Hyde County
Rural Development
Site Analysis

A Study by
Central South Dakota Enhancement District

Funded by the South Dakota Value Added Agriculture Subfund

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Summary

Program History

As part of the South Dakota Department of Agriculture's (SDDA) efforts to enhance economic development opportunities and better support local control of development, the County Site Analysis Program (Program) was developed in the summer of 2013. The Program assists participating counties in identifying potential rural properties with site development opportunities. The analysis and subsequent report will provide local leaders with information and research-based resources to foster well informed decisions regarding the future of their respective regions. It also helps identify and plan for potential challenges that may arise should those opportunities be pursued.

In implementing the Program, SDDA is working closely with South Dakota's Planning and Development Districts. The First District Association of Local Governments (First District) and Planning and Development District III (District III) developed a methodology for a feasibility analysis that focuses on identifying locations for rural economic development. The methodology addresses the feasibility of locations for the development of concentrated animal feeding operations, agricultural processing and storage facilities, and other agriculturally-related commercial/industrial development. The analysis takes into consideration local zoning and State permitting requirements along with the availability of infrastructure necessary to accommodate certain rural economic development projects.

The identification of each prospective site's relative advantages and constraints provides decision-makers with useful information for assessing the development potential of each site. The information contained herein has the potential to streamline the marketing process thereby reducing timelines, financial expenditures and labor costs. Local governments, landowners, economic development groups and state agencies such as the Department of Agriculture or Governor's Office of Economic Development all benefit from the rural site development analysis. These entities now have access to a marketing tool based on proactive planning efforts. In addition, the report may assist local governments in updating their comprehensive plans, zoning ordinances and permitting procedures while also increasing local awareness of potential development opportunities.

Methodology

The analysis methodology developed for this study utilized an established set of criteria deemed critical to further development of the subject properties while specifically addressing the suitability of a site for either a concentrated animal feeding operation (CAFO) or an Agriculturally-related Industrial Development (AID). **Table 1** lists the site assessment criteria identified as being necessary in order to conduct analysis of the potential sites. Minimum thresholds for each standard were utilized to establish a hierarchy classification of "Good", "Better" and "Best" sites. Those sites designated as "Best" sites were those not limited by any of the criteria considered. Sites not meeting the minimum criteria required for the "Best" sites were subsequently identified as "Good" or "Better".

Specific information regarding the Site Assessment Criteria and methodology utilized for developing the "Good", "Better", and "Best" hierarchy may be found in **Appendix I and II**, respectively.

Table 1: Site Assessment Criteria

CAFO/AID Criteria
Access to County and State Road Network
Proximity to Three-phase Electricity Supply
Proximity to Rural Water System
Capacity of Rural Water System
Location of Shallow Aquifer
Existing Zoning Districts/Land Use Plans
Buildable Parcel
County CAFO Zoning Setback Requirements (If applicable)*
Proximity to Rural Residences* & Communities
Proximity to Rail**

*CAFO Assessment Criteria Only
** AID Assessment Criteria Only

Limiting Factors

While this report focuses on the specific sites matching the site assessment criteria standards, it became apparent that each site also possesses its own unique set of site characteristics which present both advantages and constraints.

The analysis found that the primary limiting factor(s) in reviewing the development potential of properties within Hyde County for a "Better" or "Best" CAFO site development is the availability of quality and quantity potable water. The same is true with AID developments which also require a reliable source of not only high quality but also large quantities. Access to a centralized water source such as a rural water system was a piece of key criteria in the site analysis process. While access to rural water quality water was identified as an impediment, the rural water system noted that if a significant water user would locate in the county; they would explore ways to provide water to the proposed development. Therefore, the analysis does not make the claim that the only sites for CAFO/AID development in Hyde County be relegated to the specific sites identified herein.

In addition to the availability of quality potable water, additional limiting factors such as access to County and State road networks, 3-Phase power lines, rail, and the county's existing zoning ordinances/setback requirements limited the number of potential AID and CAFO sites.

The site assessment process was limited in scope to include undeveloped parcels and did not consider expansion of existing CAFOs or commercial/industrial uses. In addition to this limited scope, minimum values were utilized in ranking each site with regards to zoning requirements and infrastructure demands. No attempt was made to rank each site within the three identified classifications. The uniqueness of each criterion identified in Table 1 warrants a comprehensive review of the potential impact each may have upon a subject property. This study is intended as the first step of a multi-faceted development process potentially leading to more specific site evaluations such as Phase 1 Environmental Site Assessments, engineering plans, development cost analysis, etc.

Results

Identifying and evaluating potential sites for development is the first step in planning for economic development in rural Hyde County. The findings of this report will assist in determining the potential role each site may play in supporting economic development and should be considered when planning for future projects within Hyde County.

Utilizing Geographic Information System (GIS) technology, the Central South Dakota Enhancement District identified **27** sites within Hyde County that met the minimum site assessment standards of the CAFO analysis, shown in **Table 2.** There were **82** sites identified that met the minimum standards of the AID analysis, as shown in **Table 3.** These sites complied with local zoning ordinances and were in close proximity to infrastructure necessary to support the previously identified economic development activities.

The CAFO and AID Analysis Maps further detail High Water Use (HWU) and Low Water Use (LWU) for these development sites. HWU CAFO sites are those locations which require 150,000 gallons of water per day. This amount of water is necessary to support, for example, a 3,000-head dairy operation. For clarification, other livestock operations such as beef that are relative to Hyde County will be classified with dairy. LWU CAFO sites are those locations which require 30,000 gallons of water per day, a volume necessary to support either a 600-head dairy or 5,000 head sow operation. HWU AID sites are locations which require water at levels necessary to support high water uses such as food processing or ethanol production. The water requirement for a HWU AID site is 410,000 gallons of water per day, which is supported on a limited basis by the rural water system. LWU AID sites are those locations which require water at levels necessary to support most agriculturally-related commercial/industrial development, 30,000 gallons per day. The analysis identified **2** High Water Use and **27** Low Water Use CAFO sites. Further, there were **81** High Water Use and **82** Low Water Use AID sites identified. The following maps provide information at a township level regarding the number of “Good”, “Better” and “Best” CAFO and AID sites.

Table 2:
Hyde County CAFO Sites by Hierarchy Classification

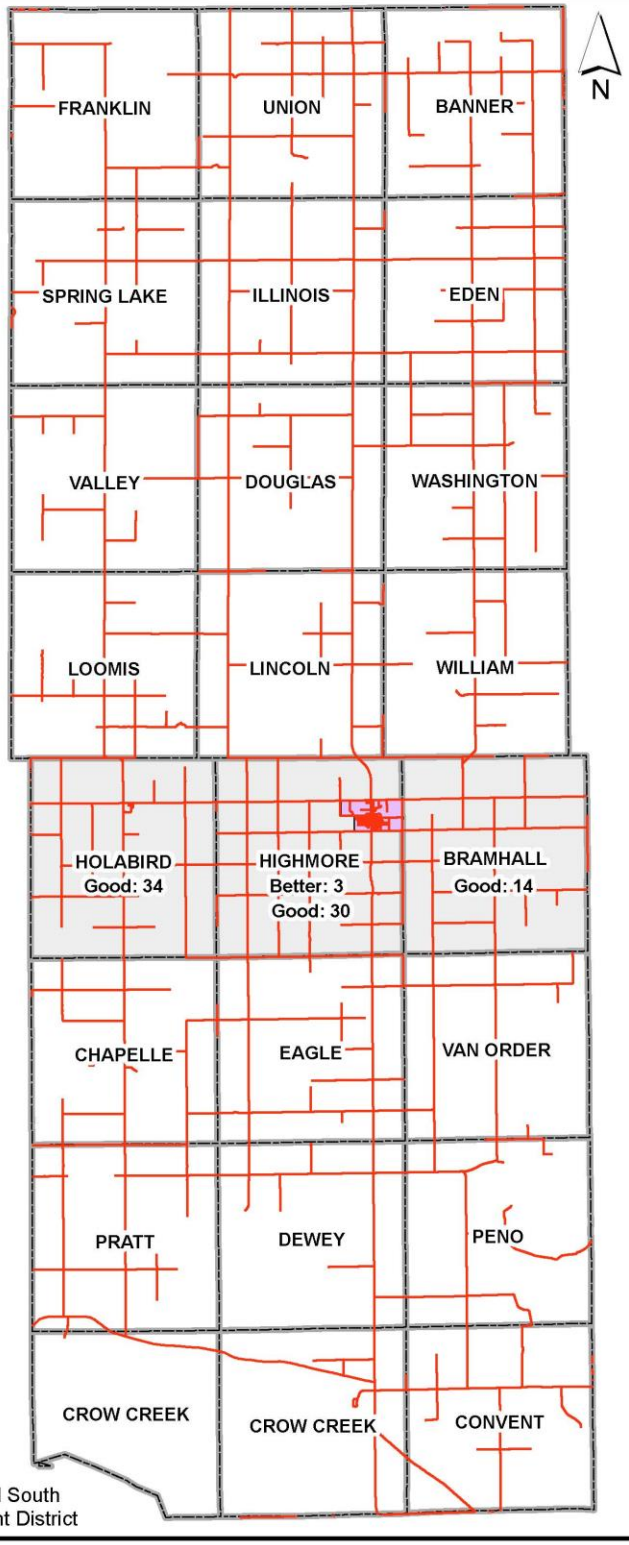
CAFO Site Classification	Good Sites	Better Sites	Best Sites
Low Water CAFO	11	0	16
High Water CAFO	2	0	0

Table 3:
Hyde County AID Sites by Hierarchy Classification

AID Site Classification	Good Sites	Better Sites	Best Sites
Low Water AID	79	3	0
High Water AID	78	3	0

Hyde County High Water Use AID Development Sites 2017

Township	Best	Better	Good
Banner			
Bramhall			14
Chapelle			
Convent			
Crow Creek			
Dewey			
Douglas			
Eagle			
Eden			
Franklin			
Highmore		3	30
Holabird			34
Illinois			
Lincoln			
Loomis			
Peno			
Pratt			
Spring Lake			
Union			
Valley			
Van Order			
Washington			
William			



Legend

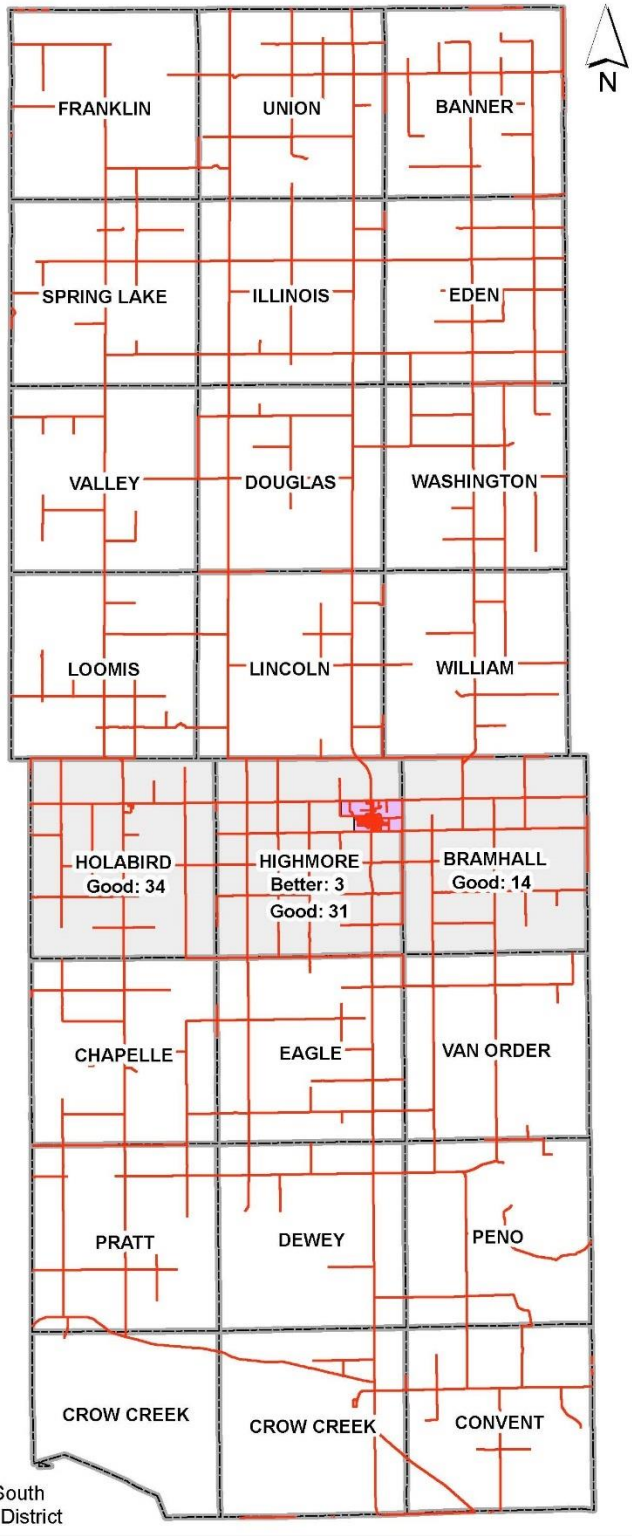
- Roads
- City Limits
- Townships

0 2 4 8 Miles

Created by, Central South Dakota Enhancement District

Hyde County Low Water Use AID Development Sites 2017

Township	Best	Better	Good
Banner			
Bramhall			14
Chapelle			
Convent			
Crow Creek			
Dewey			
Douglas			
Eagle			
Eden			
Franklin			
Highmore		3	31
Holabird			34
Illinois			
Lincoln			
Loomis			
Peno			
Pratt			
Spring Lake			
Union			
Valley			
Van Order			
Washington			
William			



Legend

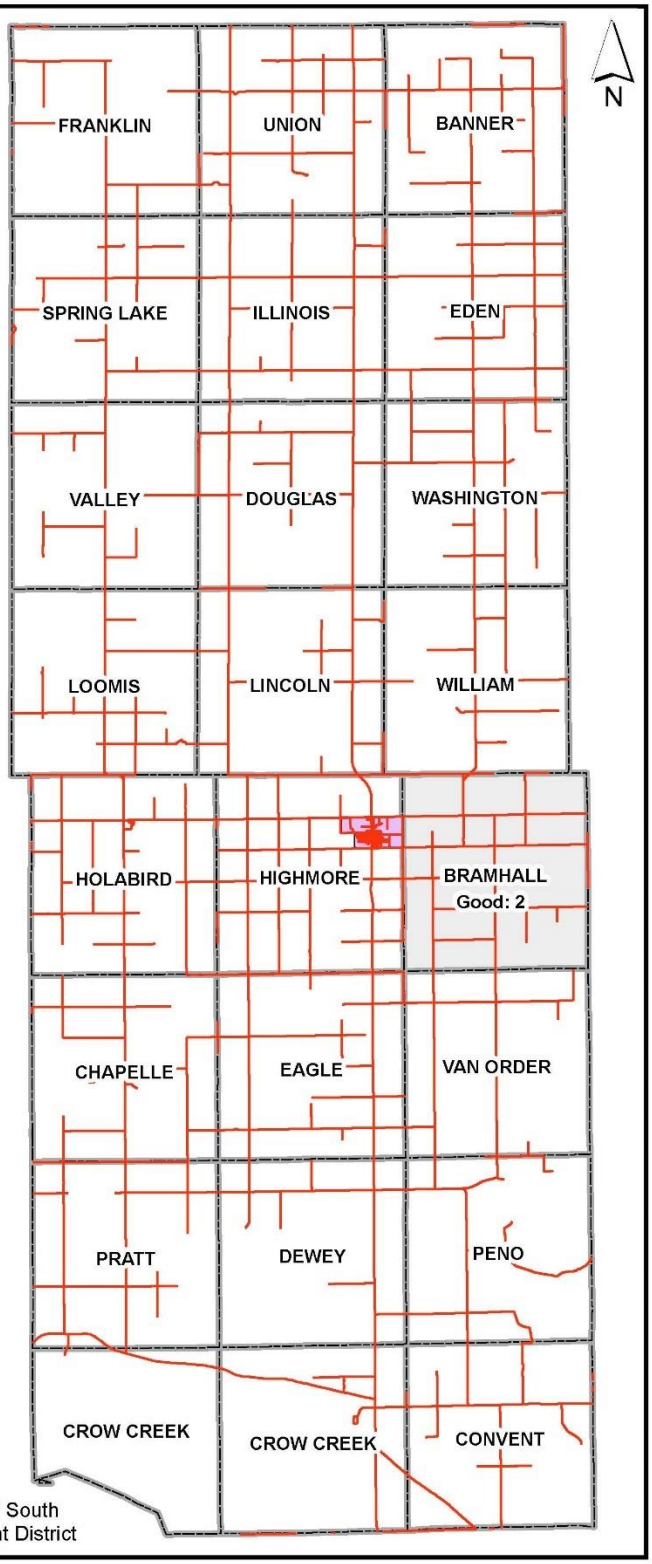
- Roads
- City Limits
- Townships

0 2 4 8 Miles

Created by, Central South Dakota Enhancement District

Hyde County High Water Use CAFO Development Sites 2017

Township	Best	Better	Good
Banner			
Bramhall			2
Chapelle			
Convent			
Crow Creek			
Dewey			
Douglas			
Eagle			
Eden			
Franklin			
Highmore			
Holabird			
Illinois			
Lincoln			
Loomis			
Peno			
Pratt			
Spring Lake			
Union			
Valley			
Van Order			
Washington			
William			



Legend

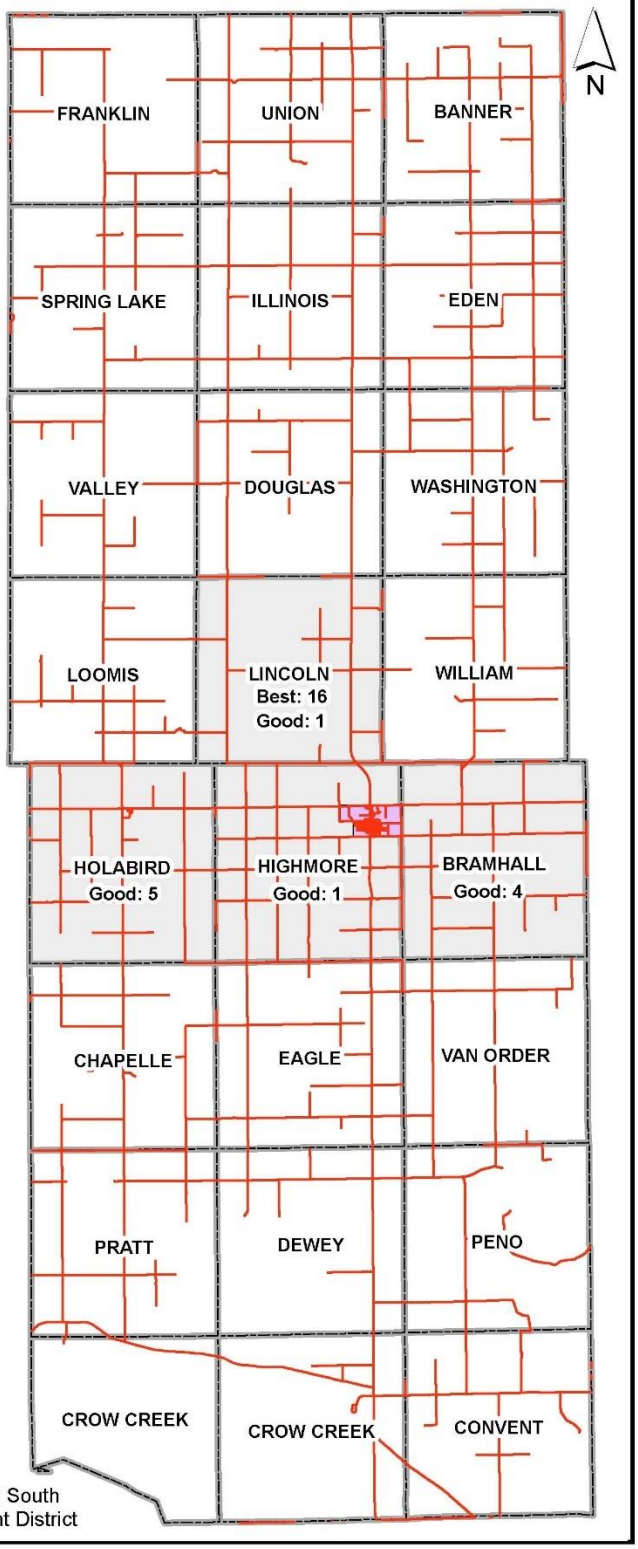
- Roads
- City Limits
- Townships

0 2 4 8 Miles

Created by, Central South Dakota Enhancement District

Hyde County Low Water Use CAFO Development Sites 2017

Township	Best	Better	Good
Banner			
Bramhall			4
Chapelle			
Convent			
Crow Creek			
Dewey			
Douglas			
Eagle			
Eden			
Franklin			
Highmore			1
Holabird			5
Illinois			
Lincoln	16		1
Loomis			
Peno			
Pratt			
Spring Lake			
Union			
Valley			
Van Order			
Washington			
William			



Legend

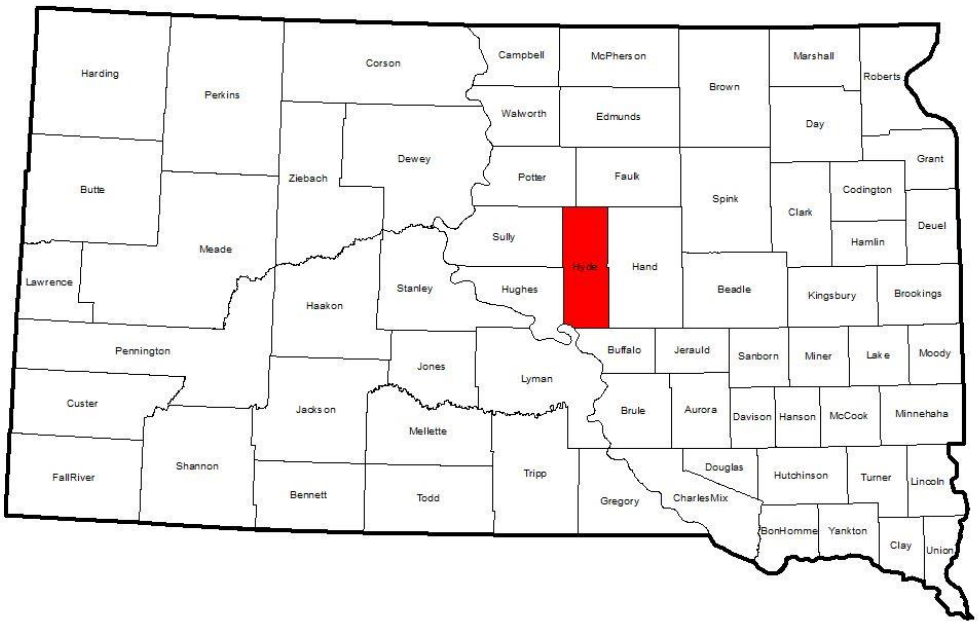
- Roads
- City Limits
- Townships

0 2 4 8 Miles

Created by, Central South Dakota Enhancement District

APPENDIX I: SITE ASSESSMENT CRITERIA

Hyde County Location Map



The developed methodology for this site analysis was carefully assembled using an established set of criteria regarded as crucial to further the development of subsequent properties, while specifically addressing the suitability of either a CAFO or an AID site.

Sites possessing all the criteria identified as critical within the analysis will be those most sought by potential developers. The occurrence of these sites may be somewhat rare. Therefore, sites under consideration for either a CAFO or AID may meet the majority of criteria, but may also be lacking in a crucial specific area. Any sites not meeting all the criteria may be burdened with a limitation, thus, requiring more specific analysis. In these cases, the feasibility of developing the site is highly dependent upon the identified limitation(s).

A limiting condition could be the availability of water volume at an identified potential CAFO site. For example, the water condition for a 3,000-head dairy, versus the needs of a 5,000-head sow operation is approximately five times greater, but both could be subject to similar zoning regulations. In this situation, the lack of water at a volume necessary for a potential dairy site are more likely identified as a location for a swine facility.

It should be noted that neither this example nor the analysis explores potential alternatives to the absence of adequate rural water volume such as upsizing water distribution infrastructure or securing an alternative water source. These issues hold the potential to mitigate this constraint, thereby, facilitating the proposed development. Rather, the analysis recognizes upgrading infrastructure identified as necessary to support rural economic development projects may increase the number of developable sites within Hyde County. In other cases, failure to meet certain criteria, such as access to a quality road network, may result in a situation where development of the site becomes economically unfeasible. Another limiting factor could be uneven terrain/topography for AID sites located throughout the county. The site assessment criteria, depending upon whether the site is for a CAFO or AID project, have been divided into the four major categories of **Land Use Regulations, Zoning, Environmental Constraints** and **Infrastructure**.

LAND USE REGULATIONS

Economic development planning in Hyde County must be conducted in concert with Hyde County's overall economic development goals. All development activities, including those specifically related to agriculture need to be accomplished within the parameters set forth in local and regional planning documents. Land use or development guidance is traditionally provided via local documents such as comprehensive plans, zoning ordinances, policies, mission statements, and other local economic development plans and initiatives. The analysis reviewed said documents to determine compliance with potential CAFO and AID development. The following is a synopsis of Hyde County's policies regarding CAFO and AID development.

Comprehensive Land Use Plan

Hyde County's most recent Comprehensive Plan was updated in 2016, and serves as a tool for future development. The plan does not specifically address agricultural development such as animal feeding or agricultural product processing activities; although, the plan does discuss the importance of agricultural practices in Hyde County. In Chapter 1, which serves as the introduction of Hyde County's Comprehensive Plan, there are three stated primary objectives of the plan. These objectives are addressing community goals that provide long-term health and safety, to provide guidance regarding potential land uses, and to provide the Hyde County Commission with policies for future planning decisions to control land use through zoning, ordinances, and other enforcement controls. Chapter 4 in the Comprehensive Plan is dedicated to the land use within the county. The plan states the primary land use goal of the county is to maintain a strong sense of place through sound land use practices. This chapter also states that other than in the communities of Highmore, Holabird, and Stephan, the land use is currently designated for only agricultural use. The three previously listed communities were all identified as areas with potential for future growth.

This chapter clearly states that Hyde County's 4 major land use objectives are to:

- Ensure that new development corresponds appropriately with existing land uses
- Encourage land use connectivity in all areas of the county
- Through land use promote a healthy and safe community
- Maintain a current and manageable land use classification system

These goals address many of the challenges which face a majority of the state's counties. Hyde County is attempting to address the challenges by proactive actions such as this study. In reviewing the 2016 Comprehensive Plan, it is clear that Hyde County recognizes the importance of large scale animal agricultural development and agriculturally-related commercial and industrial development.

Commercial/Industrial Land Use Policies

- Preferences should be given to agricultural production and processing activities that directly benefit the farming and local agribusiness economies.
    - County regulations must preserve individual property rights while promoting the economic opportunities of farm operators and other current county agricultural operators.
    - The conservation of prime agricultural land should be a consideration in land use decisions.
- Higher density development such as commercial, industrial, and concentrated animal feeding should take advantage of existing utility networks and transportation systems.
    - The locations, capacities, and relationships of public infrastructure systems should be reviewed as part of development proposals requiring county review.
    - The redevelopment and reuse of existing business locations should be encouraged by local development officials.
    - The County should promote the development of agriculture business related processing and manufacturing facilities within the rural areas conducive to such activity.
- Intense development similar to commercial, industrial, and concentrated animal feeding should be compatible with adjacent land uses.
    - These types of projects should take place in designated industrial parks or already developed highway locations, whenever possible.
    - Developers should be encouraged to reserve "buffer" areas between different land uses, to minimize the potential for conflict.

Zoning

Ideally, economic developers seek sites that are zoned and eligible for specific uses. The need to pursue a zoning change or conditional use permit introduces an additional step in the development process; thus, increasing development timeframes and costs. These steps or requirements also increase the uncertainty of approval given zoning changes are referable. Another contention is the super majority voting requirement necessary for a County's Board of Adjustment to approve a conditional use permit.

While the rural areas of Hyde County are reserved for agricultural uses, certain agricultural uses may require a case by case review. Generally speaking, CAFOs are one of the aforementioned uses. It is important to emphasize that agricultural producers must maintain flexibility in their operations. Hyde County's leadership recognizes a diverse agricultural industry, relying on cash crops and animal agriculture, and promotes a sustainable, balanced agricultural economy. CAFO sites further these goals as they create a demand for crops grown in the area, provide fertilizer for surrounding land, and yield a raw product which is, in some cases, directly sold to local residents. Zoning regulations pertaining to concentrated animal feeding operations can be referenced to in Hyde County's Zoning Ordinances.

General CAFO Policies in the Hyde County Zoning Ordinance:

- Hyde County supports the creation and expansion of concentrated animal feeding operations in rural areas.

- All CAFOs are required to comply with applicable state and federal regulations.

- All manure spreading within Hyde County requires appropriate separation from property lines, rights-of-way, specific water features, and various different land uses.

- Prior to construction, such facilities shall obtain a Storm Water Permit for Construction Activities from the South Dakota Department of Environment and Natural Resources. The Storm Water Pollution Prevention Plan required by the permit must be developed and implemented upon the start of construction.

- Hyde County does not specifically regulate the siting of a CAFO with regards to shallow aquifers though such a standard could be introduced during the conditional use process.

Owners of Class A, Class B, and Class C CAFOs are required to complete a Conditional Use Permit application whenever any of the following occur:

- A new CAFO is proposed where one does not exist.
- An expansion is proposed beyond what a current CUP allows.
- A signed complaint has been received by the Zoning Administrator or South Dakota Department of Environment and Natural Resources and after inspection reveals that the CAFO is in violation of County or State regulations.

Concentrated Animal Feeding Operation Setbacks:

Hyde County utilizes standard setback requirements based upon the following classes formed from Animal Units (AU):

- Class A – 2,000 AU or more
- Class B – 1,000 AU or more
- Class C – up to 999 AU

For the purpose of the analysis a 3,000-head dairy and a 5,000-head sow farrowing operation was used for identifying CAFO sites. Hyde County administers two separate zoning districts for agricultural purposes. According to Hyde County zoning requirements, the needs of a 3,000 head dairy operation or 5,000 head sow CAFO site, do not meet zoning requirements for Agricultural District B. Agricultural District B declares CAFOs with more than 400 animals as incompatible to nearby land uses. Agricultural District B is defined in the zoning ordinance as 3 miles from Highmore's City Limits, as well as a ½ mile on either side of Highway 14. However, CAFO's with more than 400 animal units are permitted in Agricultural District A, after a finding by the Board of Adjustment that their mode of conduct and location will not hinder the enjoyment and use of nearby properties and will not disrupt the appropriate use of land and resources of the county. An application for a conditional use permit is required for all CAFOs in areas of Agricultural District A, and must meet the setback and lot are requirements. All **27** CAFO sites in this analysis are currently zoned in Agricultural District A.

All other minimum CAFO setbacks for dwellings, churches, schools, and businesses are based on the classes listed above. Class A CAFO setback minimums are 5,280 feet plus 880 feet for each additional 250 AU (or portion thereof) over 2,000 AU. Class B CAFO setback minimums are 2,640 feet plus 660 feet for

each additional 250 AU (or portion thereof) over 1,000 AU. Class C CAFO setback minimums are 1,320 feet plus 440 feet for each additional 250 AU (or portion thereof) over 250 AU. Hyde County also requires setback minimums for animal waste application sites which is 300 feet, injected 50 feet for a residence (other than operator), and 1,000 feet, injected 300 feet for municipalities.

Commercial/Industrial Development

There is very little concentrated or clustered commercial/industrial activity at the county level. Hyde County's commercial and industrial properties are generally singular and adjacent to County and State hard surface roads. Commercial and industrial activities located in rural areas are generally not conducive to municipal or populated locations.

Buildable Parcel

One criterion deemed necessary to facilitate development of either a CAFO or an AID was land area. A parcel of 40 buildable acres was set as the minimum for consideration within the analysis. In order to be considered, the property must have consisted of 40 contiguous acres and be able to support development upon all 40 acres. Parcels without 40 buildable acres were not considered in the final analysis.

Proximity to Communities

The AID analysis also considered sites within one mile of a community or at specific locations identified by Hyde County. This was done because many communities and counties have established growth plans for economic development within certain proximities of communities or at locations with existing infrastructure such as paved roads. Also since the parameters of the original AID analysis excluded all AID sites within counties without access to rail, the criterion of "proximity to a community" was determined to be an adequate alternative for counties without rail facilities to identify potential AID sites.

ENVIRONMENTAL

If available, the location of shallow aquifers in relation to potential development sites was included in the analysis. In reviewing shallow aquifers, it is critical to note that they are included in the analysis for two distinct and very different reasons. Shallow aquifers may be utilized as a potential water source to support development. These same aquifers are also vulnerable to pollution due to their proximity to the surface and may be required to be protected via setbacks and development limitations.

At present, there is limited information regarding the occurrence and/or location of shallow aquifers in Hyde County. Further, Hyde County has not enacted or currently enforce aquifer protection or surface water regulations more restrictive than the State of South Dakota. Therefore, all sites within Hyde County were considered eligible for development.

Prior to or contingent upon acquiring a parcel for development it is assumed other environmental factors potentially affecting the property would be addressed via a Phase I Environmental Site Assessment or similar process. It is recommended that developers consider undertaking such an inquiry prior to executing a major commitment to a particular location.

INFRASTRUCTURE

The term infrastructure is broad in the context of property development which includes essential services such as water, sewer, electrical, telecommunications, and roads. With regards to the rural site analysis process; access to quality roads, electrical capacity and water supply were deemed essential and identified as site selection criteria.

Transportation

Access to quality roads was identified as critical to determining the development potential of a parcel. The proximity of a potential development site to either a state or county road was established as one of the parameters in conducting the rural site analysis. In addition to utilizing the South Dakota Department of Transportation's road layer to identify roads and surface types, local experts were consulted to assist in identifying the road network. CSDED requested the Hyde County Highway Superintendent to identify segments of the county road system inadequate to support a CAFO or AID. Sites accessed only by township roads that were located further than one mile from the intersection of a County or State hard surface road network were eliminated from the analysis.

A potential development site's proximity to certain road types impacted its designation. Those parcels abutting hard surface roads were consistently ranked higher than those served by gravel roads. In reviewing CAFO and AID sites, parcels adjacent to a county or state hard surface road were designated "Better" or "Best" for transportation resources. Parcels adjacent to county gravel roads or within one mile of an intersection with a county/state road network were designated "Good" for CAFO sites. Parcels within one mile of an intersection with a county/state hard surface road network were designated "Good" for AID sites.

Access to rail was also considered to be an important factor in locating an AID site. Parcels adjacent to rail facilities were designated "Best". Parcels within one-half mile of rail were designated "Better" and those parcels within one mile of rail were designated "Good". In addition, the analysis also considered sites within one mile of a community or at locations identified by the County, with or without rail. Those parcels within one mile of a municipality or at locations identified by the County that met necessary requirements, except access to rail, were designated as "Good" and "Better".

Electric Supply

Access to 3-phase power was designated as a site characteristics criterion for both CAFO and AID development. The Central South Dakota Enhancement District contacted Dakota Energy as well as NorthWestern Energy to obtain the location and capacity of the 3-Phase infrastructure within Hyde County. Dakota Energy and Northwestern Energies are the primary providers of electricity in the rural area of the county. All parcels whether for CAFO or AID development adjacent to a 3-phase power line were designated "Best" for electricity resources. Whereas, parcels within one mile of a three-phase power line were designated "Better" and those within two miles of a three-phase power line were designated "Good".

Water Supply

The ability to secure specific information regarding a rural water system's operations to include storage, distribution, and capacities proved to be the most complex and difficult component of the infrastructure analysis. Due to this, water resources were evaluated differently than transportation and electric infrastructure. While transportation and electric infrastructure were classified based primarily upon location and availability of three-phase power, the analysis of rural water systems first required the evaluation of the water system, specifically, each system's supply and distribution capacities.

Development sites were then selected upon the proximity to water service. The classifications with regards to water supply and their respective criteria are as follows:

1. "**Best" Classification**

   a. CAFO

      i. High Water Use CAFO Site - If the site was adjacent to or within an area where a rural water system had sufficient supply ***and*** distribution capacity to provide 150,000 gallons per day, the site area was designated as "Best" for water resources.

      ii. Low Water Use CAFO Site - If the site was adjacent to or within an area where a rural water system had sufficient supply ***and*** distribution capacity to provide 30,000 gallons per day, the site area was designated as "Best" for water resources.

   b. AID

      i. High Water Use AID Site - If the site was adjacent to or within an area where a rural water system had sufficient supply ***and*** distribution capacity to provide 410,000 gallons per day, the site area was designated as "Best" for water resources.

      ii. Low Water Use AID Site - If the site was adjacent to or within an area where a rural water system had sufficient supply ***and*** distribution capacity to capacity to provide 30,000 gallons per day, the site area was designated as "Best" for water resources.

2. "**Better" Classification**

   a. CAFO

      i. High Water Use CAFO Site - If the site was within an area where a rural water system had either a sufficient supply ***or*** distribution capacity to provide 150,000 gallons per day, the site area was designated as "Better" for water resources.

      ii. Low Water Use CAFO Site - If the site was within an area where a rural water system had either a sufficient supply ***or*** distribution capacity to provide thirty thousand 30,000 gallons per day, the site area was designated as "Better" for water resources.

b. AID

i. High Water Use AID Site - If the site was within an area where a rural water system had sufficient supply ***or*** distribution capacity to provide 410,000 gallons per day, the site area was designated as "Better" for water resources.

ii. Low Water Use AID Site - If the site was within an area where a rural water system had sufficient supply ***or*** distribution capacity to provide 30,000 gallons per day, the site area was designated as "Better" for water resources.

3. "Good" Classification

a. In the event the Rural Water System has neither supply nor distribution capacity to serve either a Low or High Water Use CAFO or Low Water Use AID as defined above, the site area was designated as "Good" for water resources if it was located within **two miles** of a river, stream or lake designated by SD DENR Administrative Rule 74:51:02 and 74:51:03 which assigns the following uses to rivers streams and lakes – domestic water supply, stock watering waters, irrigation waters, commerce and industry waters, cold water and warm water permanent fish life propagation waters. The analysis does not make any conclusions regarding the quantity or quality of the water source identified in SDDENR Administrative Rule 74:51:02 and 74:51:03. Only that the potential for a water source may exist. The designation as "Good" for water resources was not applied to High Water Use AID sites due to the water volume requirements of High Water Use AID sites and the lack of available data regarding the capacity of shallow aquifers. Therefore, High Water Use AID sites without a water resource designation of "Better" or "Best" were deemed unusable for the purpose of the analysis.

The site analysis sought to address whether or not the Rural Water System serving the region had excess water treatment capacity (supply) and their ability to serve potential properties (distribution). In order to address the issue of supply, the Central South Dakota Enhancement District contacted and requested location and capacity information from the rural water provider within Hyde County. The primary rural water system for Hyde County is Mid-Dakota Rural Water System (RWS). Mid-Dakota RWS takes water from the Missouri River through eastern South Dakota. Mid-Dakota RWS was requested to provide information regarding their available treated water capacity. The system was asked to notate on maps those geographic areas where distribution capacity existed which could provide water volumes at 30,000, 150,000, and 410,000 gallons per day, respectively.

Mid-Dakota RWS sent detailed maps illustrating approximate locations of water delivery capacity without conducting a hydraulic analysis on land areas. However, Mid-Dakota RWS expressed limitations on the possible supply of water to these areas stating larger users need to request service in the future and improvements may be needed. Mid-Dakota RWS identified approximately 42 miles of water lines that could service land areas potentially meeting the minimum High Water Use CAFO "Best" requirement of 150,000 gallons per day. Also, the rural water system identified nearly 76 miles of water lines that could service land areas potentially meeting the minimum Low Water Use CAFO "Best" requirement of 30,000 gallons per day. Mid-Dakota RWS stated that corelines have the delivery capacity to accommodate the High Water Use AID site "Best" requirement of 410,000 gallons per day. Mid-Dakota highlighted a 30 mile stretch of coreline from near Grey Goose that runs east to meet up and follow along Highway 14. The same 76 miles of water lines from Mid-Dakota, mentioned in the Low Water Use CAFO requirement can provide a source of water for a Low Water AID site, which also requires the 30,000 gallons per day.

APPENDIX 2: RESEARCH AND METHODOLOGY

This section describes the methodology utilized to evaluate the suitability of potential CAFO or AID development sites.

Step 1: Identification of Site Assessment Criteria

Table A1 lists the site assessment criteria identified as being necessary to conduct an analysis of potential sites. Utilizing these criteria as a guide, a variety of research methods were employed to compile the GIS data sets utilized within the analysis. Research efforts included the examination of local, regional, and state planning documents along with existing GIS data layers.

Table A1: Site Assessment Criteria

CAFO Criteria	AID Criteria
Access to County and State Road Network	Access to County and State Road Network
Proximity to Three-Phase Electricity Supply	Proximity to Three-Phase Electricity Supply
Proximity to Rural Water System	Proximity to Rural Water System
Capacity of Rural Water System	Capacity of Rural Water System
Location of Shallow Aquifer	Location of Shallow Aquifer
Buildable Parcel	Buildable Parcel
Existing Zoning Districts/Land Use Plans	Existing Zoning Districts/Land Use Plans
Proximity to Rural Residences & Communities	Proximity to Communities
County CAFO Zoning Setback Requirements	Proximity to Rail

Step 2: Evaluation of Site Assessment Criteria

After developing the data sets in **Table A1**, the analysis identified those site locations that:

1. Complied with zoning guidelines; and
2. Were in close proximity to infrastructure necessary to support either CAFO or AID development.

<u>Concentrated Animal Feeding Operation (CAFO) Analysis</u>

The GIS analysis removed all parcels within the County from consideration that:

1. Were not within one mile of a County or State road;
2. Were not within two miles of three-phase electric power;
3. Did not meet the minimum standards for available water;
4. Did not contain a buildable footprint of at least 40 acres.

After applying the buildable footprint requirement to each site, the availability of necessary infrastructure was incorporated into the analysis. The general location of available water, electric and road infrastructure was applied to the remaining sites to establish “Good”, “Better” and “Best” hierarchy of potential development sites. **Table A2** exhibits the minimum requirements necessary for a site to be classified as “Good”, “Better” or “Best” for **CAFO development**.

Table A2: CAFO Hierarchy Classification Requirements

Location Criteria	Description	Good	Better	Best
Roads	Site is adjacent to County/State hard surface road		X	X
	Site is within one (1) mile of a County/State road	X		
Water	Site is adjacent to rural water system area that has both supply and distribution capacity to provide 150,000 gallons per day or 30,000 gallons per day			X
	Site is adjacent to or within rural water system area that has either supply or distribution capacity to serve either 150,000 gallons per day or 30,000 gallons per day		X	
	Site is within two (2) miles of a river, stream or lake designated by SD DENR Administrative Rule 74:51:02 and 74:51:03 which assigns the following uses to rivers streams and lakes – domestic water supply, stock watering waters, irrigation waters, commerce and industry waters, cold water and warm water permanent fish life propagation waters	X		
Electricity	Site is adjacent to three-phase power			X
	Site is within one (1) mile of three-phase power		X	
	Site is within two (2) miles of three-phase power	X		
Zoning	Site meets county zoning setback requirements	X	X	X
Buildable Parcel	Site contains buildable area of at least forty (40) acres	X	X	X

Agriculturally-related Industrial Development (AID)

The GIS analysis removed all parcels within the County from consideration that:

1. Were not within one mile of a County or State hard surface road;
2. Were not within two miles of three-phase electric power;
3. Were not within one mile of rail, if applicable;
4. Were not within one mile of a community or at locations identified by the county
5. Did not meet the minimum standards for available water;
6. Did not contain a buildable footprint of at least 40 acres.

After applying the required location based site assessment criteria to each site, the availability of necessary infrastructure was incorporated into the analysis. The general location of available water, electric, rail and road infrastructure was applied to the remaining sites to establish "Good", "Better" and "Best" hierarchy of potential development sites. **Table A3** exhibits the minimum requirements necessary for a site to be classified as "Good", "Better" or "Best" **for AID development**.

Table A3: AID Hierarchy Classification Requirements

Location Criteria	Description	Good	Better	Best
Roads	Site is adjacent to County/State hard surface road		X	X
	Site is within one (1) mile of a County/State hard surface road	X		
Rail	Site is adjacent to rail facility			X
	Site is within one half ½ mile of rail facility		X	
	Site is within one (1) mile of rail facility	X		
Water	Site is adjacent to rural water system area that has both supply and distribution capacity to provide 410,000 gallons per day or 30,000 gallons per day			X
	Site is adjacent to or within rural water system area that has either supply or distribution capacity to serve either 410,000 gallons per day or 30,000 gallons per day		X	
	Site is within two (2) miles of a river, stream or lake designated by SD DENR Administrative Rule 74:51:02 and 74:51:03 which assigns the following uses to rivers streams and lakes – domestic water supply, stock watering waters, irrigation waters, commerce and industry waters, cold water and warm water permanent fish life propagation waters *	X		
Electricity	Site is adjacent to three-phase power			X
	Site is within one (1) mile of three-phase power		X	
	Site is within two (2) miles of three-phase power	X		
Zoning	Site is zoned for commercial/industrial development			X
	Site is identified in land use plan for commercial/industrial development		X	
	Site is neither identified or zoned for commercial/industrial development	X		
Proximity to Community	Site is within one (1) mile of community	X	X	
Buildable Parcel	Site contains buildable area of at least forty (40) acres	X	X	X

* Rivers, streams, and lakes designated by SD DENR Administrative Rule 74:51:02 and 74:51:03 are not used for High Water Use AID site analysis as they require specific Rural Water System Supply and Distribution Capacities

Step 3: Site Development Recommendations

Based on the analysis, **27** sites were classified as Good, Better, or Best for CAFO development **(Table A4)** and **82** sites were classified as Good, Better, or Best for AID development **(Table A5).**

While this study only identifies those sites that met the required criteria for the analysis, it should be noted that other sites within Hyde County may be satisfactory for CAFO and AID development. Sites not within the specified distance of a hard-surfaced County or State road or that do not have desired infrastructure (rail, water, power) within close proximity do not necessarily negate their development potential.

Table A4:
Hyde County CAFO Sites by Hierarchy Classification

CAFO Site Classification	Good Sites	Better Sites	Best Sites
Low Water CAFO	11	0	16
High Water CAFO	2	0	0

Table A5:
Hyde County AID Sites by Hierarchy Classification

AID Site Classification	Good Sites	Better Sites	Best Sites
Low Water AID	79	3	0
High Water AID	78	3	0

APPENDIX 3: CONTACT INFORMATION

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