Management, Planning and Zoning, Highway Department, Extension Office, Register of Deeds, Veteran's Service Officer, and Sheriff's Office.

Photograph 5.2 Cherry County Fairgrounds
Source: Google Earth

Knox County Fairgrounds

The Cherry County Fair takes place in July each year in Valentine and is operated by the Cherry County Ag Society. The grounds have a recently renovated hall, a new pavilion, two barns, a large rodeo arena, and parking.
Source: http://www.cherrycofairgrounds.com/

Historic Buildings and Site

Former Valentine United States Post Office

The former Valentine United States Post Office, constructed in 1936-37, is a one-story, brick and limestone Modernistic style building. While the building retains a high degree of integrity, its historical significance derives from the mural painted on an interior wall. Through New Deal programs such as the Public Works of Art Project and the WPA Federal Art Project, thousands of artists were employed. In 1934 the Section of Painting and Sculpture (renamed the Section of Fine Arts in 1938) was organized under the auspices of the Treasury Department to provide murals and sculptures for the many federal buildings constructed during the New Deal era. Between 1938 and 1942 the Treasury Department's Section of Fine Arts (generally known as "the Section") commissioned twelve murals for twelve newly constructed post offices in Nebraska. Valentine, along with the other eleven post office murals in Nebraska, represent the Section's goal of making art accessible to the general population by reserving one percent of new building construction budgets for art.
Source: Nebraska Historical Society

Photograph 6.3 Former Valentine US Post Office
Source: Nebraska Historical Society

County Line Bridge

The County Line Bridge is a well preserved example of a Pratt through truss bridge type and retains all seven aspects of integrity. Following the flood of 1916, the Pratt through truss was widely used to replace damaged and destroyed bridges along the Niobrara River. It represents a once common bridge type for medium length river crossings in Cherry County, Nebraska.
Source: Nebraska Historical Society

Photograph 6.4 County Line Bridge
Source: Nebraska Historical Society

F.M. Walcott House

This one-and-one-half-story frame house, located in Valentine, is a simplified example of a Neo-Classical Revival dwelling, based upon earlier Greek Revival style houses in the eastern and mid-western states. F. M. Walcott established one of the

largest legal practices in the state and also held the offices of county judge and county attorney.
Source: Nebraska Historical Society

Photograph 6.5 F.M Wolcott House
Source: Nebraska Historical Society

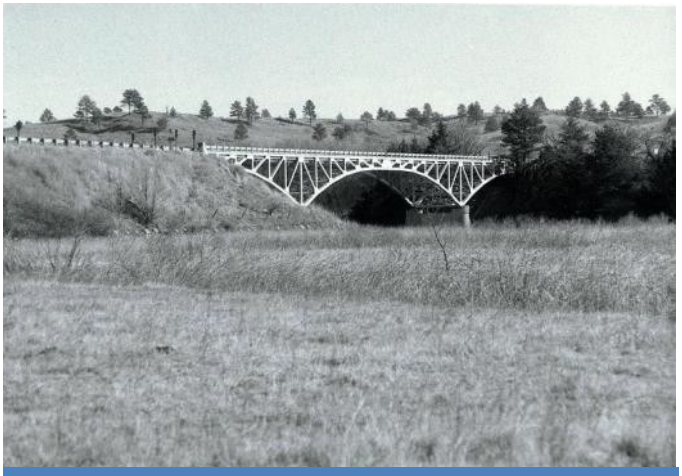
Valentine Public School (Centennial Hall)

The bond issue to build the Valentine Public School was approved in February 1897. It was designed by Omaha architect Charles F. Beindorff, and construction was completed in 1898. The two-story brick structure was built for primary and secondary students of Cherry County School District 1. The building incorporates Queen Anne and Romanesque Revival design elements. The school is owned by the Centennial Hall Corporation, a non-profit organization which uses it for community functions.
Source: Nebraska Historical Society

Photograph 6.6 Valentine Public Schools (Centennial Hall)
Source: Nebraska Historical Society

Bryan Bridge

The Bryan Bridge, constructed in 1932, is located on a turnout off of U.S. Highway 20/83 over the Niobrara River about two miles southeast of Valentine. The 289-foot bridge consists of a 145-foot central steel pin-connected cantilever arch with 72 -foot half-arch anchor arms at each end. It was named after former governor Charles W. Bryan and is the only one of its kind in Nebraska.
Source: Nebraska Historical Society



Photograph 6.7 Bryan Bridge
Source: Nebraska Historical Society

Cherry County Courthouse

Although Cherry County is the largest county (in square miles) in Nebraska, early settlement did not occur until the late 1870s. By the early 1880s, however, settlement began to increase, spurred on in part by the construction of the railroad. In 1883 Cherry County was organized. The following year Valentine, the county seat, was incorporated. Initially, the county rented office space in Valentine. In 1900 voters approved a bond issue to finance the construction of a courthouse. Events moved quickly thereafter and in November 1901 the courthouse opened its doors.
Source: Nebraska Historical Society

Photograph 6.8 Cherry County Courthouse
Source: Nebraska Historical Society

Museums

Arthur Bowring Ranch State Historical Park

The history of Sandhills ranch life is on display at Arthur Bowring Ranch State Historical Park, a 7,202-acre ranch located three miles north and east of Merriman off Highway 20. Former U.S. Senator Eve Bowring managed the ranch until her death in 1985 at age 92. Her wish was to preserve the ranch as a turn-of-the-20th-century working cattle ranch and living history museum.

It's a great opportunity to see ranch life up close. A visitor center houses artifacts and memorabilia of early ranching days. Corrals, barns, bunkhouses, and even a sod house are open to the public.

The park also boasts a collection you might not expect on a ranch. Eve Bowring was a world traveler and passionate collector of antique china, silver, and glass. Her amazing collection is displayed inside the ranch house.

Buildings and grounds are open Memorial Day weekend through Labor Day, 8 a.m. to 5 p.m. The grounds are open from 9 a.m. to sunset the rest of the year.

Source: https://visitvalentine.org/arthur-bowring-ranch-state-historical-park/

Photograph 6.9 Eve Bowring Visitor Center
Source: http://outdoornebraska.gov/bowringranch/

Education

Public Schools

The public schools in Nebraska are grouped into six classes, depending upon the type of educational services provided and the size of the school district. The six classes, as defined by the State of Nebraska, are:

Class 1 Dissolved by Legislative action

Class 2 Any school district with territory having a population of 1,000 inhabitants or less that maintains both elementary and high school grades under the direction of a single school board.

Class 3 Any school district with territory having a population of more than 1,000 and less than 100,000 that maintains both elementary and high school grades under the direction of a single school board.

Class 4 Any school district with territory having a population of 100,000 or more and less than 200,000 inhabitants that maintains both elementary and high school grades under the direction of a single school board.

Class 5 Any school district with territory having a population of 200,000 or more that maintains both elementary and high school grades under the direction of a single school board.

Class 6 Any school district that maintains only a high school under the direction of a single school board. The territory of Class 6 district is made up entirely of Class 1 districts (or portions thereof) that have joined the Class 6.

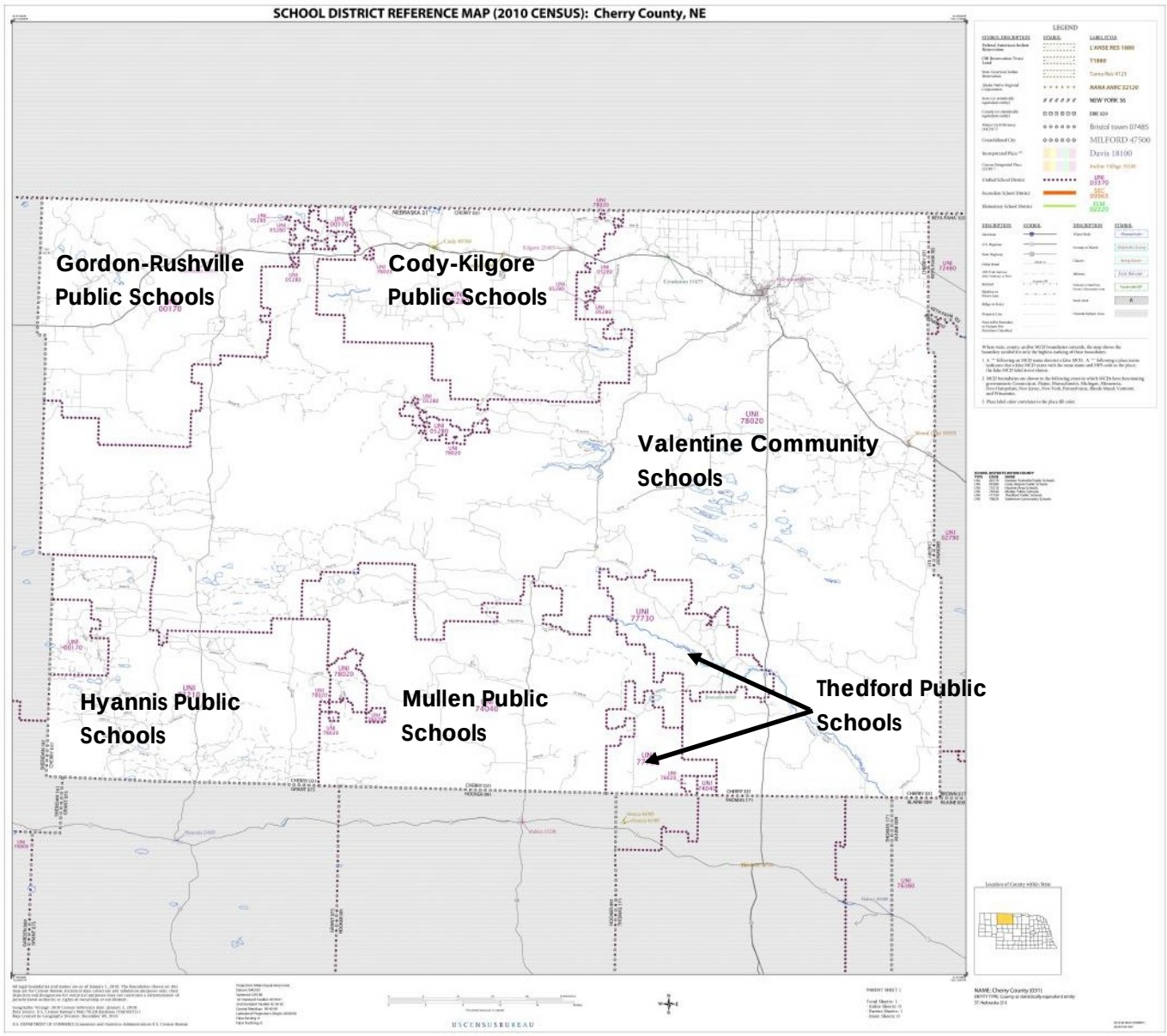
Cherry County is served by a total of seven public school districts:

- Cody-Kilgore Public Schools
- Gordon-Rushville
- Hyannis Area Schools
- Mullen Public Schools
- Thedford Public Schools
- Valentine Community Schools

Cody-Kilgore Public Schools

The Cody-Kilgore Unified Schools serves approximately 170 PreK-12th grade students. It is located in North Central NE with a sparsely populated constituency yet covering one of the largest geographic areas among NE Class II Districts. The district provides regular transportation services for students that cover a 312 mile round trip in a 553 square mile area. Some students log as many as 76 miles round trip in a day on our buses. Our staff is 100% NCLB Qualified. They have received an Entrepreneurship and Incubator Business Grant with the Village of Cody. This enhances our Career Education curriculum by providing real world experiences. Expanded Distance Learning and Dual Credit classes are helping them provide more curriculum offerings. At CKUS they are: Committed, Knowledgeable, Unified, and Successful.

FIGURE 5.1: CHERRY COUNTY SCHOOL DISTRICT BOUNDARIES - 2010



Source: US Census Bureau

There are three schools in the District.

- Cody-Kilgore Elementary School located in Kilgore
- Cody-Kilgore Middle School located in Cody
- Cody-Kilgore High School located in Cody.

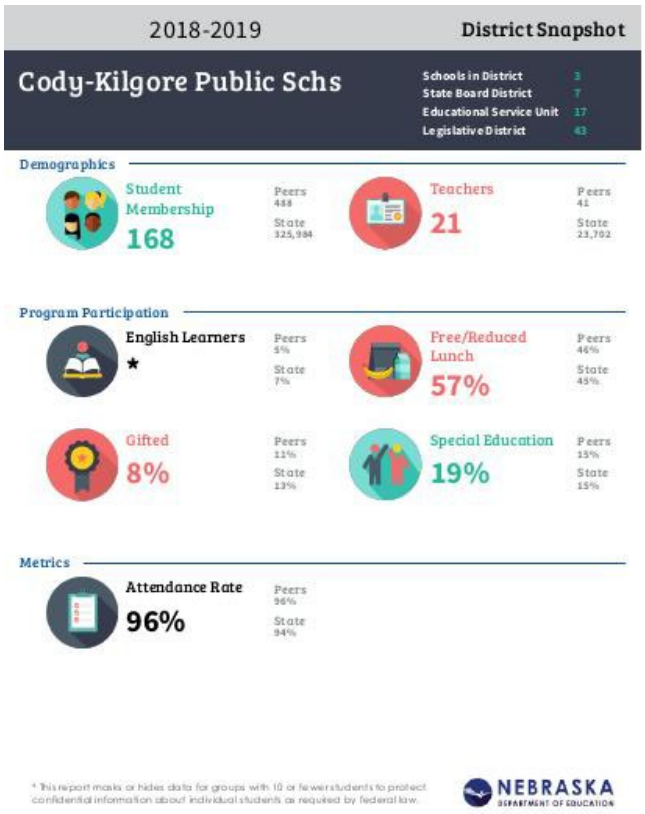
Source: https://nep.education.ne.gov/snapshot.html#16-0030-000/about

Gordon-Rushville

GRPS is a consolidated district. The district covers 2300 square miles consists of one 9-12 high school located in Gordon, a 6-8 middle school located in Rushville and two K-5 elementary schools including Pre-K located in Rushville and Gordon. Schools in the district are AdvancEd and NDE accredited. With a high poverty rate, bordering a socio-economically impacted area, they are striving to positively impact student populations geographically and economically. GRPS has an enrollment of approximately 624 students and serves a population that is one fourth Native American. The district offers courses through distance learning and other modes of technology in addition to the district taught curriculum. The staff and students actively work with mentoring programs to build relationships, develop cultural awareness and promote positive choices.

Source: https://nep.education.ne.gov/snapshot.html#81-0010-000/about

FIGURE 5.2: DISTRICT SNAPSHOT - CODY-KILGORE PUBLIC SCHOOLS (2018-2019)



Source: Nebraska Department of Education

Hyannis Area Schools

Hyannis Area Schools is located in four different counties (Arthur, Cherry, Grant, and Sheridan) encompassing over 1,755 square miles. The district has 19.0 FTE teachers and 1.5 FTE administrators. All teachers have been involved in the standards/ assessment process. The beautiful Nebraska Sandhills serve as a backdrop for our school district . Cattle ranching is the primary industry.

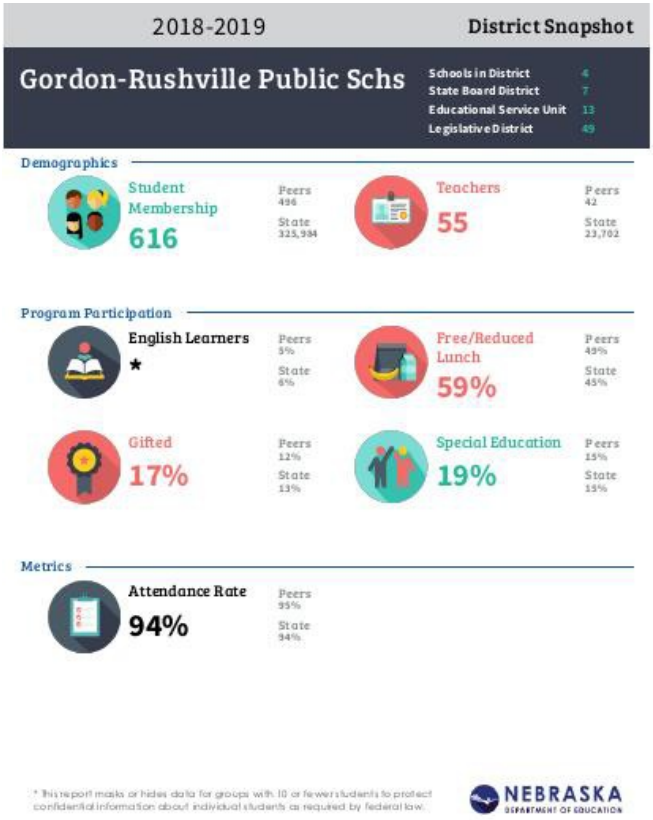
Source: https://nep.education.ne.gov/snapshot.html#38-0011-000/about

Mullen Public Schools

The Mullen School District is a Class III K-12 District encompassing an area of 1,383.8 sq. miles, including all of Hooker Co., 520 sq. miles of Cherry Co. and 72 sq. miles of Thomas Co. To meet these needs of the vast district, Mullen Public Schools have adopted the Nebraska Standards and Assessment system. The elementary staff includes nine teachers and the secondary staff includes 15 teachers in particular content areas. All staff members have received extensive training provided by ESU #16. All Mullen teachers, K-12, have been trained through the Academic Literacy Project through ESU #10. A.L.P. helps teachers to focus on engagement, vocabulary and comprehension. Teachers share their expertise through structured learning walks allowing them to collaborate on improvement of instruction. Mullen experiences little student mobility and low staff turnover creating a very personal and positive learning environment. The school also participates in DIBELS, ACT, and NWEA MAP tests.

Source: https://nep.education.ne.gov/snapshot.html#46-0001-000/about

FIGURE 5.3: DISTRICT SNAPSHOT - GORDON-RUSHVILLE PUBLIC SCHOOLS (2018-2019)



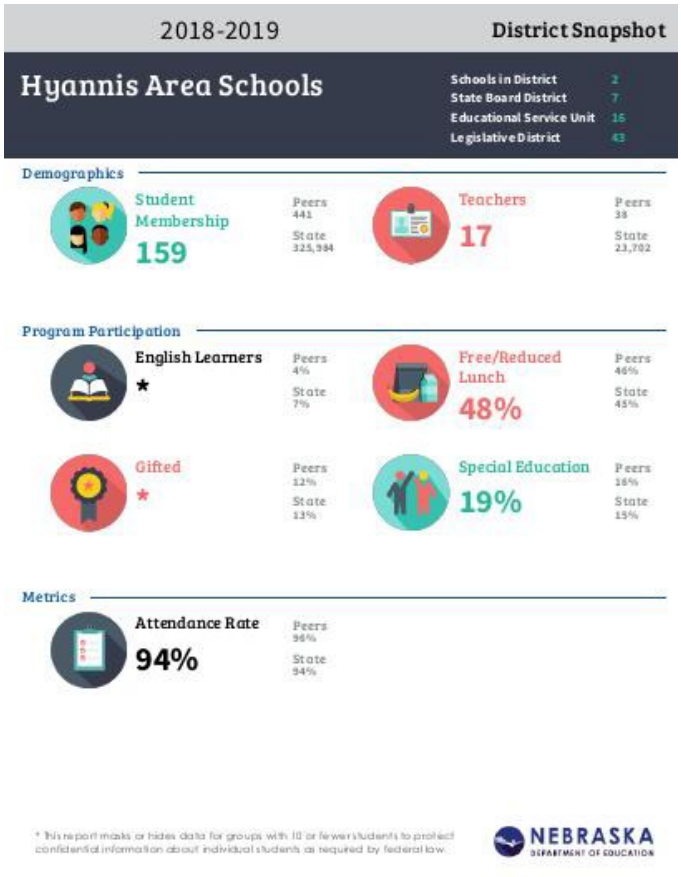
Source: Nebraska Department of Education

Thedford Public Schools

Thedford Public Schools is a Class III school located in the Sandhills cattle country of Nebraska. The student population consists of students covering a large, rural area. Many of the students drive from 5 to 50 miles to school each day. Total enrollment for the school, grades K - 12, is 108 students. Preschool is offered to 3 and 4 year old students. They are at the crossroads of Highways 83 and 2 and are a hour from Broken Bow, North Platte, and Valentine. The student to teacher ratio is about 7:1, they offer iMac Laptops for students in grades 7-12, and have iMac carts and iPads for elementary students. They

offer many activities outside of athletics, including HAL. SkillsUSA, FFA, FCCLA, One Act, and Speech.
Source: https://nep.education.ne.gov/snapshot.html#86-0001-000/about

FIGURE 5.4: DISTRICT SNAPSHOT - HYANNIS PUBLIC SCHOOLS (2018-2019)



Source: Nebraska Department of Education

Valentine Community Schools

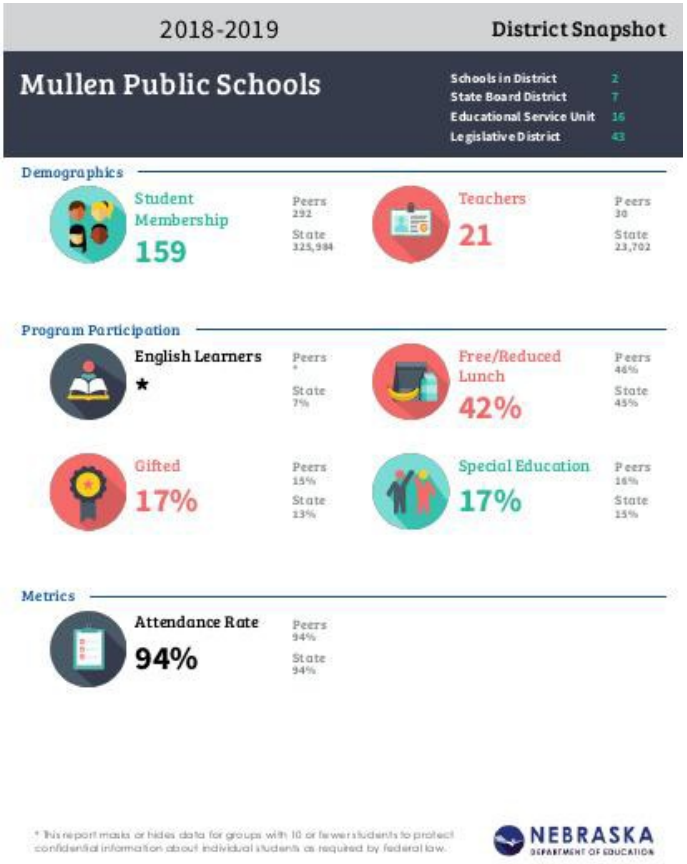
Valentine Community Schools is a class 3 district located in north central Nebraska. The district is comprised of Valentine High School, Valentine Middle School, Valentine Elementary, and four rural attendance centers. Valentine Community Schools encompasses a geographic area of approximately 3400 square miles covering most of Cherry County.
Source: https://nep.education.ne.gov/snapshot.html#16-0006-000/about

Parochial Schools serving Cherry County

There is one parochial school located in Cherry County.

- Zion Lutheran School in Valentine

FIGURE 5.5: DISTRICT SNAPSHOT - MULLEN PUBLIC SCHOOLS (2018-2019)



Source: Nebraska Department of Education

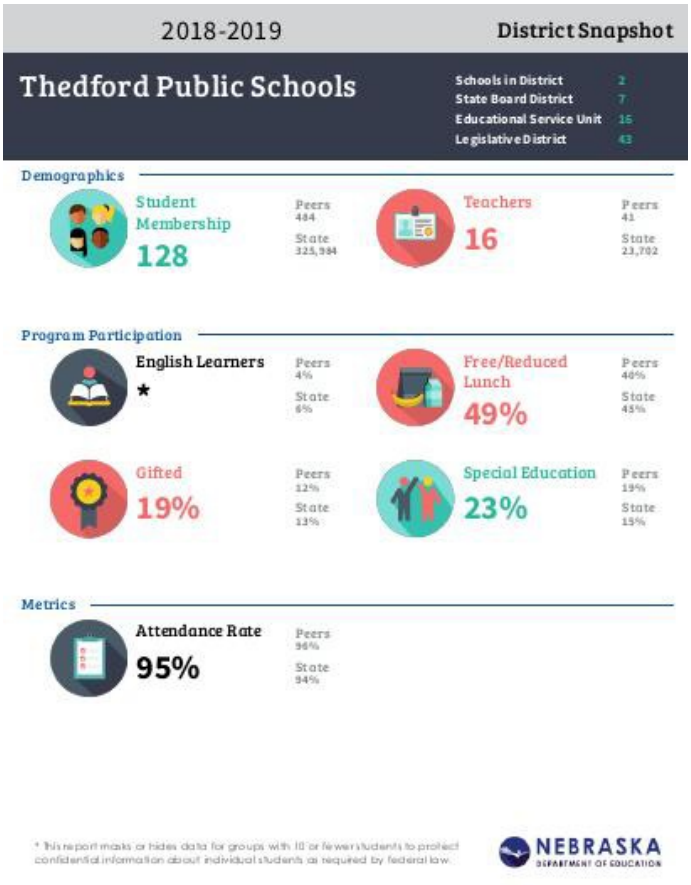
Post-Secondary Education

There are no post-secondary educational facility located in Cherry County. The residents of Cherry County and the surrounding area have a large selection of in-state post-secondary schools to select.

Some Nebraska institutions include:

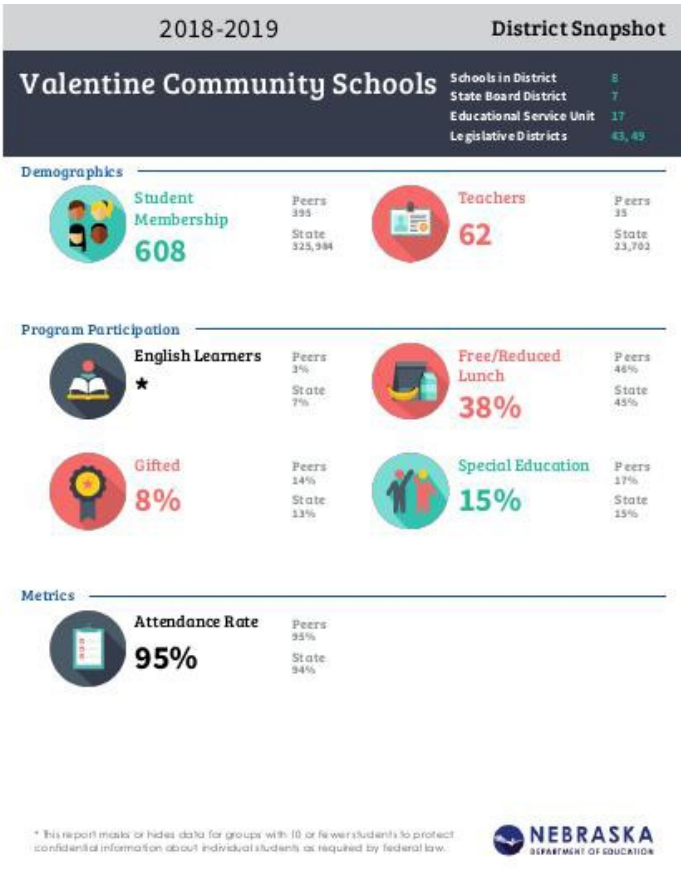
- Chadron State College
- Northeast Community College
- Wayne State College
- University of Nebraska-Lincoln
- Hastings College
- Nebraska Wesleyan
- Union College
- Southeast Community College
- Central Community College
- University of Nebraska-Kearney
- University of Nebraska-Omaha
- Creighton University
- University of Nebraska Medical Center
- Methodist College of Nursing and Allied Health
- Midland Lutheran College

FIGURE 5.6: DISTRICT SNAPSHOT - THEDFORD PUBLIC SCHOOLS (2018-2019)



Source: Nebraska Department of Education

FIGURE 5.7: DISTRICT SNAPSHOT - VALENTINE COMMUNITY SCHOOLS (2018-2019)



Source: Nebraska Department of Education

HEALTH CARE

Health care facilities in Cherry County are limited. There is only one hospital located in the county. The facility is Cherry County Hospital and Clinic located in Valentine. The Hospital is a County Hospital run by an appointed board.

Cherry County Hospital provides general medical and surgical care for inpatient, outpatient, and emergency room patients. Below is a listing of several of their services, but it is not exhaustive.

Among the services we provide are:

- Ambulance Service,
- Cardiology,
- Dialysis,
- Emergency Room,
- Home Health,
- Laboratory,
- Nursing Service,
- Physical Therapy,
- Occupational Therapy,
- Prenatal Care/Labor/Delivery,
- Radiology,
- Respiratory Therapy,
- Surgery

Source: www.cherrycountyhospital.org/ getpage. php? name=mission&sub=About+Us

Goals and Policies

Educational Goals

Educational Goal 1

Quality education is a vital component of positive growth. Although the County's role is limited, objectives and policies need to be established with regard to locating development to insure cost effective use of existing facilities.

Educational Policies and Strategies

ED-1.1 Continue to cooperate with the school systems in expanding public uses of educational facilities.

ED-1.2 The school districts should review all new development proposed within the zoning jurisdiction of Knox County so they can accommodate future school populations.

Educational Goal 2

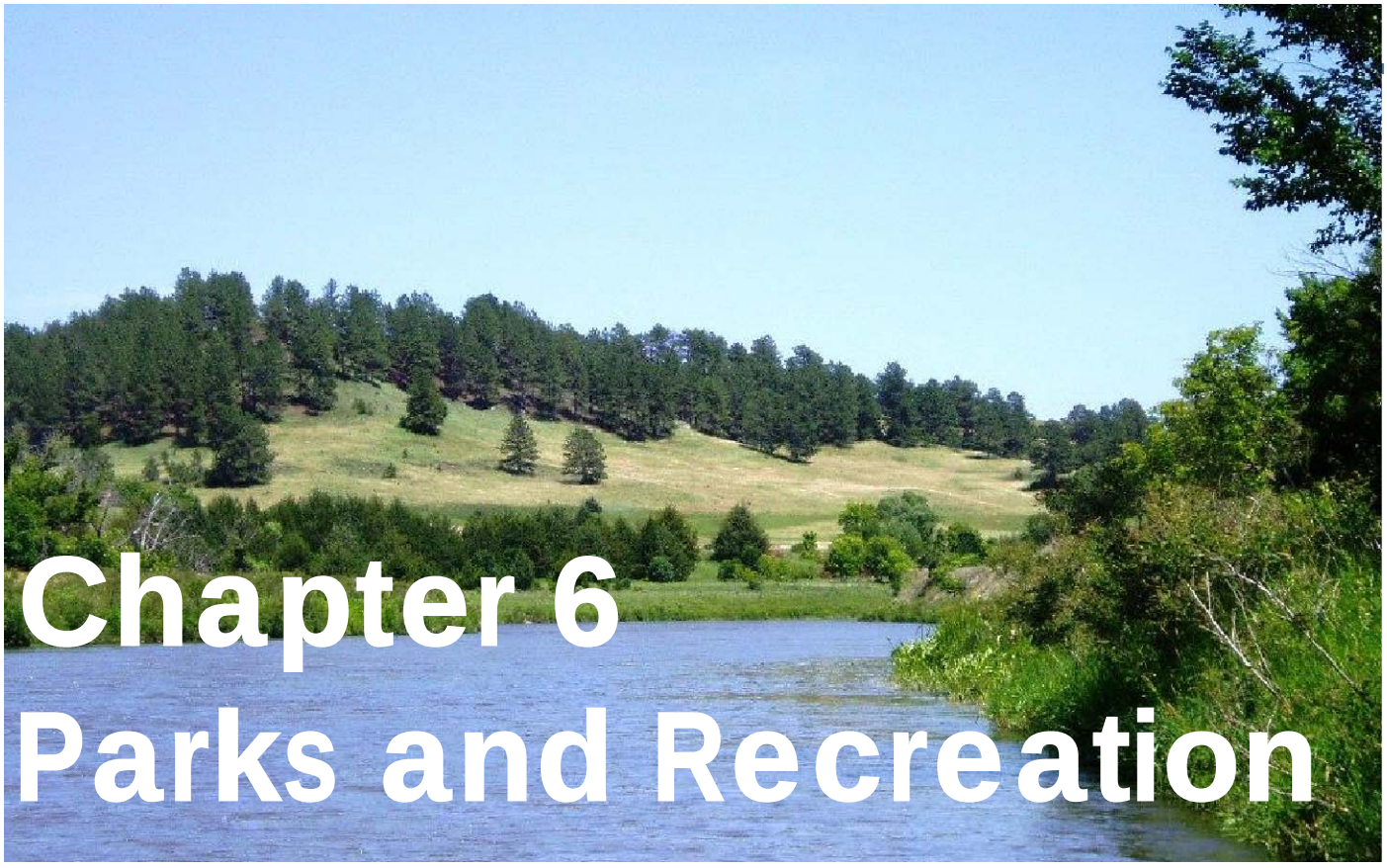
The county should coordinate with the school districts to insure adequate areas for future educational needs. Above all, the main goal is to encourage excellence in the school curriculum and facilities.

Educational Policies and Strategies

ED-2.1 Cooperate with school systems on any future expansion or the development of new joint facilities.

ED-2.2 Work with students to continually identify new facilities needed in the future.

PAGE INTENTIALLY LEFT BLANK

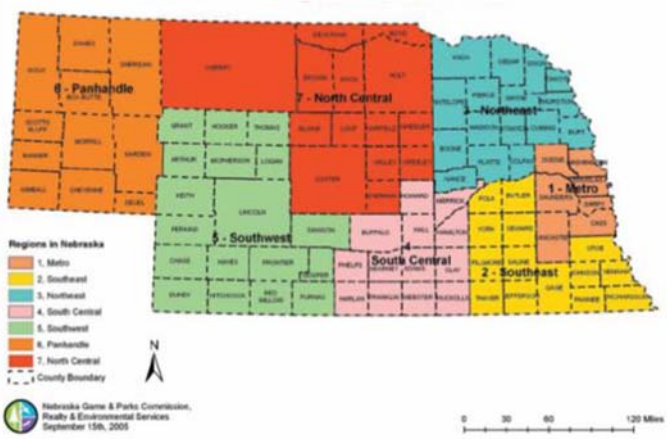


Chapter 6
Parks and Recreation

Parks and Recreation

Cherry County is located in Nebraska's North Central Recreation Planning, Region 7, and a region within the Nebraska Department of Game and Parks system. The Region includes 14 counties in Northeastern Nebraska.

FIGURE 6.1: NEBRASKA GAME AND PARKS REGIONS



Source: Nebraska Game and Parks Commission

REGIONAL RECREATION

Regional recreational areas are a combination of state, federal, and major private facilities that attract people into the Cherry County area.

The following is a brief description of the facilities operated by Cherry County and Nebraska Game and Parks Commission in and around Cherry County.

Fort Niobrara National Wildlife Refuge

Fort Niobrara National Wildlife Refuge is managed as part of the Fort Niobrara/Valentine National Wildlife Refuge Complex. A National Wildlife Refuge Complex is an administrative grouping of two or more refuges, wildlife management areas or other refuge conservation areas that are primarily managed from a central office location. Refuges are grouped into a complex structure because they occur in a similar ecological region, such as a watershed or specific habitat type, and have a related purpose and management needs. Typically, a project leader or complex manager oversees the general management of all refuges within the complex and refuge managers are responsible for operations at specific refuges. Supporting staff, composed of administrative, law enforcement, refuge manager, biological, fire, visitor services, and maintenance professionals, are centrally located and support all refuges within the complex.

Other refuges in the Fort Niobrara/Valentine National Wildlife Refuge Complex include:

- Valentine and John W. and Louise Seier National Wildlife Refuges.

The Refuge Complex headquarters is located at: Fort Niobrara National Wildlife Refuge, 39983, Refuge Road, Valentine, Nebraska 69201

Valentine National Wildlife Refuge

Valentine National Wildlife Refuge is managed as part of the Fort Niobrara/Valentine National Wildlife Refuge Complex. A National Wildlife Refuge Complex is an administrative grouping of two or more refuges, wildlife management areas or other refuge conservation areas that are primarily managed from a central office location. Refuges are grouped into a complex structure because they occur in a similar ecological region, such as a watershed or specific habitat type, and have a related purpose and management needs. Typically, a project leader or complex manager oversees the general management of all refuges within the complex and refuge managers are responsible for operations at specific refuges. Supporting staff, composed of administrative, law enforcement, refuge manager, biological, fire, visitor services, and maintenance professionals, are centrally located and support all refuges within the complex.

John W. and Louise Seier National Wildlife Refuge

John W. and Louise Seier National Wildlife Refuge is managed as part of the Fort Niobrara/Valentine National Wildlife Refuge Complex. A National Wildlife Refuge Complex is an administrative grouping of two or more refuges, wildlife management areas or other refuge conservation areas that are primarily managed from a central office location. Refuges are grouped into a complex structure because they occur in a similar ecological region, such as a watershed or specific habitat type, and have a related purpose and management needs. Typically, a project leader or complex manager oversees the general management of all refuges within the complex and refuge managers are responsible for operations at specific refuges. Supporting staff, composed of administrative, law enforcement, refuge manager, biological, fire, visitor services, and maintenance professionals, are centrally located and support all refuges within the complex.

Source: https://www.fws.gov/refuge/fort_niobrara/

Samuel R. McKelvie National Forest

The Nebraska National Forest is located in Nebraska and South Dakota. This Forest is comprised of two National Forests, and three National Grasslands. The area is an unusual combination of forests and prairie grasslands.

The Nebraska National Forest consists of the Buffalo Gap, Fort Pierre and Oglala National Grasslands and the Nebraska and Samuel R. McKelvie National Forests.

The Nebraska National Forest began in 1902 as an experiment to produce trees and plant them in what is now the largest human-made forest in the United States.

The Soldier Creek Wilderness is located in the Nebraska National Forest. A well-developed trail system of 15 miles in and adjacent to the Soldier Creek Wilderness allows hikers and horseback riders a variety of loop trail choices.

The Fort Pierre National Grassland gets the most rainfall of all the grasslands, eighteen inches per year on average. The Buffalo Gap National Grassland is home to over 300 black-footed ferrets, the most endangered mammal in North America.

The Fort Pierre National Grassland in central South Dakota and the Bessey Ranger District in central Nebraska support populations of greater prairie chicken and sharp-tailed grouse. Other prairie wildlife species include: pronghorn antelope and black tailed prairie dogs. The country's most endangered mammal, the black-footed ferret, has been reintroduced into its native habitat on the Buffalo Gap National Grassland.

Blowout penstemon (Penstemon haydenii), the rarest plant species native to the Great Plains, grows only in the Nebraska Sandhills and is the only endangered plant in the state.

Each of the National Forests and Grasslands offer a number of recreation activities, including: camping, hiking, fishing, off-roading, mountain biking, horseback riding, backpacking, and wildlife watching. For specifc activities, visit one of the following links: Samuel R. McKelvie National Forest; Nebraska National Forest (Pine Ridge Ranger District and Bessey Ranger District);Buffalo Gap National Grassland; Fort Pierre National Grasslands.

Source: https://www.nationalforests.org/our-forests/find-a-forest/nebraska-samuel-r-mckelvie-national-forests

Niobrara National Scenic River

The Niobrara National Scenic River is in north-central Nebraska, United States, approximately 300 miles (480 km) northwest of Omaha. In 1991, Congress set aside 76 miles (120 km) for preservation under the management of the National Park Service with assistance from the local Niobrara Council. Several "outstandingly remarkable values" have been designated to be

protected along the Niobrara National Scenic River, including: Fish and Wildlife, Scenery, Fossil Resources, Geology, and Recreation. The river was designated by Backpacker magazine as one of the 10 best rivers for canoeing in the United States.

Along the National Scenic River are numerous waterfalls that empty into the river from the surrounding cliff and canyon walls; the highest one is Smith Falls, which drops almost 63 feet (19 m) into the river valley. There are short sections of Class I and II rapids on the river, and several locations further downstream require a portage around the rapids. The westernmost 26 miles (40 km) of the Scenic River section, from the Fort Niobrara National Wildlife Refuge (just east of Valentine) to the Rocky Ford portage, offer outstanding canoeing, kayaking, and tubing opportunities. Although the remainder of the river can be paddled, access is limited by private landholder permission. Around 75,000 people visit the river annually, with the months of June through August being the busiest. Water levels decline slightly in late summer, but the river can still be enjoyed by canoe, kayak, and inner tube. To reach the first public access on the Scenic River section, drive northeast of Valentine on Nebraska Highway 12 until the sign for the Fort Niobrara National Wildlife Refuge put-in.

Considered an extraordinary example of a Great Plains river, the Niobrara is home to over 500 plant species many at or beyond their usual range, including many not otherwise naturally found within several hundred miles. These species include birch, ponderosa pine and a rare hybrid aspen (quaking X bigtooth). Species from six different vegetation communities can be found in proximity. Northern boreal forest types occur on north facing slopes where shade and abundant ground water create cooler microclimates. Species growing here include paper birch, aspen, ferns and club mosses. Rocky Mountain forest plants include ponderosa pine, serviceberry, and horizontal juniper. Eastern deciduous forests grow on the moist bottom lands and islands of the Niobrara. They include American elm, basswood, cottonwood, green ash, bur oak, hackberry and box elder. Three types of prairie are found in the river valley, displaying a botanical transition between among the eastern tallgrass prairie, the Sandhills mixed-grass prairie, and Northern Mixed-grass prairie. Mule deer, beaver, mink, pronghorn, river otter and even bison can be found in the area. Approximately 300 bison and a few dozen elk are protected in the 19,000 acre (77 km2) Fort Niobrara National Wildlife Refuge, which is located along the river.

In the Niobrara river, minnows such as sand shiners, red shiners and flathead chubs search for their food of aquatic insects near streambank margins. Larger fish, such as rainbow and brown trout, prefer cooler, clear water where springbranch canyon tributaries enter the river. Channel catfish, a popular game fish, prefer deeper waters or cover during the day and feed at night in the riffles. Softshell, snapping or painted turtles may be found sunning on logs in summer.

The scenic river is spanned by 15 bridges, including six which are listed on the National Register of Historic Places.
Source: https://en.wikipedia.org/wiki/Niobrara_National_Scenic_River

Arthur Bowring Ranch State Historical Park
See Chapter 5 of this Plan

Smith Falls State Park
Scenic Smith Falls State Park is home to Nebraska's highest waterfall, also called Smith Falls. The state park is a popular destination for campers, as well as canoers, kayakers, tubers and others who visit the area to experience the beautiful Niobrara River, a National Scenic River. Many outfitters use the park as a take-out spot, which make it a convenient camping site for those planning to paddle or float the river.

Smith Falls is named for Frederic Smith, who filed the first homestead patent on the land that encompasses the falls. The site became a state park in 1992. Not only is the land home to the beautiful falls, it is also an area of biological significance where several ice age species can still be found.
Source: http://outdoornebraska.gov/smithfalls/

Chadron State Park
Nebraska's first state park, Chadron State Park was founded in 1921 and is nestled among the distinctive buttes and canyons of Nebraska's Pine Ridge. Since its founding a century ago, it's remained a popular spot for camping, family reunions and old-fashioned vacations where guests can escape and enjoy spending time in one of the state's most famous landscapes. Chadron State Park is an especially great destination for hikers and mountain bikers. Hike-bike trails for all skill levels lace the park and adjoining Forest Service lands. Between the trails in the park and on the adjacent Nebraska National Forest, a hiker or biker will find

more than 100 miles of beautiful trails and old roads suitable for a variety of experience levels.
Source: http://outdoornebraska.gov/chadron/

Fort Robinson State Park
Stunning Fort Robinson State Park comprises more than 22,000 acres of exquisite Pine Ridge scenery, compelling Old West history, exceptional lodging, scenic camping and the park's own buffalo and longhorn herds. Fort Robinson is a particularly popular destination for family reunions and has been named one of the nation's top family reunion spots by USA Today, among other publications.

As its name implies, Fort Robinson was operated as a fort from the early days of the Old West until after World War II. Many original buildings survive and remain in use at the park today, and others have been reconstructed. Fort Robinson was the site of the 1879 Cheyenne Outbreak and the death of famed Sioux Chief Crazy Horse. Over the years, the fort served the Red Cloud Indian Agency, as a cavalry remount station, K-9 dog training center, POW camp and beef research station. It was established as a state park in 1962.
Source: http://outdoornebraska.gov/fortrobinson/

Ashfall Fossil Beds State Historical Park
Nearly 12 million years ago, volcanic ash engulfed this ancient watering hole, entombing innumerable animals. National Geographic has called it the Pompeii of prehistoric animals. Because of its scientific importance, the 360-acre historical park between Orchard and Royal was acquired in 1987 and is a joint project of the Game and Parks Commission and the University of Nebraska State Museum. See paleontologists dig the site and prepare fossils unearthed. Interpretive facilities include a visitor center and rhino barn
Source: http://outdoornebraska.gov/ashfall/

Golf Courses

There are three golf courses serving the Cherry County area. One is The Prairie Club and the second is Fredrick Peak Golf Club; while the final is Deer Park Country Club. At the time of this Plan, a fourth one was under construction.

The Prairie Club
The Prairie Club is a membership club containing two 18-hole courses (Par 73) called the Dunes Course and the Pines Course. The third course, the Horse Course, is a 10-hole Par 3 course. The Prairie Club is located east of the Samuel R. McKelvie National Forest.

Fredrick Peak Golf Club
The Fredrick Peak Golf Club is located outside of Valentine. The course is a 10-hole course with driving range facilities. The golf club is open to the public. The clubhouse serves food and beverages.

Deer Park Country Club
Scenic Deer Park is next to Fort Niobrara Wildlife Refuge. If you play early in the morning you are likely to see some deer.

Crystal clear Minnechaduza Creek winds through the course before joining the Niobrara. Most of your putts will break toward the Minnechaduza.

The 1st and 5th holes reveal the multilevel and tree-full nature of the course. The 8th may be the most beautiful par 3 in Nebraska and is certainly one of the most challenging. From a tree lined tee box, you hit down to a narrow undulating green circumscribed by the Minnechaduza and cloaked in trees.

The 1st tee is atop a 40 foot bluff. You must hit over a giant sumac tree and avoid the creek to find the fairway below. Big hitters can go for the green.
Source: http://www.golfingnebraska.com/course_description/valentine_deerparkcc.shtml

Other area golf courses include:

Course	Community
Ainsworth Municipal	Ainsworth
Bassett Country Club	Bassett
Pelican Beach	Hyannis
Dismal River	Mullen
Sand Hills Golf Course	Mullen
Thedford Golf Course	Thedford
Ord Golf Links	Ord

Goals and Policies

Parks and Recreational Goals

Parks and Recreation Goal 1

Development of a county-wide trails system will aid in the long-term recreational and walkability needs as well as creating a tourism destination for the county.

Parks and Recreation Policies and Strategies

PR-1.1 The County should complete a long-range trails Master Plan in order to identify specific locations, routes and amenities to connect.

PR-1.2 The County should work with the NRD's to determine potential funding for the planning and construction of recreational trails within Knox County.

PR-1.3 The County should, as the paved county roads are repaired, overlaid, etc. work to incorporate a standard trail width to the shoulder of the roadway.

PR-1.4 A trail system should work to connect different entities within Knox County together as well as connect to other regional trails in the area.

Parks and Recreation Goal 2

Knox County will continue to work closely with different entities including the community's and NRD to maintain and enhance the existing parks, camps, riverfront, and lakes.

Parks and Recreation Policies and Strategies

PR-2.1 The County should continue promoting the areas recreational destinations.

PR-2.2 The County should continue to promote local Agri-tourism.

PAGE INTENTIALLY LEFT BLANK


Photo source: Valentine VFD Facebook Page

Chapter 7 Public Safety

Fire Protection

Fire and Rescue

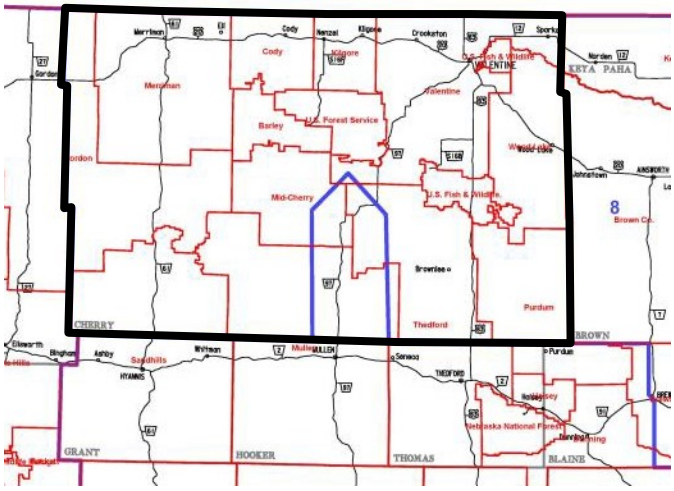
Fire and rescue in Cherry County is handled through 14 different departments/agencies:

- Barley
- Cody
- Gordon
- Hyannis
- Kilgore
- Merriman
- Mid-Cherry
- Mullen
- Purdum
- Thedford
- US Fish and Wildlife
- US Forest Service
- Valentine
- Wood Lake

Each of the agencies listed above, provide varying levels of fire and rescue service to their respective territories. Detailed information is not provided since the type and age of equipment can vary annually.

Figure 7.1 is a map showing the location and boundaries of the 14 different agencies proving fire protection in Cherry County.

Figure 7.1: Cherry County Fire Districts



Source: Nebraska Department of Transportation

Valentine Volunteer Fire Department

Valentine Fire Departments provide fire protection and emergency response services to the Valentine, NE community with a mission to prevent the loss of life and property. In addition to responding to calls for fire suppression, Valentine Fire Departments respond to medical emergencies, incidents involving hazardous materials, rescue calls, and motor vehicle or other accidents.

Source: https://www.countyoffice.org/valentine-ne-fire-departments/

Barley Rural Fire Department
Barley Rural Fire Department is located approximately in the middle of Cherry County. The fire district covers approximately 156 square miles of Cherry County.

Cody Volunteer Fire Department
The Crofton Volunteer Fire Department is located Cody. The district is in northwest Cherry County. The fire district covers approximately 231 square miles.

Gordon Volunteer Fire Department
The Gordon Volunteer Fire Department is based in Gordon, within Sheridan County. The district covers approximately 674 square miles of Cherry County.

Hyannis Volunteer Fire Department
The Hyannis Volunteer Fire Department is based in Hyannis, within Grant County. The district covers approximately 457 square miles of Cherry County.

Kilgore Volunteer Fire Department
The Kilgore Volunteer Fire Department is based in Kilgore, in north-central Cherry County. The district covers approximately 190 square miles of Cherry County.

Merriman Volunteer Fire Department
The Merriman Volunteer Fire Department is based in Merriman, in northwest Cherry County. The district covers approximately 750 square miles of Cherry County.

Mid-Cherry Volunteer Fire Department
The Mid-Cherry Volunteer Fire Department is based in Nenzel, in central Cherry County. The district covers approximately 336 square miles of Cherry County.

Mullen Volunteer Fire Department
Mullen Volunteer Fire Department is based in Mullen within Hooker County. The fire district covers approximately 719 square miles of Cherry County.

Purdum Volunteer Fire Department
Purdum Volunteer Fire Department is based in Blaine County, southeast of Cherry County. The fire district covers approximately 390 square miles of Cherry County.

Thedford Volunteer Fire Department
Thedford Volunteer Fire Department is based in Thedford in Thomas County, south of Cherry County. The fire district covers approximately 500 square miles of Cherry County.

US Fish and Wildlife Fire Department
The US Fish and Wildlife Fire Department is a Federal agency and covers the two different refuges located in Cherry County. US Fish and Wildlife is responsible for approximately 128 square miles of Cherry County.

US Forest Service Fire Department
The US Forest Service Fire Department is a Federal agency and covers the National Forest lands located in Cherry County. The Forest Service is responsible for approximately 151 square miles of Cherry County.

Wood Lake Volunteer Fire Department
Wood Lake Volunteer Fire Department is based in Wood Lake, in eastern Cherry County. The fire district covers approximately 450 square miles of Cherry County.

Law Enforcement
Cherry County Sheriff's Department

Cherry County is served by the Cherry County Sheriff's Department, which provides policing services to a majority of the county as well as support and operation of the county courts and jail facilities.

The following are other law enforcement agencies in Cherry County:

- Valentine Police Department
- US Fish and Wildlife
- US Forestry Service

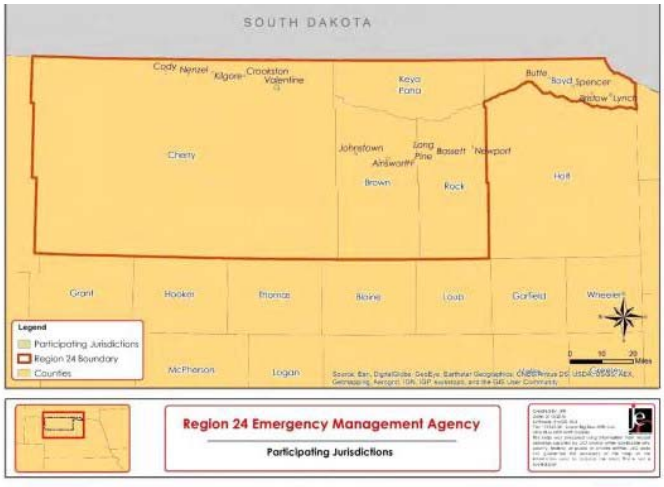
Based upon data from the Nebraska Commission on Law Enforcement and Criminal Justice, the Cherry County Sheriff's Department had five full-time sworn officers in 2016 and 2018. Table 7.1 shows the employment levels for the past three years. When examining the number of sworn officers per 1,000 people, the Cherry County Sheriff's Department had an average of 1.6 sworn officers per 1,000 people from 2016 to 2018. Table 7.1 also shows the Valentine Police Department has maintained between five and six sworn officers for the same period.

TABLE 7.1: SWORN OFFICER COMPARISON

Source: Nebraska Commission on Law Enforcement and Criminal Justice 2016 through 2018

The ratio of law enforcement officers per 1,000 persons in the population for any given area is influenced by many factors. The determination of law enforcement strength for a certain area is based on such factors as population density, size and character of the county, geographic location and other conditions existing in the area. The data indicate Cherry County has been maintaining a ratio of 1.6 sworn officers per 1,000 people over a period of time; apparently this is a good balance for Cherry County. Table 7.1 also shows the number of sworn officers and officers per 1,000 persons in the surrounding counties.

FIGURE 7.2: REGION 24 EMERGENCY MANAGEMENT EMERGENCY MANAGEMENT



Source: Map courtesy of JEO, Inc.
Region 24 Hazard Mitigation Plan

Cherry County Emergency Management is handles by the Region 24 Emergency Management office based in Bassett. Region 24 serves the counties of Boyd, Brown, Cherry, Keya Paha, and Rock.

The local Agency has a director; however, the county's office works directly under the state agency, Nebraska Emergency Management Agency (NEMA). The local offices were created under the Nebraska Emergency Management Act of 1996.

The Nebraska Emergency Management Agency (NEMA) is part of the Military Department. The state's Adjutant General serves as the director of the agency as well as the commanding officer of the Army National Guard and the Air National Guard. The three units comprise the Military Department.

Originally, the agency was located in a bunker built in the 1960s during the height of the Cold War. It was intended to serve as Nebraska's government headquarters if nuclear confrontation was likely. In 2012, the agency headquarters was relocated to the Joint Force Headquarters, on the Nebraska National Guard base in Lincoln. NEMA is a small agency with less than 40 full-time and part-time employees. Day-to-day operations are managed by the assistant director.

Emergency management in the United States has been divided into four phases: preparedness, response, recovery, and mitigation. Even with the emphasis on terrorism since the 9/11 attacks, emergency management's role has not changed a great deal. Nebraska must still deal with a host of hazards, both natural and man-made.

Preparedness

During the preparedness phase, NEMA monitors the situation across the state. This is accomplished by using a duty officer system; state, National Weather Service and North American Warning and Alert System (NAWAS); local emergency management organizations, police and fire departments across the state and the general public.

A member of NEMA staff serves as the duty officer on a rotational basis taking calls for a host of incidents in addition to severe weather such as tornadoes, floods and blizzards. A terrorist attack would be handled in the same manner as a tornado strike or flood.

During the preparedness phase, the agency coordinates the state Radiological Emergency Preparedness Program (REP), which develops emergency plans for the two nuclear power plants – Cooper and Ft. Calhoun Nuclear Stations.

The agency also monitors low-level and high-level radiological material shipments, which traverse the state by highway and railway. Any abnormality can trigger a call to the duty officer and alert the rest of Nebraska government.

NEMA conducts an extensive training program for emergency managers and first responders, such as police, fire and emergency medical personnel. The training classes cover a wide range of topics, including counter terrorism, hazardous materials, radiological emergency, public information and incident management. Classes, schedules and other information are listed on NEMA's training page.

An important part of preparedness is the development of state and local emergency operations plans, which NEMA coordinates. The agency has also developed an emergency operations exercise program that assists local jurisdictions in exercising their emergency plans.

Each year, once in the spring and again in the fall, the agency conducts public awareness campaigns. The severe weather awareness campaign tests the state's emergency systems in advance of the spring thunderstorm season and the winter weather awareness campaign does the same before winter. Both are sponsored by NEMA and the National Weather Service.

Response

In the event of an emergency anywhere in the state, the local jurisdictions are responsible for first response to the emergency. If local resources are inadequate to deal with the situation, the local political leader declares an emergency and requests state assistance.

Normally, the agency would be aware of the developing situation and would have alerted the governor's office and other state agencies. NEMA could also activate the State Emergency Operations Center (SEOC) located in the agency headquarters. The SEOC becomes the center for any state response. Depending upon the nature of the emergency, state teams can be dispatched to the disaster area.

If deemed necessary the Federal Emergency Management Agency' s (FEMA) Region VII office, which is located in Kansas City, can be alerted. They, in turn, can notify FEMA National in Washington, D.C.

Upon the advice of the agency director, the governor can proclaim a state emergency and sign a declaration. This declaration formalizes the state response and places all the state's resources at the disposal of the adjutant general. This can involve the National Guard, State Patrol, Department of Transportation, Game and Parks Commission, Department on Aging, Health and Human Resources or any other agency that can be of assistance.

The formal declaration process also allows the adjutant general to use money in the governor's Emergency Fund to pay for the disaster costs. This fund, which was created and is maintained by the Legislature, usually is kept at around $1 million.

If the governor determines state resources are not sufficient to deal with the emergency, a federal disaster declaration can be requested. The issuance of a Presidential Disaster Declaration means all the resources of the federal government can be brought to bear on the emergency.

Recovery

Under a Presidential Disaster Declaration, NEMA and FEMA coordinate state and federal activities in a Joint Field Office. The two disburse recovery funds for two types of federal disasters. A Presidential Disaster Declaration can be for public assistance, individual assistance or both.

Public assistance is used to help local and state governments recover their disaster expenses. Public assistance is used to pay for roads, bridges, public buildings and other facilities damaged in the disaster and to pay for costs such as the National Guard, police, fire and public works employee salaries and other costs. Normally, the Federal Government pays 75 percent of all eligible public costs. Traditionally, the state and local governments equally split the remaining 25 percent.

Individual assistance is provided to the survivors of the disaster. Individual assistance can come in the form of low interest loans both to families and businesses, or individual family grants to pay for losses to families or businesses that are not eligible for loans.

Mitigation

Following a federally-declared disaster, the state receives funding assistance for hazard mitigation. This can amount to substantial sums of money, because 15 percent of the total federal share of the disaster is earmarked for mitigation. Hazard mitigation is designed to lessen or mitigate the impacts of future disasters.

For example, hazard mitigation for flooding might mean the buyout of flood-prone structures in the disaster area, or it might involve raising structures above the 100-year flood level. In the case of tornadoes, mitigation might involve better warning systems or structural improvements. The state and federal governments must agree to whatever mitigation projects that are designed.
Source: https://nema.nebraska.gov/overview/nema-overview

Public Safety Goals and Policies

Public Safety Goals

Public Safety Goal 1

The goal of Cherry County is to maintain fire protection, rescue and ambulance programs by exploring programs and alternative services to insure optimum service levels and public costs.

Public Safety Policies and Strategies

PS -1.1 The different fire and rescue organizations and the county should continue to work to maintain quality equipment levels.

PS-1.2 The fire departments should continue to expand fire safety education and prevention throughout the county.

Public Safety Goal 2

The goal of Cherry County is to maintain quality law enforcement throughout the county.

Public Safety Policies and Strategies

PS-2.1 Continue to identify specific ways to work cooperatively with the County Sheriff regarding protection in the County.

PS-2.2 Continue to support minimum standards regarding equipment used by law enforcement.

Public Safety Goal 3

The goal of Cherry County is to maintain regulations to protect the general health and safety of all residents.

Public Safety Policies and Strategies

PS-3.1 Establish regulations protecting the county residents from the secondary effects of adult entertainment.

PAGE INTENTIALLY LEFT BLANK

Chapter 8 Communications, Utilities, and Energy

Communications

Telephone Services

The primary telephone providers in Cherry County include CenturyLink and Great Plains Communication.

Radio Stations

There are multiple stations available to listeners in Cherry County. Local stations (Valentine) are: KMBV 90.7 FM, KKNL 89.3 FM, and KVSH 940 AM.

Television Stations

Presently there are no local television stations located in Cherry County. The over the air stations serving the area originate out of South Dakota, Colorado and Nebraska.

Internet/World Wide Web Service Providers (ISP)

High speed Internet service in Cherry County is primarily provided by CenturyLink and Great Plains Communications. There are various other small providers in the area.

Cellular Service

All of the mainstream cellular providers have a presence in Cherry County. Viaero has a local office in Valentine.

Newspapers

The residents of Cherry County are served locally by the Valentine Midland News which is a weekly paper. Daily news is provided by the Omaha World Herald, Scottsbluff Star-Herald and the North Platte Telegraph.

Listed below are other newspapers with weekly circulation within the Cherry County area:

- Hooker County Times in Mullen
- Thomas County Herald in Thedford
- Sheridan County Journal-Star in Gordon

Utilities

Sanitary Sewer Systems

The sanitary waste in the rural parts of Cherry County is handled via individual septic systems. The level and complexity of these systems varies greatly throughout Cherry County due to soil conditions, see Chapter 11: Natural Resources and Soils for more detail.

Sanitary waste within the communities of Cherry County are typically addressed via community-wide collection and treatment systems if available.

Water Systems

Water in Cherry County is supplied by wells drawing groundwater up for consumption or other uses. The unincorporated communities and the farmsteads, and acreages typically have individual wells supplying the needs of the user. However, within some of the primary incorporated communities of the county, the wells are owned and operated by

the local government. The local government runs a centralized system.

Solid Waste
Sanitation collection in Cherry County is provided by private haulers.

Sanitary Improvement Districts (SIDs)
Sanitary Improvement Districts in Nebraska are a form of taxation which allows a development group and/or homeowner's 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. Cherry County does not have any SID's within the county.

Electricity
The Nebraska Public Power District provides power to Cherry County retail and wholesale to local public power districts. There are five primary rural public power districts serving Cherry County:

- KBR Rural Public Power
- Cherry-Todd Electric Cooperative
- La Creek Electric based in S. Dakota
- Northwest Rural Public Power District
- Panhandle Rural Electric Membership, and
- Custer Public Power District

KBR Rural Public Power
KBR Rural Public Power District is a non-profit public utility whose mission is to safely provide customers reliable, high quality and reasonably priced electricity and other energy related products and services.

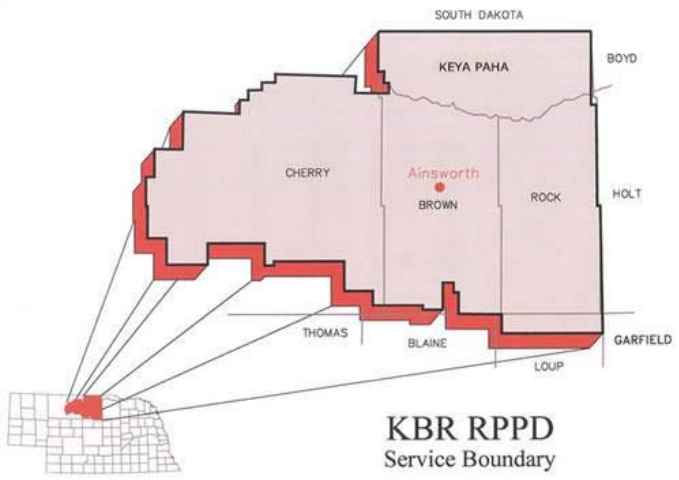
KBR is one of 32 rural electric systems located in Nebraska and one of nearly 1,000 electric systems nationwide. They provide electric service to over 5,400 electric accounts scattered across over 5,000 square miles of service area located in the counties of Brown, Rock, Keya Paha and Cherry in the sandhills of north-central Nebraska.

They are a distribution utility — they do not generate electricity. They purchase all of their power from the Nebraska Public Power District through the Nebraska Electric G&T, both headquartered in Columbus, Nebraska.

KBR has 17 full-time employees; three working out of our Valentine Outpost, three serving out of the Springview Outpost and the balance headquartered in the general office located in Ainsworth, Nebraska.

KBR is governed by nine elected board members, three from Keya Paha County, three from Rock County, two from Brown County and one from Cherry County. Each board member is elected at the November general election and is elected for a six-year term.

Figure 8.1: KBR Service Area



Note: All first person references were modified by MPC
Sources: https://kbrpower.com/

Cherry-Todd Electric Cooperative
Central-Todd Electric Cooperative part of a Touchstone Energy Cooperatives.

The Touchstone Energy Cooperatives brand represents a nationwide alliance made of more than 750 local, consumer-owned electric cooperatives in 46 states. Touchstone Energy coops collectively deliver power and energy solutions to more than 30 million members every day. Electric cooperatives distribute power for 56 percent of the U.S. land mass over 2.4 million miles of power lines.

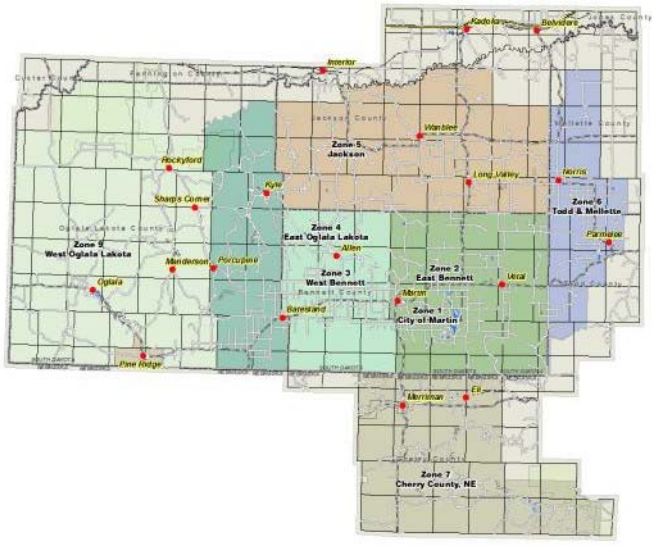
Electric cooperatives were established to provide electricity to rural America, and now make up the largest electric utility network in the nation. Touchstone Energy is the national brand identity for that network.

Touchstone Energy co-ops are owned by the members they serve and are committed to providing reliable electricity at the lowest price possible. In short, co-ops "look out" for the members they serve.
Sources: http://www.cherry-todd.com/

Lacreek Electric

Lacreek Electric Association, Inc. was incorporated in 1948. It is headquartered at Martin, along the north edge of the Great Sand Hill Plains in southern South Dakota. LEA is a rural electric cooperative serving more than 4,000 members in six counties across 5,174 square miles of south central South Dakota and northern Nebraska.

Figure 8.2: Lacreek Service Area



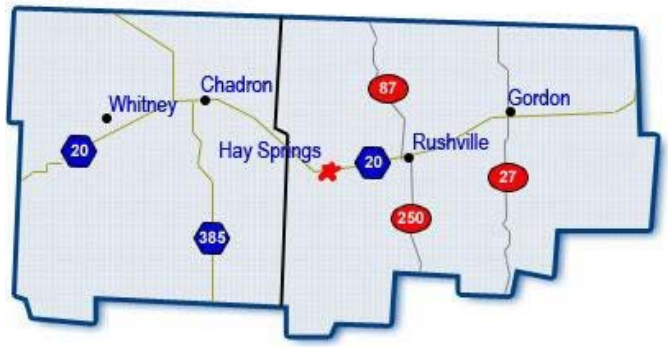
Sources: lacreek.com

Northwest Rural Public Power District

Northwest Rural Public Power District is located in the northern part of the Nebraska Panhandle, and is a Touchstone Energy partner. They provide electricity and many other quality products and services to customers in Northwest Nebraska. The service area covers the Oglala National Grasslands and the national forest and dryland wheat areas in the West, to the Pine Ridge Indian Reservation, pine trees and rugged rock terrain in the North, to the sandhills and cattle ranches to the East and to the irrigated farmland to the South.

The main office is located in Hay Springs, a town of 650 population with a high school, grade school, medical clinic, parks, swimming pool and much more. A hospital and four-year college are within 20 minutes of Hay Springs.

Figure 8.3: Northwest Rural Public Power Service Area



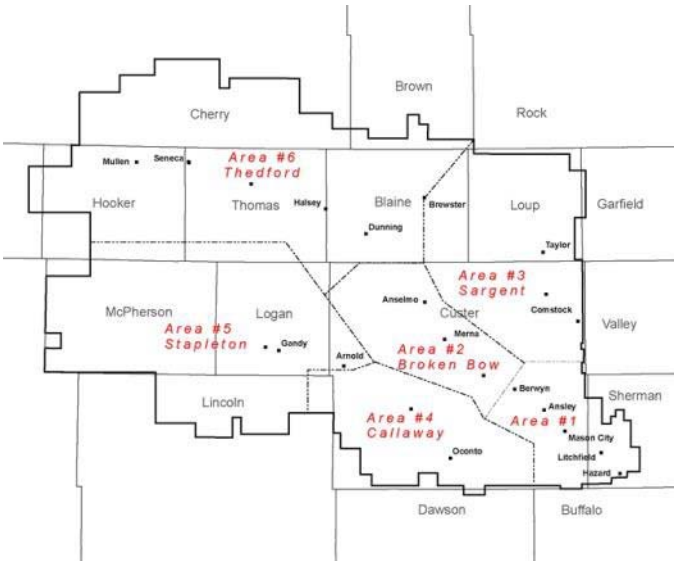
Sources: http://www.nrppd.com/

Panhandle Rural Electric Membership

PREMA is a local rural electric cooperative. Articles of Incorporation were filed in the offices of the Secretary of State and County Clerk of Box Butte County on April 5th, 1945, organizing Panhandle Rural Electric Membership Association (PREMA). The goal of the organization being, "to provide electric service to every farm and ranch within our area." For more than 70 years we continue to provide power to all or parts of 11 western Nebraska counties which include; Arthur, Box Butte, Cherry, Dawes, Garden, Grant, Hooker, McPherson, Morrill, Sioux and Sheridan.

Sources: http://www.prema.coop

Figure 8.4: Custer Public Power Service Area



Custer Public Power District

Custer Public Power District believes community ties are what sets "Public Power" apart from other utility services. Public Power is owned by the customers

we serve. Whether it is a residential, commercial, or agricultural account, that customer-owner has a voice. The Board of Directors are voted to the Custer Public Power District's Board of Directors to represent the customer-owner. Custer Public Power District strives to provide the most reliable, affordable, and personal electrical service available. Providing "Public Power" to the communities, serving rural Nebraska, and powering the "Good Life".
Sources: https://www.custerpower.com

Electrical Distribution
The overall distribution systems are in good condition. The systems are owned and operated by each of the power districts. The distribution systems not only supply power throughout Cherry County but are the foundation for power transmitted to other customers in Nebraska.

ENERGY
Energy usage in the early 21st Century is becoming a critical issue throughout Nebraska as well as the entire United States. Our dependency on non-renewable energy sources has increased significantly over the past 100 years.

Energy consumption comes in several forms, such as:
- Lighting our homes, businesses, and industries
- Cooling and heating our homes, businesses, and industries
- Heating our water for homes, businesses, and industries
- Food preparation
- Transportation – both personal and business related
- Agricultural equipment
- Recreation and Entertainment – vehicular, computers, music, etc.

The 21st Century ushered in an increased concern for energy usage and its impacts on the environment. This increased concern for the environment created a better understanding of the carbon footprint generated by any one individual as well as striving towards modifying our behavior patterns in order to lessen the footprint. In addition, the phrase and concept of sustainability has become more widely used, even in Nebraska.

Energy and the issues connected to the different sources are becoming more critical every year. The need for the Energy Element in the Cherry County Comprehensive Development Plan should be something desired as opposed to required.

SUSTAINABILITY
Sustainability, in today's discussions, has a number of meanings. According to Webster's Third International Dictionary, the verb "sustain" is defined as "to cause to continue...to keep up especially without interruption, diminution or flagging". However, the American Planning Association has come up with the following definition:

> ***"Planning for 'sustaining places' is a dynamic, democratic process through which communities plan to meet the needs of current and future generations without compromising the ecosystems upon which they depend by balancing social, economic, and environmental resources, incorporating resilience and linking local actions to regional and global concerns".***

In other words, sustainability is the ability of present day generations to live without jeopardizing the ability of future generations to sustain life as we know it today.

All of us living in today's world need to begin switching gradually to cleaner resources. By doing so it will aid future generations with their quality of life. The more renewable energy sources become the norm for our generation, the more likely these sources will be second nature and common in the future.

Americans have grown to rely more heavily on electricity. However, state and federal policies have been more insistent on curbing the level of our reliance on electricity; especially, those sources produced by non-renewable fossil fuels such as oil and coal. Federal policy has set a goal for 20% of all electricity, by 2020, in the United States be from renewable sources such as solar and wind.

So, what can Cherry County do to be more sustainable? There are a number of activities that can be undertaken and pursued to make an impact. The following information will meet at a minimum, the requirements of LB 997 but will also provide basic strategies Cherry County residents can undertake to make a contribution to the overall energy solution.

ENERGY USE BY SECTOR
This section analyzes the energy use by residential, commercial, industrial and other users and will examine the different types of energy sources that are utilized by these different sectors.

Residential Uses

Within Cherry County, residential uses are provided a number of options for both power and heating and cooling. These include electrical power (both fossil fuel and renewable resources), oil, propane, and wood. The most dominant of the energy sources available and used by the residents of Cherry County is electricity produced from both fossil fuels and renewable resources.

The use of oil, propane and wood will be found typically as heating sources during the winter months. The type of fuel used will depend a great deal on where a residence is located within the county. Residents located within the more urbanized parts of Cherry County are more likely to have electrical furnaces. Propane and wood stoves are most likely found in the rural parts of the county where other sources are not always available.

Commercial Uses

Cherry County's commercial uses also have a number of options for both power and heating and cooling. These include electrical power (both fossil fuel and renewable resources), propane, oil and wood. The type of energy source is very dependent upon the specific commercial use and the facilities employed to house the use. The most dominant of the energy sources available is electricity produced from both fossil fuels and renewable resources.

Similar to residential uses, the use of oil, propane and wood will be found typically as heating sources during the winter months. The type of fuel used will depend a great deal on the type of commercial use and the construction of the building(s) involved.

The location of the commercial uses will also dictate, similar to residential uses, what type of heating fuels are used. However, in commercial uses such as repair garages and other uses in larger metal buildings, they may be dependent upon recycling used motor oils to heat their facilities.

Industrial Uses

Cherry County's industrial uses will be very similar to those discussed within the commercial section. However, in some cases, diesel fuel can play a role in both power generation and heating and cooling.

Short-term and Long-term Strategies

As the need and even regulatory requirements for energy conservation increases, residents of Cherry County will need to:

1. Become even more conservative with energy usage
2. Make use of existing and future programs for retrofitting houses, businesses, and manufacturing plants
3. Increase their dependence on more renewable energy sources.

Residential Strategies

There are a number of different strategies that can be undertaken to improve energy efficiency and usage in residences. These strategies range from simple (less costly) to complex (costly). Unfortunately not all of the solutions will have an immediate return on investment. As individual property owners, residents will need to find strategies fitting their budgets to invest in the long-term savings.

There are several ways to make a residence more energy efficient. Some of the easiest include:

- Converting all incandescent light bulbs and Compact Florescent Lights (CFL) to Light Emitting Diodes (LED) or a more recent technology to conserve energy.
- Installing additional insulation in the attic.
- Converting standard thermostats to digital/ programmable thermostats.
- Changing out older appliances with new EnergyStar appliances.

Some of the more costly ways to make a residence more energy efficient include:

- Changing out older less efficient air conditioners and furnaces/boilers to newer high-efficiency units
- Exchanging less efficient water heaters with EnergyStar units or on demand systems.
- New insulation in exterior walls.
- Addition of solar panels for either electrical conversion and/or water heater systems.
- Adding individual scale wind energy conversion systems.
- Installing a geothermal heating and cooling system.
- Installation of energy-efficient low-e windows.

Commercial/Industrial Strategies

Strategies for energy efficiency within commercial/ industrial facilities are more difficult to achieve than those for residential uses. Typically, these improvements will require a greater amount of investment due to the size of most of these facilities.

There are a number of different strategies that can be undertaken to improve energy efficiency and usage in commercial and industrial facilities. Again, not all of the solutions will have an immediate return on investment. Businesses and industries will need to find strategies fitting into their ability to pay for savings at the present time.

There are several ways to make businesses/ industries more energy efficient. Some of the easiest include:

- Converting all incandescent light bulbs and CFL's to LED's or better on small fixtures.
- Converting all florescent lights to more efficient florescent systems.
- Converting standard thermostats to digital/ programmable thermostats.
- Installing additional insulation in an attic space.

Some of the more costly ways to make a business more energy efficient include:

- Exchanging less efficient water heaters with EnergyStar units or on demand systems.
- Changing out older less efficient air conditioners and furnaces/boilers to newer high -efficiency units.
- Installation of energy-efficient low-e windows and/or storefronts.
- New insulation in exterior walls.
- Addition of solar panels for either electrical conversion and/or water heater systems.
- Adding individual scale wind energy conversion systems.
- Installing a geothermal heating and cooling system.
- New storefronts with insulated panels and insulated Low-E glazing.

Public Strategies

Energy efficiency strategies for public facilities are similar to those of commercial and industrial users. Typically, these improvements will require a greater amount of investment due to the size of most of these facilities. However, in some cases there are grants available from time to time to assist public agencies with these improvements.

There are a number of different methods that can be undertaken to improve energy efficiency and usage in public facilities, including:

- Converting all incandescent light bulbs and CFL's to LED's or better on small fixtures.
- Converting all florescent lights to more efficient florescent systems.
- Converting standard thermostats to digital/ programmable thermostats.
- Installing additional insulation in an attic space.

Some of the more costly ways to make public facilities more energy efficient include:

- Changing out older less efficient air conditioners and furnaces/boilers to newer high -efficiency units.
- Exchanging less efficient water heaters with EnergyStar units or on demand systems.
- Installation of energy-efficient low-e windows and/or storefronts
- New insulation in exterior walls
- Addition of solar panels for either electrical conversion and/or water heater systems
- Adding individual scale wind energy conversion systems
- Installing a geothermal heating and cooling system
- New storefronts with insulated panels and insulated Low-E glazing

Renewable Energy Sources

Renewable energy sources, according to most definitions, include natural resources such as the wind, the sun, water, and the earth (geothermal) that can be used over and over again with minimal or no depletion, as well as tapping into sources of methane (from natural resources or man-made conditions). The most common sources of renewable energy used in Nebraska are the wind, the sun, water and earth. The following are examples of how these renewable resources can be used to reduce dependency on fossil fuels.

Wind

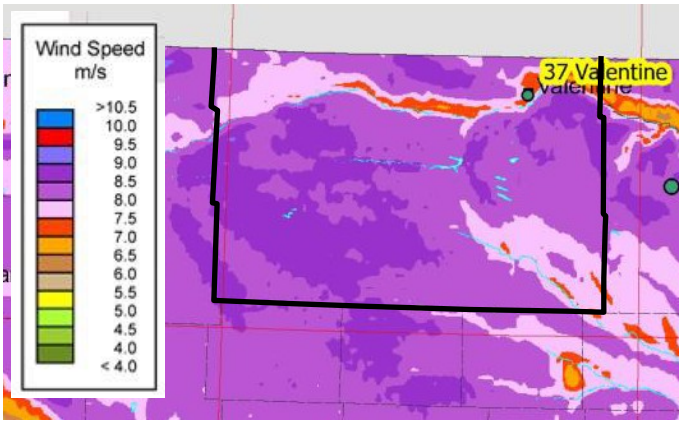
The wind is one of those resources in abundance in Nebraska. Wind is not a new technology in Nebraska; the pioneers that settled in Nebraska used wind mills for power and to work the water wells on their farms and ranches.

Wind can be used to produce electricity through the construction of small-scale or utility/commercial grade wind conversion systems (wind turbines). However, not all areas of the state have the ideal levels needed to produce electricity on a utility or commercial level; but the use of small-scale wind turbines on homes and businesses will work in most parts of Nebraska.

Wind energy has not been a popular issue in Cherry County over the past several years. Some of the issues brought in the debate is the visual impacts made by the actual turbines as well as the power

lines needed to transmit the generated energy. This is an issue needing to be resolved in the future one way or another.

9.5: Annual Average Wind Speed at 80 Meters



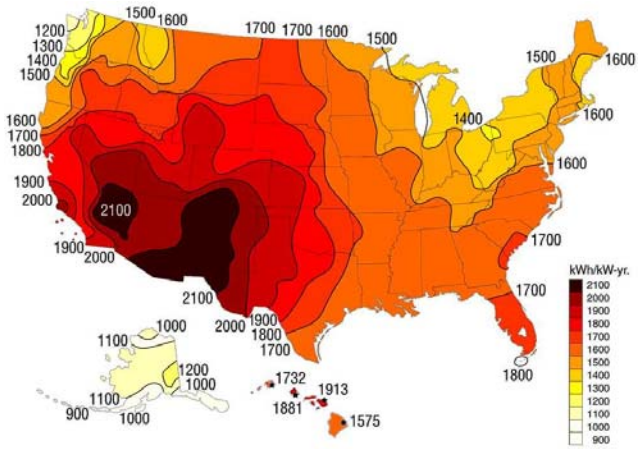
Source: AWS Truepower, NREL

Wind Energy in the Cherry County area
Valentine Wind LLC
The Valentine Wind LLC project consists of one 1.7 MW turbine to supply power to the city of Valentine.

Solar

Solar energy has been around for decades and it last hit a high in popularity in the 1970's. However, today's solar energy design is much more efficient and aesthetically pleasing. Some of the aesthetic improvements have to do with the fact that today's systems are not as bulky as their ancestors. Today, solar is being used much like wind turbines, on a small-scale level (home or business) or a much grander level (solar farms).

Figure 9.6: Solar Contours



Source: Solar Energy Industries Association

Based upon Figure 9.6 there is great solar potential in the state of Nebraska. A majority of the state lies within some of the better areas in the country for solar potential.

Geothermal Energy

Geothermal energy is typically utilized through a process where a series of pipes are lowered into vertical cores called heat-sink wells. The pipes carry a highly conductive fluid that either is heated or cooled by the constant temperature of the ground. The resulting heat exchange is then transferred back into the heating and cooling system of a home or other structure. This is called a geothermal heat exchange system or ground source heat pump. The California Energy Commission estimates the costs of a geothermal system can earn net savings immediately when financed as part of a 30-year mortgage *(Source: American Planning Association, PAS Memo January/February 2009)*.

Methane Energy

The use of methane to generate electricity is becoming more cost-effective to use in Nebraska. Methane electrical generation can be accomplished through the use of a methane digester which takes the raw gas, naturally generated from some form of decomposing material, and converts the gas into electrical power.

There have been some attempts to take the methane generated from animal manure and convert it into electricity; most have been successful but were costly to develop. Another approach to methane electrical generation is to tap into the methane being generated from a solid waste landfill; instead of burning off the methane, it can be piped into a methane convertor and generated into electricity for operating a manufacturing plant or placed on the overall grid for distribution.

Methane convertors make use of unwanted gases and are able to produce a viable product. As long as humans need to throw garbage into a landfill or the production of livestock is required, there will be a source of methane to tap for electrical generation.

State Programs

The following provides a basic history and description of some newer programs in Nebraska; interested parties should contact the State of Nebraska Energy Office or the local power districts.

C-BED Program

In May 2007, Nebraska established an exemption from the sales and use tax imposed on the gross receipts from the sale, lease, or rental of personal property for use in a community-based energy development (C-BED) project. The Tax Commissioner is required to establish filing requirements to claim the exemption. In April 2008 L.B. 916 made several amendments to this incentive, including: (1) clarified C-BED ownership criteria to recognize ownership by partnerships, cooperatives and other pass-through entities; (2) clarified that the restriction on power purchase agreement payments should be calculated according to gross and not net receipts; (3) added language detailing the review authority of the Tax Commissioner and recovery of exempted taxes; and (4) defined local payments to include lease payments, easement payments, and real and personal property tax receipts from a C-BED project.

A C-BED project is defined as a new wind energy project that meets one of the following ownership conditions:

For a C-BED project that consists of more than two turbines, the project is owned by qualified owners with no single qualified owner owning more than 15% of the project and with at least 33% of the power purchase agreement payments flowing to the qualified owner or owners or local community; or

For a C-BED project that consists of one or two turbines, the project is owned by one or more qualified owners with at least 33% of the power purchase agreement payments flowing to a qualified owner or local community.

In addition, a resolution of support for the project must be adopted by the county board of each county in which the C-BED project is to be located.

A qualified C-BED project owner means:

- a Nebraska resident;
- a limited liability company that is organized under the Limited Liability Company Act and that is entirely made up of members who are Nebraska residents;
- a Nebraska nonprofit corporation;
- An electric supplier(s), subject to certain limitations for a single C-BED project.

In separate legislation (LB 629), also enacted in May 2007, Nebraska established the Rural Community-Based Energy Development Act to authorize and encourage electric utilities to enter into power purchase agreements with C-BED project developers.

Local Government and Renewable Energy Policies

Local governments can take steps to encourage greater participation in wind generation. Cities and counties can pursue strategies to make these projects more attractive, including:

- Develop or amend existing zoning regulations to allow small-scale wind turbines as an accessory use in all districts.
- Develop or amend existing zoning regulations to exempt small-scale turbines from maximum height requirements when attached to an existing or new structure; provided, they meet all building codes and manufacturers requirements for attachment.
- Work with the local power districts on ways to use wind turbines on small-scale individual projects or as a source of power for the community.

Net Metering in Nebraska

LB 436, signed in May 2009, established statewide net metering rules for all electric utilities in Nebraska. The rules apply to electricity generating facilities which use solar, methane, wind, biomass, hydropower or geothermal energy, and have a rated capacity at or below 25 kilowatts (kW). Electricity produced by a qualified renewable energy system during a month shall be used to offset any kilowatt-hours (kWh) consumed at the premises during the month.

Any excess generation produced by the system during the month will be credited at the utility's avoided cost rate for that month and carried forward to the next billing period. Any excess remaining at the end of an annualized period will be paid out to the customer. Customers retain all renewable energy credits (RECs) associated with the electricity their system generates. Utilities are required to offer net metering until the aggregate generating capacity of all customer-generators equals one percent of the utility's average monthly peak demand for that year.

State Law of Solar and 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) 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 variances to solar and wind energy systems that would be restricted under existing regulations, so long as the variance 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 that 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.

Current Renewable Energy Programs/Funding Sources

There are several programs available through the power districts to assist in purchasing and installing more energy efficient equipment in residences and businesses. In addition, there are funding opportunities through the Nebraska Energy Office.

Energy in Cherry County

Cherry County will continue to encourage the development of energy-related goals, policies and strategies.

PAGE INTENTIALLY LEFT BLANK

Chapter 9 Hazards

Introduction

This Chapter of the Cherry County Comprehensive Plan contains the description of specific hazards within the planning area. Good planning would dictate the need to include such issues as Hazards within the Comprehensive Plan. The information found in this Chapter has been taken from the current Hazard Mitigation Plan written for the counties of Boyd, Brown, Cherry, Keya Paha and Rock through the 2015 Region 24 Emergency Management Area. The discussion herein will be focused on those with a land use impact and only for Cherry County.

Since 1967 Cherry County has been directly involved in 10 Presidential Disaster Declarations including: floods, ice jams, tornadoes, severe storms, COVID-19, and severe winter storms. The most recent (two declarations) was during the development of this Comprehensive Plan, COVID-19.

Hazards Section

One of the key items within the hazard mitigation plan is a risk assessment for the future. The assessment is based upon the type of hazard event and likelihood of it occurring again in the future.

The type of hazards assessed are:

- Ag Diseases
- Dam Failure
- Drought
- Earthquakes
- Expansive Soils
- Extreme Heat
- Flooding (Riverine and Flash)
- Landslides
- Levee Failure
- Severe Thunderstorms (Thunderstorm and Lighting)
- Hail (Hailstorm)
- Severe Winter Storms (Severe Winter Storms and Extreme Cold)
- Sink Holes
- Tornados
- High Winds (Windstorms)
- Wildfires
- Civil Disorder
- Fixed Site Hazards (Chemical and Radiological)
- Terrorism
- Transportation Incidents (Chemical, Radiological, and Severe Incidents)
- Urban Fire

Hazard Mitigation Plan

Section 4 of the ***Region 24 Hazard Mitigation Plan*** rates the different hazards and rates them on Historic Occurrence, Probability, and Extent.

It is critical to monitor hazards, even the ones rated as a Low Risk. The key to successfully addressing these incidents is to follow through with the Goals and Strategies developed to mitigate the issues. Successful mitigation will aid in minimizing the overall loss occurring from any hazard situation.

Table 9.1: Hazard Identification and Risk Assessment Region 24 - 2015

Regional Risk Assessment			
Hazard	**Previous Event Occurrence Occurrence /Year**	**Approximate Annual Probability**	**Likely Extent**
Ag Animal Disease	23/14	100%	Limited
Ag Plant Disease	7/14	50%	Limited
Chemical Fixed Sites	0	Not Calculated	Limited
Chemical Transportation	3/43.25	7%	Limited
Civil Disorder	0	< 1%	Limited
Dam Failure	0	< 1%	Limited
Drought	19/225*	8.40%	Moderate
Earthquakes	0	< 1%	< 4.0
Extreme Heat	38/1	100%	> 90°
Flooding	28/18.75	100%	Minor
Grass/Wildfires	558/15	100%	<100 acres
Hail	1239/18.75	100%	H4 - H9
High winds	69/18.75	100%	9-10 BWF
Landslides	57/(no time frame available)	Unknown	Limited
Levee failure	0	0%	No federal levees in the planning area
Radiological Fixed Sites	None in the planning area	Not calculated	NA
Radiological Transportation	0	< 1%	Limited
Severe Thunderstorms	318/18.75	100%	≥ 1" rainfall
Severe Winter Storms	318/18.75	100%	.25—.5" ice
			20 - 40° F below zero Wind Chills
			4 - 8" snow
			25 - 40 mph winds
Terrorism	0	< 1%	Undefined
Tornadoes	78/18.75	100%	EF0
Transportation Incidents	Auto (225/5)	100%	Limited
	Rail (0/5)	< 1%	
	Kilgor (51/75)	Aviation (89%)	
Urban Fire	413/9	100%	Limited (single structure fire)

Source: 2015 Region 24 Hazard Mitigation Plan

See the actual document for more detail on how these were calculated and the estimated losses for each hazard type.

Table 9.2: Cherry County Risk Assessment

Hazard	Previous Occurrence	2014 Cherry County HIRA	Specific Concerns
Natural Hazards			
Prolonged Power Outages	Yes	High	Lack of Generators
Wildfire	Yes	High	Valentine
Tornado / High Winds	Yes	High	Safe Rooms Needed
Severe Thunderstorms	Yes	High	--
Drought	Yes	High	--
Hail	Yes	N/A	--
Animal Disease	Yes	High	--
Severe Winter Storms	Yes	High	--
Plant Disease	Yes	High	--
Extreme Heat	Yes	N/A	--
Flooding	Yes	High	--
Dam Failure	No	Medium	--
Landslide	No	N/A	--
Earthquake	No	High	--
Man-made Hazards			
Radiological Incident (during transport)	No	N/A	--
Transportation Incident	Yes	Medium	--
Chemical Spills (during transport)	Yes	Medium	--
Radiological Incident (fixed site)	No	N/A	--
Chemical Spills (fixed site)	No	Medium	--
Urban Fire	Yes	High	--
Terrorist Incident	No	Medium	
Civil Disorder	No	Medium	

Source Region 24 Hazard Mitigation Plan

Prolonged Power Outages

Cherry County officials identified food supply, water supply, and school closure having the greatest impact from prolonged power outages. Cherry County receives its power from NPPD, the City of Valentine, KBR REA, Cherry Todd REA, and Panhandle REA. Approximately 10 percent of the county's power lines are buried. The county indicated that the power supply is sufficient to meet current demand. The county has backup generators at the Justice Center/Courthouse, the hospital, and at the communication towers.

In an effort to mitigate the impacts of this hazard, Cherry County included mitigation actions in the plan update. These include purchasing additional backup generators for critical facilities, public awareness initiatives, and improvement emergency communications.

Wildfire

The county has 14 fire departments dispersed throughout the county. These fire departments, as well as the Forest Service, regularly conduct education and outreach initiative to mitigate the impacts of wildfire.

Cherry County identified mitigation actions which address this hazard. Included in the plan update are actions such as improved emergency communication and warning sirens, although the main mitigation measure which addresses this hazard will be public education and awareness initiatives. The majority of the counties offices and critical facilities are located in Valentine, which is a Firewise Community and regularly conducts wildfire mitigation measures, such as debris removal and other educational initiatives in coordination with the Nebraska Forest Service.

Tornado / High Winds

Ten percent of the county's power lines are buried. The county has safe rooms at their schools, the hospital, and the courthouse. The county does have mobile home parks, which may be particularly vulnerable to these hazards. The county also offered emergency text alerts for severe weather through Code Red. Valentine is also a Firewise Community. The county has mutual aid agreements with neighboring counties.

Cherry County identified a need to stabilize/anchor fertilizer, fuel, and propone tanks, which will mitigate the impacts of this hazard. Other actions identified

during this plan update include developing additional safe room locations and installing weather radios and warning sirens around the county. The Niobrara River Council, which is based in Valentine but operates throughout the county, also identified a safe room project during this plan update.

Severe Thunderstorms

The county uses surge protection at its critical facilities and also has a tree board. There are weather radios at the hospital, at the schools, and at Pineview Nursing Home. The county indicated that is does have education programs which address this hazard.

Actions identified in this plan update include installing weather radios at critical facilities and improving warning sirens around the county.

Post Hazard Mitigation Plan

Since the completion of the Hazard Mitigation Plan in 2014, there have been three additional declarations in Cherry County, two for COVID-19 and one for severe winter storms, Straight-line Winds, and Flooding.

Hazard Goals and Policies

The goals of Cherry County and Region 24 are as follows:

Hazard Goal 1

Protect the Health and Safety of Residents.

Hazard Policies and Strategies

HZ -1.1 Reduce or prevent damage to property or prevent loss of life or serious injury (overall intent of the plan).

Hazard Goal 2

Reduce Future Losses from Hazard Events

Hazard Policies and Strategies

HZ-2.1 Provide protection for existing structures, future development, critical facilities, services, utilities, and trees to the greatest extent possible.

HZ-2.2 Develop hazard specific plans, conduct studies or assessments, and retrofit jurisdiction to mitigate for hazards and minimize their impact.

HZ-2.3 Minimize and control the impact of hazard events through enacting or updating ordinances, permits, laws, or regulations.

Hazard Goal 3

Increase Public Awareness and Educate on the Vulnerability to Hazards

Hazard Policies and Strategies

HZ-3.1 Develop and provide information to residents and businesses about the types of hazards they are exposed to, what the effects may be, where they occur, and what they can do to be better prepared.

Public Safety Goal 4

Improve Emergency Management Capabilities

Hazard Policies and Strategies

HZ-4.1 Develop or improve Emergency Response Plan and procedures and abilities.

HZ-4.2 Develop or improve Evacuation Plan and procedures.

HZ-4.3 Improve warning systems and ability to communicate to residents and businesses during and following a disaster or emergency.

Table 9.3: Mitigation Projects

Goal/ Objective	Action Item #	Action Item	Summary	Hazards Addressed
Goal 2 Objective **HZ -2.1**	**2.1.1**	**Backup Generators**	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other critical facilities and shelters.	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
	2.1.2	**Expand Water Storage Capacity / Emergency Water Supplies / Dry Hydrants**	Evaluate the need to expand water storage capacity through a new water tower, stand pipe, etc. to provide a safe water supply for the community and additional water for fire protection. Establish emergency water supplies such as dry hydrants and individual or community cisterns for defending structures from wildland fires.	Wildfire, Urban Fire
	2.1.3	**Hazardous Fuels Reduction**	The Nebraska Forest Service (NFS) Forest Fuels Reduction Program creates strategically located corridors of thinned forests across the landscape, reduces fire intensity, improves fire suppression effectiveness, increases firefighter safety, and better protects lives and property.	Wildfire
	2.1.4	**Hazardous Tree Removal Program**	Identify and remove hazards limbs and/or trees.	Severe Thunderstorms, Hail, High Winds, Tornados, Severe Winter Storms
	2.1.5	**Power and Service Lines**	Communities can work with their local Public Power District or Electricity Department to identify vulnerable transmission and distribution lines and plan to replace or retrofit existing structures to be less vulnerable to storm events.	Tornados and High Winds, Severe Winter Storms, Severe Thunderstorms
	2.1.6	**Safe Rooms**	Design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, and other areas.	Tornados, High Winds, Severe Thunderstorms
	2.1.7	**Stabilize/Anchor fertilizer, fuel, and propane tanks**	Anchor fuel tanks to prevent movement. If left unanchored, tanks could present a major threat to property and safety in a tornado or high wind event.	Tornados, High Winds
	2.1.8	**Stormwater System and Drainage Improvements**	Larger communities generally utilize underground stormwater systems comprised of pipes and inlets to convey runoff. Undersized systems can contribute to localized flooding. Stormwater system improvements may include pipe upsizing and additional inlets. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Smaller communities may utilize stormwater systems comprised of ditches and culverts to convey runoff. Undersized systems can contribute to localized flooding. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements.	Flooding, Dam Failure, Levee Failure
	2.1.9	**Stream Bank Stabilization/ Grade Control Structures / Channel Improvements**	Stream bed degradation can occur along many rivers and creeks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. Can be implemented and improved to maintain the channel bed.	Flooding, Dam Failure, Levee Failure
	2.1.10	**Windbreaks / Living Snow Fence**	Installation of windbreaks to increase water storage capacity in soil.	Severe Winter Storms, Drought
	2.1.11	**Facilities for Vulnerable Populations**	Ensure that facilities which will house vulnerable populations in the future are placed in the least vulnerable areas of the community.	All hazards
	2.1.12	**Install Vehicular Barriers**	Install vehicular barriers to protect critical facilities and key infrastructure where possible.	Transportation Incidents
	2.1.13	**Vulnerable Population Support Database**	Work with stakeholders to develop a database of vulnerable populations and the organizations which support them.	All hazards

Goal/ Objective	Action Item #	Action Item	Summary	Hazards Addressed
Goal 2 Objective HZ-2.2	2.2.1	**Dam Engineering Analysis / Improvements and Reinforcement**	Conduct a preliminary engineering analysis for dam repairs and reinforcement. Dams serve to provide flood protection to businesses and residents during large storm events. Improvements to existing dams will increase flood protection. The Emergency Action Plan, Dam Breech Analysis, and/ or inspection/ safety equipment training may need to be updated along with improvements.	Dam Failure, Flood
	2.2.2	**Drainage Study / Stormwater Master Plan**	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.	Flooding
	2.2.3	**Drought Monitoring Plan**	Develop and implement a plan/ program to monitor the effects of drought.	Drought
	2.2.4	**Flood Prone Property Acquisition**	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Repetitive loss structures are typically highest priority.	Flooding, Dam Failure, Levee Failure
	2.2.5	**Groundwater/Irrigation/Water Conservation Management Plan**	Establish a plan to reduce total consumption of water resources by irrigators of agricultural land in the area and to conserve water use by the citizens during elongated periods of drought. Potential restrictions on water could include limitations on lawn watering, car washing, farm irrigation restrictions, or water sold to outside sources.	Drought
	2.2.6	**Source Water Contingency Plan**	Villages and cities can evaluate and locate new sources of groundwater to ensure adequate supplies to support the existing community and any additional growth which may occur. Also, identify and develop water sources for fire protection.	
	2.2.7	**Community Continuity Plan**	Develop continuity plans for critical community services	All hazards
	2.2.8	**Hail Resistant Roofing**	Encourage the use of hail resistant roofing for any new construction.	Hail
	2.2.9	**Preserve Natural Floodplain**	Preserve natural and beneficial functions of floodplain land through measures such as: retaining natural vegetation, restoring streambeds; and preserving open space in the floodplain.	Flooding, Dam Failure, Levee Failure
	2.2.10	**Adopt a No Adverse Impact**	Adopt a no adverse impact approach tofloodplain management.	Flooding, Dam Failure, Levee Failure
	2.2.11	**Low Impact Development**	Utilize low impact development practices and green infrastructure to reduce flood risk.	Flooding, Dam Failure, Levee Failure

Goal/ Objective	Action Item #	Action Item	Summary	Hazards Addressed
Goal 2 Objective HZ-2.3	2.3.1	Firewise Community	Work to become a Firewise Community/USA participant through the Nebraska Forest Service and US Forest Service in order to educate homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire. The Firewise Communities approach emphasizes community responsibility for planning in the design of a safe community as well as effective emergency response, and individual responsibility for safer home construction and design, landscaping, and maintenance.	Wildfire
	2.3.2	Floodplain Regulation Enforcements/ Updates	Continue to enforce local floodplain regulations for structures located in the 1-percent floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by any community or county. Continue education of building inspectors or Certified Floodplain Managers.	Flooding
	2.3.3	Maintain Good Standing with National Flood Insurance Program (NFIP)	Continue to comply with and maintain good standing with the National Flood Insurance Program (NFIP).	Flooding
	2.3.4	Participate in the National Flood Insurance Program (NFIP)	Participate in the National Flood Insurance Program (NFIP) if eligible. This will not only benefit the community, but gives them eligibilityto specific federal cost share programs.	Flooding
	2.3.5	Floodplain Management	Continue or improve floodplain management practices such as adoption and enforcement of floodplain management requirements, floodplain identification and mapping, description of community assistance and monitoring activities, explanation for failure to participate in the NFIP, CRS, and participation in FEMA's Cooperating Technical Partners Program to increase local involvement in the flood mapping process.	Flooding
	2.3.6	Tree City USA – Tree Maintenance Programs	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a tree maintenance program in order to maintain trees in a community to limited potential damages when a storm event occurs. The four main requirements include: 1) Establish a tree board; 2) Enact a tree care ordinance; 3) Establish a forestry care program; 4) Enact an Arbor Day observance and proclamation.	Severe Thunderstorms, Tornados And High Winds, Severe Winter Storms
	2.3.7	Promote Higher Code	Promote the use of higher codes and standards, such as the Fortified for Safer Living Standard, in order to provide greater protection for any new construction or building retrofits.	All hazards

Goal/ Objective	Action Item #	Action Item	Summary	Hazards Addressed
Goal 3 Objective HZ-3.1	3.1.1	Public Awareness / Education	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchase equipment such as overhead projectors and laptops.	All hazards
	3.1.2	Promote First Aid	Promote first aid training for all residents.	All hazards
	3.1.3	Business Continuity Plans	Educate local businesses on the value of continuity planning.	All hazards
	3.1.4	Mitigation Education	Educate the public and business owners regarding rain gardens, green roofs, and other minor mitigation measures.	All hazards
	3.1.5	Sheltering in Place Outreach	Ensure that all critical facilities, businesses, and residents located near major transportation corridors and near fixedsite chemical facilities are aware of how to safely shelter in place in the event of a chemical incident.	All hazards

Goal/ Objective	Action Item #	Action Item	Summary	Hazards Addressed
Goal 4 Objective HZ-4.1	4.1.1	Civil Service Improvements	Improve Fire Department and Rescue squad equipment and facilities. Providing additional, or updating existing emergency response equipment; this could include fire trucks, ATV's, pay loaders, etc. This would also include developing backup systems for emergency vehicles, and identifying and training additional personnel for emergency response.	All hazards
	4.1.2	Improve and Revise Snow/Ice Removal Program	As needed, continue to revise and improve the snow and ice removal program for streets. Revisions should address situations such as plowing snow, ice removal, parking during snow and ice removal, and removal of associated storm debris. This would include equipment that is needed and paving routes.	Severe Winter Storm
Goal 4 Objective HZ-4.3	4.3.1	Alert/Warning Sirens	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking.	All hazards
	4.3.2	Emergency Communications	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inter-operable communications.	All hazards
	4.3.3	Warning Systems	Improve city cable TV interrupt warning system and implement telephone interrupt system such as Reverse 911, emergency text messaging warning system, etc.	Tornados and high winds, severe winter storms, severe thunderstorms
	4.3.4	Weather Radios	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.	All hazards
	Source: Region 24 Hazard Mitigation Plan—2015 *Note: Yellow highlighted areas are areas Cherry County has committed to doing.*			

Table 9.4: Mitigation Actions - Cherry County

ACTION 2.1.1	Backup Generators
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMGP, NEMA, County Funds
Timeline	6 months
Priority	Medium
Lead Agency	County Board, R24 Emergency Management
Status	Ongoing. This action was listed in the previous mitigation plan. Cherry County currently has generators at the courthouse and communication towers, but would like additional generators at other critical facilities.

ACTION 2.1.6	Safe Rooms
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	PDM, HMPG, NEMA, County Fund, NPS

ACTION 2.1.6	Safe Rooms
Timeline	One year
Priority	Medium
Lead Agency	R24 Emergency Management, Niobrara Council
Status	Not completed. This action was listed in the previous mitigation plan. This project has also been identified by the Niobrara River Council.

ACTION 2.1.7	Stabilize/Anchor Fertilizer, Fuel, and Propane Tanks
Analysis	Anchor fuel tanks to prevent movement. If left unanchored, tanks could present a major threat to property and safety in tornado or high wind event.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Address	Tornados, High Winds
Benefits	Limits the chance of fuel/chemical spills. Reduces chance that propane tanks and other items become missiles during tornado events.
Estimated Cost	$1,000 plus
Potential Funding	PDM, HMGP, LPG, Diesel
Timeline	One year
Priority	Medium
Lead Agency	R24 Emergency Management
Status	Not completed. This action was listed in the previous mitigation plan.

ACTION 2.1.8	Stormwater System and Drainage Improvements
Analysis	Larger communities generally utilize underground stormwater systems comprising of pipes and inlets to convey runoff. Undersized systems can contribute to localized flooding. Stormwater system improvements may include pipe upsizing and additional inlets. Smaller communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	N/A
Timeline	N/A
Priority	N/A

ACTION 2.1.9	Stream Bank Stabilization / Grade Control Structures/ Channel Improvements
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Benefits	Protects structures near banks from flooding and shifting by reducing risk of flow disruption. Low maintenance solution to reduce the risk of recurring maintenance from banks falling in and increase conveyance.
Estimated Cost	$50,000 to $100,000+
Potential Funding	USACE, PDM, HMGP, Natural Resource District, County and Local Governing Agency
Timeline	One year
Priority	Medium
Lead Agency	Cherry County Roads Department
Status	Ongoing. This action was listed in the previous mitigation plan. This action would affect multiple water bodies.

ACTION 2.2.5	Groundwater/Irrigation/Water Conservation Management Plan
Analysis	Develop and implement a plan/ best management practices to conserve water use and reduce total use (high water use to low water use) and consumption of groundwater resources by citizens and irrigators of agricultural land during elongated periods of drought. Identify water saving irrigation projects or improvements such as sprinklers or soil moisture monitoring. Potential restrictions on water could include limitations on lawn watering, car washing, farm irrigation restrictions, or water sold to outside sources. Implement BMPs through water conservation practices such as changes in irrigation management, education on no-till agriculture and modified crop selection, and use of xeriscaping in communities.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Drought
Benefits	Conserving water during periods in which the demand increases along with best management practices will reduce the total consumption of groundwater resources and ensure an adequate water supply during drought periods and reduces the risk of depleting the water supply. This protects the residents and the local agricultural economy.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	N/A

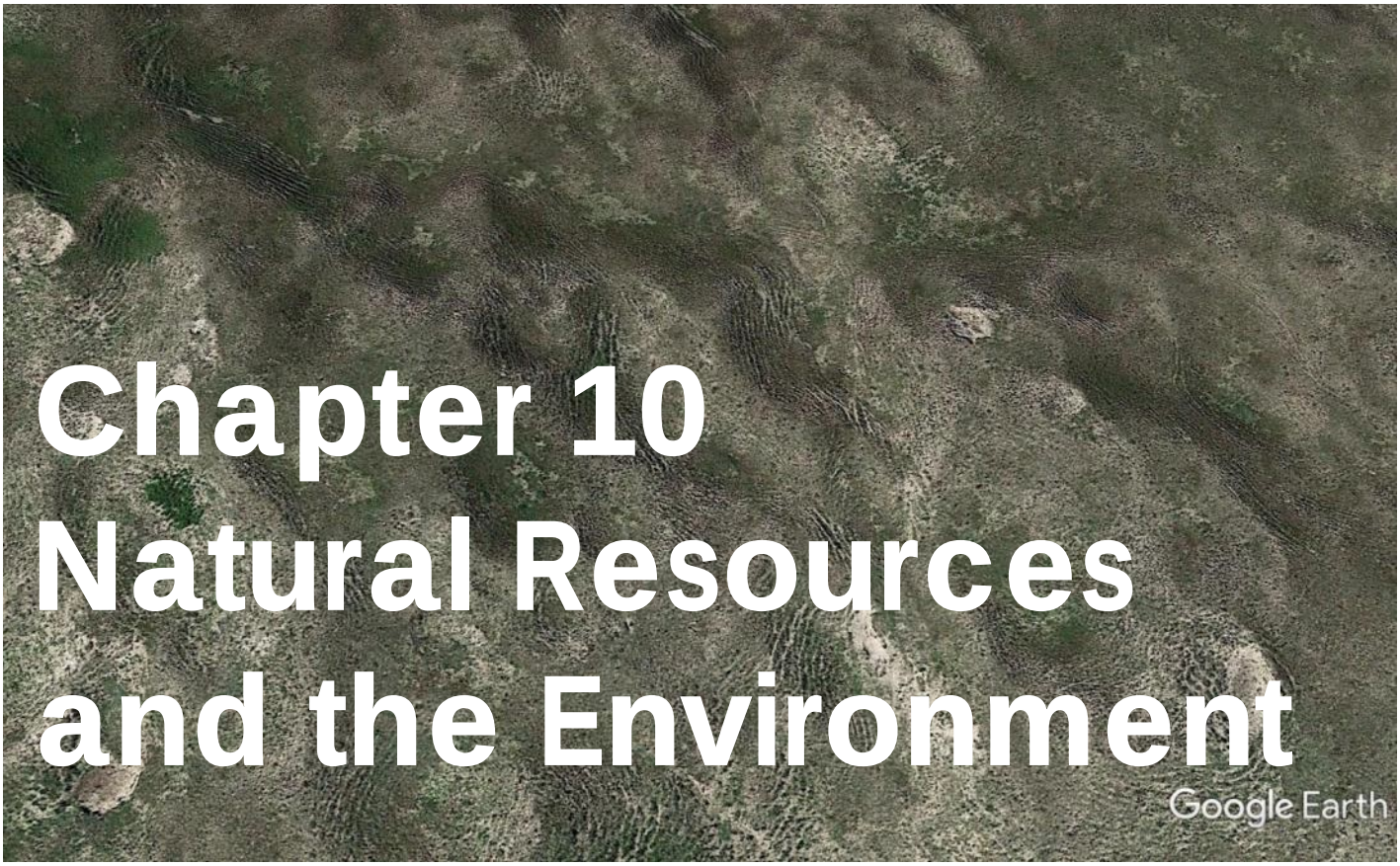
ACTION 3.1.1	Public Awareness / Education
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, PDM, County Funds, State Funds
Timeline	One year
Priority	Low
Lead Agency	R24 Emergency Management, Niobrara Council
Status	Ongoing. This action was listed in the previous mitigation plan.

ACTION 4.3.1	Alert / Warning Sirens
Analysis	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking and remote activation.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$15,000+
Potential Funding	HMGP, PDM, Natural Resource District, County Funds
Timeline	Three to Five years
Priority	Low
Lead Agency	County E911, R24 Emergency Management, County Board
Status	Ongoing. This action was listed in the previous plan.

ACTION 4.3.3	Warning Systems
Analysis	Improve city cable TV interrupt warning system and implement telephone interrupt system such as Reverse 911.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$10,000+
Potential Funding	HMGP, PDM, Natural Resource District, County and Local Governing Agency
Timeline	One year
Priority	High
Lead Agency	Cherry County, Region 24 Emergency Management
Status	Ongoing. This action was listed in the previous mitigation plan.

ACTION 4.3.4	Weather Radios
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	HMGP, PDM, Natural Resource District, County and Local Governing Agency, Schools
Timeline	One year
Priority	High
Lead Agency	Region 24 Emergency Management
Status	Not completed. This action was listed in the previous mitigation plan.

ACTION 4.3.2	Emergency Communications - New
Analysis	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Coordination and clear and efficient communications between agencies increases the capabilities to protect and rescue, increases safety, and reduces the risk of mistakes due to miscommunications.
Estimated Cost	$10,000+
Potential Funding	Homeland Security, Natural Resource District, County and Local Governing Agency
Timeline	One year
Priority	High
Lead Agency	Region 24 Emergency Management, Cherry County Board
Status	Not started. This is a new action that has been identified by Cherry County during this plan update.



Chapter 10 Natural Resources and the Environment

Introduction

In order to formulate a truly valid and "comprehensive" plan for the future development of Cherry County, it is first necessary to evaluate the environmental and man-made conditions currently existing in order to determine the impacts these factors may have on future land uses in the County. This component of the Cherry County Comprehensive Plan provides a general summary of the environmental and man-made conditions, which are present in the County, and identifies and qualifies the characteristics of each which will directly or indirectly impact future land uses in the County.

Natural Environmental Conditions

- Climate
- Geology
- Relief and Drainage
- Wildlife
- Wetlands
- Soil Association
- Capability Grouping
- Prime Farmland
- Soil Limitations

Natural Conditions

Climate

(This information was taken from the 2005 Cherry County Soils Survey)

The climate in Cherry County is characterized by cold winters and long, hot summers. Heavy rains occur mainly in spring and early summer when moist air from the Gulf of Mexico interacts with the drier continental air. Snowfall is fairly frequent in winter, but the snow cover is usually not continuous. The annual precipitation normally is adequate for wheat, rye, and range grasses.

In winter, the average temperature is 22.3 degrees F and the average daily minimum temperature is 9.3 degrees. The lowest temperature on record, which occurred at Valentine on December 22, 1989, was -39 degrees. In summer, the average temperature is 71.6 degrees and the average daily maximum temperature is 85.8 degrees. The highest temperature, which occurred at Valentine on July 2, 1990, was 114 degrees.

The average annual precipitation is about 18.24 inches. Of this total, about 12.9 inches, or 71 percent, usually falls in May through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall on record was 3.76 inches at Valentine on May 29, 1949.

Thunderstorms occur on about 46 days each year, and most occur between May and August.

The average seasonal snowfall is 34.1 inches. The greatest snow depth at any one time during the period of record was 22 inches, recorded on December 28, 1987. On the average, 55 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 18.4 inches, recorded on September 28, 1985.

The average relative humidity in midafternoon is about 48 percent. Humidity is higher at night, and the average at dawn is about 77 percent. The sun shines 74 percent of the time possible in summer and 62 percent in winter. The prevailing wind is from the south during the summer and fall and from the north and west during the rest of the year. Average windspeed is highest, about 10 to 11 miles per hour, from March to May.

Geology and Groundwater

(This information was taken from the Cherry County Soil Survey by the United States Department of Agriculture – Soil Conservation Service – 2005)

The oldest exposed rocks in Cherry County occur in the eastern Niobrara River Valley and consist of brownish to pinkish, pale orange siltstone and silty sandstone. They have been correlated by some geologists with the Rosebud Formation of South Dakota and by others with the upper part of the Brule Formation. These strata are composed predominantly of volcanically derived grains (glass shards and crystals) and were for the most part deposited by the wind. They are upper Oligocene in age (Swinehart and others, 1985).

Overlying the Brule/Rosebud Formation in a few scattered exposures along the central and western Niobrara River Valley are fine grained, silty sandstones of the Arikaree Group. These sandstones contain a lower percentage of glass shards than the Brule or Rosebud Formation and are upper Oligocene to lower Miocene in age.

Sand, sandstone, and siltstone of the Ogallala Group overlie the Brule/Rosebud Formation and Arikaree rocks along the Niobrara River Valley and elsewhere in the county. The outcroppings of the Ogallala sediments have been subdivided into two formations—the Valentine Formation and the overlying Ash Hollow Formation. Subsurface correlation of these units has been difficult. Both formations were deposited by streams in a complex set of valleys locally cut deep into underlying strata.

A widespread calcium-carbonate-cemented unit, the "Cap Rock," occurs at the base of the Ash Hollow Formation. Several discrete beds of volcanic ash occur in the Ash Hollow Formation. The Ogallala Group beneath the Sandhills in the southern half of the county is fairly uniform fine and medium sand and lesser amounts of siltstone and coarse sand and gravel (Swinehart and Diffendal, 1990). The Ogallala Group is famous for its accumulation of fossil vertebrates. It is middle to upper Miocene in age.

A few exposures of Pliocene river-deposited sand and gravel occur in southeastern Cherry County. These have been correlated with the Broadwater Formation of Morrill County. Pleistocene alluvial gravel, sand, and silt are present locally along the Niobrara River Valley. The majority of Cherry County is covered by the fine and medium sand of the Nebraska Sandhills. Recent research indicates that the present dunes were formed during two or more periods of aridity and dune movement in the last 8,000 years (Ahlbrandt and others, 1983). In some interdunes, peat and windblown sand are interbedded to a depth of 25 feet (Loope and others, 1995).

The Ogallala Group of the High Plains Aquifer is the main source of ground water in the county (Cronic and others, 1956). Almost all of the water for public and domestic use and much of the water for livestock is obtained from wells. Very little water can be obtained from the Brule/Rosebud sediments. The Arikaree Group would constitute a source if it were more extensive. The depth to water in areas of the Sandhills varies according to dune height and is generally less than 50 feet in interdune areas. In the tableland areas of the county, water depths generally range from 100 to 200 feet. The saturated thickness of the High Plains Aquifer is typically 300 to 500 feet in the southern half of the county and 100 to 300 feet in the northern half. Water is generally of good quality throughout the county. Total dissolved solids are typically less than 200 milligrams per liter, but higher concentrations are in the northeastern and northwestern parts of the county. Relatively few center-pivot irrigation systems have been installed.

Physiography, Relief, and Drainage
(This information was taken from the Cherry County Soil Survey by the United States Department of Agriculture – Soil Conservation Service – 2005)

Cherry County is in the northern High Plains of the Great Plains physiographic province. More than 90 percent of the county is covered by sand dunes and interdunes of the prairie-covered Nebraska Sandhills, which make up about 20,000 square miles (Swinehart, 1990). The Niobrara River Valley, extending from west to east across the northern part of the county, and tablelands in the northeast corner and the extreme west-central parts of the county make up the other major landforms.

The Nebraska Sandhills is by far the largest sand dune area in North America. The sand dunes in Cherry County average about 150 to 250 feet high, 2 to 10 miles long, and one-half mile to 2 miles wide. These large dunes typically have steep south- to southeastern-facing slopes and rolling backslopes. They are separated from each other by nearly level to gently sloping interdunes. Certain areas of the Sandhills have many shallow lakes and interdunal wetlands. Some of the lakes and the interdunes surrounding them are moderately alkaline or strongly alkaline. Many interdunes have small streams, but drainage networks are poorly developed because the sandy soils allow little runoff. The Snake River, Minnechaduza Creek, and all other tributaries of the Niobrara River and the forks of the Middle Loup River all flow in valleys cut 50 to 200 feet below the level of the interdunes. The North Loup River and its tributaries flow east and southeast. They drain much of the southeastern part of the county, and their valleys are not cut so deeply.

The Niobrara River Valley has been entrenched 150 to 350 feet, and the valley sides are steep and very steep. Sandy alluvial bottom land makes up only a small part of the valley. The valley is steepest in western Cherry County, where a 10-mile region of incised meanders has formed. Remnants of a prominent high terrace underlain by deep, loamy and sandy soils occur along portions of the Niobrara River Valley. Rivers and streams within the county have quite constant flows because they are fed primarily by ground water and receive little runoff. The high tablelands in the northeastern and extreme west central parts of the county are underlain by sandstone and are capped by loamy and sandy soils. These tablelands are among the few areas that contribute significant runoff to streams and rivers.

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.

Inland wetlands found in Cherry County are spread out across the entire county in the form of Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetlands. Inland wetlands include marshes and wet meadows dominated by herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees.

Certain types of inland wetlands are common to particular regions of the country:

- wet meadows or wet prairies in the Midwest
- prairie potholes of Nebraska

Many of these 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. Even wetlands can appear dry, at times, for significant parts of the year - such as vernal pools - often provide critical habitat for wildlife adapted to breeding exclusively in these areas.

The federal government protects wetlands through regulations (like Section 404 of the Clean Water Act), economic incentives and disincentives (for example, tax deductions for selling or donating wetlands to a qualified organization and the "Swampbuster" provisions of the Food Security Act), cooperative programs, and acquisition (for example, establishing national wildlife refuges).

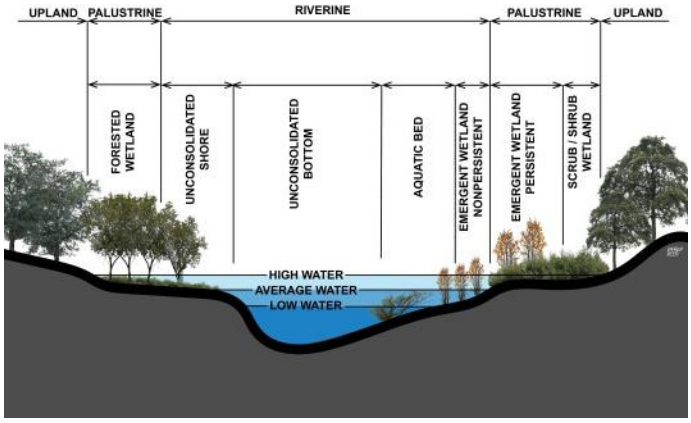
Partnerships to manage whole watersheds have developed among federal, state, tribal, and local governments; nonprofit organizations; and private landowners. The goal of these partnerships is to implement comprehensive, integrated watershed protection approaches. A watershed approach recognizes the interconnection of water, land, and wetlands resources and results in more complete solutions that address more of the factors causing wetland degradation.

The government achieves the restoration of former or degraded wetlands under the Clean Water Act Section 404 program as well as through watershed protection initiatives. Together, partners can share limited resources to find the best solutions to protect and restore America's natural resources. While regulation, economic incentives, and acquisition programs are important, they alone cannot protect the majority of our remaining wetlands. Education of the public and efforts in conjunction with states, local governments, and private citizens are helping to protect wetlands and to increase appreciation of the functions and values of wetlands. The rate of wetlands loss has been slowing. Approximately 75 percent of wetlands are privately owned, so individual landowners are critical in protecting these areas.

Wetlands play an important role in the ecology of Cherry County. Wetlands are home to many species of wildlife, many of which live only in wetland areas. 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.

The U.S. Fish and Wildlife Service (FWS) produce information on the characteristics, extent, and status of the Nation's wetlands and deep-water habitats. This information has been compiled and organized into the National Wetlands Inventory (NWI).

Figure 10.1: Riverine Wetland System



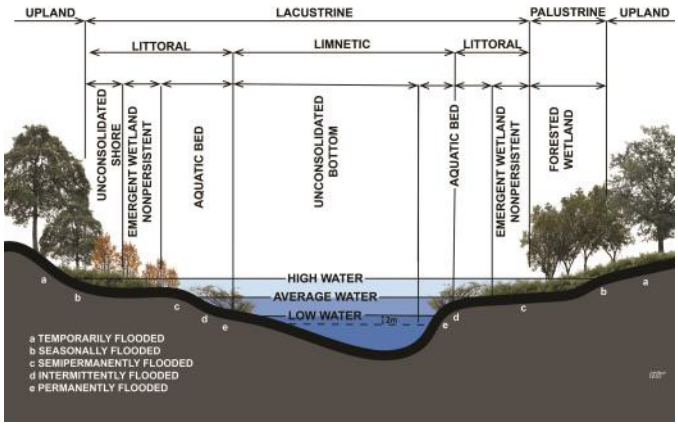
Source: National Wetlands Inventory

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.

Cherry County experiences each of these three other wetland systems. The majority of the wetlands in the county occur, mostly along the Niobrara River and as meadow areas (mostly around the Wood Lake are). However, there are smaller wetland pockets scattered throughout Cherry County.

Figures 10.1, 10.2, and 10.3 depict common examples of the riverine, lacustrine, and palustrine wetlands, respectively. Figure 10.4 shows the occurrence of wetlands in Cherry County. 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", some enhancement was completed in order to place accents on key areas.

Figure 10.2: Lacustrine Wetland System



Source: National Wetlands Inventory

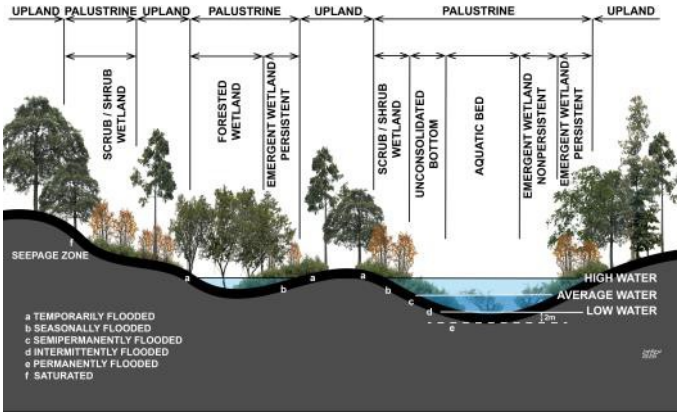
Figure 10.1 shows the riverine system includes all wetlands occurring in channels, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens, and (2) habitats with water containing ocean derived salts in excess of 0.5%. A channel is an open conduit 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.

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

Figure 10.3: Palustrine Wetland System



Source: National Wetlands Inventory

The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens, and all such wetlands that 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 less than 20 acres; (2) lacking active wave-formed or bedrock shoreline features; (3) water depth in the deepest part of basin less than 6.6 feet (2 meters) at low water; and (4) salinity due to ocean-derived salts 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.

Soil Formation and Classification

Cherry County has over 100 different soils types scattered throughout the county. Some of these soils are similar; however, many are completely different from one another. The following pages, derived from the 2005 Cherry County Soil Survey identify key aspects of each soil.

The following definitions are how the Soil Conservation Service use these terms.

Available water capacity: (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low.....0 to 3
Low.....3 to 6
Moderate..... 6 to 9
High.....9 to 12
Very high .....more than 12

Permeability: The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow ..... 0.0 to 0.01 inch
Very slow .....0.01 to 0.06 inch
Slow..... 0.06 to 0.2 inch
Moderately slow .....0.2 to 0.6 inch
Moderate.....0.6 inch to 2.0 inches
Moderately rapid .....2.0 to 6.0 inches
Rapid ..... 6.0 to 20 inches
Very rapid.....more than 20 inches

Soil Characteristics

Ad—Almeria loamy fine sand, channeled, 0 to 2 % slopes

Setting

Landscape: River valleys
Landform: Low flood plains (Photo 10.1)
Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Wildlife habitat and rangeland

Soil Properties and Qualities

Organic matter content: Moderate (4 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)

Photograph 10.1 Example of Almeria loamy fine sand
Source: Cherry County Soil Survey 2005

Surface runoff: Very low or ponded
Frequency of flooding: Frequent
Ponding duration: Long
Distinctive property: A seasonal high water table

Ae—Almeria fine sandy loam, 0 to 2% slopes

Setting

Landscape: River valleys
Landform: Low flood plains
Slope range: 0 to 2 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: High (8 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Occasional
Distinctive property: A seasonal high water table

Af—Almeria fine sandy loam, wet, 0 to 2% slopes

Setting

Landscape: River valleys
Landform: Low flood plains
Slope range: 0 to 2 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: High (8 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Low (6 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Occasional
Ponding duration: Long
Distinctive property: A seasonal high water table

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

NATIONAL WETLANDS INVENTORY

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

NWI Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 03.08.2020

0 3.5 7 14 Miles

1 " = 7 miles

AmB—Anselmo loamy fine sand, 0 to 3% slopes

Setting

Landscape: Tablelands and sandhills
Landform: Plains and interdunes
Slope range: 0 to 3 percent (mainly 1 percent) *Major uses:* Cropland, rangeland, and hayland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (7 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Low Hazard of water erosion:
Slight Hazard of soil blowing: Severe Inclusions

AmC—Anselmo loamy fine sand, 3 to 6 slopes

Setting

Landscape: Tablelands, sandhills, and river valleys
Landform: Hills, interdunes, and valley sides
Position on the landform: Summits, shoulders, backslopes, and footslopes
Slope range: 3 to 6 percent (mainly 4 percent) *Major uses:* Rangeland, hayland, and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Low
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

An—Anselmo fine sandy loam, 0 to 2% slopes

Setting

Landscape: Tablelands and river valleys
Landform: Plains and stream terraces
Slope range: 0 to 2 percent (mainly 1 percent)
Major use: Cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (7 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Moderate

AnC—Anselmo fine sandy loam, 2 to 6% slopes

Setting

Landscape: Tablelands and river valleys
Landform: Hills and valley sides
Position on the landform: Summits, shoulders, backslopes, and footslopes
Slope range: 2 to 6 percent (mainly 4 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Low
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate

AnD—Anselmo fine sandy loam, 6 to 11% slopes

Setting

Landscape: Tablelands and river valleys
Landform: Hills and valley sides
Position on the landform: Summits, shoulders, backslopes, and footslopes
Slope range: 6 to 11 percent (mainly 8 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (7 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate

AuF—Anselmo-Longpine fine sandy loams, 9 to 30% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Anselmo backslopes; Longpine summits, shoulders
Slope range: Anselmo 9 to 17 percent (mainly 10 percent); Longpine 9 to 30 percent (mainly 13 percent)
Major use: Rangeland

Soil Properties and Qualities

Anselmo

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (7 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Severe
Hazard of soil blowing: Moderate

Longpine

Organic matter content: Low (0.5 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (1 inch)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

BcG—Blownout land-Valentine complex, 0 to 60% slopes

Setting

Landscape: Sandhills
Landform: Interdunes and dunes
Slope range: Blownout land 0 to 60 percent; Valentine 3 to 24 percent (mainly 5 percent)
Major use: Rangeland

Soil Properties and Qualities

Valentine

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe

Bm—Bolent loamy fine sand, channeled, 0 to 2% slopes

Setting

Landscape: River valleys
Landform: Low flood plains
Slope range: 0 to 2 percent (mainly less than 1 percent)
Major uses: Rangeland, hayland, and wildlife habitat

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (6 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Occasional
Hazard of soil blowing: Severe
Distinctive property: A seasonal high water table

Bn—Bolent fine sandy loam, 0 to 2% slopes

Setting

Landscape: River valleys
Landform: Low flood plains Slope range: 0 to 2 percent (mainly less than 1 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Moderate
Distinctive property: A seasonal high water table

Bp—Bolent-Calamus, calcareous, loamy fine sands, 0 to 2 slopes

Setting

Landscape:
River valleys
Landform: Bolent low flood plains; Calamus high flood plains
Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Rangeland, hayland (Photo 10.2), cropland, and wildlife habitat

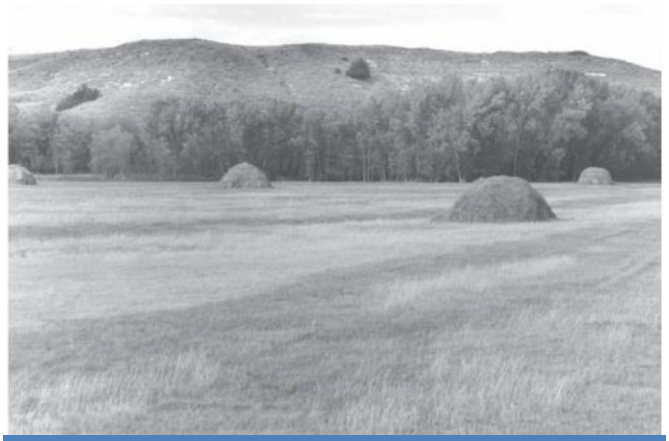
Soil Properties and Qualities

Bolent

Organic matter content: Low (1 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Occasional
Hazard of soil blowing: Severe
Distinctive property: A seasonal high water table

Calamus, calcareous

Organic matter content: Low (1 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Severe
Distinctive property: A seasonal high water table



Photograph 10.2 Example of Bolent-Calamus loamy fine sands
Source: Cherry County Soil Survey 2005

BsD—Busher fine sandy loam, 6 to 9% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Summits, shoulders, backslopes, and hillslopes
Slope range: 6 to 9 percent (8 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities
Potential rooting depth: Deep (40 to 60 inches)
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

BvF—Busher-Tassel fine sandy loams, 9 to 30% slopes

Setting
Landscape: Tablelands
Landform: Hills
Position on the landform: Busher backslopes; Tassel summits and shoulders
Slope range: Busher 9 to 15 percent (mainly 11 percent); Tassel 9 to 30 percent (mainly 25 percent)
Major use: Rangeland

Soil Properties and Qualities
Busher
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (7 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Severe
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

Tassel
Organic matter content: Low (0.5 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (1 inch)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

Cr—Crowther loam, 0 to 1% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: High (8 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Moderate (8 inches)
Permeability: Moderately rapid (2 to 6 inches per hour) over rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive properties: A seasonal high water table; a high content of carbonates

Cs—Crowther loam, wet, 0 to 1% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: High (8 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Moderate (8 inches)
Permeability: Moderately rapid (2 to 6 inches per hour) over rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Rare
Ponding duration: Long
Distinctive properties: A seasonal high water table; a high content of carbonates

Cv—Cullison loam, 0 to 1% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: Very high (15.5 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: High (10 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive properties: A seasonal high water table; a high content of carbonates

Cx—Cullison loam, wet, 0 to 1% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: Very high (15.5 percent)

Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: High (11 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Rare
Ponding duration: Long
Distinctive properties: A seasonal high water table and a high content of carbonates

Cy—Cutcomb mucky peat, 0 to 2 slopes

Setting

Landscape: Sandhills
Landform: Interdunes (Photo 10.3)
Position on the landform: Swales
Slope range: 0 to 2 percent (mainly less than 1 percent)
Major uses: Hayland and rangeland

Soil Properties and Qualities

Organic matter content: Very high (45 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: High (9 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Ponded
Ponding duration: Long
Distinctive property: Organic soil

DaB—Dailey loamy fine sand, 0 to 3% slopes

Setting

Landscape: Tablelands and sandhills
Landform: Plains and interdunes
Slope range: 0 to 3 percent (mainly 1 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

DaD—Dailey loamy fine sand, 3 to 9% slopes

Setting

Landscape: Tablelands and sandhills
Landform: Hills and interdunes
Position on the landform: Summits and backslopes
Slope range: 3 to 9 percent (mainly 5 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

Photograph 10.3 Example of Cutcomb mucky peat
Source: Cherry County Soil Survey 2005

DfB—Doughboy loamy fine sand, 0 to 3% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Hummocks
Slope range: 0 to 3 percent (mainly less than 1 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Severe
Distinctive properties: A seasonal high water table; a high content of carbonates

Dg—Doughboy fine sandy loam, 0 to 2% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales Slope range: 0 to 2 percent (mainly less than 1 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities

Organic matter content: Moderate (2.75 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 6 feet
Available water capacity: High (10 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Moderate
Distinctive properties: A seasonal high water table; a high content of carbonates

DtB—Duda-Fishberry loamy fine sands, 0 to 3% slopes

Setting

Landscape: Tablelands and sandhills
Landform: Plains and interdunes
Slope range: Duda—0 to 3 percent (mainly 1 percent); Fishberry—0 to 3 percent (mainly 3 percent)
Major use: Rangeland

Soil Properties and Qualities

Duda

Organic matter content: Low (1 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe
Distinctive property: Sandstone bedrock at a depth of 20 to 40 inches

Fishberry

Organic matter content: Low (0.5 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (2 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

DuB—Dunday loamy fine sand, 0 to 3% slopes

Setting

Landscape: Tablelands and sandhills
Landform: Plains and interdunes
Slope range: 0 to 3 percent (mainly 2 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

DuD—Dunday loamy fine sand, 3 to 9% slopes

Setting

Landscape: Tablelands and sandhills
Landform: Hills and interdunes
Position on the landform: Summits and backslopes
Slope range: 3 to 9 percent (mainly 5 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

Ec—Els fine sand, 0 to 2% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Very severe
Distinctive property: A seasonal high water table

EfB—Els-Ipage fine sands, 0 to 3% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Els—swales; Ipage— hummocks
Slope range: Els—0 to 2 percent (mainly 1 percent); Ipage—0 to 3 percent (mainly 2 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Els

Organic matter content: Low (1 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Very severe
Distinctive property: A seasonal high water table

Ipage

Organic matter content: Low (1 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 5 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of flooding: None
Hazard of soil blowing: Very severe
Distinctive property: A seasonal high water table

Eh—Els-Tryon complex, 0 to 2% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Els—hummocks; Tryon— swales
Slope range: Els—0 to 2 percent (mainly 1 percent); Tryon—0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Els

Organic matter content: Low (1 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Very severe
Distinctive property: A seasonal high water table

Tryon

Organic matter content: High (5 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive property: A seasonal high water table

Em—Els, calcareous-Hoffland complex, 0 to 2% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Els, calcareous—hummocks; Hoffland—swales
Slope range: Els, calcareous—0 to 2 percent (mainly 1 percent); Hoffland—0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Els, calcareous

Organic matter content: Low (1 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Very severe
Distinctive properties: A seasonal high water table; less than 15 percent carbonates; slightly alkaline or moderately alkaline

Hoffland

Organic matter content: High (7 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Low (6 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive properties: A seasonal high water table; more than 15 percent carbonates

En—Els, calcareous-Selia fine sands, 0 to 2% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Els, calcareous—hummocks; Selia—swales
Slope range: Els, calcareous—0 to 2 percent (mainly 2 percent); Selia—0 to 2 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Els, calcareous

Organic matter content: Moderately low (1 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Very severe
Distinctive properties: A seasonal high water table; less than 15 percent carbonates; moderately alkaline

Selia

Organic matter content: Moderately low (1.5 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 2.5 feet
Available water capacity: Low (6 inches)
Permeability: Slow (0.06 to 0.2 inch per hour) over rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Very severe
Distinctive properties: Strongly alkaline; a seasonal high water table

Es—Elsmere loamy fine sand, 0 to 2% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales
Slope range: 0 to 2 percent (mainly less than 1 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities

Organic matter content: Moderate (2 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Severe
Distinctive property: A seasonal high water table

Et—Elsmere loamy fine sand, calcareous, 0 to 2% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales
Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities

Organic matter content: Moderate (3 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Severe
Distinctive properties: A seasonal high water table; less than 15 percent carbonates; slightly alkaline or moderately alkaline

Ew—Elsmere-Loup complex, 0 to 2% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Elsmere—hummocks; Loup—swales
Slope range: Elsmere—0 to 2 percent (mainly 1 percent); Loup—0 to 1 percent (mainly 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Elsmere

Organic matter content: Moderately low (2 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Severe
Distinctive property: A seasonal high water table

Loup

Organic matter content: High (8 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive property: A seasonal high water table

FbC—Fishberry fine sandy loam, 0 to 6% slopes

Setting

Landscape: Tablelands
Landform: Plains and hills
Position on the landform: Summits
Slope range: 0 to 6 percent (mainly 2 percent)
Major uses: Rangeland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (1 inch)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

FcF—Fishberry-Duda loamy fine sands, 6 to 30% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Fishberry—summits and shoulders; Duda—backslopes
Slope range: Fishberry—6 to 30 percent (mainly 16 percent); Duda—6 to 15 percent (mainly 12 percent)
Major uses: Rangeland

Soil Properties and Qualities

Fishberry

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (1 inch)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Severe
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

Duda

Organic matter content: Low (1 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (3 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

FdG—Fishberry-Rock outcrop complex, 20 to 60% slopes

Setting

Landscape: River valleys and tablelands
Landform: Valley sides and hills
Landscape component: Fishberry-summits and shoulders; Rock-outcrop—shoulders
Slope range: Fishberry—20 to 60 percent (mainly 50 percent); Rock outcrop—20 to 60 percent
Major uses: Wildlife habitat, recreation, and rangeland

Soil Properties and Qualities

Fishberry

Organic matter content: Low (1 percent)
Drainage class: Excessively drained

Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (1 inch)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Very severe
Hazard of soil blowing: Severe
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

Fe—Fluvaquents, sandy, 0 to 1% slopes

Setting
Landscape: River valleys
Landform: Low flood plains (Photo 10.4)
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major use: Wildlife habitat

Soil Properties and Qualities
Organic matter content: High (9 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Frequent
Ponding duration: Long
Distinctive property: A seasonal high water table

Ga—Gannett loam, 0 to 1% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: High (8 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Moderate (9 inches)
Permeability: Moderately rapid (2 to 6 inches per hour) over rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive property: A seasonal high water table

Gb—Gannett loam, wet, 0 to 1% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: High (8 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Moderate (8 inches)
Permeability: Moderately rapid (2 to 6 inches per hour) over rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Rare
Ponding duration: Long
Distinctive property: A seasonal high water table

Photograph 10.4 Example of Fluvaquents
Source: Cherry County Soil Survey 2005

Gc—Gus clay loam, 0 to 1% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: High (6 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: High (10 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive property: A seasonal high water table

Gf—Gus clay loam, wet, 0 to 1% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: High (8 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: High (10 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Ponded

Frequency of flooding: Rare
Ponding duration: Long
Distinctive property: A seasonal high water table

He—Hennings fine sandy loam, 0 to 2% slopes

Setting

Landscape: Tablelands
Landform: Plains
Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Cropland, rangeland, and hayland

Soil Properties and Qualities

Depth to unconsolidated material that contains rock fragments: 24 to 44 inches (mainly 33 inches)
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (9 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

HeC—Hennings fine sandy loam, 2 to 6% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 6 percent (mainly 4 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities

Depth to unconsolidated material that contains rock fragments: 27 to 41 inches (mainly 36 inches)
Organic matter content: Moderately low (1.5 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Medium Hazard of water erosion:
Moderate Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

HeD—Hennings fine sandy loam, 6 to 11% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Summits, shoulders, and backslopes
Slope range: 6 to 11 percent (mainly 9 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities

Depth to unconsolidated material that contains rock fragments: 25 to 32 inches (mainly 32 inches)
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Medium Hazard of water erosion:
Moderate Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

HgE—Hennings-Anselmo fine sandy loams, 11 to 20% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Hennings-shoulders and summits; Anselmo-backslopes
Slope range: Hennings—11 to 20 percent (mainly 11 percent); Anselmo—11 to 17 percent (mainly 14 percent)
Major use: Rangeland

Soil Properties and Qualities

Hennings

Depth to unconsolidated material that contains rock fragments: 24 to 44 inches (mainly 26 inches)
Organic matter content: Moderately low (1.3 percent)
Drainage class: Well drained
Available water capacity: Moderate (6 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

Anselmo

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Available water capacity: Moderate (9 percent)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Severe
Hazard of soil blowing: Moderate

Hr—Hoffland fine sandy loam, 0 to 1% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: High (7 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Low (6 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive properties: A seasonal high water table; more than 15 percent carbonates

Hs—Hoffland fine sandy loam, wet, 0 to 1% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: High (7 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Low (6 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Rare
Ponding duration: Long
Distinctive properties: A seasonal high water table; more than 15 percent carbonates

Ht—Holt fine sandy loam, 0 to 2% slopes

Setting

Landscape: Tablelands
Landform: Plains
Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Cropland and rangeland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Low Hazard of water erosion: Slight
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 20 to 36 inches

HuC—Holt-Longpine fine sandy loams, 2 to 6% slopes

Setting

Landscape: Tablelands
Landform: Hills and plains
Position on the landform: Holt—backslopes; Longpine—shoulders and summits
Slope range: Holt—2 to 6 percent (mainly 4 percent); Longpine—2 to 6 percent (mainly 2 percent)
Major uses: Cropland and rangeland

Soil Properties and Qualities

Holt

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (3 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 20 to 36 inches

Longpine

Organic matter content: Low (1 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (2 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

HuD—Holt-Longpine fine sandy loams, 6 to 9% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Holt—backslopes; Longpine—shoulders and summits
Slope range: Holt—6 to 9 percent (mainly 7 percent); Longpine—6 to 9 percent (mainly 9 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities

Holt

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 20 to 36 inches

Longpine

Organic matter content: Low (1 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (2 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

HyC—Holt-Vetal fine sandy loams, 0 to 6% slopes

Setting

Landscape: Tablelands
Landform: Hills and plains
Position on the landform: Holt—summits, shoulders, and the upper backslopes; Vetal—swales and the lower backslopes
Slope range: Holt—2 to 6 percent (mainly 3 percent); Vetal—0 to 2 percent (mainly 1 percent)
Major uses: Cropland and rangeland

Soil Properties and Qualities

Holt

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 20 to 36 inches

Vetal

Organic matter content: Moderate (4 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (9 percent)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Moderate

Ic—Calamus fine sand, calcareous, 0 to 2% slopes

Setting

Landscape: River valleys
Landform: High flood plains
Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Rangeland, hayland, and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of water erosion: Slight
Hazard of soil blowing: Very severe
Distinctive property: A seasonal high water table

Id—Calamus loamy fine sand, calcareous, 0 to 2% slopes

Setting

Landscape: River valleys
Landform: High flood plains
Slope range: 0 to 2 percent (mainly 2 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of water erosion: Slight
Hazard of soil blowing: Severe
Distinctive property: A seasonal high water table

IgB—Ipage fine sand, 0 to 3% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales and hummocks *Slope range:* 0 to 3 percent (mainly less than 1 percent)
Major uses: Rangeland, hayland, and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 5 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour) *Surface runoff:* Low
Hazard of soil blowing: Very severe
Distinctive property: A seasonal high water table

IhB—Ipage fine sand, calcareous, 0 to 3% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales and hummocks
Slope range: 0 to 3 percent (mainly 2 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 5 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe
Distinctive properties: A seasonal high water table; less than 15 percent carbonates; slightly alkaline or moderately alkaline

IpB—Ipage loamy fine sand, 0 to 3% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales and hummocks
Slope range: 0 to 3 percent (mainly less than 1 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 5 feet *Available water capacity:* Low (4 inches) *Permeability:* Rapid (6 to 20 inches per hour
Surface runoff: Low
Hazard of soil blowing: Severe
Distinctive property: A seasonal high water table

ItB—Ipage-Tryon complex, 0 to 3% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Ipage—hummocks; Tryon—

swales
Slope range: Ipage—0 to 3 percent (mainly less than 1 percent); Tryon—0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Ipage

Organic matter content: Low (1 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 5 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Very severe
Distinctive property: A seasonal high water table

Tryon

Organic matter content: High (8 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive property: A seasonal high water table

Jn—Jansen fine sandy loam, 0 to 2% slopes

Setting

Landscape: Tablelands
Landform: Plains
Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Cropland, rangeland, and hayland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour) over very rapid (more than 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Moderate

Ke—Keya loam, 0 to 2 percent slopes

Setting

Landscape: Tablelands *Landform:* Swales *Slope range:* 0 to 2 percent (mainly 1 percent) *Major uses:* Cropland, rangeland, and hayland

Soil Properties and Qualities

Organic matter content: Moderate (4 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: High (11 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Slight

LfB—Libory loamy fine sand, 0 to 3% slopes

Setting

Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Hummocks
Slope range: 0 to 3 percent (mainly 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: Moderately low (1.5 percent)
Drainage class: Moderately well drained
Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet
Available water capacity: Moderate (8 inches)
Permeability: Rapid (6 to 20 inches per hour) over moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Severe
Distinctive property: A perched seasonal high water table

Lh—Lodgepole silt loam, 0 to 1% slopes

Setting

Landscape: Tablelands
Landform: Depressions
Slope range: 0 to 1 percent (mainly 1 percent)
Major uses: Rangeland and cultivated crops

Soil Properties and Qualities

Organic matter content: Moderate (3 percent)
Drainage class: Somewhat poorly drained
Seasonal high water table: Perched at the surface to 2 feet below the surface
Available water capacity: High (10 inches)
Permeability: Very slow (less than 0.06 inch per hour)
Surface runoff: Ponded
Ponding duration: Brief
Hazard of soil blowing: Slight
Distinctive property: A perched seasonal high water table

Lo—Loup fine sandy loam, 0 to 1% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: High (6 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive property: A seasonal high water table

Lp—Loup fine sandy loam, wet, 0 to 1% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: High (6 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Rare
Ponding duration: Long
Distinctive property: A seasonal high water table

Ma—Marlake fine sandy loam, 0 to 1% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Depressions
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Wildlife habitat and recreation

Soil Properties and Qualities

Organic matter content: High (8 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Low (6 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Ponding duration: Very long
Distinctive property: A seasonal high water table

McB—McKelvie loamy fine sand, 0 to 3% slopes

Setting

Landscape: River valleys
Landform: Valley sides
Position on the landform: Footslopes
Slope range: 0 to 3 percent (mainly 2 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

McD—McKelvie loamy fine sand, 3 to 9% slopes

Setting

Landscape: River valleys
Landform: Valley sides
Position on the landform: Footslopes
Slope range: 3 to 9 percent (mainly 6 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

McF—McKelvie loamy fine sand, 9 to 30% slopes

Setting

Landscape: River valleys
Landform: Valley sides
Position on the landform: Backslopes
Slope range: 9 to 30 percent (mainly 10 percent)
Major use: Rangeland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

MdF—McKelvie-Fishberry loamy fine sands, 9 to 30% slopes

Setting

Landscape: River valleys
Landform: Valley sides
Position on the landform: McKelvie—backslopes; Fishberry—summits and shoulders
Slope range: McKelvie—9 to 17 percent (mainly 12 percent); Fishberry—9 to 30 percent (mainly 14 percent)
Major use: Rangeland

Soil Properties and Qualities

McKelvie

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

Fishberry

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (1 inch)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Severe

Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

MeG—McKelvie-Fishberry-Rock outcrop complex, 11 to 60% slopes

Setting

Landscape: River valleys
Landform: Valley sides (Photo 10.5)
Position on the landform: McKelvie—backslopes; Fishberry—summits and shoulders; Rock outcrop—summits and shoulders
Slope range: McKelvie—11 to 60 percent (mainly 42 percent); Fishberry—20 to 60 percent (mainly 60 percent); Rock outcrop—20 to 60 percent
Major uses: Wildlife habitat, recreation, and rangeland

Soil Properties and Qualities

McKelvie

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Severe

Fishberry

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (1 inch)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Very severe
Hazard of soil blowing: Severe
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

MfG—McKelvie-Rock outcrop complex, 20 to 60% slopes

Setting

Landscape: River valleys
Landform: Valley sides Position on the landform: McKelvie—backslopes; Rock outcrop—summits and shoulders
Slope range: McKelvie—20 to 60 percent (mainly 24 percent); Rock outcrop—20 to 60 percent
Major uses: Rangeland and wildlife habitat

Soil Properties and Qualities

McKelvie

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Severe

Photograph 10.5 Example of McKelvie-Fishberry-Rock outcrop, along tributary of Niobrara River
Source: Cherry County Soil Survey 2005

MgG—McKelvie-Ustorthents complex, 20 to 60% slopes

Setting

Landscape: River valleys
Landform: Valley sides
Position on the landform: McKelvie—shoulders and backslopes; Ustorthents—backslopes
Slope range: McKelvie—20 to 60 percent (mainly 42 percent); Ustorthents—20 to 60 percent (mainly 40 percent)
Major uses: Wildlife habitat, recreation, and rangeland

Soil Properties and Qualities

McKelvie

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Severe

Ustorthents

Organic matter content: Low (1 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (9 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: High
Hazard of water erosion: Very severe
Hazard of soil blowing: Severe

MxB—Meadin loamy sand, 0 to 3% slopes

Setting

Landscape: Tablelands
Landform: Plains
Slope range: 0 to 3 percent (mainly 1 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained

Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (3 inches)
Permeability: Rapid (6 to 20 inches per hour) over very rapid (more than 20 inches per hour)
Surface runoff: Very low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe
Distinctive property: Shallow to gravel

MxF—Meadin loamy sand, 3 to 30% slopes

Setting
Landscape: River valleys
Landform: Hills and valley sides
Position on the landform: Shoulders and backslopes
Slope range: 3 to 30 percent (mainly 12 percent)
Major use: Rangeland

Soil Properties and Qualities
Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (3 inches)
Permeability: Rapid (6 to 20 inches per hour) over very rapid (more than 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Severe
Distinctive property: Shallow to gravel

Mz—Medihemists, 0 to 2% slopes

Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Depressions
Slope range: 0 to 2 percent (mainly less than 1 percent)
Major use: Wildlife habitat

Soil Properties and Qualities
Organic matter content: Very high (more than 20 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: High (more than 9 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Ponded
Ponding duration: Very long
Distinctive properties: Organic soil; a seasonal high water table

NeB—Nenzel loamy fine sand, 0 to 3% slopes

Setting
Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales and hummocks
Slope range: 0 to 3 percent (mainly less than 1 percent)
Major uses: Rangeland, hayland, and cropland

Soil Properties and Qualities
Organic matter content: Moderately low (2 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 5 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Severe
Distinctive property: A seasonal high water table

NfB—Nenzel loamy fine sand, calcareous, 0 to 3% slopes

Setting
Landscape: Sandhills and river valleys
Landform: Interdunes and stream terraces
Position on the landform: Swales and hummocks
Slope range: 0 to 3 percent (mainly 2 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: Moderately low (2 percent)
Drainage class: Moderately well drained
Depth to seasonal high water table: 3 to 5 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Severe
Distinctive properties: A seasonal high water table; less than 15 percent carbonates; slightly alkaline or moderately alkaline

Or—Ord loam, 0 to 2% slopes

Setting
Landscape: Sandhills and river valleys
Landform: Interdunes and flood plains
Position on the landform: Swales and hummocks
Slope range: 0 to 2 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: Moderate (4 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderately rapid (2 to 6 inches per hour) over rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Moderate
Distinctive properties: A seasonal high water table; a high content of carbonates

OsD—Orpha loamy fine sand, 3 to 9% slopes

Setting
Landscape: River valleys
Landform: Valley sides
Position on the landform: Footslopes
Slope range: 3 to 9 percent (mainly 4 percent)
Major use: Rangeland

Soil Properties and Qualities
Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)

Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

OtF—Orpha-Niobrara loamy fine sands, 9 to 30% slopes

Setting

Landscape: River valleys
Landform: Valley sides
Position on the landform: Orpha—backslopes; Niobrara—shoulders
Slope range: Orpha—9 to 30 percent (mainly 12 percent); Niobrara—9 to 30 percent (mainly 16 percent)
Major uses: Rangeland

Soil Properties and Qualities

Orpha

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Severe
Hazard of soil blowing: Severe

Niobrara

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (1 inch)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Severe
Distinctive property: Sandstone bedrock at a depth of 10 to 20 inches

OxG—Orpha-Rock outcrop complex, 20 to 60% slopes

Setting

Landscape: River valleys (Photo 10.6)
Landform: Valley sides
Position on the landform: Orpha—backslopes; Rock outcrop—shoulders
Slope range: Orpha—20 to 60 percent (mainly 30 percent); Rock outcrop—20 to 60 percent
Major uses: Rangeland and wildlife habitat

Soil Properties and Qualities

Orpha

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: High
Hazard of water erosion: Severe
Hazard of soil blowing: Severe

Photograph 10.6 Example of Orpha-Rock outcrop complex 20 to 60% slope, along Niobrara River
Source: Cherry County Soil Survey 2005

PtB—Pivot loamy fine sand, 0 to 3% slopes

Setting

Landscape: Tablelands
Landform: Plains
Slope range: 0 to 3 percent (mainly 1 percent)
Major uses: Irrigated cropland and rangeland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour) over very rapid (more than 20 inches per hour)
Surface runoff: Very low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe
Distinctive property: Moderately deep to gravel

SfB—Sandose loamy fine sand, 0 to 3% slopes

Setting

Landscape: Tablelands, sandhills, and river valleys
Landform: Plains, interdunes, and stream terraces
Slope range: 0 to 3 percent (mainly less than 1 percent)
Major uses: Rangeland

Soil Properties and Qualities

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Rapid (6 to 20 inches per hour) over moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

ShB—Sandose-Hennings loamy fine sands, 0 to 3% slopes

Setting

Landscape: Tablelands
Landform: Plains
Slope range: Sandose—0 to 2 percent (mainly 1 percent);

Hennings—1 to 3 percent (mainly 2 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities
Sandose
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Rapid (6 to 20 inches per hour) over moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

Hennings
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight or moderate
Hazard of soil blowing: Moderate
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

ShC—Sandose-Hennings loamy fine sands, 3 to 6% slopes
Setting
Landscape: Tablelands
Landform: Hills
Position on the landform: Sandose—backslopes; Hennings—shoulders and summits
Slope range: Sandose—3 to 6 percent (mainly 3 percent); Hennings—3 to 6 percent (mainly 5 percent)
Major uses: Rangeland and cropland

Soil Properties and Qualities
Sandose
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Rapid (6 to 20 inches per hour) over moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

Hennings
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

ShD—Sandose-Hennings loamy fine sands, 6 to 11% slopes
Setting
Landscape: Tablelands
Landform: Hills
Position on the landform: Sandose—backslopes; Hennings—shoulders and summits
Slope range: Sandose—6 to 11 percent (mainly 7 percent); Hennings—6 to 11 percent (mainly 6 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities
Sandose
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (9 inches)
Permeability: Rapid (6 to 20 inches per hour) over moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

Hennings
Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe
Distinctive property: Sandstone bedrock at a depth of 40 to 60 inches

SnB—Satanta fine sandy loam, 0 to 3% slopes
Setting
Landscape: Tablelands
Landform: Plains
Slope range: 0 to 3 percent (mainly 2 percent)
Major use: Cropland

Soil Properties and Qualities
Organic matter content: Moderately low (1.2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: High (10 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Moderate

SoB—Simeon sand, 0 to 3% slopes
Setting
Landscape: Tablelands and river valleys
Landform: Plains and stream terraces
Slope range: 0 to 3 percent (mainly 1 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities
Organic matter content: Low (1 percent)
Drainage class: Excessively drained

Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Hazard of water erosion: Slight
Hazard of soil blowing: Very severe
Distinctive property: Shallow to gravel

SvD—Simeon-Valentine complex, 0 to 9% slopes

Setting

Landscape: Tablelands and sandhills
Landform: Simeon—plains; Valentine—dunes
Slope range: Simeon—0 to 3 percent (mainly 1 percent); Valentine—3 to 9 percent (mainly 6 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (0.6 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Hazard of soil blowing: Very severe
Distinctive property: Shallow to gravel

Valentine

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe

SvF—Simeon-Valentine complex, 9 to 24% slopes

Setting

Landscape: River valleys and tablelands
Landform: Valley sides and dunes
Position on the landform: Simeon—backslopes; Valentine—dunes
Slope range: Simeon—9 to 24 percent (mainly 12 percent); Valentine—9 to 24 percent (mainly 13 percent)
Major use: Rangeland

Soil Properties and Qualities

Simeon

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe
Distinctive property: Shallow to gravel

Valentine

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of soil blowing: Very severe

Tn—Tryon fine sandy loam, 0 to 1% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: High (5 percent)
Drainage class: Poorly drained
Seasonal high water table: At the surface to 1.5 feet below the surface
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Very low
Frequency of flooding: Rare
Distinctive property: A seasonal high water table

To—Tryon fine sandy loam, wet, 0 to 1% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales
Slope range: 0 to 1 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Organic matter content: High (5 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Rare
Ponding duration: Long
Distinctive property: A seasonal high water table

TwC—Tuthill fine sandy loam, 3 to 6% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Summits, shoulders, and backslopes
Slope range: 3 to 6 percent (mainly 3 percent)
Major uses: Cropland and rangeland

Soil Properties and Qualities

Organic matter content: Moderately low (1.1 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (6 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour) over rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Contrasting sandy material at a depth of 20 to 40 inches

TwD—Tuthill fine sandy loam, 6 to 11% slopes

Setting

Landscape: Tablelands
Landform: Hills
Position on the landform: Summits, shoulders, and backslopes
Slope range: 6 to 11 percent (mainly 8 percent)
Major uses: Rangeland

Soil Properties and Qualities

Organic matter content: Moderately low (1.1 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (6 inches)
Permeability: Moderate (0.6 inch to 2.0 inches per hour) over rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Moderate
Hazard of soil blowing: Moderate
Distinctive property: Contrasting sandy material at a depth of 20 to 40 inches

VkB—Valentine fine sand, 0 to 3% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Hummocks
Slope range: 0 to 3 percent (mainly 2 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe

VkD—Valentine fine sand, 3 to 9% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Dunes
Slope range: 3 to 9 percent (mainly 6 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe

VkE—Valentine fine sand, rolling

Setting

Landscape: Sandhills
Landform: Dunes
Slope range: 9 to 24 percent (mainly 15 percent)
Major use: Rangeland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of soil blowing: Very severe

VkF—Valentine complex, rolling and hilly

Setting

Landscape: Sandhills
Landform: Dunes
Slope range: Valentine, rolling—9 to 24 percent (mainly 18 percent); Valentine, hilly—24 to 60 percent (mainly 42 percent)
Major use: Rangeland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of soil blowing: Very severe

VkG—Valentine fine sand, hilly

Setting

Landscape: Sandhills
Landform: Dunes (Photo10.7)
Slope range: 24 to 60 percent (mainly 45 percent)
Major use: Rangeland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of soil blowing: Very severe

VmB—Valentine loamy fine sand, 0 to 3% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Hummocks
Slope range: 0 to 3 percent (mainly 2 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (5 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Severe Inclusions

Photograph 10.7 Example of Valentine fine sand, hilly, on dunes (Choppy Sands site)
Source: Cherry County Soil Survey 2005

VmD—Valentine loamy fine sand, 3 to 9% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Dunes
Slope range: 3 to 9 percent (mainly 7 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Severe

VnD—Valentine-Duda complex, 3 to 9% slopes

Setting

Landscape: Sandhills and tablelands
Landform: Valentine—dunes; Duda—hills
Slope range: Valentine—3 to 9 percent (mainly 6 percent); Duda—3 to 9 percent (mainly 5 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Valentine

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe

Duda

Organic matter content: Low (1 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (3 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of water erosion: Moderate
Hazard of soil blowing: Severe

VnF—Valentine-Duda complex, 9 to 24% slopes

Setting

Landscape: Sandhills and tablelands
Landform: Valentine—dunes; Duda—hills
Slope range: Valentine—9 to 24 percent (mainly 12 percent); Duda—9 to 15 percent (mainly 9 percent)
Major use: Rangeland

Soil Properties and Qualities

Valentine

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of soil blowing: Very severe

Duda

Organic matter content: Low (1 percent)
Drainage class: Somewhat excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Very low (2 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Medium
Hazard of water erosion: Severe
Hazard of soil blowing: Severe

VoD—Valentine-Els fine sands, 0 to 9% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Valentine—dunes; Els— swales
Slope range: Valentine—3 to 9 percent (mainly 6 percent); Els—0 to 3 percent (mainly 0.5 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities

Valentine

Organic matter content: Low (0.5 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe

Els

Organic matter content: Low (1 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.0 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Frequency of flooding: Rare
Hazard of soil blowing: Very severe
Distinctive property: A seasonal high water table

VpD—Valentine-Libory complex, 0 to 9% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Valentine—dunes; Libory—hummocks and swales
Slope range: Valentine—3 to 9 percent (mainly 7 percent); Libory—0 to 3 percent (mainly less than 1 percent)
Major uses: Rangeland and hayland

***Soil Properties and Qualities* Valentine**

Organic matter content: Low (0.8 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 60 inches
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe

Libory

Organic matter content: Moderately low (1 percent)
Drainage class: Moderately well drained
Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet Available water capacity: Moderate (8 inches)
Permeability: Rapid (6 to 20 inches per hour) over moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Severe
Distinctive property: A perched seasonal high water table

VsD—Valentine-Sandose complex, 0 to 9% slopes

Setting

Landscape: Tablelands and sandhills
Landform: Valentine—dunes; Sandose—plains
Slope range: Valentine—3 to 9 percent (mainly 8 percent); Sandose—0 to 3 percent (mainly 1 percent)
Major uses: Rangeland and irrigated cropland

Soil Properties and Qualities

Valentine

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe

Sandose

Organic matter content: Moderately low (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (7 inches)
Permeability: Rapid (6 to 20 inches per hour) over moderate (0.6 inch to 2.0 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

VwF—Valentine-Tryon fine sands, 0 to 24% slopes

Setting

Landscape: Sandhills
Landform: Interdunes
Position on the landform: Valentine—dunes and hummocks; Tryon—swales (Photo 10.8)
Slope range: Valentine—1 to 24 percent (mainly 14 percent); Tryon—0 to 1 percent (mainly 1 percent)
Major use: Rangeland

Soil Properties and Qualities

Valentine

Organic matter content: Low (1 percent)
Drainage class: Excessively drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low and medium
Hazard of soil blowing: Very severe

Tryon

Organic matter content: High (8 percent)
Drainage class: Very poorly drained
Seasonal high water table: At the surface to 1 foot below the surface
Available water capacity: Low (4 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Ponded
Frequency of flooding: Rare
Ponding duration: Long
Distinctive property: A seasonal high water table

Photograph 10.8 An area of Valentine-Tryon fine sands, 0 to 24 percent slopes. The Valentine soil is on the dunes, and the Tryon soil is in the swales.
Source: Cherry County Soil Survey 2005

VyB—Vetal loamy fine sand, 0 to 3% slopes

Setting

Landscape: Tablelands
Landform: Swales and plains
Slope range: 0 to 3 percent (mainly 1 percent)
Major uses: Cropland and rangeland

Soil Properties and Qualities
Organic matter content: Moderately low (1 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (8 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Severe

Vz—Vetal fine sandy loam, 0 to 2% slopes
Setting
Landscape: Tablelands
Landform: Swales and plains
Slope range: 0 to 2 percent (mainly 1 percent)
Major uses: Cropland and rangeland

Soil Properties and Qualities
*Organic matter content: M*oderate (2 percent)
Drainage class: Well drained
Depth to seasonal high water table: More than 6 feet
Available water capacity: Moderate (9 inches)
Permeability: Moderately rapid (2 to 6 inches per hour)
Surface runoff: Low
Hazard of water erosion: Slight
Hazard of soil blowing: Moderate

WeB—Wildhorse fine sand, 0 to 3% slopes
Setting
Landscape: Sandhills
Landform: Interdunes
Position on the landform: Swales and hummocks
Slope range: 0 to 3 percent (mainly 1 percent)
Major uses: Rangeland and hayland

Soil Properties and Qualities
Organic matter content: Low (1 percent)
Drainage class: Somewhat poorly drained
Depth to seasonal high water table: 1.5 to 3.5 feet
Available water capacity: Low (3 inches)
Permeability: Rapid (6 to 20 inches per hour)
Surface runoff: Low
Hazard of soil blowing: Very severe
Frequency of flooding: Rare
Distinctive properties: Alkali; strongly alkaline and very strongly alkaline; a seasonal high water table

Soil Suitability

The characteristics of soils play a major role in determining the potential compatibility of certain uses on the land. The ability to absorb certain liquids such as water and wastewater are different for certain types of soils. In addition, how sensitive an area is to erosion or how shallow the soils are in an area can have a major impact on the ability to develop a specific area of Cherry County. These conditions and how they factor into a soils ability to support certain types of uses is referred to limitations.

Finally, if a soil has some level of limitation, it does not mean the different land uses cannot be undertaken in those soils. However, the key focus needs to be on the types of special engineering solutions needing to be implemented in order to overcome these specific soil limitations.

Soil Limitations

The interpretations 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 familiar with the soils of Cherry County.

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, that 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

Figure 10.3 shows the soil suitability conditions for constructing dwelling without a basement (slab on-grade construction). In addition Table 10.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions

Based on Table 10.1, about half of the soils in Cherry County are considered Very Limited for a Dwelling Unit without a Basement. There are eight major conditions impacting the soils (not all eight are present in any one soil type). The conditions present in the different soils are:

- Ponding
- Depth to saturation zone
- Slope
- Flooding
- Organic Matter Content
- Shrink-Swell
- Depth to Soft Bedrock
- Subsidence Risk

Again, these conditions may or may not eliminate the ability of a land owner to build a slab-on-grade dwelling unit, 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 when developing. The conditions creating the Somewhat Limited classification are:

- Slope
- Depth to Soft Bedrock
- Depth to saturation zone

Dwellings with Basements

Figure 10.4 shows the soil suitability conditions for constructing Dwellings with basements. In addition Table 10.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions

Based on Table 10.1, the Very Limited conditions are very similar to Dwellings without Basements. As noted above, a majority of the soils in Cherry County are considered Very Limited for a Dwelling Unit with a Basement. There are eight major conditions impacting the soils (not all eight are present in any one soil type). The conditions present in the different soils are:

- Ponding
- Depth to saturation zone
- Shrink-swell
- Organic Matter Content
- Subsidence Risk
- Depth to Soft Bedrock
- Slope
- Flooding

Again, these conditions may or may not eliminate the ability of a land owner to build a dwelling unit, but specific conditions will need to be engineered to overcome to eliminate potential problems in the future.

Somewhat Limited Conditions

There are fewer Somewhat Limited rated soils having fewer issues when developing. The conditions creating the Somewhat Limited classification are:

- Slope
- Depth to Soft Bedrock
- Depth to saturation zone
- Flooding
- Shrink-swell

Septic Tank and Absorption Fields

Figure 10.4 shows the soil suitability conditions for placement of a septic tank and absorption field in Cherry County. Table 10.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions

Based upon the Table 10.1, there are nine conditions impacting the use of septic tanks and absorption fields in Cherry County. The major conditions impacting the soils are:

- Ponding
- Depth to saturated zone
- Flooding
- Seepage
- Filtering Capacity
- Depth to Bedrock
- Slow water movement
- Slope
- Subsidence Risk

Again, 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 to eliminate potential problems in the future.

Somewhat Limited Conditions

The issues present creating Somewhat problems for septic tanks are:

- Depth to saturated zone
- Slow water movement
- Depth to Bedrock
- Seepage
- Filtering Capacity
- Ponding

Sewage Lagoons

Figure 10.4 shows the soil suitability conditions for placement of Sewage Lagoons in Cherry County. Table 10.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions

Based on Table 10.1, there are seven conditions impacting the use of sewage lagoons in Cherry County. The major conditions impacting the soils are:

- Ponding
- Depth to saturated zone
- Depth to Soft Bedrock
- Flooding
- Organic Mater Content
- Seepage
- Slope

Again, 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 to eliminate potential problems in the future.

Somewhat Limited Conditions

Besides the Very Limited soils, there are some soils considered Somewhat Limited which is less of an issue when developing. The conditions creating the Somewhat Limited classification are:

- Ponding
- Depth to saturated zone
- Depth to Soft Bedrock
- Slope
- Seepage

Again, these conditions may need special engineering to overcome to eliminate potential problems in the future.

Sanitary Landfills

Figure 10.5 shows the soil suitability conditions for placement of sanitary landfills in Cherry County. Table 10.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions

Based on Table 10.1, there are seven conditions impacting the use of sanitary landfills in Cherry County. The major conditions impacting the soils are:

- Ponding
- Depth to saturated zone
- Slope
- Flooding
- Seepage
- Depth to Bedrock
- Dusty

Again, these conditions may or may not eliminate the ability of a land owner to use a sanitary landfill but specific conditions will need to be engineered to overcome to eliminate potential problems in the future.

Somewhat Limited Conditions

Besides the Very Limited soils, there are some soils considered Somewhat Limited which is less of an issue when developing. The conditions creating the Somewhat Limited classification are:

- Dusty
- Slope

Again, these conditions may need special engineering to overcome to eliminate potential problems in the future.

Small Commercial Businesses

Figure 10.6 shows the soil suitability conditions for placement of small commercial businesses in Cherry County. Table 10.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions

Based on Table 10.1, there are seven conditions impacting the use of small commercial buildings in Knox County. The major conditions impacting the soils are:

- Ponding
- Depth to saturated zone
- Shrink-swell
- Organic Mater Content
- Subsidence Risk
- Flooding
- Slope

Again, these conditions may or may not eliminate the ability of a land owner to use a small commercial buildings but specific conditions will need to be engineered to overcome to eliminate potential problems in the future.

Somewhat Limited Conditions

Besides the Very Limited soils, there are some soils considered Somewhat Limited which is less of an issue when developing. The conditions creating the Somewhat Limited classification are:

- Slope
- Depth to saturated zone
- Shrink-swell
- Depth to Soft Bedrock

Again, these conditions may need special engineering to overcome to eliminate potential problems in the future.

Other Factors Impacting Land Uses

The previously discussed uses are typical to counties similar to Cherry County. Earlier in this Chapter, the issue of wetlands was covered in some detail and is very closely associated with surface and groundwater. The following topics are greatly influenced by the type of soil and its location in an area. The following paragraphs will focus on Prime Farmland and Percent of Slope.

Prime Farmland

Prime farmland is directly tied to the specific soils and their composition. The map in Figure 10.7 identifies Prime Farmland, Prime Farmland if

TABLE 10.1: SOIL PROPERTIES BY TYPE AND USE

Soil Symbol/Soil Name Bolded soil represents specific soil in a complex	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
4201 Almeria	2	1,2,5	2	1,2,6	2	1,2,6,11,12	2	1,2,4,6,7,11	2	1,2,5,6,11	2	1,2,6
4203 Almeria	2	1,2,3	2	1,2,6	2	1,2,6,11,12	2	1,2,6,11	2	1,2,6,11	2	1,2,6
4205 Almeria	2	1,2,3	2	1,2,6	2	1,2,6,11,12	2	1,2,6,11	2	1,2,6,11	2	1,2,6
9001 Anselmo	0	0	0	0	2	9,10,11,12	2	4,11	2	10,11,13	0	0
9004 Anselmo	0	0	0	0	2	10,11,12	2	4,5,11	2	10,11,13	1	5
9006 Anselmo	1	4,5	1	5	2	5,10,11,12	2	4,5,11	2	5,10,11,13	2	5
9012 Anselmo	0	0	0	0	2	11,12	2	5,11	2	11	0	0
9013 Anselmo	0	0	0	0	2	10,11,12	2	4,5,11	2	10,11	1	5
9019 Anselmo-Longpine	1	4,5	1	5	2	5,10,11	2	4,5,11	2	5,10,11,13	2	2,5
4221 Bolent	2	2,6	1	2	2	2,11,12	2	2,6,11	2	2,11,13	1	2
4224 Bolent	2	2,6	2	2,6	2	2,6,11,12	2	2,6,11	2	2,6,11,13	2	2,6
4226 Bolent-Almeria	2	1,2,6	1	2	2	1,2,11,12	2	1,2,6,7,11	2	1,2,6,11	1	2
4228 Bolent-Calamus	2	2,6	2	2,6	2	2,6,11,12	2	2,6,11	2	2,6,11,13	2	2,6
5121 Busher	0	0	0	0	1	10	2	4,5,11	1	13	2	2,5
5141 Busher-Tassel	1	5	1	5	2	5,10,12	2	4,5,11	1	5,13	2	2,5
4231 Calamus	1	2	0	0	2	1,2,6,11,12	2	2,6,11	2	2,11	0	0
4233 Calamus	1	2	0	0	2	2,6,11,12	2	2,6,11	2	2,11	0	0
4237 Calamus-Bolent	2	1,2,6	2	1,2,6	2	1,2,6,11,12	2	1,2,6,7,11	2	1,2,6,11	2	1,2,6
4455 Crowther	2	1,2	2	1,2	2	1,2,9,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2
4456 Crowther	2	1,2	2	1,2,3,7	2	1,2,9,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2,3,7
4462 Cullison	2	1,2,3	2	1,2,3	2	1,2,9,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2,3
4463 Cullison	2	1,2,3	2	1,2,3,7	2	1,2,9,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2,3,7
4467 Cutcomb	2	1,2,3,7,8	2	1,2,3,7,8	2	1,2,8,9,11, 12	2	1,2,7,11	2	1,2,11,13	2	1,2,3,7,8
4470 Doughboy	1	2	0	0	2	2,9,11,12	2	2,11	2	2,11,13	0	0
4471 Doughboy	1	2	0	0	2	2,9,11,12	2	2,11	2	2,11	0	0
4476 Duda-Fishberry	2	4	0	0	2	10,11,12	2	4,5,11	2	2,11	0	0
4485 Dunday	0	0	0	0	2	2,11,12	2	2,11	2	2,11	0	0
4490 Dunday	0	0	0	0	2	11,12	2	5,11	2	11	1	5
4521 Els	2	1,2	1	2	2	1,2,11,12	2	1,2,5,7,11	2	1,2,11	1	2
4536 Els	2	1,2	1	2	2	1,2,11,12	2	1,2,7,11	2	1,2,11	1	2
4540 Els	2	2	1	2	2	2,11,12	2	2,11	2	2,11	1	2
4545 Els-Ipage	2	1,2	1	2	2	1,2,11,12	2	1,2,5,7,11	2	1,2,11	1	2
4553 Elsmere	2	1,2	1	2	2	1,2,11,12	2	1,2,7,11	2	1,2,11	1	2
4556 Elsmere	2	1,2	1	2	2	1,2,11,12	2	1,2,7,11	2	1,2,11	1	2
4561 Elsmere-Loup	2	1,2	2	1,2	2	1,2,11,12	2	1,2,7,11	2	1,2,11	2	1,2
4563 Els-Tryon	2	1,2	1	2	2	2,11,12	2	1,2,5,7,11	2	1,2,11	1	2,5
3351 Fishberry	2	4	1	4	2	10,11,12	2	4,5,11	2	10,11	1	3
3352 Fishberry-Duda	2	4,5	2	4,5	2	5,10,11,12	2	4,5,11	2	5,10,11	2	3,5
3353 Fishberry-Rock	2	4,5	2	4,5	2	5,10,11,12	2	4,5,11	2	5,10,11	2	3,5
9903 Fluvaquents	2	1,2,5	2	1,2,5	2	1,2,11,12	2	1,2,6,7,11	2	1,2,6,11	2	1,2,6
4576 Gannett	2	1,2	2	1,2	2	1,2,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2
4579 Gannett	2	1,2,7,8	2	1,2,7,8	2	1,2,8,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2
4590 Gus	2	1,2,3,7,8	2	1,2,3,7,8	2	1,2,8,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2,3,7
4591 Gus	2	1,2,3,7,8	2	1,2,3,7,8	2	1,2,8,9,11, 12	2	1,2,7,11	2	1,2,11,13	2	1,2,3,7,8
3167 Hennings	0	0	1	3	2	9,10,11	2	4,11	2	10,11,13	1	3
4596 Hennings	0	0	1	0	2	9,11,12	2	4,5,11	2	10,11,13	1	3,5
4597 Hennings	1	5	1	3,5	2	5,9,10,11	2	4,5,11	2	5,10,11,13	2	2,3,5
4598 Hennings-Anselmo	2	4,5	2	4,5	2	5,10,11	2	4,5,11	2	5,10,11,13	2	2,5
4635 Hoffland	2	1,2	2	1,2	2	1,2,11,12	2	1,2,7,11	2	1,2,11	2	1,2
4636 Hoffland	2	1,2,3	2	1,2,3,7	2	1,2,9,11,12	2	1,2,7,11	2	1,2,11	2	1,2,3,7
3170 Holt	1	4	0	0	2	10,11,12	2	4,11	2	10,11	0	0
3172 Holt-Longpine	1	4	0	0	2	10,11,12	2	4,5,11	2	10,11	1	4,5
3173 Holt-Longpine	1	4,5	1	4,5	2	5,10,11	2	4,5,11	2	10,11,13	2	4,5
3176 Holt-Vetal	1	4	0	0	2	10,11	2	4,5,11	2	10,11,13	1	3,5
4641 Ipage	1	2	0	0	2	1,2,11,12	2	1,2,7,11	2	1,2,11	0	0
4643 Ipage	1	2	0	0	2	1,2,11,12	2	1,2,7,11	2	1,2,11	0	0
4646 Ipage	1	2	0	0	2	1,2,11,12	2	1,2,5,11	2	1,2,11	0	0
4655 Ipage-Tryon	1	2	0	0	2	1,2,11,12	2	1,2,7,11	2	1,2,11	0	0
3180 Jansen	0	0	1	3	2	9,11,12	2	11	2	11,13	1	3
5188 Keya	0	0	1	3	1	9	1	1,2,4,5,11	1	13	1	3

Soil Symbol/Soil Name Bolded soil represents specific soil in a complex	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
4370 Libory	1	2	0	0	1	2,9	2	2,11	2	2,11,13	0	0
1661 Lodgepole	2	1,2,3	2	1,2,3	2	1,2,9	2	1,2,11	2	1,2,13	2	1,2,3
4662 Loup	2	1,2,3	2	1,2,3	2	1,2,9,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2,3
4670 Loup	2	1,2,3	2	1,2,3	2	1,2,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2,3
4691 Marlake	2	1,2,3,7,8	2	1,2,3,7,8	2	1,2,8,9,11,12	2	1,2,7,11	2	1,2,11,13	2	1,2,3,7,8
4700 McKelvie	0	0	0	0	2	10,11,12	2	2,4,11	2	2,10,11	0	0
4701 McKelvie	0	0	0	0	2	10,11,12	2	4,5,11	2	10,11	1	5
4702 McKelvie	0	0	0	0	2	5,10,11,12	2	4,5,11	2	5,10,11	1	5
4703 McKelvie-Fishberry	0	0	0	0	2	2,5,6,11,12	2	4,5,11	2	2,5,6,10,11	1	5
4704 McKelvie-Fishberry-	2	2,4,5	2	2,4,5,6	2	2,5,6,10,11,	2	2,4,5,11	2	2,5,6,10,11	2	2,5,6
4705 McKelvie-Rock	2	2,5,6	2	2,5,6	2	2,5,6,11,12	2	2,5,6,11	2	2,5,6,11	2	2,5,6
4707 McKelvie-Ustorthents	2	2,5,6	2	2,5,6	2	5,6,11,12	2	2,5,6,11	2	2,5,6,11	2	2,5,6
3249 Meadin	0	0	0	0	2	9,11,12	2	11	2	11	0	0
3251 Meadin	2	5	2	5	2	5,11,12	2	5,11	2	5,11	2	5
9936 Medihemists	2	1,2,3,7,8	2	1,2,7,8	2	1,2,8,9,11	2	1,2,7,11	2	1,2,11,13	2	1,2,3,7,8
4712 Nenzel	1	2	0	0	2	2,11,12	2	2,11	2	2,11	0	0
4711 Nenzel	1	2	0	0	2	2,11,12	2	2,11	2	2,11,13	0	0
4243 Ord	2	2	1	2	2	2,11,12	2	2,8,11	2	2,11,13	1	2
4713 Orpha	0	0	0	0	2	12	2	4,5,11	0	0	1	5
4717 Orpha-Niobrara	2	2,4,5,6	2	2,4,5,6	2	2,5,10,11,12	2	2,4,5,11	2	5	2	2,5,6
4718 Orpha-Rock	2	2,5,6	2	2,5,6	2	2,5,6,11,12	2	2,5,6,11	2	5	2	2,5,6
4720 Pivot	0	0	0	0	2	9,11,12	2	11	2	11	0	0
4730 Sandose	0	0	0	0	2	9,10,11,12	2	4,11	2	11	0	0
4733 Sandose-Hennings	0	0	0	0	2	9,10,11,12	2	4,11	2	10,11	0	0
4734 Sandose-Hennings	0	0	0	0	2	9,10,11	2	4,5,11	2	10,11	1	2,5
4735 Sandose-Hennings	1	5	1	4,5	2	5,9,10,11	2	4,5,11	2	5,10,11	2	2,5
1809 Satanta	0	0	0	0	1	9,10	2	1,2,4,11	1	13	0	0
8929 Simeon	0	0	0	0	2	11,12	2	5,11	2	11	0	0
8939 Simeon-Valentine	0	0	0	0	2	11,12	2	5,11	2	11	0	0
8941 Simeon-Valentine	1	5	1	5	2	1,11,12	2	5,11	2	5,11	2	5
4740 Tryon	2	1,2	2	1,2	2	1,2,11,12	2	1,2,7,11	2	1,2,11	2	1,2
4743 Tryon	2	1,2	2	1,2	2	1,2,11,12	2	1,2,7,11	2	1,2,11	2	1,2
5266Tuthill	0	0	0	0	2	1,2,9,11,12	2	1,2,4,5,11	1	13	1	5
5267 Tuthill	1	5	1	5	2	1,2,5,9,11,12	2	1,2,4,5,11	1	5,13	2	1,2,3,5
4781 Valentine	0	0	0	0	2	1,2,11,12	2	1,2,11	2	1,2,11	0	0
4791 Valentine	0	0	0	0	2	1,2,11,12	2	1,2,5,11	2	1,2,11	1	2,5
4800 Valentine	2	5	2	5	2	5,6,11,12	2	5,11	2	5,11	2	5
4810 Valentine	1	2,5	1	2,5	2	1,2,5,11,12	2	1,2,11	2	1,2,11	2	1,2,5
4807 Valentine	1	2,5	1	2,5	2	1,2,5,11,12	2	1,2,5,11	2	5,11	2	1,2,5
4814 Valentine	0	0	0	0	2	1,2,11,12	2	1,2,11	2	1,2,11	0	0
4818 Valentine	0	0	0	0	2	1,2,11,12	2	1,2,5,11	2	1,2,11	1	5
4450 Valentine	2	1,2,5	2	1,2,5	2	1,2,5,11,12	2	1,2,5,7,9,11	2	1,2,5,11	2	1,2,5
4851 Valentine- Birdwood	2	2,5,6	2	2,5,6	2	2,5,6,11,12	2	2,5,6,11	2	2,5,6,11	2	2,5,6
4856 Valentine-Duda	0	0	0	0	2	9,10,11,12	2	4,5,11	2	10,11	1	5
4870 Valentine-Duda	1	2,5	1	5	2	5,10,11,12	2	4,5,11	2	5,10,11	2	2,5
4875 Valentine-Dunday	0	0	0	0	2	2,11,12	2	2,5,11	2	2,11	1	2,5
4861 Valentine-Els	0	0	0	0	2	1,2,11,12	2	1,2,7,11	2	1,2,11	1	2,5
4867 Valentine-Libory	1	2,5	1	2,5	2	1,2,5,11,12	2	1,2,11	2	1,2,11	2	1,2,5
4771 Valentine-Mullen	0	0	0	0	2	2,11,12	2	2,5,11	2	2,11	1	5
4872 Valentine-Sandose	0	0	0	0	2	9,11,12	2	5,11	2	11	1	3,5
4889 Valentine-Tryon	2	1,2,5	2	1,2,5	2	1,5,11,12	2	1,2,7,11	2	1,2,5,11	2	1,2,5
5281 Vetal	0	0	0	0	2	11,12	2	11	2	11,13	0	0
5288 Vetal	0	0	0	0	2	11,12	2	11	2	11	0	0
4894 Wildhorse	2	1,2	1	2	2	1,2,11,12	2	1,2,7,11	2	1,2,11	1	2

Depth to saturated zone refers to soils which do not drain well or have a low permeability. This conditions creates an above average existence of wet soils.

Depth to Bedrock means typically a soil that has limited distance to bedrock of some kind.

Depth to Soft Bedrock means bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Flooding is defined as soils located in areas which are prone to flooding.

Poor Filter means soils with rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

Slow water movement means soils that do not allow reasonable downward movement of water.

Slope 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

Seepage means the movement of water through the soil. Seepage adversely affects the specified use.

Shrink-swell 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.

Subsidence means the sudden sinking or gradual downward settling of the ground's surface with little or no horizontal motion.

Legend for Table 10.1

Suitability	Conditions
0 = Not Limited	1. Ponding
1 = Somewhat Limited	2. Depth to Saturation Zone
2 = Very Limited	3. Shrink-swell
	4. Depth to Soft Bedrock
	5. Slope
	6. Flooding
	7. Organic Matter Content
	8. Subsidence
	9. Slow Water Movement
	10. Depth to Bedrock
	11. Seepage
	12. Filtering Capacity
	13. Dusty

Drained, Farmland of Statewide Importance, and Not Prime Farmland.

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 one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that 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 that 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 Soil Conservation Service.

Cherry County contains approximately 3,845,903 acres of land within the county borders. The Prime Farmland found in the county is in two forms: Farmland of Statewide Importance and Prime Farmland, if drained.

Figure 10.10 shows the locations of the Prime Farmland within Cherry County. However, the amount of these two classifications are very limited. Farmland of Statewide Importance makes up a total of 20,725.4 acres or 0.54% of the total county; while Prime, if drained had 47,307.7 acres or 1.23% of the entire county. All together, Prime Farmland makes up only 1.77% of Cherry County.

Soils determined to be prime farmland need to be protected throughout the rural areas of Nebraska. These soils are typically the best crop producing lands.

Percent of Slope

The slope of an area is critical to the ability of the area to be used for agricultural purposes to constructing homes and septic systems. Typically the steeper the slope the more difficult these issues become. However, lands with little to no slope can also create problems regarding the inability of water to drain away from a site.

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - DWELLINGS WITH BASEMENTS

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Soils - Dwellings with Basements

- Not limited
- Somewhat limited
- Very limited
- Not rated

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 03.08.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - DWELLINGS WITHOUT BASEMENTS

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Soils - Dwellings without Basements

- Not limited
- Somewhat limited
- Very limited
- Not rated

N

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 03.08.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - SEPTIC TANK ABSORPTION FIELD CONDITIONS

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Septic Tank Absorption Field Conditions

- Somewhat limited
- Very limited
- Not rated

N

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 03.08.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - SEWAGE LAGOONS DOMINATE CONDITION

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Sewage Lagoons - Dominate Condition

- Somewhat limited
- Very limited
- Not rated

N

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 03.08.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

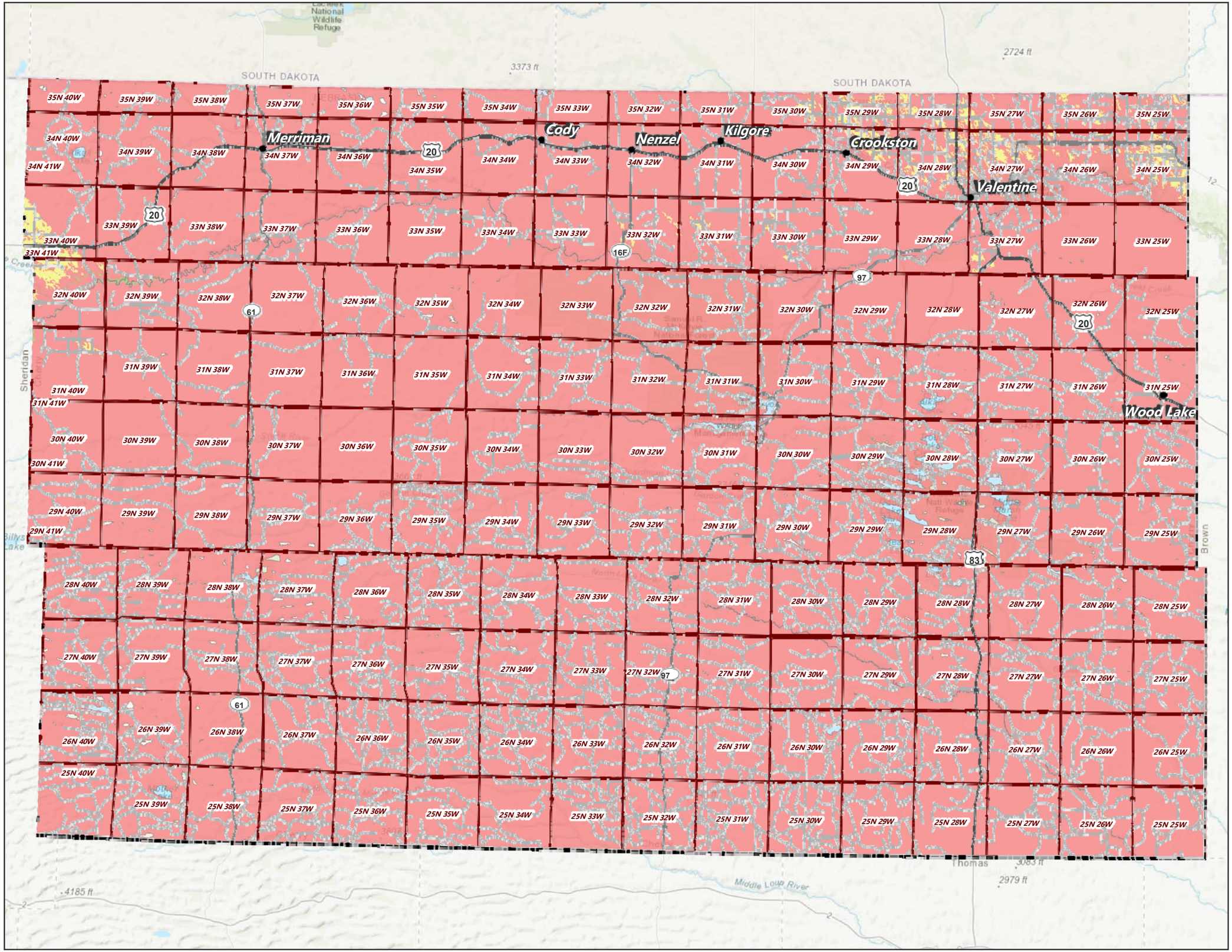
SOILS - LANDFILL SUITABILITY

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Soils - Landfill Suitability

- Not Limited
- Somewhat Limited
- Very Limited
- Not Rated



MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 07.01.2020

N

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - SMALL COMMERCIAL BUILDING SUITABILITY

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Soils - Small Commerical Buildings

- Not Limited
- Somewhat Limited
- Very Limited
- Not Rated

N

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 07.01.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - SLOPE GRADIENT

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Slope Gradient

- <1% Slope
- 1 - 10% Slope
- 11 - 20% Slope
- 21 - 30% Slope
- 31 - 40% Slope
- >41%

N

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 03.08.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - PRIMEFARMLAND

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Soils - Prime Farmland

- Farmland of Statewide Importance
- Prime Farmland if Irrigated
- Prime Farmland if Drained
- Not prime farmland

MARVIN PLANNING CONSULTANTS

Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 03.08.2020

N

0 3.5 7 14 Miles

1 " = 7 miles

TABLE 10.2: DEFINTION OF SOIL SLOPES

Classes Simple Slopes	Complex Slopes	Slope Gradient Limits	
		Lower Percent	Upper Percent
Nearly level	**Nearly level**	0	3
Gently sloping	**Undulating**	1	8
Strongly sloping	**Rolling**	4	16
Moderately sloping	**Hilly**	10	30
Steep	**Steep**	20	60
Very steep	**Very steep**	>45	

Figure 10.11 shows the percent slope for Cherry County. Based upon the map, Cherry County has steep slopes in limited locations of the county throughout the entire county; however, some of the steepest are in the northeast along the Niobrara River.

Based upon Table 10.1 slope is factor in several soils/locations in the county. In a number of situations, any soil conditions based upon slope could likely be engineered to become more compatible. However, it is important to involve an engineer, geologist, or soil scientist in the issue in order to make the correct modifications throughout the county.

Permeability

Permeability is defined in the Cherry County Soil Survey as..."The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through saturated soils." Permeability is rated as:

Very slow	less than 0.06 inches
Slow	0.06 to 0.20 inches
Moderately slow	0.2 to 0.6 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Table 10.3 indicates the various permeability rates for each soil and at what depth the rating was taken. The Table indicates those considered to moderately rapid or higher in red. There are a number of soils in Cherry County with a permeability of twenty inches per hour or more.

There are a number of specific uses not compatible for soils rated as Moderately rapid or higher. Soils rated at these levels will move contaminated materials much faster through the profile and into the regional water tables and aquifers. These uses will typically include anything dealing with animal or human sanitary waste systems.

Permeability, as with other soil factors, can be overcome with the proper engineering and construction techniques. Caution is a must when dealing with these conditions since the potential for contaminating an aquifer that feeds an entire area with water is a risk.

WATER IMPACT ON CHERRY COUNTY

Water, along with the soils are the two most restricting environmental conditions faced by Cherry County. Damaging either one of these two elements will impact the residents of the county for years to come. As with the soil descriptions and conditions, it is important to discuss the water factors impacting Cherry County during the present and coming planning period. Water in this section will apply to two topics, surface water and ground water.

Surface water applies to any water running across a surface and eventually runs into a minor drainage area, eventually ending up in a major waterway such as the Niobrara River. However, a certain portion of surface water can and is absorbed by the soil in order to support plant life including corn, soybeans, and grass lawns.

Cherry County lies in two distinct watersheds, these are defined and drainage areas controlled by the respective Natural Resource District. The two districts covering Cherry County are the Middle Niobrara Natural Resource District and the Upper Loup Natural Resource District. The Middle Niobrara is based in Valentine, Nebraska, while the Upper Loup is in Thedford, Nebraska.

TABLE 11.3: PERMEABILITY/SHRINK-SWELL BY SOIL TYPE

Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/hour)	Shrink-Swell potential
4201	Almeria	0-7 7-79	2-6 6-20	Low Low
4203	Almeria	0-3 3-6 6-60	.6-6 .6-6 6-20	- Low Low
4205	Almeria	0-10 10-12 12-24 24-79	6-20 6-20 6-20 6-20	Low Low Low Low
9001	Anselmo	0-11 11-44 44-79	2-6 2-6 6-20	Low Low Low
9004	Anselmo	0-11 11-44 44-79	2-6 2-6 6-20	Low Low Low
9006	Anselmo	0-11 11-44 44-79	2-6 2-6 6-20	Low Low Low
9012	Anselmo	0-11 11-36 36-79	6-20 2-6 6-20	Low Low Low
9013	Anselmo	0-11 11-36 36-79	6-20 2-6 6-20	Low Low Low
9019	Anselmo Longpine	0-6 6-12 12-34 34-60 0-4 4-12 12-60	.6-6 2-6 2-6 6-20 2-6 2-6 1.42-14.17	Low Low Low Low Low Low -
4221	Bolent	0-4 4-60	2-6 6-20	Low Low
4224	Bolent	0-5 5-60	6-20 6-20	Low Low
4226	Bolent Almeria	0-5 5-25 25-79 0-2 2-4 4-79	6-20 6-20 6-20 6-20 .6-2 6-20	Low Low Low Low Low Low
4228	Bolent Calamus	0-4 4-60 0-9 9-38 38-60	6-20 6-20 6-20 6-20 6-20	Low Low Low Low Low
5121	Busher	0-16 16-45 45-60	2-6 2-6 1.42-14.17	Low Low -
5141	Busher Tassel	0-18 18-42 42-60 0-4 4-15 15-60	2-6 2-6 1.42-14.17 2-6 2-6 .2-2	Low Low - Low Low -
4231	Calamus	0-4 4-30 30-60	6-20 6-20 6-20	Low Low Low
4233	Calamus	0-9 9-38 38-60	6-20 6-20 6-20	Low Low Low
4237	Calamus Bolent	0-4 4-39 39-79 0-7 7-25 25-79	6-20 6-20 6-20 6-20 6-20 6-20	Low Low Low Low Low Low

Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/hour)	Shrink-Swell potential
4455	Crowther	0-11 11-26 26-79	.6-2 .6-2 6-20	Moderate High Low
4456	Crowther	0-3 3-24 24-36 36-79	6-20 .6-2 .6-2 6-20	Low Moderate Moderate Low
4462	Cullison	0-8 8-24 24-79	.6-2 .6-2 .6-2	Moderate Moderate Moderate
4463	Cullison	0-2 2-27 27-79	6-20 .6-6 .6-6	Low Moderate Moderate
4467	Cutcomb	0-52 52-79	6-20 6-20	Low Low
4470	Doughboy	0-19 19-38 38-79	2-20 .6-6 .6-6	Low Low Low
4471	Doughboy	0-14 14-37 37-79	6-20 .6-6 .6-6	Low Low Low
4476	Duda Fishberry	0-8 8-36 36-79 0-5 5-12 12-79	2-20 2-20 1.42-14.17 6-20 6-20 1.42-14.17	Low Low - Low Low -
4485	Dunday	0-18 18-25 25-79	6-20 6-20 6-20	Low Low Low
4490	Dunday	0-18 18-25 25-79	6-20 6-20 6-20	Low Low Low
4521	Els	0-6 6-35 35-79	6-20 6-20 6-20	Low Low Low
4536	Els Hoffland	0-9 9-37 37-79 0-1 1-9 9-79	6-20 6-20 6-20 6-20 2-20 6-20	Low Low Low - Low Low
4540	Els Selia	0-5 5-40 40-60 0-6 6-14 14-60	6-20 6-20 6-20 6-20 .06-.2 6-20	Low Low Low Low Low Low
4545	Els Ipage	0-6 6-35 35-79 0-4 4-15 15-38 38-79	6-20 6-20 6-20 6-20 6-20 6-20 6-20	Low Low Low Low Low Low Low
4553	Elsmere	0-14 14-23 23-79	6-20 6-20 6-20	Low Low Low
4556	Elsmere	0-8 8-14 14-79	6-20 6-20 6-20	Low Low Low
4561	Elsmere Loup	0-14 14-23 23-79 0-10 10-15 15-79	6-20 6-20 6-20 2-20 6-20 6-20	Low Low Low Low Low Low
4563	Els Tryon	0-6 6-16 16-79 0-7 7-25 25-79	6-20 6-20 6-20 6-20 6-20 6-20	Low Low Low Low Low Low
3351	Fishberry	0-4 4-15 15-60	2-6 6-20 1.42-14.17	Low Low -

TABLE 10.3: PERMEABILITY/SHRINK-SWELL BY SOIL TYPE CONT.

Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/hour)	Shrink-Swell potential
3352	Fishberry	0-5 5-12 12-60	2-6 6-20 1.42-14.17	Low Low -
	Duda	0-4 4-24 24-60	2-20 2-20 1.42-20	Low Low -
3353	Fishberry	0-5 5-12 12-60	2-6 6-20 1.42-14.17	Low Low -
	Rock	0-60	.01-.15	-
9903	Fluvaquents	0-2 2-79	6-20 20-100	Low Low
4576	Gannett	0-10 10-22 22-79	.6-2 2-6 6-20	Moderate Low Low
4579	Gannett	0-2 2-10 10-32 32-79	6-20 .6-6 2-20 6-20	Low Moderate Low Low
4590	Gus	0-1 1-6 6-28 28-60	.6-2 .6-2 .6-2 .6-2	- Moderate Moderate Moderate
4591	Gus	0-2 2-5 5-36 36-79	6-20 .6-6 .6-6 .6-6	- Moderate Moderate High
3167	Hennings	0-7 7-27 27-36 36-55 55-60	.6-6 .6-2 .6-6 2-20 1.42-14.17	Low Moderate Low Low -
4596	Hennings	0-7 7-27 27-36 36-55 55-60	.6-6 .6-2 .6-6 2-20 1.42-14.17	Low Moderate Low Low -
4597	Hennings	0-7 7-27 27-36 36-55 55-60	.6-6 .6-2 .6-6 2-20 1.42-14.17	Low Moderate Low Low -
4598	Hennings	0-8 8-22 22-26 26-42 42-60	.6-6 .6-2 .6-6 2-20 1.42-14.17	Low Moderate Low Low -
	Anselmo	0-10 10-18 18-26 26-60	.6-6 2-6 2-6 6-20	Low Low Low Low
4635	Hoffland	0-1 1-9 9-79	6-20 2-20 6-20	- Low Low
4636	Hoffland	0-1 1-9 9-79	6-20 2-20 6-20	- Low Low
3170	Holt	0-7 7-17 17-22 22-42	2-6 .6-2 .6-2 .2-2	Low Low Low -
3172	Holt	0-7 7-17 17-22 22-42	2-6 .6-2 .6-2 .2-2	Low Low Low -
	Longpine	0-6 6-16 16-36	2-6 2-6 .2-2	Low Low -
4641	Ipage	0-4 4-15 15-38 38-79	6-20 6-20 6-20 6-20	Low Low Low Low
4643	Ipage	0-4 4-40 40-79	6-20 6-20 6-20	Low Low Low
4646	Ipage	0-5 5-11 11-22 22-79	6-20 6-20 6-20 6-20	Low Low Low Low
4655	Ipage	0-4 4-15 15-38 38-79	6-20 6-20 6-20 6-20	Low Low Low Low
	Tryon	0-7 7-25 25-79	6-20 6-20 6-20	Low Low Low
3180	Jensen	0-6 6-35 35-60	2-6 .6-2 20-100	Low Moderate Low
5188	Keya	0-22 22-42 42-79	.6-2 .6-2 .6-2	Low Moderate Low
4370	Libory	0-18 18-57 57-79	6-20 2-20 2-20	Low Low Low
1661	Lodgepole	0-6 6-41 41-60	.6-2 .06-.2 .6-2	Low High Low
4662	Loup	0-10 10-15 15-79	2-20 6-20 6-20	Low Low Low
4670	Loup	0-3 3-14 14-79	6-20 2-20 6-20	- Low Low
4691	Marlake	0-2 2-9 9-16 16-79	6-20 2-20 6-20 6-20	- Low Low Low
4700	McKelvie	0-6 6-10 10-79	6-20 6-20 6-20	Low Low Low
4701	McKelvie	0-6 6-10 10-79	6-20 6-20 6-20	Low Low Low
4702	McKelvie	0-6 6-10 10-79	6-20 6-20 6-20	Low Low Low
4703	McKelvie	0-6 6-10 10-79	6-20 6-20 6-20	Low Low Low
	Fishberry	0-5 5-15 15-79	6-20 6-20 0-.06	Low Low -
4704	McKelvie	0-6 6-36 36-79	6-20 6-20 6-20	Low Low Low
	Fishberry-Rock	0-5 5-15 15-79 0-79	6-20 6-20 0-.06 0	Low Low - -
4705	McKelvie-Rock	0-6 6-36 36-79 0-79	6-20 6-20 6-20 0	Low Low Low -
4707	McKelvie	0-6 6-36 36-60	6-20 6-20 6-20	Low Low Low
	Ustorthents	0-11 11-60	6-20 2-6	Low Low
3249	Meadin	0-5 5-14 14-60	2-6 6-20 20-100	Low Low Low
3251	Meadin	0-6 6-11 11-60	2-6 6-20 20-100	Low Low Low

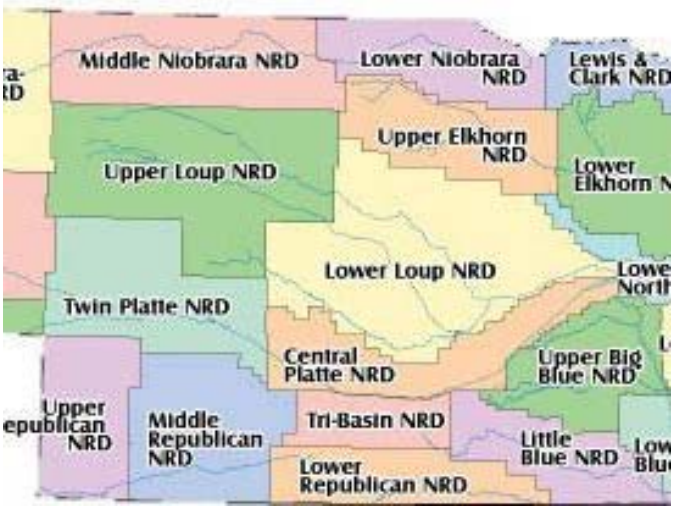
TABLE 11.3: PERMEABILITY/SHRINK-SWELL BY SOIL TYPE CONT.

Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/hour)	Shrink-Swell potential
4390	Natick	0-5 5-11 11-22 22-79	6-20 6-20 6-20 6-20	Low Low Low Low
4712	Nenzel	0-18 18-33 33-79	6-20 6-20 6-20	Low Low Low
4711	Nenzel	0-14 14-21 21-30 30-79	6-20 6-20 6-20 6-20	Low Low Low Low
4243	Ord	0-14 14-34 34-60	.6-2 2-6 6-20	Low Low Low
4713	Orpha	0-5 5-44 44-60	6-20 6-20 6-20	Low Low Low
4717	Orpha Niobrara	0-8 8-14 14-60 0-6 6-13 13-60	6-20 6-20 6-20 6-20 6-20 1.42-14.17	Low Low Low Low Low -
4718	Orpha Rock	0-6 6-26 26-60 0-60	6-20 6-20 6-20 .01-.15	Low Low Low -
4720	Pivot	0-5 5-11 11-28 28-60	6-20 6-20 6-20 20-100	Low Low Low Low
4730	Sandrose	0-10 10-32 32-48 48-60	6-20 6-20 .6-2 .6-6	Low Low Moderate Low
4733	Sandrose Hennings	0-16 16-30 30-48 48-60 0-17 17-29 29-35 35-55 55-60	6-20 6-20 .6-2 .6-6 6-20 .6-2 .6-6 2-20 1.42-14.17	Low Low Moderate Low Low Moderate Low Low -
4734	Sandrose Hennings	0-16 16-30 30-48 48-60 0-17 17-29 29-35 35-55 55-60	6-20 6-20 .6-2 .6-6 6-20 .6-2 .6-6 2-20 1.42-14.17	Low Low Moderate Low Low Moderate Low Low -
4735	Sandrose Hennings	0-16 16-30 30-48 48-60 0-17 17-29 29-35 35-55 55-60	6-20 6-20 .6-2 .6-6 6-20 .6-2 .6-6 2-20 1.42 14.17	Low Low Moderate Low Low Low Moderate Low Low -
1809	Satanta	0-13 13-46 46-79	2-6 .6-2 2-6	Low Low Low
8929	Simeon	0-5 5-79	6-20 6-20	Low Low
8939	Simeon Valentine	0-5 5-79 0-5 5-12 12-79	6-20 6-20 6-20 6-20 6-20	Low Low Low Low Low
8941	Simeon Valentine	0-5 5-79 0-5 5-12 12-79	6-20 6-20 6-20 6-20 6-20	Low Low Low Low Low
4740	Tryon	0-7 7-25 25-79	6-20 6-20 6-20	Low Low Low
4743	Tryon	0-4 4-79	2-6 6-20	Low Low
5266	Tuthill	0-8 8-23 23-50 50-60	.6-6 .6-2 6-20 6-20	Low Moderate Low Low
5267	Tuthill	0-8 8-23 23-50 50-60	.6-6 .6-2 6-20 6-20	Low Moderate Low Low
4781	Valentine	0-7 7-14 14-79	6-20 6-20 6-20	Low Low Low
4791	Valentine	0-7 7-14 14-79	6-20 6-20 6-20	Low Low Low
4800	Valentine	0-4 4-20 20-79	6-20 6-20 6-20	Low Low Low
4810	Valentine	0-5 5-12 12-79	6-20 6-20 6-20	Low Low Low
4807	Valentine	0-5 5-12 12-79	6-20 6-20 6-20	Low Low Low
4814	Valentine	0-7 7-14 14-79	6-20 6-20 6-20	Low Low Low
4818	Valentine	0-7 7-14 14-79	6-20 6-20 6-20	Low Low Low
4450	Valentine	0-79 0-4 4-20 20-79	6-20 6-20 6-20 6-20	Low Low Low Low
4851	Valentine Birdwood	0-4 4-20 20-79 0-6 6-36 36-79	6-20 6-20 6-20 .6-6 2-20 2-20	Low Low Low Low Low Low
4856	Valentine Duda	0-7 7-14 14-79 0-8 8-36 36-79	6-20 6-20 6-20 2-20 2-20 1.42-14.17	Low Low Low Low Low Low
4870	Valentine Duda	0-5 5-12 12-79 0-8 8-36 36-79	6-20 6-20 6-20 2-20 2-20 1.42-14.17	Low Low Low Low Low -
4875	Valentine Dunday	0-7 7-14 14-79 0-18 18-25 25-79	6-20 6-20 6-20 6-20 6-20 6-20	Low Low Low Low Low Low
4861	Valentine Els	0-7 7-14 14-79 0-6 6-35 35-79	6-20 6-20 6-20 6-20 6-20 6-20	Low Low Low Low Low Low
4867	Valentine Libory	0-5 5-12 12-79 0-18 18-57 57-79	6-20 6-20 6-20 6-20 .6-6 .6-6	Low Low Low Low Low Low
4771	Valentine Mullen	0-7 7-14 14-79 0-19 19-37 37-58 58-79	6-20 6-20 6-20 6-20 6-20 .6-6 .6-6	Low Low Low Low Low Low Low

TABLE 10.3: PERMEABILITY/SHRINK-SWELL BY SOIL TYPE CONT.

Soil Symbol/Soil Name		Depth (inches)	Permeability (inches/hour)	Shrink-Swell potential
4872	Valentine	0-6	6-20	Low
		6-60	6-20	Low
	Sandrose	0-11	6-20	Low
		11-22	6-20	Low
		22-41	.6-2	Moderate
		41-60	.6-6	Low
4889	Valentine	0-5	6-20	Low
		5-12	6-20	Low
		12-79	6-20	Low
	Tryon	0-7	6-20	Low
		7-79	6-20	Low
5281	Vetal	0-7	2-6	Low
		7-23	2-6	Low
		23-48	2-6	Low
		48-79	6-20	Low
5288	Vetal	0-25	6-20	Low
		25-42	2-6	Low
		42-79	6-20	Low
4894	Wildhorse	0-6	6-20	Low
		6-11	6-20	Low
		11-22	6-20	Low
		22-79	6-20	Low

FIGURE 10.19: WATERSHEDS AND THE NATURAL RESOURCE DISTRICTS



GROUNDWATER/WATER TABLE ELEVATIONS

Groundwater refers to water found beneath the surface and includes smaller pockets of water as well as aquifers. This water source is where the residents of Cherry County both city and rural, get their potable water for everyday living as well as the irrigation water for crops. The ability to find water meeting these specific needs is critical to the placement of certain uses. These specific needs include water quantity, water quality, and water pressure.

Use of Groundwater

Groundwater use in Cherry County is in three forms; domestic and livestock supply, public water supplies, and irrigation. Each use is important to the overall viability of Cherry County.

Domestic and Livestock supplies

Typically domestic and most livestock water supplies are obtained through the use of small diameter wells. Most of these wells are drilled only a few feet below the top of the water table, are low production wells, and equipped with electric powered jet or submersible pumps. The water yield of this type of well is usually no more than five gallons of water per minute.

Public water supplies

The public water supply is one of the most critical uses of groundwater resources. These supplies are used by the municipalities supplying water to its residents. In Cherry County, all of the incorporated communities have a publicly owned water supply system.

The State of Nebraska places a great deal of value on these systems across the state. The value is so high that a Wellhead Protection Program is available to municipalities through Nebraska Department of Environment and Energy. This program allows the municipalities, after a series of prescribed steps are completed, to designate special areas around their wells and well fields in order to protect the quality and quantity of the water within the underlying aquifers. Development of a community wellhead protection plan can help communities receive financial assistance to protect and secure the source of drinking water for the community.

Wellhead Protection

A Wellhead Protection Area is an delineated area indicating where a water source is located, as well as the area of travel for a specific well or well field. A wellhead protection area is important from the aspect that correctly implemented, the area will aid in protecting the water supply of a domestic well providing potable water to a community.

In Nebraska, the goal of the Nebraska Department of Environment and Energy Wellhead Protection Program "...is to protect the land and groundwater surrounding public drinking water supply wells from Contamination". Within the NDEE's program there are five steps to developing a wellhead protection area, which are:

1. Delineation
2. Contamination Source Inventory
3. Contaminant Source Management
4. Emergency, Contingency, and Long-term Planning

5. Public Education

The mapping process includes the use of computer modeling and other data. From this the NDEE can generate a map indicating the w ellhead Prot ect ion Area. How ever, delineating an area is not sufficient for protecting the groundwater around a public supply well, the governmental entity must adopt an ordinance in order to enforce the area and the regulations used to protect this water supply. Another way to officially regulate a wellhead protection area is for the community to create an interlocal agreement with the County to regulate these areas as part of the county comprehensive plan and zoning regulations.

Irrigation

Irrigation wells in Cherry County are very limited for two reasons: the typical depth to water and the type of soils are not conducive to crops like corn, soybeans, etc. The main location for irrigation wells in Cherry County are in the northern areas near the Niobrara River.

Hydric Soils

Hydric soils are formed under conditions of saturation, flooding, or ponding. The process has to occur long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils along with hydrophytic vegetation and wetland hydrology are used to define wetlands. (USDA/NRCS, Fall 1996)

Figure 11.21 indicates where the hydric soils are located in Cherry County. The soils are classified as the following:

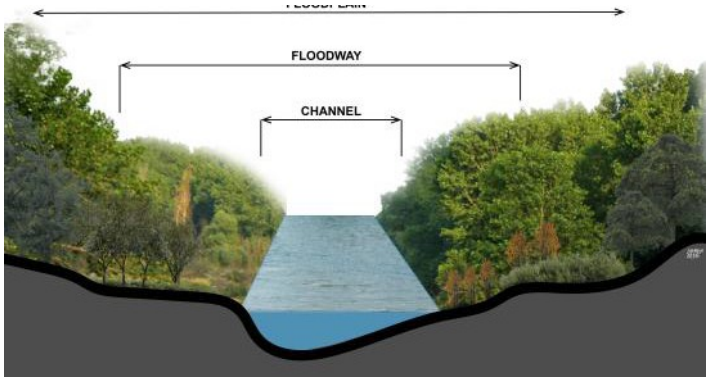
- All Hydric; or
- Not Hydric

The majority of the soils in Cherry County are considered Not Hydric. Overall, a small amount of soils are considered as 100% Hydric or All Hydric.

Floodways and Floodplains

Flooding is the temporary covering of the soil surface by flowing water from any source, such as streams and rivers overflowing their banks, runoff from adjacent or surrounding slopes, or a combination of different sources. During a flooding event there are a number of components that make up the flooded area. These areas include:

Floodway which is the channel of a watercourse and those portions of the adjoining floodplains which are required to carry and discharge the 100-year flood with no significant increase in the base flood elevation.



Floodplain which is the low land near a watercourse which has been or may be covered by water from flood of 100-year frequency, as established by engineering practices of the U.S. Army Corps of Engineers. It shall also mean that a flood of this magnitude may have a 1 percent chance of occurring in any given year.

Floodway Fringe which is that portion of a floodplain that is inundated by floodwaters but is not within a defined floodway. Floodway fringes serve as temporary storage for floodwaters.
The floodplain also includes the floodway and the flood fringe, which are areas covered by the flood, but which do not experience a strong current.

The floodplain area of greatest significance in terms of state and federal regulation is the 100 year floodplain. This area is defined by the ground elevation in relation to the water elevation experienced during a 100 year flood event. The 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 and more accurate words, the 100 year flood is a 1% flood, meaning it defines a flood that has a 1% chance of being equaled or exceeded in any single year.

Preserving the floodplain and floodway are critical to limiting the level of property damage that can occur as well as the level of damage to life of the occupants of the area. Land when not flooded seems to be harmless, but it is those rare times that threaten life and property that need to be controlled.

All this said, the county of Cherry County as a whole is not mapped for floodplains and floodway. However, Valentine and Cody are in the flood program.

In recent years there have been numerous flooding occurrences in Nebraska and the Midwest. These events have included the Platte River, the Niobrara River (downstream from Cherry County, the Missouri River, and the Mississippi River, as well as their tributaries. Each of these events have caused significant damage to life and property. In order to protect an individuals property there are specific rules and guidelines that need to be followed. Most guidelines are developed for 100 year flooding events. The times the guidelines have not worked are typically referred to a 500 year event for lack of a better term. However, in some cases, due to mother nature and increases in development runoff, the area needed to handle the floodway and floodplain (100 year event) have increased due to the amount and speed of the water reaching the streams and rivers.

A home north of Quincy, Illinois within the 100- year floodplain - river is between 1 and 2-miles away

Same house during the 2008 Mississippi River floods

Natural Resources/Environment Goals and Policies

Soils

Soil Goal 1

Cherry County needs to protect specific soils regarding the suitability of certain uses.

Soil Policies and Strategies

Soil-1.1 The County should require the use of the Planned Unit Development technique for larger developments in highly sensitive areas.

Soil-1.2 Discourage conversion of designated prime agricultural land and soils to non-agricultural uses by targeting less productive agricultural soils (crops) for urban or non-farm uses.

Soil Goal 2

Develop environmental protection and "good neighbor" standards for any such land use changes to be set forth in the County zoning regulations as information required in a zoning permit application.

Soil Policies and Strategies

Soil-2.1 Non-agricultural developments should maintain a vegetative cover on the land sufficient to prevent wind and water erosion.

Soil-2.2 Non-agricultural developments should protect wetlands and flood-prone areas.

Water (surface water and groundwater)

Water Goal 1

Protect both the surface water and groundwater that runs through and is under the county.

Water Policies and Strategies

W-1.1 Encourage the preservation of environmentally sensitive areas such as wetlands, wooded areas, waterways (streams, ponds, lakes, rivers, etc.).

W-1.2 Protect all water supplies and aquifers from development activities that may affect the quality of water; development must demonstrate a positive or, at least, a neutral impact on groundwater.

W-1.3 Continue participation in the FEMA National Flood Insurance Program to prevent flood-

caused loss of life and property.

W-1.4 Cherry County should discourage land use development within the floodplains of the county.

W-1.5 Cherry County should support soil and water conservation efforts to aid in erosion, sediment, and run-off control where possible.

W-1.6 Cherry County should coordinate with and support city, regional, state and federal water-quality plans and programs so that high water quality will be achieved in the cities and villages of the County.

W-1.7 Cherry County should require the protection of riparian vegetation from damage that may result from development.

W-1.8 Water erosion control structures, including riprap and fill, should be reviewed by the appropriate authorities to insure they are necessary and are designed to minimize adverse impacts on water currents, erosion, and accretion patterns.

W-1.9 Cherry County should consider the following in any public or private land use determination subject to county review:

1) the impact of filling or drainage of swamps or marshes;
2) the damming of rivers and streams;
3) the location and construction of highways and utility transmission lines; and
4) Any other land development activities which significantly interfere with the vegetation or soil cover or drainage patterns in critical habitat areas.

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - HYDRIC SOILS

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Hydric Soils Rating

- Not Rated / Not Hydric
- Hydric

MARVIN PLANNING CONSULTANTS

Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)

DATUM: NAD 83

DATE: 03.08.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - DEPTH TO WATER TABLE

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Depth to Water Table

- 0 feet
- 10-20 feet
- 20-30 feet
- 60-70 feet
- 120-129 feet
- 130-140 feet

N

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 07.06.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

SOILS - PONDING FREQUENCY

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

Ponding Frequency

- Rare
- Occasional
- Frequent

N

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 07.06.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

WELLHEAD PROJECTION AREAS

Legend

- Municipality
- Wellhead Protection Area
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road

N

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 07.06.2020

0 3.5 7 14 Miles

1 " = 7 miles

Chapter 11 Land Use

Introduction

The purpose of the Cherry County Land Use Chapter is to provide a general guide to land uses which directs zoning criteria. The resulting land uses are intended to be a guide without creating multiple incompatibilities with current uses existing within Cherry County. This Chapter reflects the existing conditions and should be flexible in order to meet the needs of its citizens as well as the vision of the county whenever possible.

The Cherry County Land Use Chapter provides the basis for the formulation of land use and the zoning regulations. For this reason, it is imperative to formulate a plan tailored to the needs, desires and environmental limitations of the planning area. The Chapter should promote improvements in all the components of the local economy.

Cherry County Land Use Elements

The elements of the Cherry County Land Use Chapter include:

- Existing Land Use, and
- Future Land Use Plan
- Niobrara River Corridor

All of these elements are integrated in some manner. Effective evaluations and decisions regarding development decisions require a substantial amount of information to be utilized.

Existing Land Use

The term "Existing Land Use" refers to the current uses in place within a building or on a specific parcel of land. The number and type of uses can constantly change within a county, and produce a number of impacts either benefiting or detracting from the county. Because of this, the short and long -term success and sustainability of the county is directly contingent upon available resources utilized in the best manner given the constraints the county faces during the course of the planning period.

Overall, development patterns in and around Cherry County have been influenced by topography, water, soils and manmade features such as highways and some hard-surfaced county roads. These items will likely continue to influence development patterns throughout the course of the planning period.

Existing Land Use Categories

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:

- Farmsteads/residential uses
- Commercial uses
- Quasi-Public/Public (includes churches and schools)
- Livestock facilities
- Agriculture

The above land use categories may be generally defined in the following manner:

Agriculture- Row crop, alfalfa, pastureland and all grain crops are considered agriculture land uses. Cherry County is an agricultural based county and the existing land use map verifies these uses.

Livestock facilities– These are specific confinement buildings including chicken and swine houses, dairies, and open lots.

Residential– This category includes residential dwellings either as a farmstead, acreage or residential developments located within the county. Residential units of this type are distributed throughout the County.

Commercial- Uses in this category consist of convenient stores; feed, seed, automobile and machinery sales; petroleum sales, etc. Commercial uses tend to be located near urban areas or in proximity to major highways for accessibility.

Industrial/Railroad Right-of-Way - Land uses of this nature may include communication plants, light manufacturing, commercial storage, industrial parks, large salvage yards, etc. These uses tend to be located near municipalities and major transportation routes for accessibility purposes.

Physical Character of Cherry County

One of the most critical factors, concerning land use development in any area is the physical characteristics of the area. The physical character of Cherry County has an environmentally sensitive landscape. The county is along the northern edge of the Nebraska Sandhills Region. As identified in Chapter 10, the soils in the county typically drain very rapidly and help feed the Ogallala Aquifer underneath.

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

EXISTING LAND USE

Legend

- Municipality
- Township/Range
- County Boundary

Existing Land Use

- Residential
- Quasi Public
- Recreation
- Feed Lot

N

MARVIN PLANNING CONSULTANTS

Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 11.1.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

FUTURE LAND USE

Legend

- Municipality
- Township/Range
- County Boundary
- US Highway
- State/County Highway
- Local Road
- Valentine Extraterritorial Jurisdiction

Future Land Use

- Federal Land
- Niobrara River Council
- River Protection Corridor

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 11.11.2020

0 3.5 7 14 Miles

1 " = 7 miles

Cattle Country Agricultural Areas

The policy of Cherry County has been and should continue to maintain its agricultural crop and livestock production which is in balance with the natural environment. In addition, the cattle country area should promote new forms of agricultural production which is compatible with existing ranch and farm uses and the environment.

The concept of this agricultural area is to encourage soil and water conservation, preserve water quality, prevent contamination of the natural environment within the County. The policy is intended to also preserve and protect ranch and farm operations from conflict with non-agricultural uses.

Overall, protecting the long standing way of life in the rural areas of Cherry County is critical to the future. Uses incompatible with the current agricultural methods should be limited and any incompatible components should be mitigated prior to being allowed in this area.

Niobrara River Corridor - Scenic River Designation

This area is located along the Niobrara River for a 76 mile distance starting near Valentine and going east to Nebraska Highway 137.

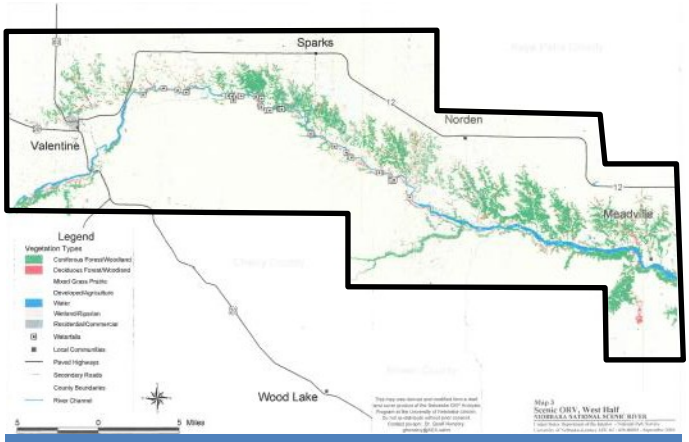


Photo 11.1: Niobrara River Scenic River Designation
Source: United States Department of the Interior

The Niobrara River Scenic River designation creates another layer of development review and guidelines along the River. These include building location, viewsheds, and more. The Corridor was developed under the Wild and Scenic Rivers Act of 1968. Within the Act, Congress declared it the policy of the nation to protect and preserve selected American rivers and their immediate environments for the benefit and enjoyment of present and future generations.

The Niobrara Scenic River Designation Act of 1991 amended the Wild and Scenic Rivers Act by designating seventy-six miles of the Niobrara River between Borman Bridge southeast of Valentine to the Nebraska Highway 137 bridge north of Newport. However, the Scenic River designation could not exceed 24,320 acres which worked out to 320 acres per mile. *The scenic river corridor has been called a "biological crossroads" a "canoeists' and outdoor persons' paradise," and of its "unique historical, paleontological and archaeological significance."*

Other Key Principles

Other keys principles for this area include:

- Private ownership of land is essential to the freedom of individuals, families and communities and to the economic interests of the citizens of the County.
- Existing agricultural uses, methods of agricultural production, property values and the lifestyle and quality of life of the citizens of the County should be protected and preserved.
- Allow for changes in non-agricultural uses in a manner and in locations which will not be incompatible with such existing uses, which will not damage the environment, which will not negatively impact the infrastructure of the County and which will not negatively impact property values or the quality of life in the rural areas of the County.
- Land use regulations should be minimized to preserve the freedoms and property rights enjoyed by the citizens of the County.
- The regulations should effectively address the needs to basic protection of the existing land uses, property values, the local environment and quality of life from development of future land uses which would be inconsistent with these needs.

CATTLE COUNTRY AGRICULTURE

General Purpose

This land use district is the means to maintain agricultural crop and livestock production which is in balance with the natural environment and promote other and new forms of agricultural production which is compatible with existing ranch and farm uses and the environment.

These areas are also meant to encourage soil and water conservation, preserve water quality, prevent contamination of the natural environment within the County and to preserve and protect ranch and farm operations from conflict with non-agricultural uses.

Compatible Uses

1. Grazing land
2. Crop production
3. Family residential groupings
4. Livestock operations for all types of animals where conditions permit
5. Private grain storage
6. Commercial grain storage
7. Commercial uses related to agriculture such as: fertilizer processing and storage, grain elevators, etc.
8. Smaller commercial uses supporting the general area
9. Manure/fertilizer applications
10. Single acreage developments
11. Public recreational, wildlife and historical areas
12. Agri-Tourism activities such as: hunting preserves, fishing, vineyards etc.
13. Religious uses and structures
14. Educational uses and structures
15. Commercial mining

Incompatible Uses

1. Residential/Acreage developments not associated with a farming operation
2. Large commercial developments

Potential issues to consider

1. Sensitive Soils
2. Groundwater availability
3. Slopes
4. Topography
5. Natural amenities such as trees, ponds, and streams
6. Flooding hazards.
7. Groundwater contamination
8. Minimum lot sizes and residential densities
9. Wetlands
10. Existing and/or proposed sanitary systems
11. Wellhead protection areas
12. Proximity to conflicting uses such as new acreages near livestock confinements
13. Transportation systems (county roads, highways)

Special Policies

1. Minimum residential lot sizes should be kept at the lowest possible size accommodating both private water and sanitary sewer.
2. Cluster developments should be considered and used whenever soils, topography, natural amenities warrant.
3. Separation distances should be applied to the livestock facility and rural acreages.
4. Small livestock feeding operations should be a permitted use; while larger livestock feeding operations be regulated through the conditional use process in order to help minimize environmental impacts and the health, safety and general welfare of the public.

TRANSITIONAL AGRICULTURE

General Purpose

The Transitional Agriculture represents an area in the County where agriculture is protected, but limited. The Transitional Agriculture land use is intended to provide a location where agriculture can continue to thrive but may at some point in the future be influenced by growth in the adjacent communities.

Compatible uses

1. Grazing land
2. Crop production
3. Family residential groupings
4. Private grain storage
5. Commercial grain storage
6. Commercial uses related to agriculture such as: fertilizer processing and storage, grain elevators, etc.
7. Manure/fertilizer applications
8. Single acreage developments
9. Public recreational, wildlife and historical areas
10. Agri-Tourism activities such as: hunting preserves, fishing, vineyards etc.
11. Religious uses and structures
12. Educational uses and structures
13. Commercial mining

Incompatible Uses

1. Large scale residential developments including mobile homes as a single-family dwelling unless located within a mobile home park
2. Livestock confinements over 100 animal units
3. Large commercial developments

Potential issues to consider

1. Sensitive Soils
2. Groundwater availability
3. Slopes
4. Topography
5. Natural amenities such as trees, ponds, and streams
6. Flooding hazards.
7. Groundwater contamination
8. Minimum lot sizes and residential densities
9. Wetlands
10. Existing and/or proposed sanitary systems
11. Wellhead protection areas
12. Proximity to conflicting uses such as new acreages near livestock confinements
13. Transportation systems (county roads, highways)

Special policies

1. Residential lot sizes may vary depending upon the types of sanitary system installed and the source of potable water.
2. Cluster developments should be considered and used whenever soils, topography, natural amenities warrant.

Niobrara River Protection Corridor

General Purpose

This land use district is shown along the Niobrara River. The Niobrara River Protection Corridor has the environmental objective of protecting the natural environment, scenic views from the river, and scenic views of the river. The land uses within a portion of this area will require additional review and approval from the Niobrara River Council.

Compatible uses

1. Crop production, including grazing lands
2. Private grain storage
3. Manure/fertilizer applications
4. Single acreage developments
5. Public recreational, wildlife and historical areas
6. Tourism activities such as: parks, hunting preserves, fishing etc.
7. Religious uses and structures
8. Educational uses and structures
9. Community/Recreational Center
10. Larger park and recreation areas

Incompatible Uses

1. Livestock operations
2. Large commercial developments
3. Large industrial developments
4. RV Storage located in the floodplain and/or floodway
5. Mobile homes as a single-family dwelling unless located within amobile home park

Potential issues to consider

1. Sensitive Soils
2. Groundwater availability
3. Slopes
4. Topography
5. Natural amenities such as trees, ponds, and streams
6. Flooding hazards.
7. Groundwater contamination
8. Minimum lot sizes and residential densities
9. Wetlands
10. Existing and/or proposed sanitary systems
11. Wellhead protection areas
12. Proximity to conflicting uses such as new acreages near livestock confinements
13. Transportation systems (county roads, highways)

Special policies

1. Residential lot sizes may vary depending upon the types of sanitary system installed and the source of potable water.
2. Cluster developments should be considered and used whenever soils, topography, natural amenities warrant.
3. Protection of view sheds towards and from the Niobrara River.

Wellhead Protection Areas (Overlay)

General Purpose

This land use area is identified for the protection of public water supplies. These areas are identified but will not be strictly enforced through zoning until an interlocal agreement is approved by the county and other party owning the wellhead.

These areas are considered as overlays and are in addition to the requirements and policies of the underlying area.

Typical Uses

1. Use allowed in the underlying area that are not considered a contamination hazard to the wellhead area and the water supply.

Potential Issues to Consider

1. See underlying land use category.

Buildable Lot Policies

1. See underlying land use category.

Development Policies to Consider

1. See underlying land use category.

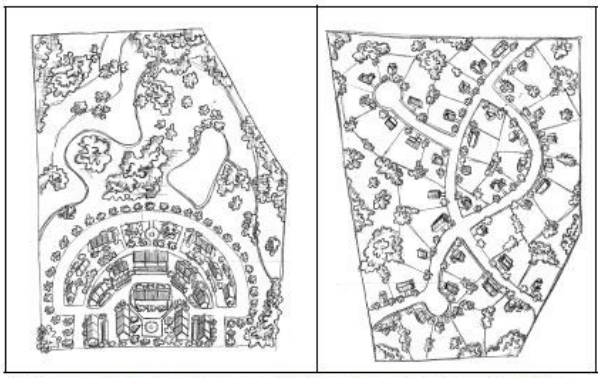
Conservation Subdivisions

The graphic to the right represents a standard subdivision and how it can be redrawn into a conservation subdivision. The primary usage of this technique in Cherry County is so a developer can maintain a specific density of building lots while protecting key environmental elements on the property. Some of these environmental elements include:

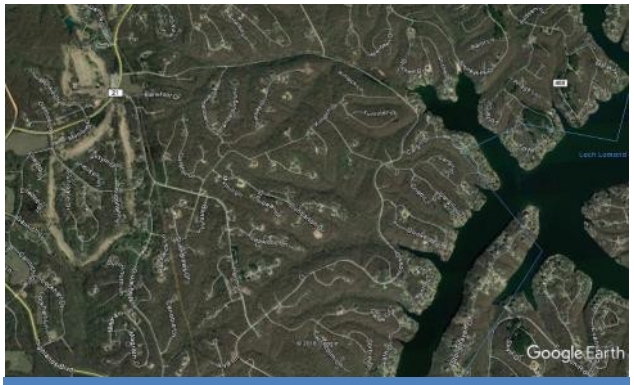
- Wetlands
- Prominent Tree Stands
- Steep slopes
- Floodplains
- Streams
- Natural prairie

In Cherry County, there are several opportunities to use Conservation Subdivisions. Key items needing to be preserved/conserved within new and existing subdivisions are the slopes, rock outcroppings, and quality trees. The County should work hard to negotiate with developers to maintain a larger part of the natural amenities available. One specific tool is the use of Planned Developments. This tool allows the county to negotiate locations, setbacks, and density of certain areas in exchange of protections.

In most cases the sensitive areas are placed in some type of conservation easement. The protected areas, in a majority of cases, are placed into a common area to be shared by all the residents; this in turn increases the overall value of the lots.



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.



Aerial view of a subdivision in Bella Vista, Arkansas using these Conservation principles.

Drainageway using conservation design concepts in Fallbrook (Lincoln, NE)

FUTURE LAND USE GOALS

Land Use Goal and Objectives

Guiding future growth and development in Cherry County in order to insure compatible uses locate together is essential during this planning period.

General Land Use Policies and Strategies

GENLU-1.1 Future land uses in the county should carefully consider the existing natural resources of the area, including soils, rivers, and groundwater.

GENLU-1.2 Cherry County should consider limited future commercial and industrial development to identified areas along the major highways spanning the county.

GENLU-1.3 The Cherry County Land Use Plan and Zoning Regulations should be designed to expedite the review and approval process where possible.

Cattle Country Agricultural Land Use Policies and Strategies

AGLU-1.1 Develop a definition agricultural use for Cherry County is needed in order to identify those land use activities that are not to be further regulated. The definition should include:

1) The raising of fish, fowl, livestock or crops or in terms of land use, crops, pasture and grazing lands.
2) Accessory uses and structures customarily associated with the raising of crops or livestock and commonly found on crop, pasture or grazing lands, including corrals, barns, windmills, ranch houses and similar structures and buildings.
3) Uses and structures complimenting ranching operations, including the use of crop, pasture and grazing lands for hunting and fishing for a fee where such activity does not involve the development of lodges or other buildings devoted solely to the support of such hunting and fishing activities; outfitting hunting and fishing trips; temporary housing of hunters and fishermen in farm or ranch dwellings, bunkhouses or other farm or ranch related housing up to five units; small home occupations or businesses including bed and breakfast inns that have up to five units, the sale of art or crafts made by family members, the conduct of a profession (accounting, law, medicine, computer and IT services, etc); welding or equipment and auto repair and similar activities that have three or fewer full-time equivalent employees in addition to family members.

AGLU-1.2 Make every effort to ensure changes in the use of land and water resources have no adverse impacts on the present and future viability of agricultural operations on lands that neighbor any such land use changes.

AGLU-1.3 Cherry County should encourage uses referred to as "Agri-tourism".

AGLU-1.4 New confined livestock operations should be located in areas where their impact on neighboring land uses and the environment will be minimal.

AGLU-1.5 All livestock production should be protected from the establishment of conflicting uses such as acreages.

AGLU-1.6 Cherry County should allow agricultural production throughout the county; except where there may be potential conflicts with other policies of this plan.

AGLU-1.7 Confined livestock operations should be encouraged to utilize odor reducing technologies such as methane digestion and composting .

AGLU-1.8 Regulations should be established and implemented creating setback and buffer requirements to minimize the impacts of solid, liquid, and gas emissions from confined livestock facilities.

AGLU-1.9 Protect the quality of groundwater in agricultural areas of Cherry County.

AGLU-1.10 Work with livestock producers on a continual basis in evaluating protections and regulations.

AGLU-1.11 Non- agricultural developments abutting grazing land should be fenced as defined in Neb. Rev. Stat.§34-115.

1) Fencing, or ensuring existing fences are sound should be the responsibility of the owner of the non-agricultural use. and
2) Such fences should be maintained by such owner unless there is a written agreement between such owner and the owner(s) of

adjoining grazing land.

AGLU-1.11 Where any non-agricultural development, other than development of a single residential dwelling, can be anticipated to generate increased traffic on a county road passing through open range, the owner of such non-agricultural development may be required to fence such road to protect motorists and livestock if the anticipated traffic volumes are more than 50% greater than existing traffic volumes.

AGLU-1.12 Non-agricultural developments which abut grazing land should be required to install cattle gates or cattle guards with adjoining gate on all vehicular access points unless there is a written agreement between such owner and the owner(s) of adjoining grazing land.

AGLU-1.13 Where any non-agricultural development, other than development of a residential dwelling on a tract of land larger than 160 acres, should be required to execute and record a Cattle Country Easement.

Niobrara River Protection Corridor Land Use Policies and Strategies

RPCLU-1.1 The County should continue to promote the recreational potential of the area and work with existing property owners to establish specific eco-tourism opportunities.

RPCLU-1.2 The Niobrara River Corridor should be protected due to the natural amenities of the area.

RPCLU-1.3 The establishment of chemical storage facilities including the manufacturing of chemicals should not be allowed in this area.

RPCLU-1.4 Existing uses within the Niobrara River Corridor having a high contaminate potential should be relocated to a more suitable location when possible.

RPC-1.5 All new developments in the Niobrara Scenic River corridor should also comply with the standards for development and the related review procedures as set forth in the General Management Plan Environmental Impact Statement: Niobrara National Scenic River.

Residential Land Use Policies and Strategies

RESLU-1.1 Develop and disseminate educational information to be included in the issuance of zoning permits for land use changes in the rural areas of the County. Such information should include information for new rural residents and owners of new commercial, industrial or other non-agricultural uses to help them understand the responsibilities that comes with land ownership including weed control, fence maintenance and erosion control.

RESLU-1.2 Ideally, new residential development within Cherry County should be focused on the communities of the county; except for those still farming in the county. Large residential subdivisions should be located next to or near the communities within Cherry County.

RESLU-1.2 Residential developments should be separated from more intensive uses, such as agriculture, industrial, and commercial development, by the use of setbacks, buffer zones, or impact easements.

RESLU-1.3 Encourage low to zero non-farm densities in Cattle Country areas.

RESLU-1.4 Develop subdivision regulations to provide a quality living environment while avoiding inefficient and expensive public infrastructure expansions.

RESLU-1.5 New residential developments should include a subdivision agreement, which provides for the maintenance of common areas, easements, groundwater, use of plant materials and drainage.

RESLU-1.6 Establish zoning and subdivision design standards requiring specific criteria to new developments.

RESLU-1.7 Any new lots or tracts created should have a minimum area of 2½ acres with a maximum lot depth to width ratio of 3 to 1.

RESLU-1.8 All proposed rural area developments should be based on reasonable expectations and no large-scale development should be approved without:

1) The submission and approval of a layout and design concept, with provision for the staging and

servicing of all phases of the development;

2) The approval of all federal and state agencies relative in any applicable health, safety and environmental controls; and
3) An adequate demonstration of the financial capacity (escrows, performance bonds, etc.) and responsibility of the applicants to complete the development and provide for operation and maintenance services.
4) Should be appropriately, if not uniquely, suited to the area or site proposed for development;
5) Should not be located in any natural hazard area, such as a floodplain (unless a sandpit development mitigating the circumstances) or area of geologic hazard, steep slope, severe drainage problems or soil limitations for building or sub-surface sewage disposal, if relevant
6) Should be furnished with adequate access – when possible a minimum of two entrances and exits.

RESLU-1.8 Examine implementation of a planned unit development (PUD)/Clustered Development concept which provides a viable alternative to conventional urban development patterns, while providing a means to encourage creative yet responsible/sensitive developments.

RESLU-1.9 Cherry County should review and accommodate, wherever possible, any new or alternative development concepts or proposals, provided such concepts or proposals are consistent with and do not compromise in any way the established disposition of land uses on the Land Use Map or the goals and policies of the Plan.

RESLU-1.9 New residential construction or relocations should not be allowed along any minimum maintenance road unless the road is upgraded to county specifications and paid for by the property owner, prior to construction.

Chapter 13 Transportation Plan

Introduction

Transportation networks tie communities together as well as providing a link to the outside world. Adequate circulation systems are essential for the safe and efficient flow of vehicles and pedestrians, and accessibility to all parts of the community. The Transportation Plan will identify existing systems and any major improvements planned for the future and those necessary to provide safe and efficient circulation of vehicles within Cherry County, including major projects that ensure implementation of the Land Use Plan.

Existing Transportation System and Facilities

Residents within a county have specific transportation needs. These include rail service, bus service, air transportation, as well as vehicular transportation. All of the transportation facilities present are not available within the county and require residents to travel to the nearest location. This portion of the Comprehensive Development Plan examines those services with regard to the closest proximity for residents of Cherry County.

Railroad Service

The closest rail freight service to Cherry County is in either Norfolk through the Nebraska Central Railroad or Alliance via the BNSF. The nearest passenger service is located in McCook through Amtrak.

Bus Service

The nearest commercial bus service with ticketing services is available in North Platte and Norfolk via Arrow Stage Lines and North Platte for Greyhound or Grand Island, Kearney, or Lexington for Burlington Trailways.

Commercial Airport Service

North Platte Regional Airport in North Platte is the nearest commercial facility to residents in Cherry County. However, arrivals and departures are limited to one major airline. Currently, the airport and commercial service connects people to Denver and points across the U.S. through Denver International Airport via United Airlines.

Small craft Public Airports

The Valentine Miller Airport is the only public airport in Cherry County for small aircraft. Runway #14/32 is 4703 feet by 75 feet with concrete surfacing. However, the northern 384 feet of the runway is considered displaced.

The crosswind runway is #03/21. This runway is 3700 feet long by 60 feet wide with the northern 300 feet designated as displaces. The surface of this runway is asphalt.

The fixed based operator (FBO) for this facility is Sandhills Aero. Elevation is listed at 2591 feet.

Photo 13.1
Aerial of Valentine Miller Municipal Airport
Source: Google Earth

State and Federal Highways

Cherry County has six major highways running through the county. The major north-south highways are US Highway 83, Nebraska Highway 61, 97, and S16F. US Highway 20 and Nebraska Highway 12 are east and west highways.

Transportation Planning and Land Use

Land use and transportation create the pattern for future development and are extremely interdependent upon one another in order to effectively shape the community. An improved or new transportation route generates a greater level of accessibility and will likely determine how adjacent land will be utilized in the future.

In the short term, land use shapes the demand for transportation and vice versa; one key to good land use planning is to balance land use and transportation. However, new or improved roads, as well as, county and state highways may change land values, thus altering the intensity of which land is utilized.

In general, the greater the transportation needs of a particular land use, the greater its preference for a site near major transportation facilities. Commercial activities are most sensitive to accessibility since their survival often depends upon how easy a consumer can get to the business. Thus, commercial land uses are generally located near the center of their market area and along highways or at the intersection of arterial streets.

Industrial uses are also highly dependent on transportation access, but in a different way. For example, visibility is not as critical for an industry as it is for a retail store. Industrial uses often need access to more specialized transportation facilities, which is why industrial sites tend to be located near railroad lines or highways to suit individual industrial uses.

Street and Road Classification System

All of the public highways, roads, and streets in Nebraska are divided into two broad categories, and each category is divided into multiple functional classifications. The two broad categories are Rural Highways and Municipal Streets. State statute defines Rural Highways as "all public highways and roads outside the limits of any incorporated municipality," and Municipal Streets as "all public streets within the limits of any incorporated municipality." Neb. Rev. Stat. § 39-2102 (RRS 1998)

Nebraska Highway Law (Chapter 39, Article 21, Revised Reissue Statutes of Nebraska 1943) proposes the functional classification of both rural and municipal roads and streets and public highways. Chapter 39, Article 21.03 lists rural highway classifications as:

1. Interstate: federally-designed National System of Interstate and defense highways;
2. Expressway: second in importance to Interstate. Consists of a group of highways following major traffic desires in Nebraska and ultimately should be developed to multiple divided highway standards;
3. Major Arterial: consists of the balance of routes that serve major statewide interests for highway transportation in Nebraska. Characterized by high speed, relatively long distances, travel patterns;
4. Other Arterial: consists of a group of highways of less importance as through-travel routes.
5. Collector: consists of a group of highways that pick up traffic from the local or land-service roads and transport community centers or to the arterial systems. Main school bus routes, mail routes, and farm-to-market routes;
6. Local: consists of all remaining rural roads, generally described as land-access roads providing service to adjacent land and dwellings; and
7. Bridges: structures crossing a stream three hundred feet or more in width or channels of such a stream having a combined width of three hundred feet or more.

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

STATE ROAD CLASSIFICATIONS

Legend

- Municipality
- Township/Range
- County Boundary

State Road Classifications

- Expressway
- Other Arterial
- Collector

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 10.20.2020

0 3.5 7 14 Miles

1 " = 7 miles

CHERRY COUNTY, NEBRASKA

COMPREHENSIVE PLAN

NATIONAL ROAD CLASSIFICATIONS

Legend

- Municipality
- Township/Range
- County Boundary

National Road Classifications

- Other Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector

MARVIN PLANNING CONSULTANTS
Specializing in Municipal, County and Neighborhood Planning

PROJECTION: NE State Plane (Ft.)
DATUM: NAD 83
DATE: 10.20.2020

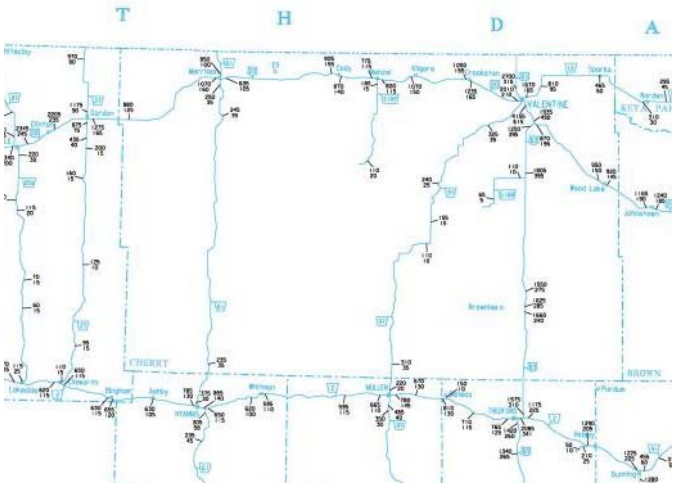
0 3.5 7 14 Miles

1 " = 7 miles

Traffic Counts in Cherry County

Traffic flow within the county on these highways varies considerably.

FIGURE 13.3:
TRAFFIC FLOW MAP



Source: Nebraska Department of Transportation

Figure 13.3 indicates the greatest traffic flows are along US Highway 83 south out of Valentine. US Highway 83 has an average daily traffic count, south of Valentine, of between 1550 vehicles and 1805 vehicles. However, the short segment heading north from Valentine has an average daily traffic county 2700 vehicles.

US Highway 20 carries the second greatest amount of traffic. It's count are 920 vehicles daily on the east edge of Cherry County and 880 vehicles on the west side.

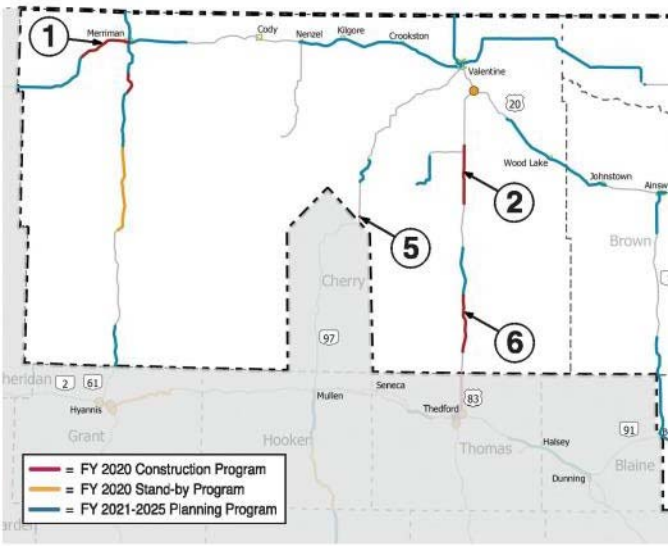
The greatest amount of traffic occurs around Valentine where US Highways 20 and 83 and Nebraska Highways 12 and 97 all come together.

NE DOT Improvements

The Nebraska Department of Transportation publishes an annual list of proposed projects for the current fiscal year, for fiscal years one to five years from the present, and six years and beyond. Cherry County is split into two different districts, the Department of Transportation's District 6 and 8. District 8 covers most of Cherry County. Between Fiscal Years 2020 and 2025, there are 17 projects budgeted for the Cherry County area (all within District8. These projects include:

- US Highway 20 Merriman West and Niobrara River North and South - Microsurfacing ($3,800,000)
- US Highway 20 S-16B North and South - Microsurfacing ($1,017,000)
- Nebraska 97 Alkali Pond - Culvert ($183,000)
- US Highway 83 North of Thomas/Cherry County line North - Microsurfacing ($716,000)
- Nebraska 61 Snake River North and South - Mill and resurface ($7,993,000)
- Nebraska 16B Hackberry Lake Northeast - Resurfacing ($2,600,000)
- Nebraska 12 Minnechaduza Creek - Bridge ($2,290,000)
- Nebraska 12 Sparks East - Resurfacing ($1,660,000)
- US Highway 20 Valentine Area - Microsurfacing ($3,980,000)
- US Highway 20 Merriman Area - Microsurfacing ($1,560,000)
- US Highway 20 Wood Lake and Bassett Area - Microsurfacing ($2,750,000)
- Nebraska 61 Grant/Cherry County line North - Mill and Resurfacing ($2,990,000)
- Nebraska 61 Snake River-Niobrara River - Mill and Resurfacing ($3,650,000)
- US Highway 83 In Valentine - Urban, Resurfacing, and Bridge ($7,230,000)
- US Highway 83 West 4th Street in Valentine - Concrete pavement ($3,650,000)
- Nebraska 97 Merritt Reservoir North - Mill and Resurfacing ($2,360,000)

FIGURE 13.4:
NDOT SIX-YEAR HIGHWAY PROGRAM



Source: Nebraska Department of Transportation

Overall the Nebraska Department of Transportation is expecting to spend over $48,429,000 in upgrades in the Cherry County

over the next six years.

Transportation Policies and Strategies

TRAN-1.1 Development should be discouraged from occurring in areas where the road system is insufficient to handle any additional traffic load without upgrades being completed.

TRAN-1.2 Cherry County should require new development to:

1. Limit access points on highways designated as arterials when alternative access points are feasible.
2. Minimize direct access points onto arterial rights-of-way by encouraging the utilization of common driveways.
3. New development should not be located along roads officially designated as "Minimum Maintenance"

Chapter 7
Implementation

Achieving Cherry County's Future

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 objectives in this plan. We recommend reviewing the relevant goals during planning and budget setting sessions to determine what projects may need to be undertaken during the course of the fiscal year.

Action Agenda

The Action Agenda is a combination of the following:

- Goals and Objectives
- Land Use Policies
- Support programs for the above items

It will be critical to earmark the specific funds to be used and the individuals primarily responsible for implementing the goals and objectives in Cherry County.

Support Programs for the Action Agenda

Five programs will play a vital role in the success of Cherry County's plan. These programs are:

1. **Zoning Regulations**--updated land use districts can allow the county to provide direction for future growth.
2. **Subdivision Regulations**--establish criteria for dividing land into building areas, utility easements, and streets. Implementing the Transportation Plan is a primary function of subdivision regulations.
3. **Plan Maintenance**--an annual and five-year review program will allow the county flexibility in responding to growth and a continuous program of maintaining the plan's viability.
4. **Strategic Plan** – A Strategic Plan will assist in identifying future economic development strategies that will tie into the overall planning effort of the county. It will be critical to work with this document and the Plan in unison.

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 be current. The annual review should occur during the month of January.

After adoption of the comprehensive plan, opportunities should be provided to identify any changes in conditions that would impact elements or policies of the plan. At the beginning of each year a report should be prepared by the Planning Commission, which provides information and recommendations on:

- whether the plan is current in respect to population and economic changes; and
- The recommended goals, objectives, and/or policies are still valid for the County and its long-term growth.

The Planning Commission should hold a meeting on this report in order to:

1. Provide citizens or developers with an opportunity to present possible changes to the plan,
2. Identify any changes in the status of projects called for in the plan, and
3. Bring forth any issues, or identify any changes in conditions, which may impact the validity of the plan.

If the Planning Commission finds major policy issues or major changes in basic assumptions or conditions have arisen which could necessitate revisions to the Comprehensive Plan, they should recommend changes or further study of those changes. This process may lead to identification of amendments to the Comprehensive Plan and would be processed as per the procedures in the next section.

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 by 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.

Methods for Evaluating Development Proposals

The interpretation of the Comprehensive Plan should be composed of a continuous and related series of analyses, with references to the goals and policies, the land use plan, and specific land use policies. Moreover, when considering specific proposed developments, interpretation of the Comprehensive Plan should include a thorough review of all sections of the Comprehensive Plan.

If a development proposal is not in conformance or consistent with the policies developed in the Comprehensive Plan, serious consideration should be given to making modifications to the proposal or the following criteria should be used to determine if a Comprehensive Plan amendment would be justified:

- the character of the adjacent area
- the zoning and uses on nearby properties
- the suitability of the property for the uses allowed under the current zoning designation
- the type and extent of positive or detrimental impact that may affect adjacent
- properties, or the county at large, if the request is approved
- the impact of the proposal on public utilities and facilities
- the length of time that the subject and adjacent properties have been utilized for their current uses
- the benefits of the proposal to the public health, safety, and welfare compared to
- the hardship imposed on the applicant if the request is not approved
- comparison between the existing land use plan and the proposed change regarding the relative conformance to the goals and policies
- consideration of County staff recommendations

Depth to Water

Figure 7.18 indicates the approximate water table/aquifer elevations. The water table elevation, in Cherry County, varies from 0 feet below grade to over 200 feet below grade. Shallow areas can be found throughout Cherry County, especially in the central portion of the county. A large portion of Cherry County has a depth of 0 to 100 feet.

Thickness of Principal Aquifer

Figure 7.19 indicates the thickness of the water table/aquifer. The thickness ranges from 0 feet to 200 feet in depth depending upon which part of the county ones resides. The deepest portion of the aquifer can be found in northwest and southeast Cherry County.