# Introduction

The land use plan is the guide for tools used by citizens of Dickinson County to minimize tax burden from infrastructure and services, maintain aesthetic qualities of the agrarian landscape, appropriately locate new industry, commercial business and residents, and protect, conserve or enhance water resources. The future land use plan implements the vision and goals identified throughout this plan by addressing key planning elements:

- Agriculture, Open Space & Rural Preservation
- Aquifer and Surface Water Resources for Water Supply
- Land and Economic Development via Smart Growth

The land use plan is built upon a LESA (Land Evaluation and Site Assessment) model process developed by the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) and adapted for Dickinson County. LESA is a community based land use decision making model. The results presented hereafter represent valid results of the LESA process. The GIS LESA model and associated GIS data layers provided the county as part of this study afford efficient review and use of the model under different value ratings if deemed necessary. Citizen engagement in the continued development of the LESA model could improve citizen approval of land use planning decisions.

The LE or Land Evaluation aspect of LESA evaluates natural resources and identifies locations for certain types of land uses based on natural resource characteristics. The SA or Site Assessment aspect assesses natural resource locations in combination with location of existing infrastructure and social resources to assess the appropriateness of land use. The land use plan is then developed around the combined natural and social resources evaluation and assessment.

The plan recognizes key land and water resources and identifies a set of goals; key planning concepts, and implementation policies for each of the planning elements presented above. The policy statements define a course of action or rule of conduct to achieve the goals of the plan. The Planning Commission and County Commission (BOCC) should review and consider each of these policies when they make decisions about land use, infrastructure, or other decisions affecting the future development of the county.

### Land and Water Resources of Dickinson County

To be able to generate a smart growth land use plan both citizens and citizen leaders must know what they collectively are responsible for. Dickinson County has historically been an agricultural community founded on very good soil resources. In fact, over 95% of the county has been determined to be Prime Farmland or Farmland of Statewide importance. A detailed analysis of soil resources using the LESA model in a Geographic Information System (GIS) determined the location of the best soil resources for agricultural crop production in the county. The areas determined to be best soil should remain in agricultural use and not converted to alternative land uses. A significant

percentage of agricultural land in the county has terraces, grassed waterways and buffer strips, all vitally important in limiting soil erosion and maintaining or improving water quantity and quality.

The majority of Dickinson County is within the Smokey Hill River Watershed with a very small area in the northeast corner of the county in the Republican River Watershed. The entire county is within the Kansas River Watershed which is a part of the Missouri River watershed and ultimately the Mississippi River watershed feeding the Gulf of Mexico. The Smokey Hill River watershed begins just west of the Kansas line in Colorado as illustrated in the map. Water in the Smokey Hill River is collected from the area within the boundary shown.

Citizens of Dickinson County should be aware that long term water resources in the Smokey Hill River will be impacted by depletion of groundwater resources throughout the watershed. As groundwater is withdrawn to support land uses, it is replenished by both river water and water that infiltrates the soil profile. Managing water use throughout the watershed will be required to maintain adequate water flow in the river and groundwater stores. With much of the upper watershed in western Kansas having groundwater resources largely depleted or being depleted, river levels have, and will continue to decline as more surface water will be required to recharge aquifer draw down.

Dickinson County's water supply is primarily derived from alluvial aquifers, including the Sand Springs Aquifer, mostly underlying the Smokey Hill River flood plain. If river levels continue to decline as water enters Dickinson County from the west, recharge of alluvial aquifers will also decline. Dickinson County should partner with counties in the watershed and state agencies to form a water resource management plan for long term water availability in the county. Any development in recharge areas such as Sand Springs should be carefully designed and managed to ensure quality recharge and/or increase quantity of recharge amounts.

Regardless of who is right in the global warming and climate change debate, scientific estimates of future precipitation and temperature should be considered in the land use plan to ensure ample water supply for current and future generations. Scientific studies indicate temperatures in the area will increase. While precipitation in the area is predicted to remain near current levels, the frequency of storms is predicted to slow, while the intensity of storm events increases. From a planning perspective, if fewer more intense storms do occur, surface water runoff increases and less water infiltrates the soil again lowering recharge of aquifers relied upon for municipal supply. Failure to plan for predicted climate change could be catastrophic to current and future generations. Agricultural terraces and grassed waterways with level spreaders (devices to slow and hold small amounts of water so it can infiltrate) should be further encouraged in the county. Additional impoundments designed to enhance water recharge should also be considered.

The Herrington Lakes are valuable water resources for the county and the watershed area surrounding the Herrington Lakes should be carefully planned to ensure long term

water quantity and quality. The Herrington Lakes area is also a very important recreation area for the county providing local residents not only an aesthetic and water resource, but also a valuable economic resource.

If fewer storms of higher intensity do occur, a highly developed watershed will put large amounts of water in the lakes quickly, however long term water movement into the lake from infiltrated water that sustains recharge of the lake between storm events will be limited. Additionally, quick movement of water into the lakes carries more eroded soil into the lake filling it with sediment shortening the total life span of the lakes. Therefore, management of development in the watershed and existing lands in the watershed to minimize total impervious surface and maximize infiltration into the soil profile is necessary to sustain the lake long term.

## Agricultural, Open Space & Rural Preservation

The agricultural landscape is an essential part of the character and environmental quality of Dickinson County, and factors heavily into the perception of the county as an extraordinary place to live, work, or visit. The rural working landscape provides open space and scenic views of the countryside. Simply stated, people are attracted to Dickinson County because of vast areas of farmland, open space and rural charm. Additionally, a large share of the local economy is generated from agriculture production and 10 percent of the workforce is employed directly or indirectly in agriculture.

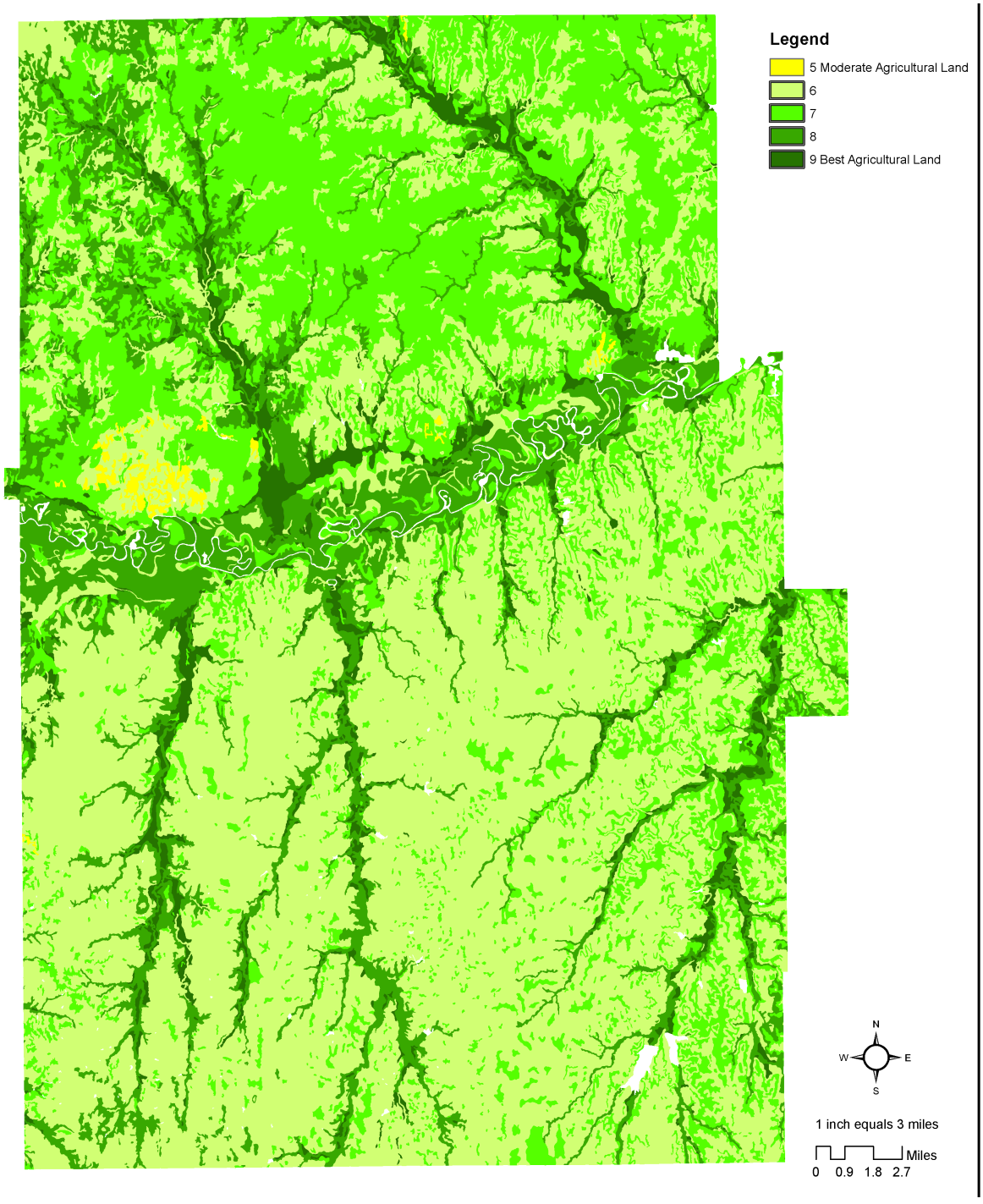
Given human perception and economic importance, farmland, open space, and rural character is vital to growing the County's quality of life. The question to be addressed with a land use plan for Dickinson County is how to accommodate new development and economic growth while respecting, preserving and enhancing agricultural land?

The county must recognize the economic challenges facing farmers and, at the same time, the need to balance private property rights with overall public welfare. Agricultural land use is vastly more compatible with the conservation of natural resources such as open space, wildlife habitat, and watershed management, than any alternative land use. Existing terraces and grassed waterways on agricultural lands are critical to quality surface and aquifer water supplies. Loss of the best agricultural soil for crop production to alternative land uses forces farming on less favorable soil which requires more inputs to produce a crop lowering net profit of the farmer impacting the county economy.

However, the sale of a small tract of land may be an important source of revenue to a farming operation. At the same time, unregulated residential uses in rural areas can lead to a new set of problems for citizens and citizen leaders, such as infrastructure and services extension to a sparsely populated area. Loss of farmland undermines the economic backbone of the county at many levels and would be an environmental, economic and fiscal blunder not to act to protect and enhance agricultural land resources. To make smart choices about all types of future land use, LESA model results identifying the most valuable soil resources in the county are used as the basis for developing policies to guide development.

The following map is the result of the LESA GIS model using over 30 soil characteristics in combination to identify the best soil resources in Dickinson County for crop production. Most Suitable soil areas should be preserved. Areas that are suitable could be considered for development if existing infrastructure is available and capable of proposed demand and the proposed land use has no adverse affect on existing rural character.

## Map 8-1

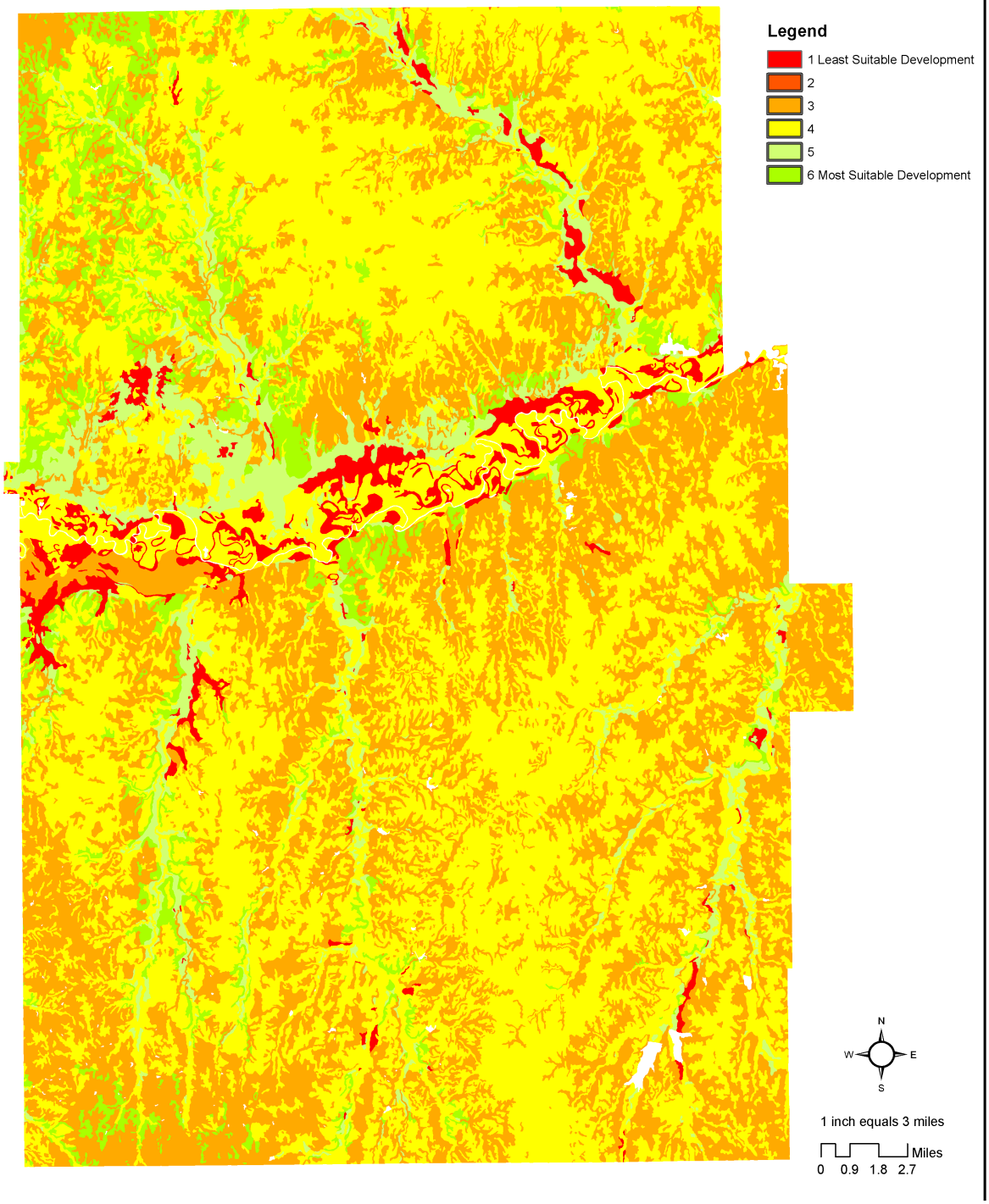


While the previous model result map identifies locations of best soil resources for crop production, it is only one part of the LESA model. The following model result map identifies locations of key transportation corridors and existing rural water infrastructure. Each resource has a proximity buffer weighting areas close to existing infrastructure higher, or more suitable for development.

## Map 8-2

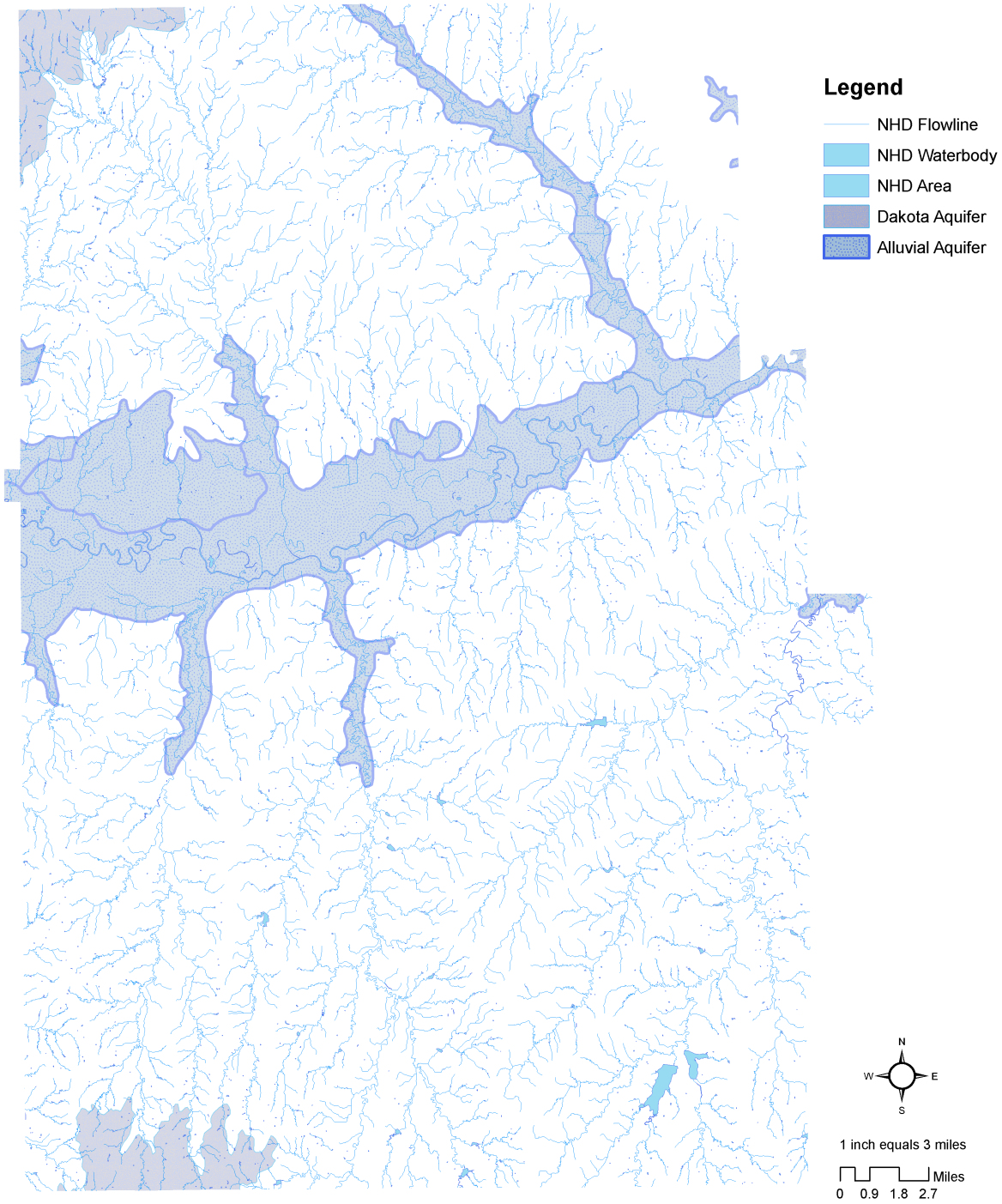
The following model result illustrates soil areas that are most suitable for develop based mainly on engineering properties of soil resources such as ratings for dwellings with and without basements, small commercial buildings, shallow excavations, septic or sewage lagoons, etc.).

## Map 8-3



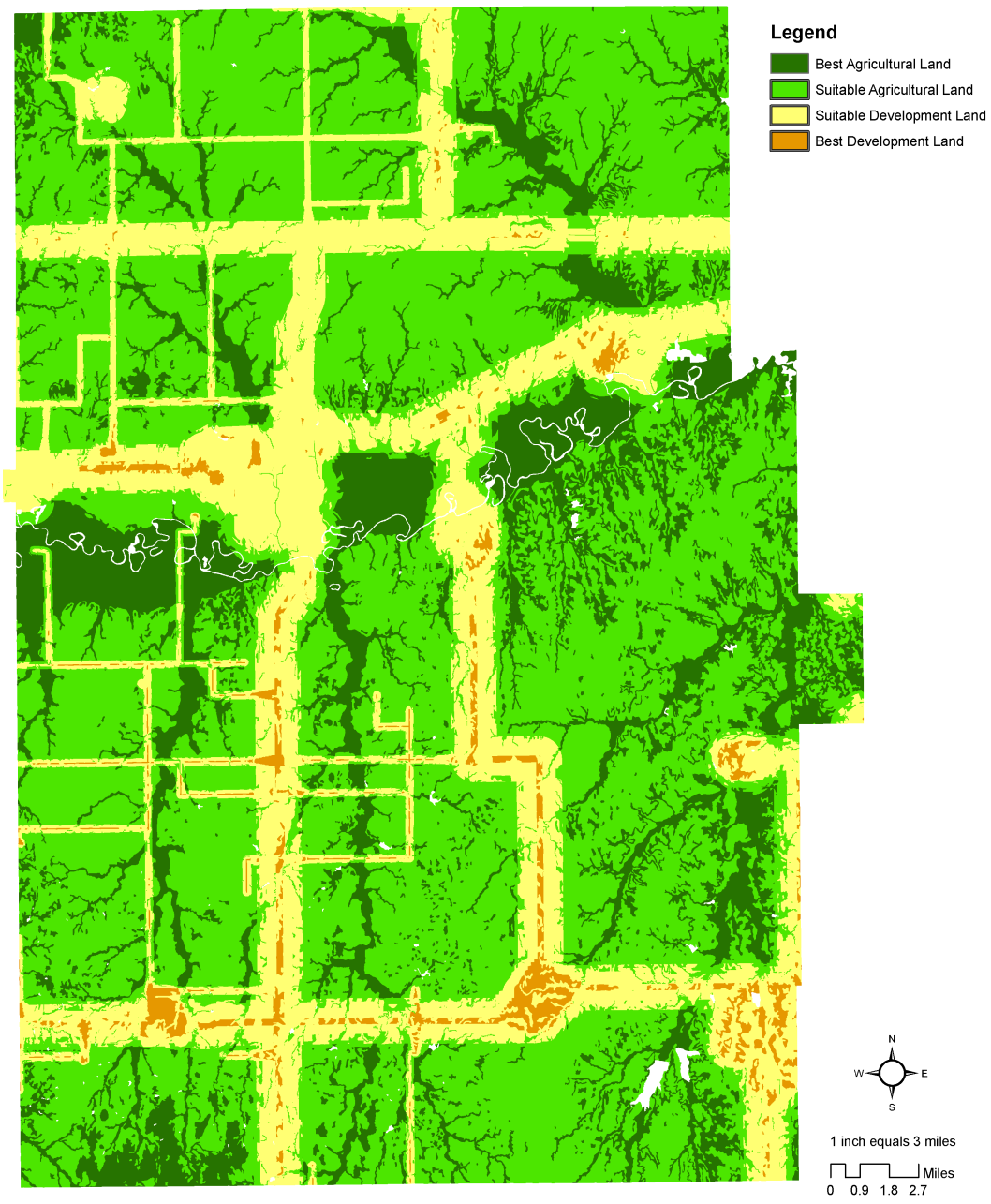
The next model result illustrates key water resources in the county that can not be built upon including streams, rivers and lakes.

## Map 8-4



The previous four model results indicating areas with best soils for crop production, within a reasonable proximity to existing road and rural water infrastructure, most suitable for development, and stream, river and lake areas not suitable for development are combined into a single map result in the LESA model defining land areas best for crop production (development excluded), areas less suitable for crop production (consider alternative land use), close to existing infrastructure (development encouraged), suitable for development (development encouraged), and not streams, rivers or lake(development excluded).

## Map 8-5



The LESA model results illustrated on the previous page should serve as the guide to policy development where both regulatory and non-regulatory measures are incorporated to realize the land use plan.

**Agricultural, Open Space & Rural Preservation Goals**

- Protect agricultural lands and limit non-farm developments in order to preserve farmland for the production of agricultural products and promotion of related agribusiness.
- Preserve the rural character of the county and retain the historical, cultural, and physical features that define the rural landscape.
- Protect and preserve the natural resources (soil, water, and wildlife habitat) of the county.
- Direct Non-farm development to areas near existing infrastructure, communities and areas most suitable for development as determined by the LESA model.

**Agricultural and Rural Preservation Areas**

The primary goal of the agricultural/rural preservation area is to retain best agriculture land and the rural character of the county by directing growth into the areas determined by the LESA model to be most suitable for development and especially near existing communities. The rural preservation areas are considered, concerning scattered non-farm housing or urban types of activities. The agricultural/rural preservation area is a visible symbol of the county's commitment to conserve and maintain rural use and character.

**Agriculture/Rural Preservation Development Policies**

- Residential subdivisions shall not be allowed in areas defined by the LESA model as best soil for crop production or suitable for crop production, and shall be located in areas deemed suitable or most suitable for development.
- Non-farm housing shall be allowed in the agricultural/rural preservation area in areas that are not best soil for crop production and are deemed suitable for development.
- Farms, woodlands and water resources shall be recognized as an integral part of the planning area's open space system and should be preserved.
- Commercial & Industrial Activity
- Agriculture-related support businesses (both commercial and industrial) in the agricultural/rural preservation areas may be allowed in areas determined by the LESA model to be suitable for development, subject to conditional review and approval. The market being served or the character of the use needs to be distinctly non-urban in nature (i.e., agricultural commodities, plant nurseries, etc.). The site for the proposed use should be designed to meet the following conditions:
- Roads providing access to the site are capable of handling additional traffic without causing congestion or undue deterioration. Sites should be located with access to hard surfaced or major county roadways.
- Vehicular turning movements onto the site shall not cause a significant reduction in road capacity or represent a traffic safety hazard.

- o A source of potable water is available in sufficient quantity to meet usage requirements. The county planning staff shall coordinate development review and approval with the affected rural water district.
- o A sewage disposal system is available that can safely treat the anticipated quantity and type of wastewater without causing groundwater or surface water pollution.
- o Storm water runoff does not increase flooding hazards to human life or property.
- o The proposed use is compatible with adjacent uses.
- o The site is designed to conserve unique and sensitive natural features such as woodlands, steep slopes, streams, floodplains, and wetlands, by setting them aside from development.
- o The proposed location does not restrict existing agricultural operations.
- o Urban commercial and industrial development shall not be allowed to locate in the agricultural/rural preservation area.
- o The county planning commission shall require buffers and/or open space between agricultural uses and commercial and industrial developments to minimize the negative impacts of one use on the other.

## Aquifer and Surface Water Resources for Water Supply

Water is a potentially limiting resource in Dickinson County. Securing clean and plentiful water resources for future generations should be one of the county's highest priorities.

**Smoky Hill River: Overall Watershed Management**
Successful management of the Smoky Hill River and associated alluvial aquifers is vital to the long-term sustainability of clean and plentiful drinking water in Dickinson County. Securing the Smoky Hill River resources for future generations will require a scope of vision that extends beyond county borders. Dickinson County should be a pro-active stakeholder in the Smoky Hill River watershed. Partnerships and dialogue with other communities and stakeholders in the watershed should be initiated to develop long-term, watershed scale management strategies. The fact that nearly all the Smoky Hill watershed occurs in the state of Kansas creates an opportunity for collaboration, in contrast to the strife common in water-use discussions that cross state lines.

**Sand Springs Aquifer**
The Sand Springs Aquifer is a unique area within Dickinson County. Its sandy soils allow rapid infiltration of rainfall into the water table. These physical properties make it valuable as a water-recharge zone, but also highly sensitive to pollution. Any land use that carries a high risk of introducing pollutants to groundwater should be avoided in the Sand Springs area.

**Herington Lakes**
Herington's lakes provide potable water to much of southeast Dickinson County and neighboring counties. The county should investigate the availability of grants and cost-sharing programs to assist landowners within the Herington Lakes watershed to

reduce non-point pollution in the lake (sediment, fertilizer, fecal bacteria, pesticides are common non-point pollution problems in an agricultural setting). The modest size of the watershed, combined with its use for potable water, gives the Herington Lakes a unique opportunity to attract funding for reducing non-point pollution. Its modest size makes it a good candidate for research and targeted funding to achieve measurable improvement in water-quality on a watershed scale. In addition the previously described challenges associated with climate change and timing of water supply recharge should also be considered in all land use planning decisions.

**Overlay Zoning**

Overlay Zoning is applied on top of existing zoning boundaries to protect environmental resources. Within the overlay district, additional restrictions for land use apply. We recommend that Dickinson County develop overlay zoning to safeguard its alluvial aquifers, stream and river corridors, floodplains, and key surface water resources such as the Herington Lakes. The following map illustrates areas that should be in overlay zoning bounds.

**Rural Resource Protection Area Policies**

- Defined FEMA floodplain areas should be restricted from development and reserved as open space.
- All aquifer areas in the county should have overlay zoning implemented to maintain and or enhance recharge and preclude potential contaminating land uses.
- The Herington Lakes watershed should be carefully planned to maintain water recharge and improve water quality.
- Encourage private landowners to preserve and protect riparian areas and streambeds from destruction and encourage structures to promote groundwater recharge.
- Require the protection of riparian areas and streambeds when a preliminary plat or site plan is being designed.
- The county should adopt erosion and sedimentation guidelines for new development. These guidelines should address stormwater quantity and quality during and after construction.

## Land and Economic Development via Smart Growth

Smart growth provides opportunities for development while preserving, enhancing or restoring natural resources, limiting tax burden, land and energy consumption. The LESA model results define areas most suitable and suitable for development based on proximity to existing communities, major highways, soils suitable for development, areas that are outside existing stream, river and lake resources and are not considered to be best soils for crop production all important considerations in smart growth.

The results of the LESA model delineate over 10,800 acres of best development land meeting smart growth criteria built into the model. Areas of land determined by

the model as best suited for development exist near every community, along the I-70 corridor and near existing rural water and major road infrastructure. The 10,800 acres of land are well dispersed throughout the county and is an area almost twice the size of all existing incorporated areas.

There are three inter-related implementation strategies associated with managing the urban fringe as presented in this section.

First is the **urban fringe**, which is defined as the land area located around a city that is expected or being planned to accommodate eventual urban growth and development. The urban fringe is the land a municipality plans to annex or directly control to promote urban housing, commerce or industry.

Second is the **rural transition area**, which is the land adjacent to the urban fringe and is intended to accommodate limited suburban and non-farm residential housing. The development in the rural transition area is not planned to be served by municipal infrastructure. Cities prefer restricting development in the urban fringe to minimize land use conflicts and avoid problems in extending sanitary sewer or water mains. For this reason, it is important to identify rural areas that are suitable for supporting suburban subdivisions and non-farm housing on individual tracts with lateral fields or lagoon systems.

Third is the **rural preservation area**, which delineates the portion of the county where agriculture and rural densities prevail. This is the part of the county where farmland and open space is considered, concerning higher density non-farm housing or urban types of activities.

The amount of land influenced by urban fringe growth in the county is greatest near Abilene. However, urban fringe management issues and concerns apply to all of the incorporated communities of the county. The intricacy of urban fringe land use issues crossover county and city boundaries and require coordination among involved parties in the decision-making process.

**Background**

Urban Fringe Management is an important tool for any county seeking to implement effective smart growth strategies. Like most of rural Kansas, Dickinson County has seen a shift in its population from rural areas to larger more densely populated communities, such as Abilene and Chapman. In addition to economic incentives associated with moving into a larger community, people in Dickinson County are also seek the small town lifestyle. In order to preserve the small town quality of life found in Dickinson County and to prohibit unplanned fringe growth in its communities, Dickinson County needs to establish a tradition of using land planning and local zoning to protect its small town image.

Not only is protecting the small town image a central planning concept, it is also important for the county to protect itself financially. When fringe growth is not

managed correctly a community may finance unnecessary infrastructure for potential development. This in turn leads to a higher tax burden for the community's residents. Urban fringe management will allow each community and the county to protect those things most important to the identity of Dickinson County.

The adoption of urban fringe management policies is important to Dickinson County because:

- Communities such as Abilene and Chapman are already witnessing outward development in their communities and will continue to do so.
- Financial losses associated with unneeded infrastructure improvements will be prevented.
- The small town quality of life will be preserved.
- Farmland and natural resources will be preserved and protected.

**Urban Growth Boundary & Service Areas**

The concept of applying an "urban growth and service area boundary" is a central element of this plan. The need exists for each of the incorporated cities to have land located outside their corporate limits for growth. The planning concept is based on encouraging city growth to areas where municipal infrastructure can easily and economically be extended. The cities are encouraged to apply "concurrency management". This is a technique to regulate development and manage growth concurrently with city revenues that are available for providing infrastructure.

The purpose of an urban growth boundary is to define the location and extent of urban growth for a defined period of time. The placement of an urban growth boundary is based on the feasibility of extending municipal sewer and water service. Projected population growth, historical market trends, and environmental resources must also be assessed when defining an urban growth boundary. By creating urban growth boundaries communities can direct growth to the areas they desire while protecting others

**Urban Fringe Management Goals**

Balance the opportunity for the cities to expand their boundaries with limited suburban and non-farm housing in areas determined to be most suitable non-development activities.

Promote compact urban development adjacent to existing urban areas where public water and sanitary sewer lines can easily and economically be extended.

Promote development that is in harmony with the surrounding built and natural environment, and in rural areas, preserves the county's rural character.

Preserve prime farmland, riparian areas, and historic and natural resources.

Encourage cluster housing and appropriate site design to protect natural resources in areas of new development

**I-70 Corridor**

The I-70 corridor area is generally defined as the area 1 mile north and 1 mile south of Interstate 70 and old Highway 40. The county recognizes the economic benefits associated with its location along I-70, and at the same time the need to preserve the landscape that so many travelers see when crossing through the county. The development of attractive residential areas along I-70 could attract new residents to the area. However, unregulated development along the I-70 corridor may lead to the destruction of important development land and natural resources. The I-70 corridor provides an opportunity in Dickinson County's attempt to increase it's population base and attract new businesses. By utilizing land in the I-70 corridor that has been identified as most suitable for development, the county can encourage smart growth that leads to economic and social benefits while preserving the natural resources of the area.

Roughly 15,000 vehicles pass through Dickinson County a day while making their way along Interstate 70. With such a large number of people traveling through the county each day it is important to realize the potential draw for attracting new businesses as well as new residents. In addition to the economic benefits associated with development along the I-70 corridor, preservation of prime agriculture land and natural resources as identified by the LESA modeling is also important.

Historically, private developers have sought sites that can accommodate large amounts of traffic flow with easy points of access and amenities. When traveling westward along I-70, Dickinson County and Salina offer the only suitable amenities and attractive access points in the 120 miles between Junction City to Russell. In order to maximize the benefits associated with the I-70 corridor, smart growth decisions need to be made when planning the land uses for this area as well as when creating the appropriate land use policies.

The adoption of appropriate land use policies for the I-70 corridor area are important to Dickinson County for the following reasons:

- The future economic contribution associated with development along 1-70.
- The majority of visitors to the county see it from I-70.
- The quality of life is enhanced through ease of access when high traffic areas are utilized for the construction of new development.
- The current and future need for infrastructure services is reduced when commercial, industrial, and residential land uses are positioned along or nearby already established major roadways.
- I-70 Corridor Goals

- Encourage development within the county along areas with sufficient infrastructure.

- Allow a mix of land uses while also preserving portions of the landscape and natural resources along I-70

- Encourage development that is in harmony with the surrounding built and natural environment.

- Balance the need to create suitable development areas outside of communities with the need to protect the rural character of the county.

- Promote development that promotes a positive image of the county pride an increases the quality of life for Dickinson County residents.

## Conclusions

Dickinson County is in a unique position to become a very vibrant and successful county within the Flint Hills Region. Unlike most counties in rural Kansas suffering from population decline, Dickinson County has every opportunity to reverse those trends thanks to its position along I-70 and the influx of population to the Flint Hills Region. In order to achieve growth within the county and at the same time preserve the rural quality of life that is so important to residents, it is important to ensure smart growth and informed decision making.

The LESA model and resulting maps outline areas for each of the key planning areas:

- Agriculture, Open Space & Rural Preservation
- Aquifer and Surface Water Resources for Water Supply
- Land and Economic Development via Smart Growth

Based on LESA model results, there are 10,833 acres of highly suitable land in smart growth areas and 104,828 of best agricultural production lands with 419,712 acres of land in total to remain in agricultural use. Land areas determined as highly suited for development should be provided incentives under a smart growth plan, as should best agricultural lands. Policy should be implemented where deemed necessary to prevent land use changes that are not in line with the LESA model results and existing zoning policies.