

KANSAS

Rapid Watershed Assessment

Prairie Dog Creek Watershed Hydrologic Unit Code – 10250015



December 2007

Produced by:

**U.S. Department of Agriculture
Natural Resources Conservation Service
760 South Broadway
Salina, Kansas 67401**

**Kansas Department of Health and Environment
Bureau of Water
Watershed Management Section
1000 S.W. Jackson
Topeka, Kansas 66612**



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Resource Profile

1.0 Purpose

This rapid watershed assessment (RWA) organizes resource information into one document that local conservationists, units of government, and others can use to identify existing resource conditions and conservation opportunities. This will enable the user to direct technical and financial resources to the local needs in the watershed. This RWA provides a brief description of the Prairie Dog Creek sub-basin's natural resources, resource concerns, conservation needs, and ability to resolve natural resource issues and concerns.

2.0 Introduction

The Prairie Dog Creek 8-Digit Hydrologic Unit Code (HUC) sub-basin is comprised of approximately 660,000 acres in northwest Kansas and includes portions of Rawlins, Thomas, Decatur, Sheridan, Norton, and Phillips counties. This sub-basin drains into the Republican River as it flows from southwest to northeast into Nebraska. According to the National Land Cover Data (NLCD), approximately 51 percent of the sub-basin is in cropland; 43 percent is in grassland, pasture, and hay; and the rest is in other various land uses.

Relief Map



Resource concerns are numerous in the sub-basin. They include, but are not limited to, soil erosion, soil condition, water quantities, surface water quality, air quality, plant conditions, and fish and wildlife habitat. Economic issues relating to risk and uncertainty, as well as profitability from agricultural production will affect acceptance and implementation of conservation on agricultural lands in the sub-basin.

It is estimated that there are approximately 441 farms with average size of 1,307 acres in the Prairie Dog Creek sub-basin.

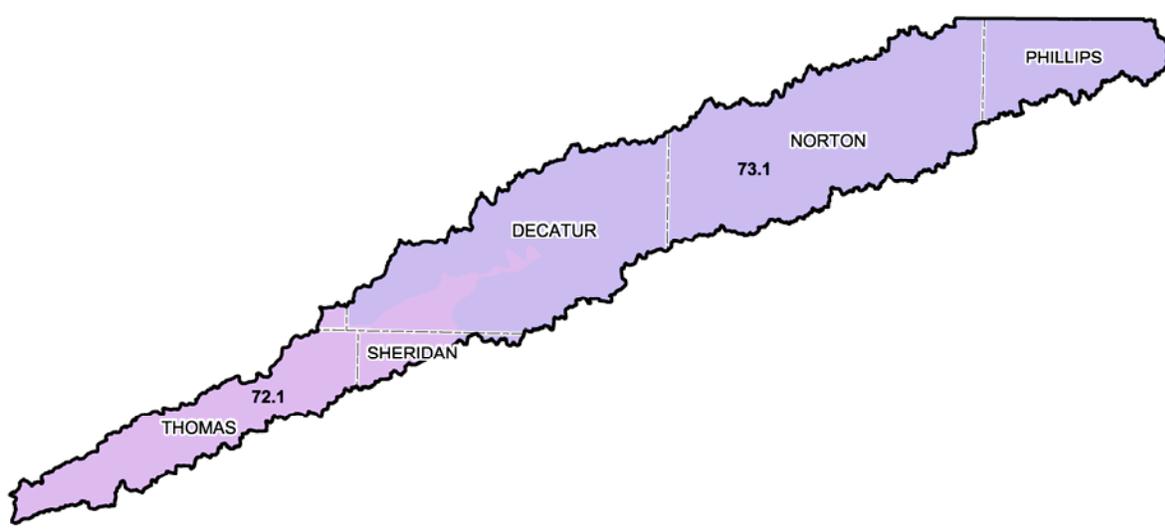
Six Natural Resources Conservation Service (NRCS) field offices, 6 county conservation districts, and two Resource Conservation and Development (RC&D) areas (Western Prairie and Solomon Valley) provide conservation assistance in the sub-basin.

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3.0 Physical Description

The physical description of the Prairie Dog Creek sub-basin provides detailed information so that the user can better understand the natural resources associated with this geographical land unit.

3.1 Common Resource Area (CRA) Map¹



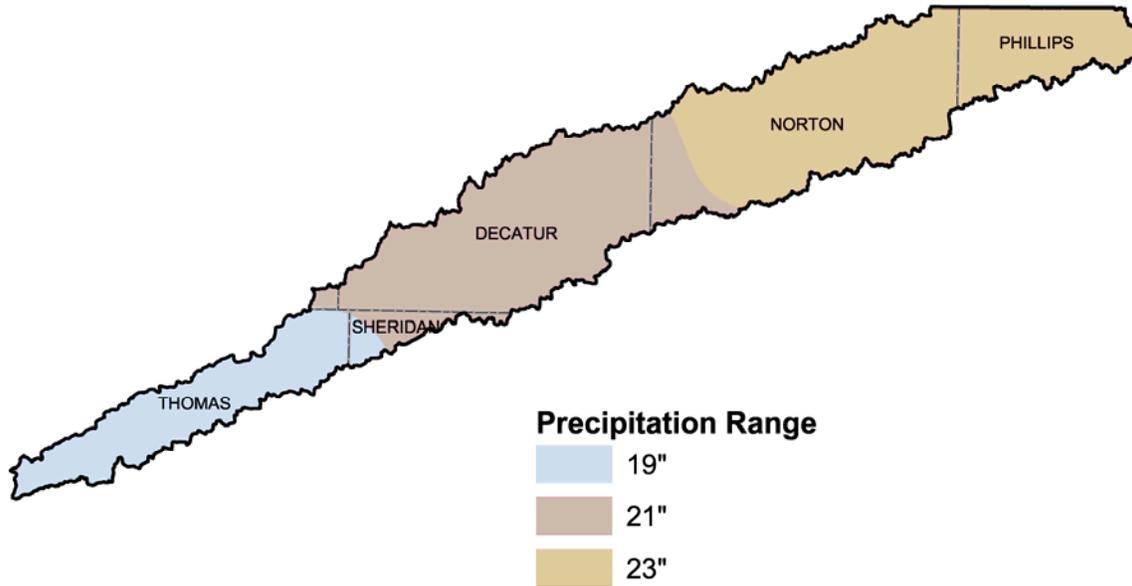
72.1 – Central High Tableland: The Central High Tableland CRA is broad, level to gently rolling, loess mantled tableland. Local relief is measured in tens of feet on the tableland and major river valleys are bordered by steep slopes. Soils are deep on the ridgetops and moderately deep to shallow on the sideslopes. Presettlement vegetation was short grass prairies. Nearly all of this area is in cropland, both dryland small grain crops and irrigated corn and grain sorghum.

73.1 – Rolling Plains and Breaks: The Rolling Plains and Breaks CRA is dissected plains having broad undulating to rolling ridgetops, loess mantled, and hilly to steep sideslopes. Local relief reaches 300 feet and is dissected with narrow drainage ways and river valleys. Soils are deep on the ridgetops and moderately deep to shallow on the sideslopes. Presettlement vegetation was mid grass prairies. Most of this land is in farms, both small grain crops and native grasses.

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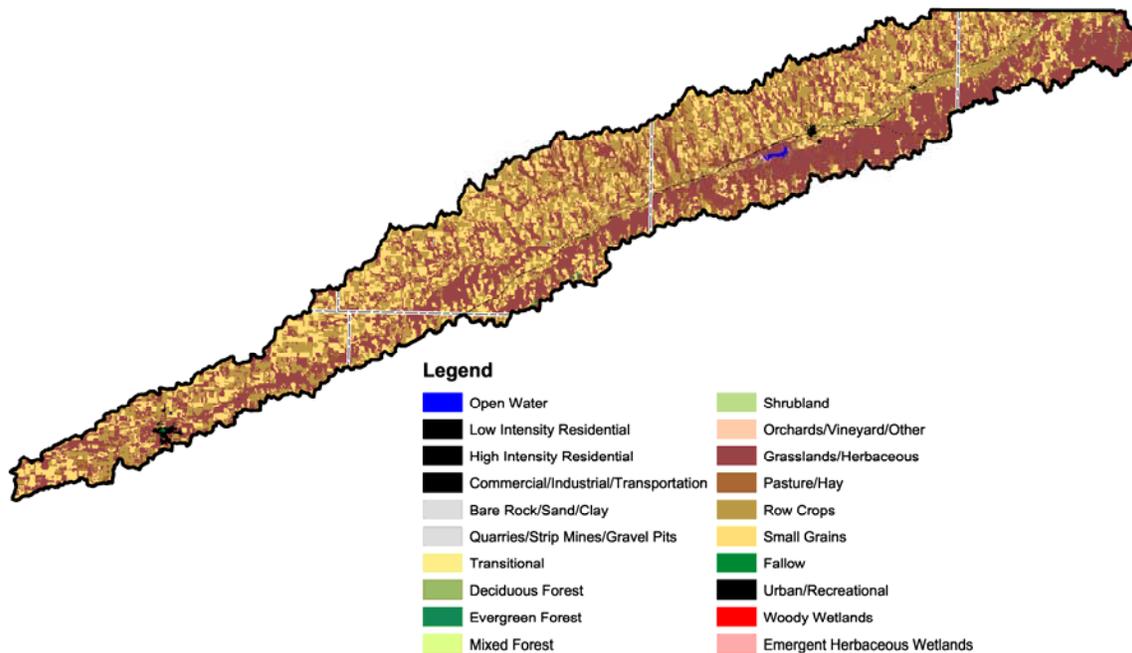
3.2 Precipitation Map^{/2}

The map below depicts the average precipitation occurring within the sub-basin.



3.3 Land Use and Land Cover Distribution Map^{/3}

The map below represents the distribution of land cover and land use as defined by the NLCD.



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3.3.1 Land Use and Land Cover Summary Table³

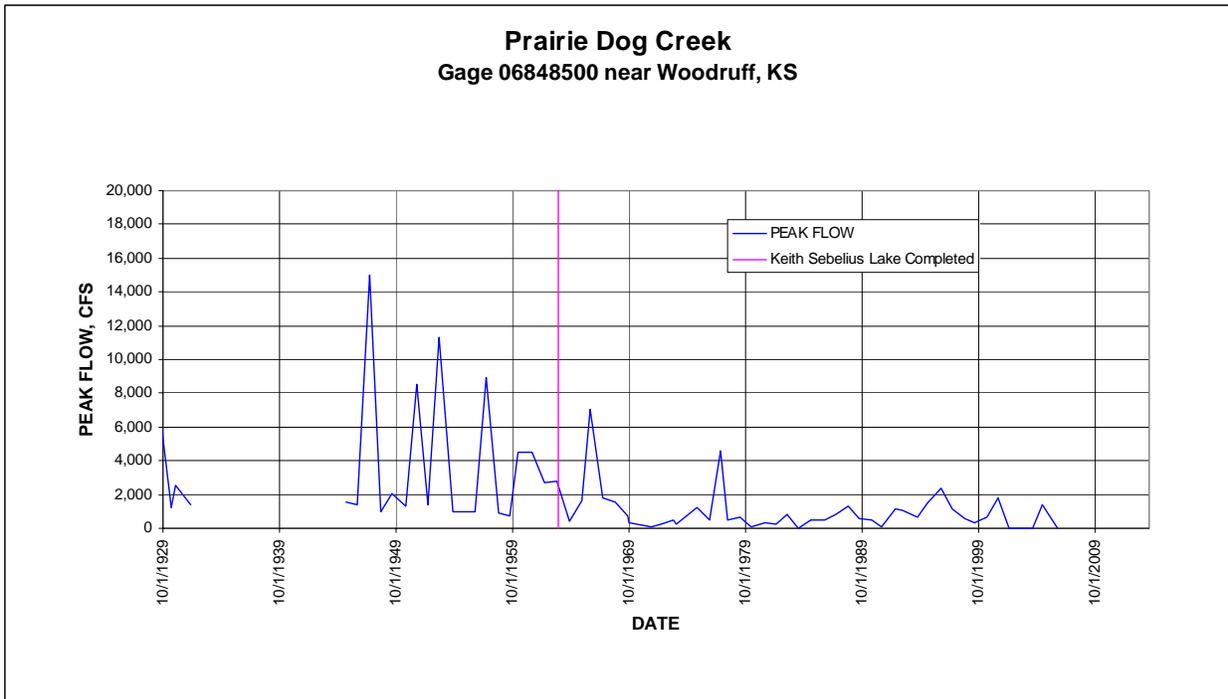
Land Cover/Land Use	Ownership							
	Public		Private		Tribal		Totals	%
	Acres	%	Acres	%	Acres	%	Acres	
Open Water	2,500 ^b	*	625	*			625	*
Low Intensity Residential			1,802	*			1,802	*
High Intensity Residential			113	*			113	*
Commercial/Industrial/ Transportation			2,104	*			2,104	*
Bare Rock/Sand/Clay			298	*			298	*
Deciduous Forest			3,957	1			3,957	1
Evergreen Forest			186	*			186	*
Shrubland			3	*			3	*
Grasslands/Herbaceous	5,500	1	275,734	42			281,234	43
Pasture/Hay			33,235	5			33,235	5
Row Crops			169,034	26			169,034	26
Small Grains			166,724	25			166,724	25
Fallow			229	*			229	*
Urban/Recreational			99	*			99	*
Emergent Herbaceous Wetlands			202	*			202	*
HUC Totals^a	5,500	1	654,346	99			659,846	100
<p>^aLess than 1 percent of total acres ^aTotals are approximate due to rounding and small, unknown acreages ^bNot accounted for in NLCD data, surface area of Keith Sebelius Reservoir</p>								
<u>Special Considerations for This 8-Digit HUC:</u>								
<ul style="list-style-type: none"> ▪ Small grains and row crops are the predominant commodities grown in rotation on 51 percent of the watershed (approximately 335,758 acres) ▪ Grasslands/Herbaceous and Pasture/Hay make up approximately 48 percent of the watershed (approximately 314,469 acres) ▪ Forest makes up less than 1 percent of the watershed (approximately 4,143 acres) ▪ Urban land comprises less than 1 percent of the watershed (approx. 4,019 acres) 								
Irrigated Lands⁴	Percent of Cropland				Percent of HUC			
Gravity	5				3			
Pressure	7				4			

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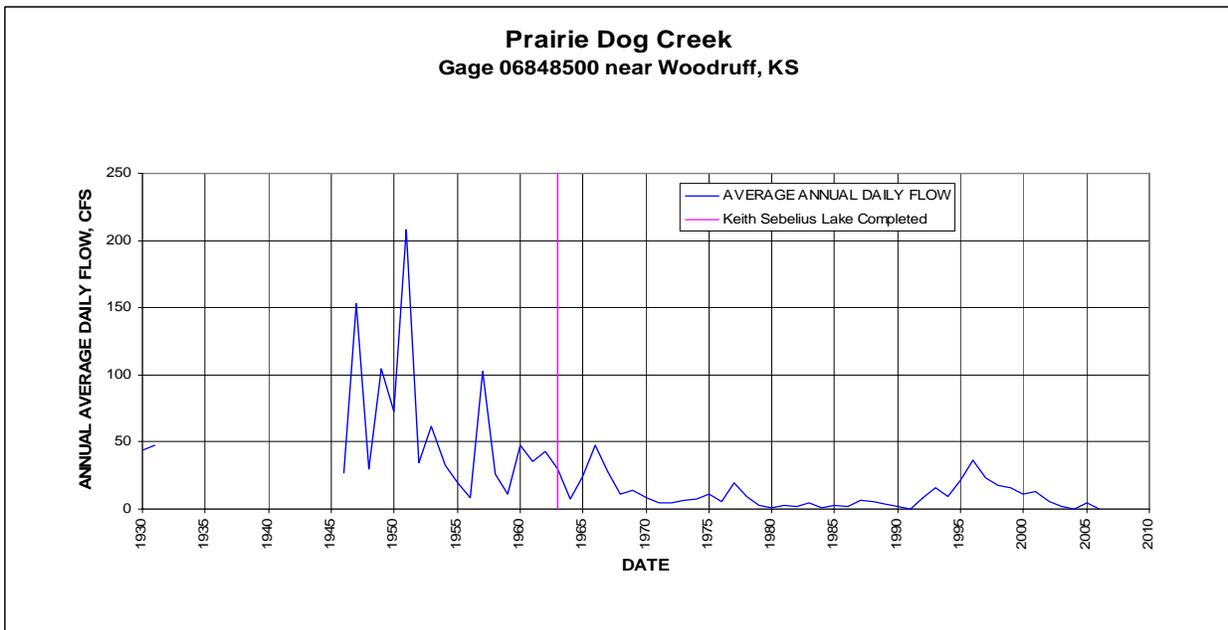
3.4 Stream Flow Data⁴⁵

Stream flow data has been collected since late 1920s. There are three known U.S. Geological Survey (USGS) stream gage stations located within the sub-basin. For this assessment, data was collected from one stream gage station near Woodruff, Kansas.

Annual Peak Flow



Annual Average Discharge



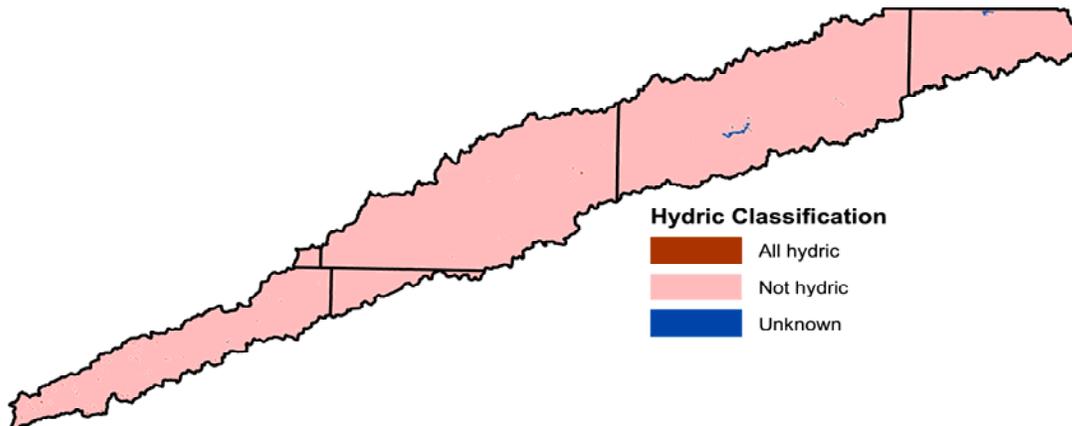
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3.5 Other Physical Descriptions

Stream Data ^{/6}	Total Miles of Streams – Major (24K Hydro Geographic Information System [GIS] Layer)	495 miles	
Land Cover/Use ^{/3} Based on a 100-foot stretch on both sides of all streams in the 24K Hydro GIS Layer		ACRES	PERCENT
	Open Water	567	1
	Low Intensity Residential	95	0
	High Intensity Residential	1	0
	Commercial/Industrial/Transportation	166	0
	Bare Rock/Sand/Clay	9	0
	Deciduous Forest	2,279	5
	Evergreen Forest	33	0
	Grasslands/Herbaceous	29,906	59
	Pasture/Hay	3,000	6
	Row Crops	7,519	15
	Small Grains	7,144	14
	Fallow	1	0
	Urban/Recreational	31	0
	Emergent Herbaceous Wetlands	72	0
	Total Acres of 100-foot Stream Buffers	50,822	100

3.6 Hydric Soils^{/12}

Hydric soils are those soils that are sufficiently wet in the upper part of the soil profile to develop anaerobic conditions during the growing season. These soils can include wetland areas which may provide benefits for aquifer recharge, floodwater holding capacity, habitat for numerous species of terrestrial and aquatic organisms, and a diversity of plants. These areas typically are protected at the federal level.



3.6.1 Hydric Soils Summary

Hydric Classification	Acres	Percent
All Hydric	502	< 1
Not Hydric	658,443	99
Unknown	901	< 1
Total	659,846	100

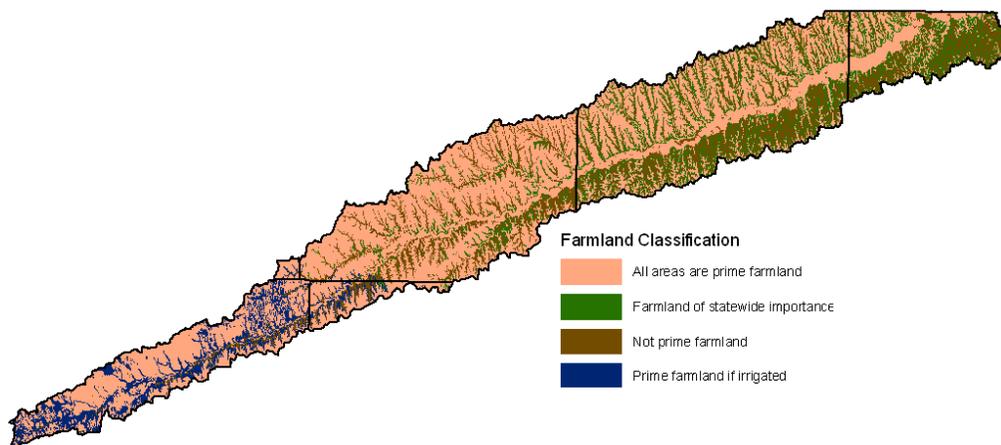
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3.7 Farmland Classification ¹²

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also 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.

Unique farmland is land other than prime farmland used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce economically sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.

Farmland of statewide importance, or of local importance, is land other than prime farmland or unique farmland but also highly productive. Criteria for defining and delineating these lands are determined by the appropriate state or local agencies in cooperation with the USDA.



3.7.1 Farmland Classification Summary

Farmland Classification	Acres	Percent
All areas are prime farmland	397,310	60
Farmland of statewide importance	88,755	13
Not prime farmland	130,965	20
Prime farmland if irrigated	42,816	7
Total	659,846	100

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4.0 Resource Concerns

Resource concerns are issues related to the natural environment. Natural resources include soil, water, air, plants, animals, and humans (SWAPA+H). Local conservationists identified major resource issues by land use that affect the Prairie Dog Creek sub-basin.

4.1 Summary of Resource Concerns

Resource Concerns/Issues by Land Use								
SWAPA+H Concerns	Specific Resource Concern/Issue	Pasture/Hay	Grain Crops	Row Crops	Grazed Range	Forest	Wildlife	Urban
Soil Erosion	Sheet and Rill		X	X				
	Wind		X	X				
	Ephemeral Gully		X	X				
Soil Condition	Organic Matter Depletion		X	X				
	Compaction		X	X				
	Contaminants: Animal Waste and Other Organics - P		X	X				
	Damage from Sediment Deposition*		X	X				
Water Quantity	Inefficient Water Use on Irrigated Land		X	X				
	Excessive Nutrients and Organics		X	X				
Water Quality, Surface	Excessive Nutrients and Organics		X	X				
	Excessive Suspended Sediment and Turbidity		X	X				
Air Quality	Chemical Drift*		X	X				
Plant Condition	Productivity, Health and Vigor				X			
	Noxious and Invasive Plants				X		X	
Animal: Fish and Wildlife	Inadequate Cover/Shelter		X	X				
Animal: Domestic	Inadequate Stock Water				X			
Human, Economics	High Risk & Uncertainty		X	X				
	Low or Unreliable Profitability		X	X	X			

*Kansas NRCS does not list as a resource concern and has not established quality criteria to address this concern.

Grain and Row Crops

- Residue, nutrient, and pest management; vegetative practices; and structural practices are necessary to control erosion, protect water quality, and improve soil conditions.
- Misapplication of irrigation leads to inefficient water use on irrigated lands.
- Over application of nutrients and organics has created surface water quality concerns.
- Wind, sheet and rill, and ephemeral gully erosion are concerns in part due to lack of residue and/or needed erosion control methods on cropland.

Grazed Range

- Rangeland is commonly over-utilized, affected by timing of grazing, in turn affecting productivity, health, and vigor.
- Over-utilization has lead to invasive plants entering the resource.
- Inadequate livestock water supply affects grazing distribution, and health and condition of animals.

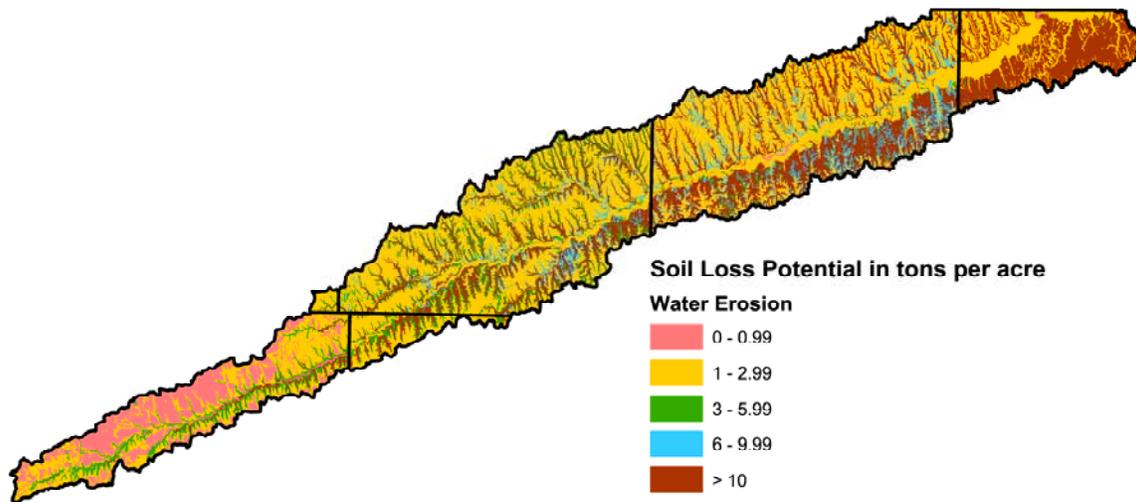
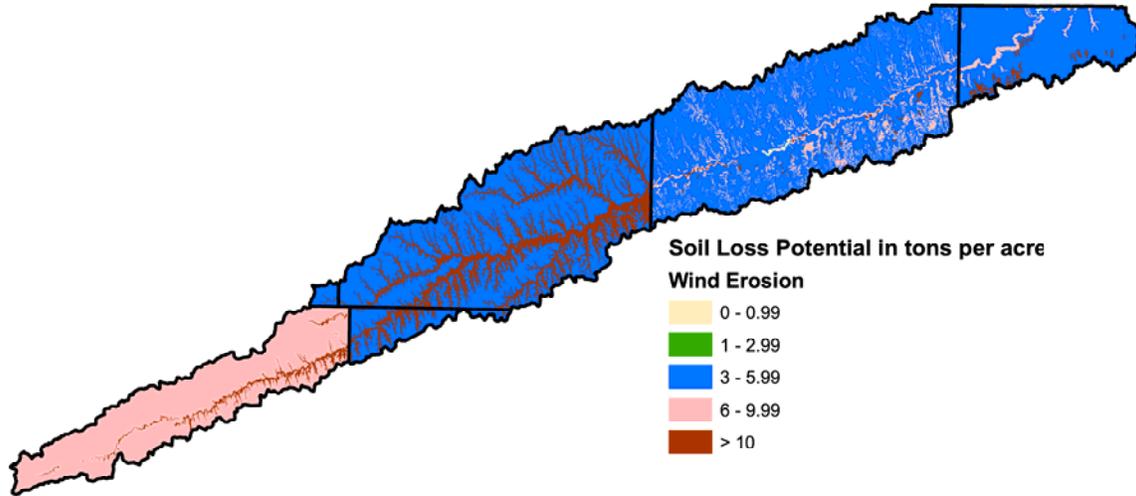
General

- Inputs needed to manage large agricultural operations, costs of production, and commodity values require capital outlay and place financial burdens on landowners and producers.

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4.2 Potential Soil Loss⁴

Soil loss through wind and water erosion is critical to consider for dealing with air and water quality issues. As an airborne particulate, soil particles can be a major contributor to air quality concerns. Soil loss through water erosion causes water quality impairments as pollutants are attached to soil colloids and are transported into the stream systems. Erosion by wind and water has been identified as concerns in the watershed. The following maps developed with the Soil Survey Geographic (SSURGO) Database display soil loss potential within the Prairie Dog Creek sub-basin.



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4.3 Water Quality Conditions¹⁴

The Kansas Department of Health and Environment (KDHE) is responsible for monitoring water quality conditions in the state of Kansas. This section has been provided by KDHE. For up-to-date water quality condition information, visit the KDHE Web site www.kdheks.gov/befs/download/KS2006_305b_Reoprts.pdf.

4.3.1 Confined Animal Feeding Operations (CAFO)

In Kansas, confined animal feeding operations (CAFOs) with an animal unit capacity of 300 or more must register with the KDHE. Waste disposal practices and the wastewater effluent quality of these registered CAFOs are closely monitored by the KDHE to determine the need for runoff control practices or structure in order to protect the waters of the state of Kansas. Because of this monitoring, registered CAFOs are not considered a significant threat to water resources within the watershed. A portion of the state's livestock population exists on small, unregistered farms. These small, unregistered livestock operations may contribute a significant source of fecal coliform bacteria and nutrients, depending on the presence and condition of waste management systems and proximity to water resources.

Animal Type	Dairy	Feedlot	Poultry	Swine	Truck-wash	Other
No. of Permitted Farms	1	19	1	17	0	0
No. of Permitted Animal Units	70	35,466	2,536	28,043	0	0

Note: All animal units based upon federal animal units as of 10/01/07.

4.3.2 Public Water Supply Systems

In the state of Kansas, a public water supply system is defined by Kansas Statutes Annotated (K.S.A.) 65-162a and Kansas Administrative Regulations (K.A.R.) 28-15a-2 as a "system for delivery to the public of piped water for human consumption that has at least 10 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year." These systems are regulated by the state to assure the citizenry safe and pathogen-free drinking water. The KDHE oversees more than 1,042 statewide public water supply systems including municipalities, rural water districts, and privately owned systems. These systems may serve a small community of several families to a city of more than 300,000 persons.

There are 31 active public water supply sites located within the HUC 8 10250015 watershed. The vast majority of public water is drawn from groundwater. Alluvial aquifers of Prairie Dog Creek and its tributaries are the source for many wells in the northern portion of the watershed, while the High Plains and Dakota aquifers supply water for the wells in the southern portion. Surface water quality is affected by a lack of dissolved oxygen, which is a significant concern within Prairie Dog Creek and a low-level priority in Norton Lake.

Source Water Assessment: The 1996 amendments to the Safe Drinking Water Act required each state to develop a Source Water Assessment Program (SWAP). Additionally, each state was required to develop a Source Water Assessment (SWA) for each public water supply that treats and distributes raw source water. In Kansas, there are approximately 763 public water supplies that required SWAs. A SWA includes the following: delineation of the source water assessment area, inventory of potential contaminant sources, and susceptibility analysis. The SWA must also be made available to the public. KDHE's Watershed Management Section has implemented the Kansas SWAP plan, and all SWAs are completed.

The Safe Drinking Water Act did not require protection planning to be part of the SWAP process. On a voluntary basis, KDHE encourages public water supplies and their surrounding communities to use the SWAs as the foundation for future protection planning efforts. Source water protection information will be posted on this site as it is compiled.

To obtain a copy of SWAs in this watershed please visit www.kdheks.gov/nps/swap/SWreports.html.

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4.3.3 Designated Uses

According to the Kansas Surface Water Register, the most *common* designated uses for streams and rivers in this watershed include expected aquatic life use, primary and secondary contact recreation, domestic water supply, food procurement, industrial water supply, groundwater recharge, irrigation water supply, and livestock water supply.

LAKE NAME	AL	CR	DS	FP	GR	IW	IR	LW
Colby City Lake	E	B	O	X		O	O	O
Norton Lake (Sebelius Lake)	E	A	X	X		X	X	
Norton W.A.	E			X				

AL = Aquatic Life Support	GR = Groundwater Recharge
CR = Contact Recreation	IW = Industrial Water Supply
DS = Domestic Water Supply	IR = Irrigation Water Supply
FP = Food Procurement	LW = Livestock Water Supply

E = Expected Aquatic Life Use Water
 S = Special Aquatic Life Use Water
 A = Primary contact recreation stream segment is a designated public swimming area
 B = Primary contact recreation stream segment is by law or written permission of the landowner open to and accessible by the public
 C = Primary contact recreation stream segment is not open to and accessible by the public under Kansas law
 a = Secondary contact recreation stream segment is by law or written permission of the landowner open and accessible by the public
 b = Secondary contact recreation stream segment is not open to and accessible by the public under Kansas law
 X = Referenced stream segment is assigned the indicated designated use
 O = Referenced stream segment does not support the indicated designated use

Stream Name	AL	CR	DS	FP	GR	IW	IR	LW
Battle Creek	E	b						
Big Timber Creek	E	b						
Buffalo Creek	E	b	X	X				
Dry Creek	E	b						
Elk Creek	E	b	X	X				
Fancy Creek	E	b	X	X				
Horse Creek	E	b	X	X				
Jack Creek	E	b						
Plum Creek	E	b						
Prairie Dog Creek	E	C	X	X	X	X	X	X
Prairie Dog Creek	E	C	X	X	X	X	X	X
Prairie Dog Creek	E	C	X	X	X	X	X	X
Prairie Dog Creek	E	C	X	X	X	X	X	X
Prairie Dog Creek	E	C	X	X	X	X	X	X
Prairie Dog Creek, N Fork	E	b	X	X	X	X	X	X
Prairie Dog Creek, N Fork	E	b	X	X	X	X	X	X
Robinson Creek	E	b						
Sand Creek	E	b	X					
Spring Creek	E	b						
Walnut Creek	E	b						
Walnut Creek	E	b						
Wildcat Creek	E	b	X					

AL = Aquatic Life Support	GR = Groundwater Recharge
CR = Contact Recreation	IW = Industrial Water Supply
DS = Domestic Water Supply	IR = Irrigation Water Supply
FP = Food Procurement	LW = Livestock Water Supply

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E = Expected Aquatic Life Use Water
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 A = Primary contact recreation stream segment is a designated public swimming area
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 X = Referenced stream segment is assigned the indicated designated use
 O = Referenced stream segment does not support the indicated designated use

4.3.4 Total Maximum Daily Loads

Total Maximum Daily Loads (TMDLs) are limits on the amount of pollutant entering a stream or lake, while still attaining water quality standards. The water quality standards identify the designated uses of streams, lakes, and wetlands and the level of water quality necessary to fully support these uses. The process of developing TMDLs in Kansas determines:

1. The pollutants causing water quality impairments.
2. The magnitude of the impairment relative to applicable water quality standards.
3. The overall level of pollution reduction needed to attain achievement of water quality standards.
4. The allocation of pollutant loads to be distributed among point and non-point sources in the watershed affecting the water quality limited water body.
5. Suggested corrective actions and management practices to be implemented in order to achieve the load allocations, TMDLs, and water quality standards.
6. The monitoring and evaluation strategies needed to assess the impact of corrective actions in achieving TMDLs and water quality standards.
7. Provisions for future revision of TMDLs based on those evaluations.

The following table shows the percentage of stream miles within HUC 8 10250015 that are listed on the 303d list. Section 303(d) of the Clean Water Act requires states to identify and list all water bodies where state water quality standards are not being met. Thereafter, TMDLs comprising quantitative objectives and strategies have been developed for these impaired waters within the watershed in order to achieve their water quality standards.

Stream Data	303d/TMDL Listed Streams (DEQ)	108	39%
<i>* Percent of Total Miles of Streams in HUC</i>			

2006 Impaired Waters for HUC 8 10250015 with TMDLs

Stream Segment	Stream/Watershed/Lake with TMDL	Priority for TMDL Implementation	Impairments
	Prairie Dog Creek Watershed including Buffalo Creek, Fancy Creek, Sand Creek, Horse Creek, North Fork Prairie Dog Creek, Jack Creek, Battle Creek, Elk Creek, Spring Creek, Wildcat Creek, Walnut Creek, Dry Creek, and Robinson Creek	High	Dissolved Oxygen
	Colby City Lake	Low	Eutrophication
	Norton Lake (Sebelius Lake)	Low	Eutrophication including Dissolved Oxygen and pH

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2006 Impaired Waters for HUC 8 10250015 needing TMDLs

Impaired Stream/Lake	Impairment
None	N/A

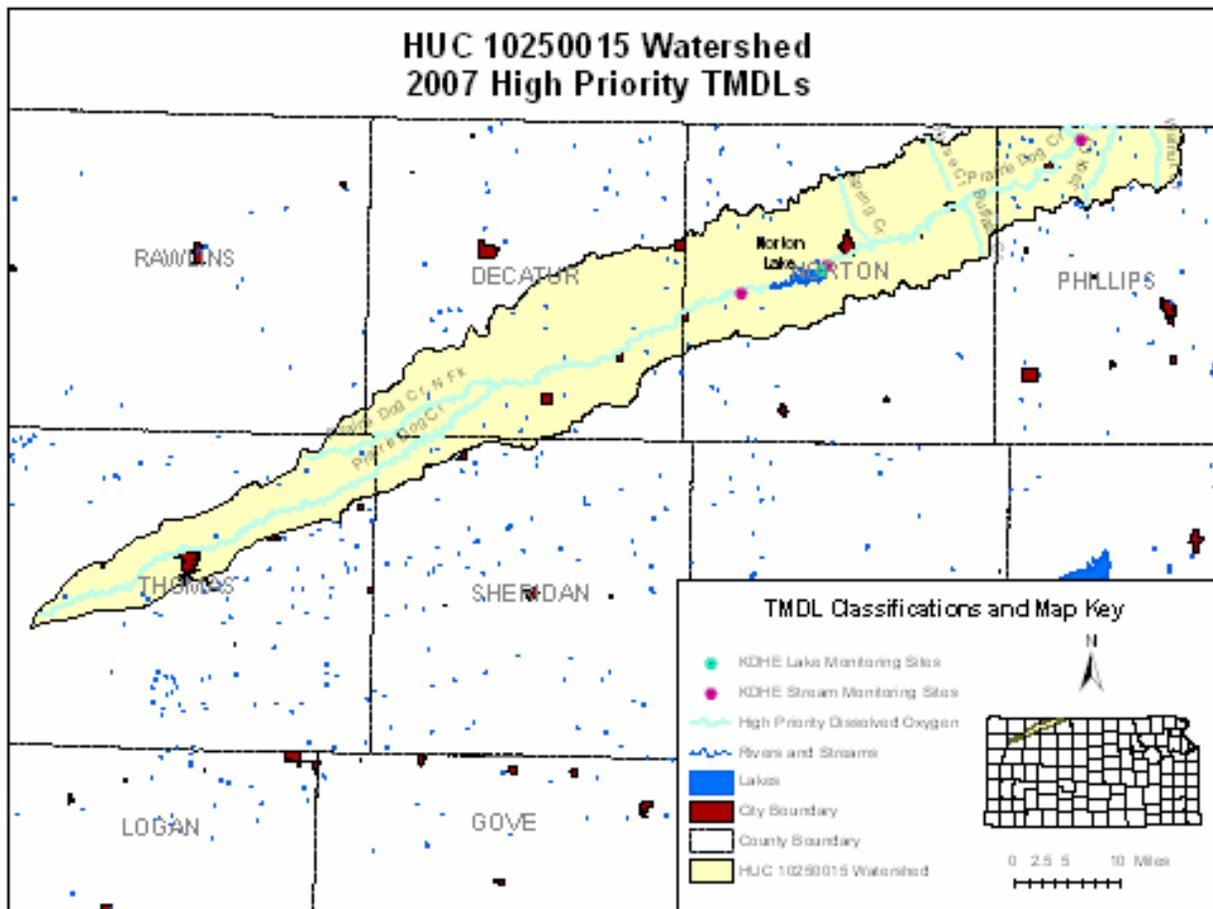
For additional TMDL information or to download the TMDL report, please visit <http://www.kdheks.gov/tmdl/index.htm>.

Impairment definitions:

Dissolved Oxygen: Refers to the amount of oxygen available to aquatic life within the water column. State water quality standards require a stream or lake to have at least 5 mg/L of dissolved oxygen.

Eutrophication: Excessive nutrients entering lake causing an increase in algae to nuisance conditions, impairing aquatic life, recreation, and water supply uses.

pH: Measure of the alkalinity or acidity of water. The scale ranges from 0 to 14 with 7.0 being neutral, 0 to 7 being acidic, and 7 to 14 being basic or alkaline.



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4.4 Threatened and Endangered Species Status⁷

The Endangered Species Act provides protection to animals that are experiencing a decline in population, or nearing extinction. The U.S. Fish and Wildlife Service and the Kansas Department of Wildlife and Parks have authority over Threatened and Endangered Species in Kansas. The table below lists species of concern and their federal and state designation(s).

LISTED THREATENED AND ENDANGERED SPECIES			
Species Common Name (<i>Scientific name</i>)	Threatened (T), Endangered (E), Proposed (P), Candidate (C)	Designated Critical Habitat (Y)es/(N)o	Listing: Federal (F), State (S)
Animals, Vertebrates – Birds			
Least Tern (<i>Sterna antillarum</i>)	E/E	N	F/S
Peregrine Falcon (<i>Falco peregrinus</i>)	E	N	S
Piping Plover (<i>Charadrius melodus</i>)	T/T	N	F/S
Snowy Plover (<i>Charadrius alexandrinus</i>)	T	N	S
Whooping Crane (<i>Grus Americana</i>)	E/E	N	F/S
Bald Eagle (<i>Haliaeetus leucocephalus</i>)*	T/T	Y	F/S
Eskimo Curlew (<i>Numenius borealis</i>)	E/E	N	F/S
Animals, Vertebrate – Fishes			
Topeka Shiner (<i>Notropis topeka</i>)	E/T	N	F/S
Animals, Vertebrate – Mammals			
Eastern Spotted Skunk (<i>Spiloale putorius</i>)	T	N	S
Black-footed Ferret (<i>Mustela nigripes</i>)	T/T	N	F/S
*The Bald Eagle has been de-listed nationally (2007) but remains as a state listed species. The Bald Eagle remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.			

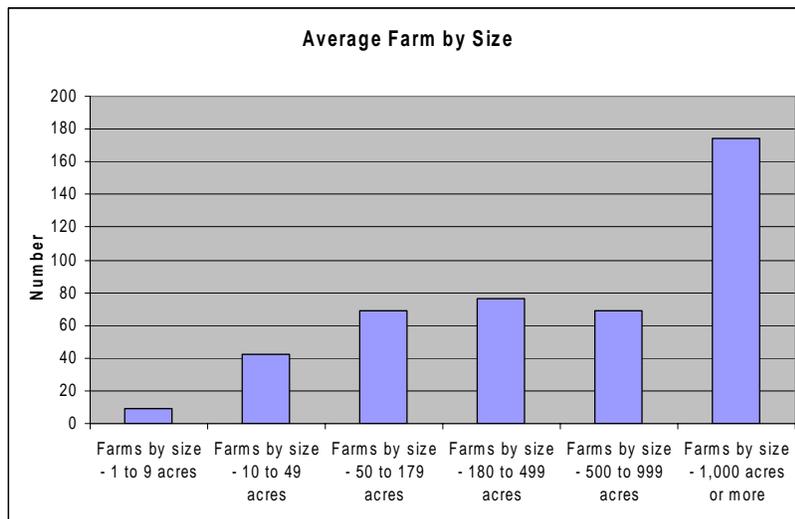
5.0 Census and Social Data (2000)⁸

Average Number of Farms: 441

- Average Farm Size: 1,307 acres

Number of Operators:

- Principal Operators by Primary Occupation (Avg.): 312



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5.1 Estimated Level of Willingness and Ability to Participate in Conservation⁹

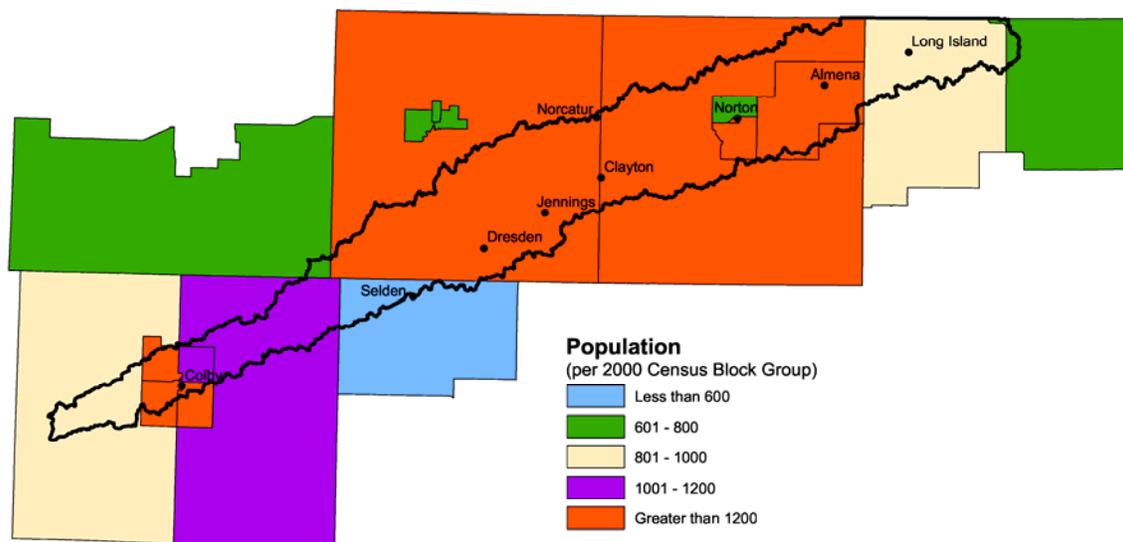
The Prairie Dog Creek sub-basin exhibits a likelihood of full participation in the first five years of the project with moderate adjustments in technical and financial assistance and conservation marketing. Management skills and a combination of educational assistance and technical assistance could be increased to improve the participation rate. On average, there are no concerns with the availability of technical assistance in the sub-basin. The existing information and education delivery system may need minor modifications to improve effectiveness. Existing financial incentives need to be expanded or increased to achieve successful participation rates in a reasonable amount of time.

5.2 Evaluation of Social Capital¹⁰

Social capital is defined as bonds of trust that arise between people interacting in everyday life. Local conservationists developed a summary of social capital for this sub-basin and concluded the following.

Collectively, communities in the Prairie Dog Creek sub-basin are reported to be somewhat effective at solving problems. Some small communities are willing to assist their neighbors by pooling their resources to overcome adversity. Dry climatic conditions over the past decade have affected the economic capital and led to a decreased state of social well-being, which decreases the community's ability to address local resource concerns.

5.3 Population Distribution Map (2000)



6.0 Conservation Progress

Conservation on the land is captured by the progress made by local landowners and operators addressing resource issues. Progress is accomplished through private, local, state, and federal funds. This data is current through the date the RWA was published. For up-to-date NRCS Performance Results System (PRS) information, visit <http://ias.sc.egov.usda.gov/prsreport2006/>.

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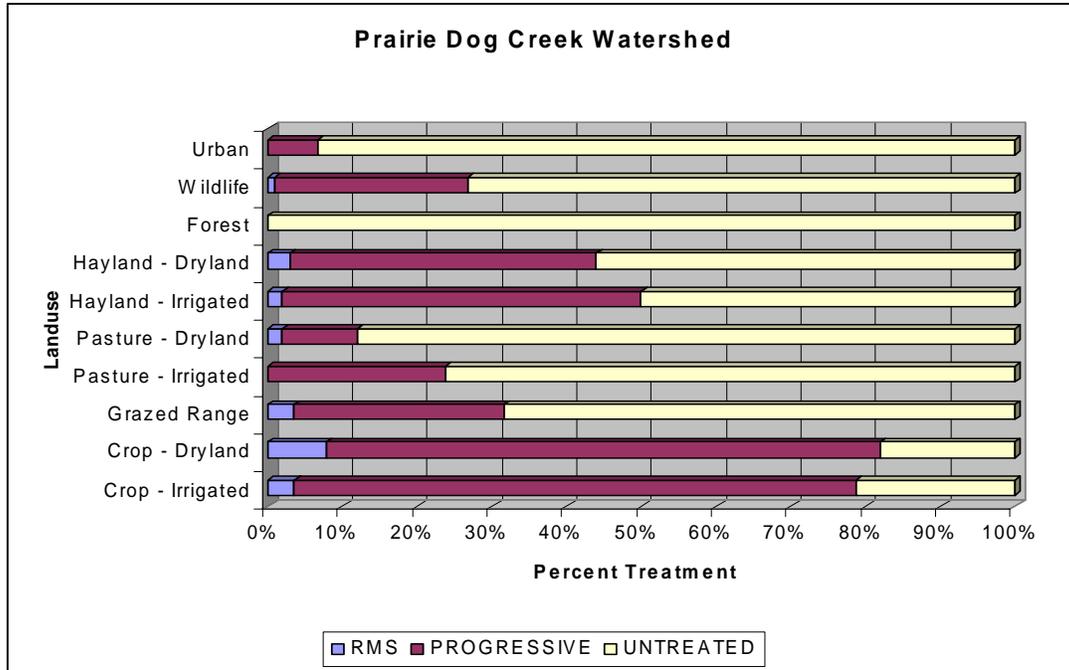
6.1 Reported Conservation Progress (Fiscal Years [FY] 2002 – 2007)

PRS Data	FY02	FY03	FY04	FY05	FY06	FY07	Avg/Year	Total
Total Conservation Systems Planned (ac)	10,668	15,997	N/A	14,578	19,174	14,483	14,980	74,900
Total Conservation Systems Applied (ac)	8,586	7,822	N/A	10,745	11,037	8,502	9,338	46,692
Conservation Treatment (Units/Acres)								
Nutrient Management (ac)	705	1,533	1,294	0	1,427	4,453	1,569	9,412
Pest Management (ac)	1,482	1,923	1,919	545	223	625	1,120	6,717
Pipeline (ft)	0	0	0	18,431	18,332	16,644	8,901	53,407
Prescribed Grazing (ac)	2,341	1,445	4,271	3,074	4,851	2,104	3,014	18,086
Range Planting (ac)	0	0	759	580	345	66	292	1,750
Residue Management, Mulch Till (ac)	1,257	311	1,443	2,983	1,681	924	1,433	8,599
Residue Management, No-Till/Strip Till (ac)	120	523	3,204	777	1,593	2,638	1,476	8,855
Residue Management, Seasonal (ac)	0	0	342	0	0	0	57	342
Restoration and Management of Rare and Declining Habitats (ac)	0	0	78	294	94	0	78	466
Sediment Basin (no)	0	0	0	4	0	0	1	4
Terrace (ft)	0	0	127,330	102,443	33,821	10,068	45,610	273,662
Tree/Shrub Establishment (ac)	10	0	2	0	0	0	2	12
Underground Outlet (ft)	0	0	0	72	0	292	61	364
Upland Wildlife Habitat Management (ac)	2,542	1,211	4,133	2,913	995	412	2,034	12,206
Use Exclusion (ac)	0	0	1,304	657	256	5	370	2,222
Waste Storage Facility (no)	0	0	0	2	0	0	0	2
Waste Utilization (ac)	0	0	360	1,139	333	1,525	560	3,357
Wastewater Treatment Strip (ac)	0	0	0	3	0	0	1	3
Water Well (no)	0	0	9	5	3	0	3	17
Watering Facility (no)	0	0	15	9	4	4	5	32
Wetland Enhancement (ac)	0	0	0	5	0	0	1	5
Wildlife Watering Facility (no)	0	0	0	0	2	0	0	2
Windbreak/Shelterbelt Establishment (ft)	12,719	1,813	27,039	620	580	0	7,129	42,771
Nutrient Management (ac)	705	1,533	1,294	0	1,427	4,453	1,569	9,412

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6.2 Cumulative Conservation Status

Conservation plans applied over the previous 10 years are projected in the following chart.



- Resource Management Systems (RMS) are conservation systems developed to address all identified resource concerns on a land unit or farm
- Progressive systems are conservation systems developed to address one or more identified resource concerns on a land unit or farm
- Progress over the last 10 years has been focused on:
 - Nutrient and pest management on cropland
 - Erosion control on cropland
- Range producers typically have not worked with NRCS, creating an opportunity for assistance

Note: Estimates are based on information received from local conservationists in the watershed.

6.3 Other Watershed Projects

Watershed Projects, Plans, Studies, and Assessments	
NRCS Watershed Projects ^{/11}	Watershed Plans, Studies, and Assessments ^{/12}
Name	Name
NONE	NONE
319 Projects, KDHE TMDL Plans ^{/16} , Watershed Restoration and Protection Strategy Plans ^{/13}	
Prairie Dog Creek Keith Sebelius Lake WRAPS Development	

6.4 Lands Removed from Production through Farm Bill Programs^{/14}

Conservation Reserve Program (CRP)^a: **15,776 acres**

a: Data from 2006 Farm Service Agency, CRP information

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7.0 Footnotes/Bibliography

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1. Common Resource Area Map – Information available online at <http://efotg.nrcs.usda.gov/treemenuFS.aspx>; select Section I, E. Maps, 2. Common Resource Area Maps (CRA).
2. Precipitation Map – U.S. Department of Agriculture, National Weather and Climate Service. Online reference information available at <http://datagateway.nrcs.usda.gov/>.
3. National Land Cover Data (NLCD) - Originator: U.S. Geological Survey (USGS). Information available online at <http://landcover.usgs.gov/natl/landcover.php>.
4. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>.
5. Kansas stream flow data available from the U.S. Department of the Interior, U.S. Geological Survey online at <http://waterdata.usgs.gov/ks/nwis/rt>.
6. Kansas Department of Health and Environment, Total Maximum Daily Loads (TMDL) Strategies, <http://www.kdheks.gov/tmdl/>.
7. U.S. Fish and Wildlife Service, Mountain-Prairie Endangered Species List, Kansas (January 2005) http://ecos.fws.gov/tess_public/SpeciesReport.do?lead=6&listingType=L. The Kansas Department of Wildlife and Parks, Threatened and Endangered Species, http://www.kdwp.state.ks.us/news/other_services/threatened_and_endangered_species.
8. Data were taken from the 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available.
9. Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, [Guide for Estimating Participation in Conservation](#), 2004. Four categories of indicators were evaluated: personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.
10. Social capital is an indicator of a community's ability and willingness to work together to solve problems. A high amount of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. A low amount of social capital typically results in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation is based on NRCS Technical Report Release 4.1, March, 2002: [Adding up Social Capital: an Investment in Communities](#). Local conservationists provided information to measure social capital.
11. Natural Resources Conservation Service, Kansas online information at: <http://www.ks.nrcs.usda.gov/programs/pl566/>.

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Footnotes/Bibliography (continued)

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12. Natural Resources Conservation Service, Web Soil Survey can be located on-line at:
<http://websoilsurvey.nrcs.usda.gov/app/>.
13. Kansas Department of Health and Environment, Bureau of Water, Watershed Management Section, <http://www.kdheks.gov/nps/wraps/index.htm>.
14. Natural Resources Conservation Service, Kansas, Program Information is located at:
<http://www.ks.nrcs.usda.gov/programs/>.

8.0 Additional On-line Resources

1. U.S. Environmental Protection Agency, EnviroMapper for Water,
http://map8.epa.gov/scripts/esrimap.dll?name=NHDMapper&Cmd=ZoomInByCat&qc=3&th=6&lc=00010200000110_0000&fipsCode=10250015.
2. U.S. Environmental Protection Agency, Surf Your Watershed at
http://cfpub.epa.gov/surf/huc.cfm?huc_code=10250015.