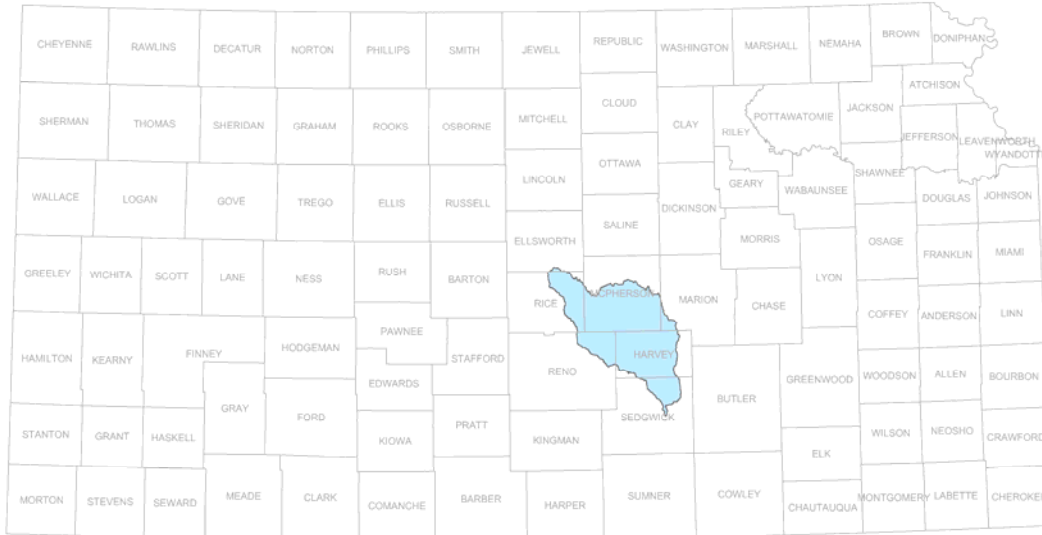


KANSAS

Rapid Watershed Assessment

Little Arkansas Watershed Hydrologic Unit Code – 11030012



December 2007

Produced by:

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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 Little Arkansas sub-basin's natural resources, resource concerns, conservation needs, and ability to resolve natural resource issues and concerns.

2.0 Introduction

The Little Arkansas 8-Digit Hydrologic Unit Code (HUC) sub-basin is comprised of approximately 909,600 acres in west central Kansas including Harvey, Marion, McPherson, Reno, Rice, and Sedgwick counties. According to the National Land Cover Data (NLCD), approximately 52 percent of the sub-basin is in grain and row crop; 43 percent is in grassland, pasture, and hay; and the rest is in other various land uses. This sub-basin is located in the Arkansas River Basin and drains into the Arkansas River as it flows from northwest to southeast through central Kansas.

Relief Map



Resource concerns are numerous in the sub-basin. They include, but are not limited to, soil erosion, soil condition, availability of water for irrigation, deteriorated surface and groundwater quality, air quality, deteriorating plant conditions, inadequate fish and wildlife requirements, and feed and water for livestock. Economic issues such as the high capital costs of crop production/farm operation, lack of available labor, and the high level of management required to operate the farm may delay the acceptance and implementation of conservation on agricultural lands in the sub-basin.

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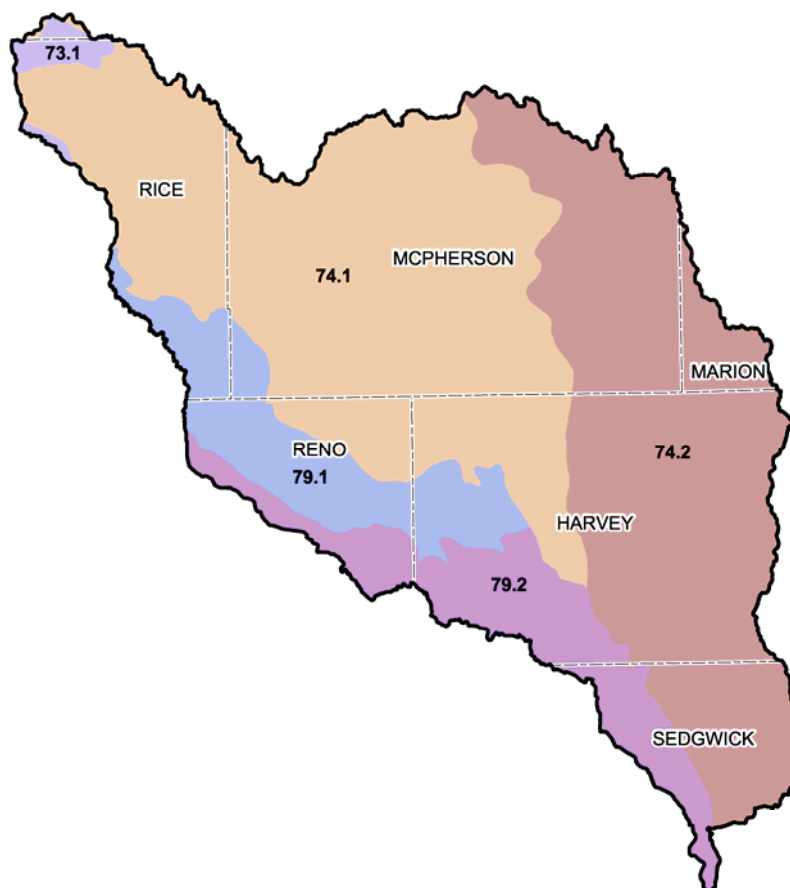
It is estimated that there are 1,680 farms with an average size of 520 acres in the Little Arkansas sub-basin. The two larger communities of McPherson and Newton fall within the boundaries of this watershed and contribute significantly to the social structure of the Lower Arkansas sub-basin.

Conservation assistance in the sub-basin is provided by 6 Natural Resources Conservation Service (NRCS) field offices, 6 county conservation districts, and 2 Resource Conservation and Development (RC&D) areas (Central Prairie and Flint Hills).

3.0 Physical Description

The physical description of the Little Arkansas 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) Map⁴¹



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 side slopes. 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 side slopes. Presettlement vegetation was mid grass prairies. Most of this land is in farms, both small grain crops and native grasses.

74.1 – Central Kansas Sandstone Hills: The Central Kansas Sandstone Hills CRA is undulating to hilly plains interrupted by escarpments in which Cretaceous sandstone bedrock is regularly exposed. Local relief reaches 300 feet and is dissected with broad river valleys. Soils are shallow to moderately deep underlain by sandstone or shale bedrock. Presettlement vegetation was mid grass prairies. Most of this land is in farms, both native grasses and cropland.

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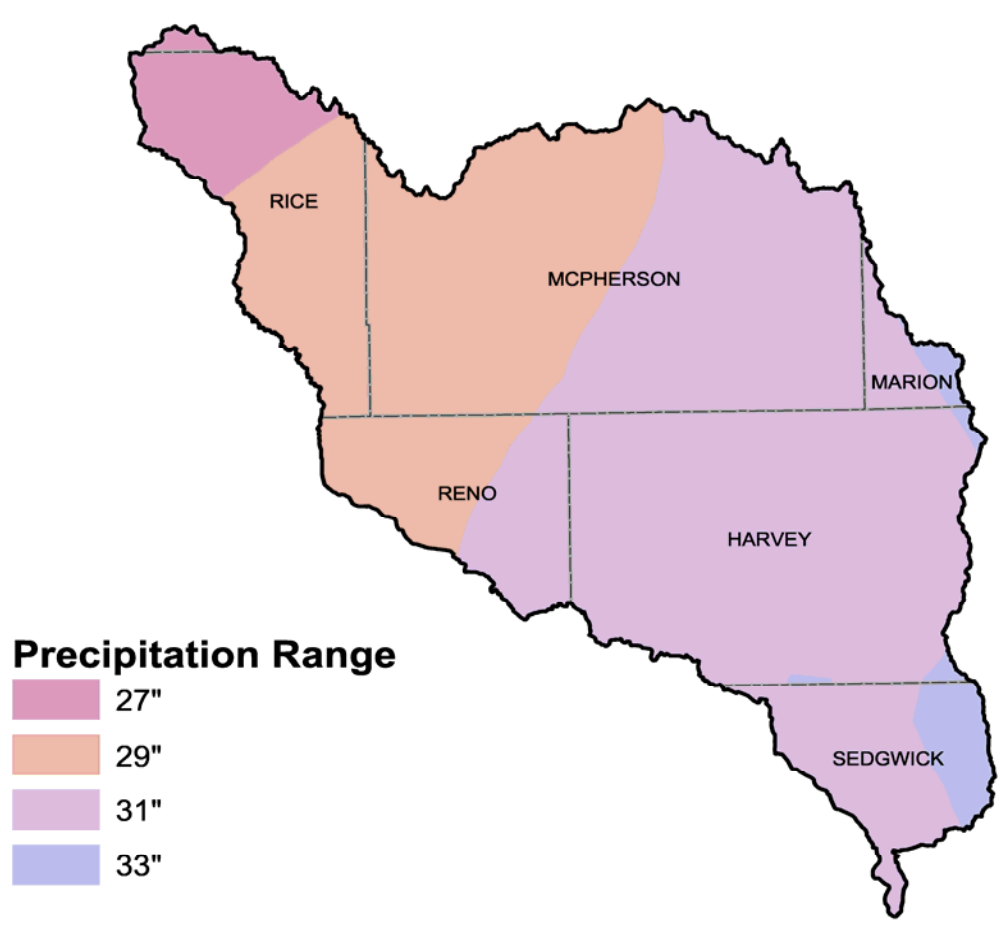
74.2 – Central Kansas Alluvial Plain: The Central Kansas Alluvial Plains CRA is a level to nearly level plain mantled by loess and underlain by unconsolidated alluvial sediments. This CRA inter-fingers in the Central Kansas Sandstone Hills as broad river valleys and terraces with a local relief in the tens of feet. Pre-settlement vegetation was tall to mid grass prairies. Most of this land is in farms, dominantly small grains and hay.

79.1 – Great Bend Sand Plains: The Great Bend Sand Plains CRA is narrow, undulating to rolling hills and valleys consisting of irregular sand dunes stabilized by native grasses. Local relief is measured in tens of feet. Soils are deep and formed in eolian sand. Pre-settlement vegetation was tall grass prairies. Nearly all of this area is in rangeland. Some nearly level areas are cultivated for growing irrigated corn and alfalfa.

79.2 – Great Bend Alluvial Plain: The Great Bend Alluvial Plain CRA is a level to nearly level Arkansas River paleoterrace mantled by loess and underlain by unconsolidated alluvial sediments. This CRA inter-fingers in the Great Bend Sand Plains as narrow flood plains and terraces with a local relief in the tens of feet. Pre-settlement vegetation was tall to mid grass prairies. Most of this land is in cropland, dominantly small grains and hay.

3.2 Precipitation Map²

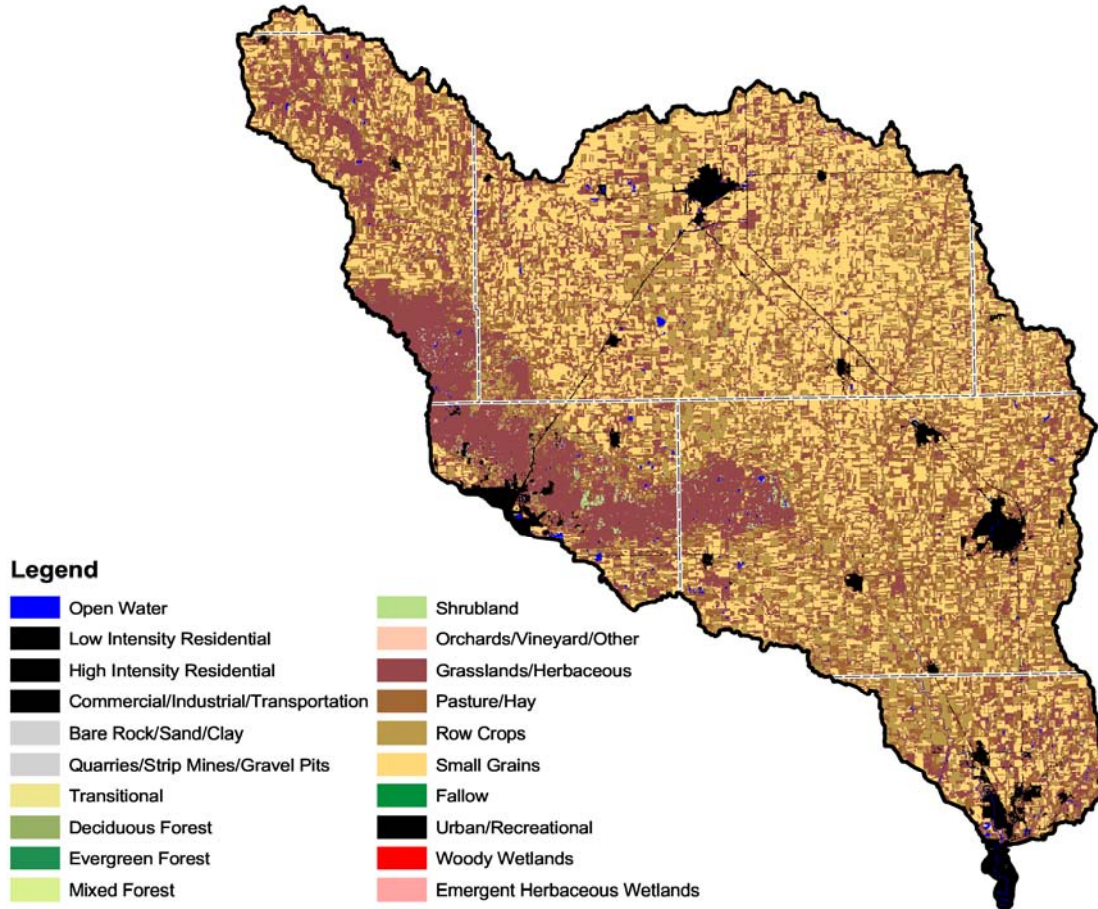
The map below depicts the average precipitation occurring within the sub-basin.



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3.3 Land Use and Land Cover Distribution Map³

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



3.3.1 Land Use and Land Cover Summary Table

Land Cover/Land Use	Ownership					
	Public		Private		Totals	%
	Acres	%	Acres	%		
Open Water			3,452	*	3,452	*
Low Intensity Residential			11,246	1	11,246	1
High Intensity Residential			3,844	*	3,844	*
Commercial/Industrial/Transportation			8,128	1	8,128	1
Bare Rock/Sand/Clay			171	*	171	*
Quarries/Strip Mines/Gravel Pits			90	*	90	*
Deciduous Forest			2,442	*	2,442	*
Evergreen Forest			1	*	1	*
Mixed Forest			13	*	13	*
Shrubland			2,933	*	2,933	*

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Land Cover/Land Use	Ownership					
	Public		Private		Totals	%
	Acres	%	Acres	%		
Grasslands/Herbaceous	3,040	*	271,487	30	274,527	30
Pasture/Hay			118,813	13	118,813	13
Row Crops			148,159	16	148,159	16
Small Grains	129	*	328,121	36	328,250	36
Urban/Recreational			6,419	1	6,419	1
Woody Wetlands			44	*	44	*
Emergent Herbaceous Wetlands	1,075	*	0	*	1,075	*
HUC Totals^a	4,244	*	905,362	100	909,606	100

*Less than 1 percent of total acres
^aTotals are approximate due to rounding and small unknown acreages

Special Considerations for This 8-Digit HUC:

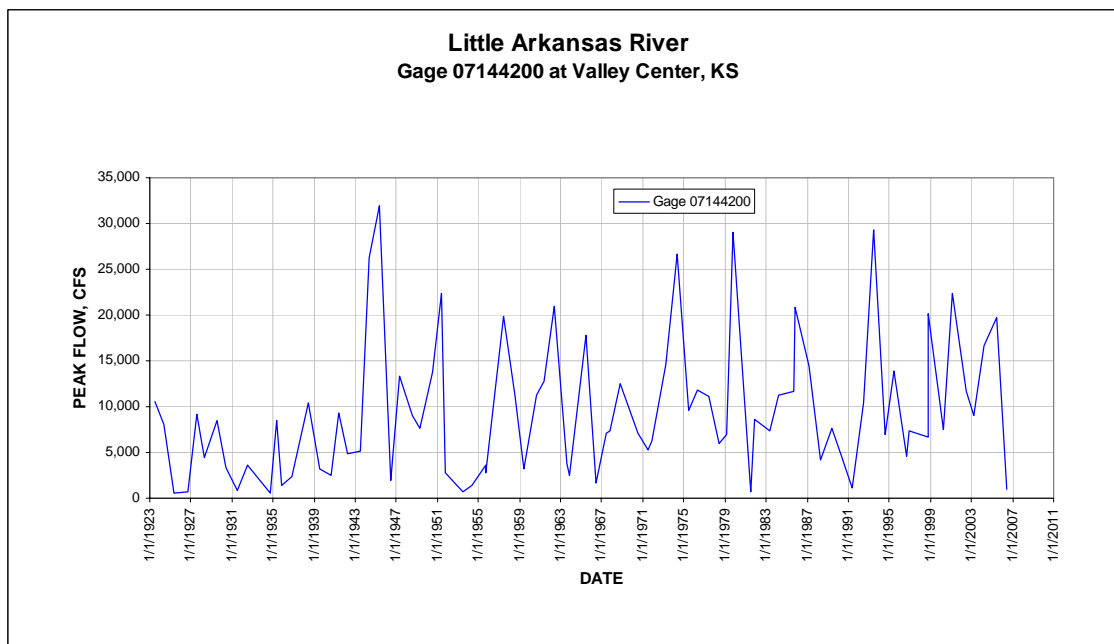
- Small grains and row crops are the predominant commodities grown in rotation on 52 percent of the watershed (approx. 476,409 acres)
- Grasslands/Herbaceous and Pasture/Hay make up 43 percent of the watershed (approximately 393,340 acres)
- Forest makes up less than 1 percent of the watershed (approximately 5,389 acres)
- Urban land comprises 1 percent of the watershed (approximately 6,419 acres)

Irrigated Lands⁴⁴	Percent of Cropland	Percent of HUC
Pressure	7	6
Gravity	5	4

3.4 Stream Flow Data⁴⁵

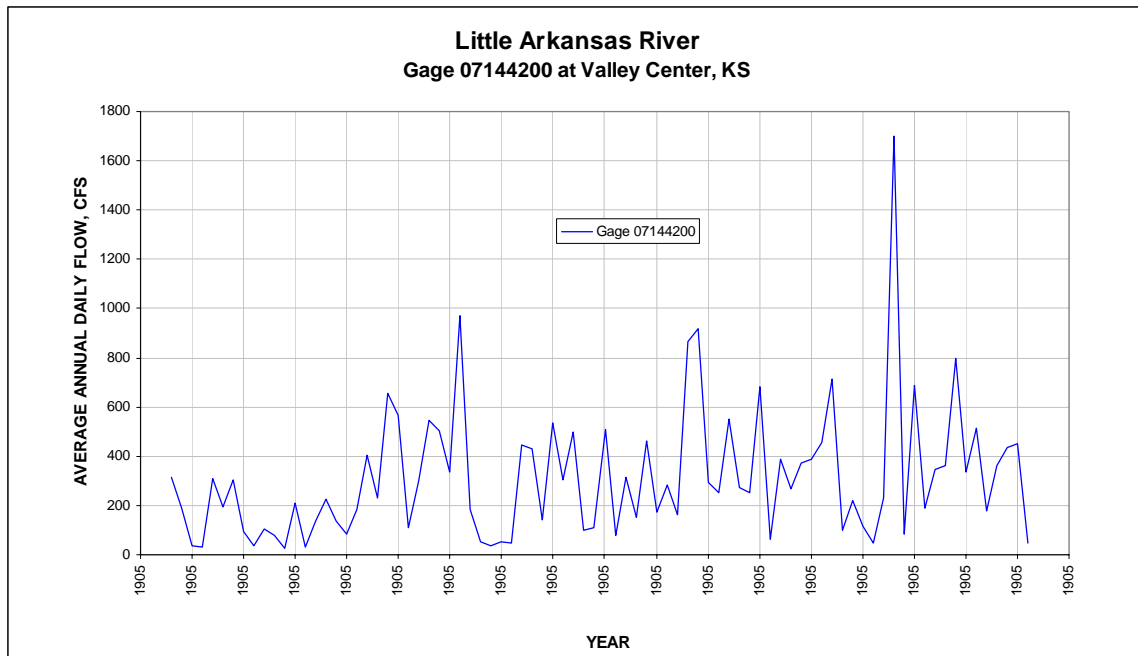
Stream flow data has been collected since the mid 1900s. U.S. Geological Survey (USGS) stream gage stations are located within the sub-basin. For this assessment, data was collected from one stream gage station on the Little Arkansas River at Valley Center, Kansas.

Annual Peak Flow



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Average Annual Discharge



3.5 Other Physical Descriptions

Stream Data ^{/6}	Total Miles of Streams in HUC Major (24K Hydro Geographic Information System [GIS] Layer)	478 miles	
		ACRES	PERCENT
Land Cover/Use ^{/3} Based on a 100-foot stretch on both sides of all streams in the 24K Hydro GIS Layer	Open Water	2,159	3
	Low Intensity Residential	724	1
	High Intensity Residential	170	0
	Commercial/Industrial/Transportation	481	1
	Bare Rock/Sand/Clay	2	0
	Quarries/Strip Mines/Gravel Pits	3	0
	Deciduous Forest	1,030	1
	Evergreen Forest	1	0
	Mixed Forest	3	0
	Shrubland	310	0
	Grasslands/Herbaceous	25,264	34
	Pasture/Hay	12,916	18
	Row Crops	13,236	18
	Small Grains	16,350	22
	Urban/Recreational	465	1
Woody Wetlands	22	0	
Emergent Herbaceous Wetlands	232	0	
Total Acres of 100-foot Stream Buffers		73,364	100

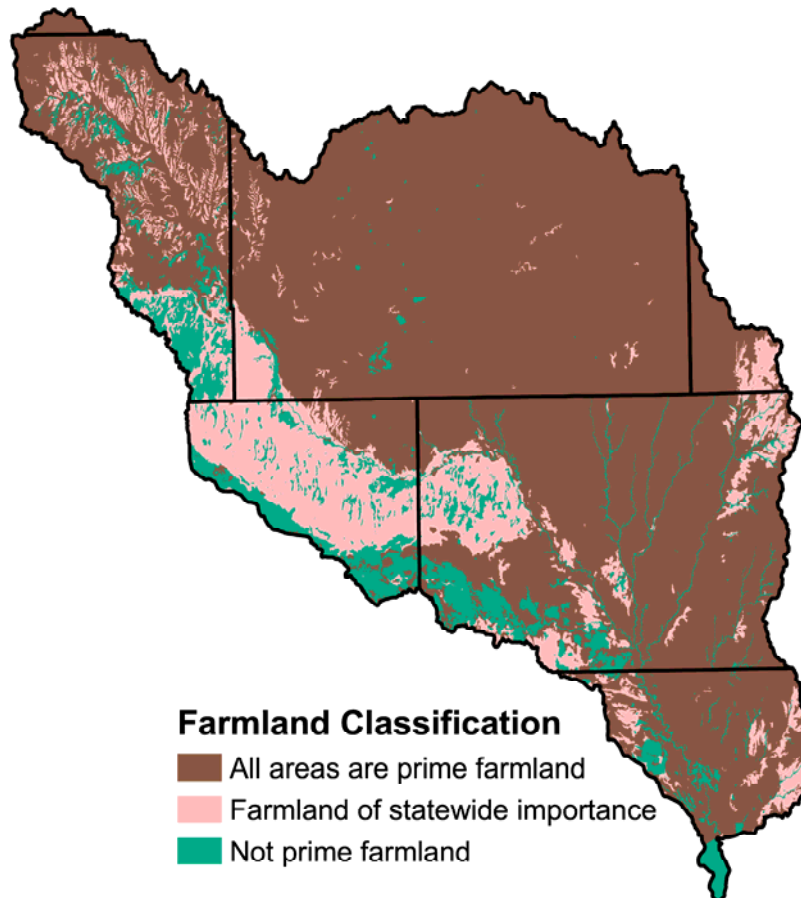
3.6 Farmland Classification^{/12}

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.

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Unique farmland is land other than prime farmland that is 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 is also highly productive. Criteria for defining and delineating these lands are determined by the appropriate state or local agencies in cooperation with USDA.

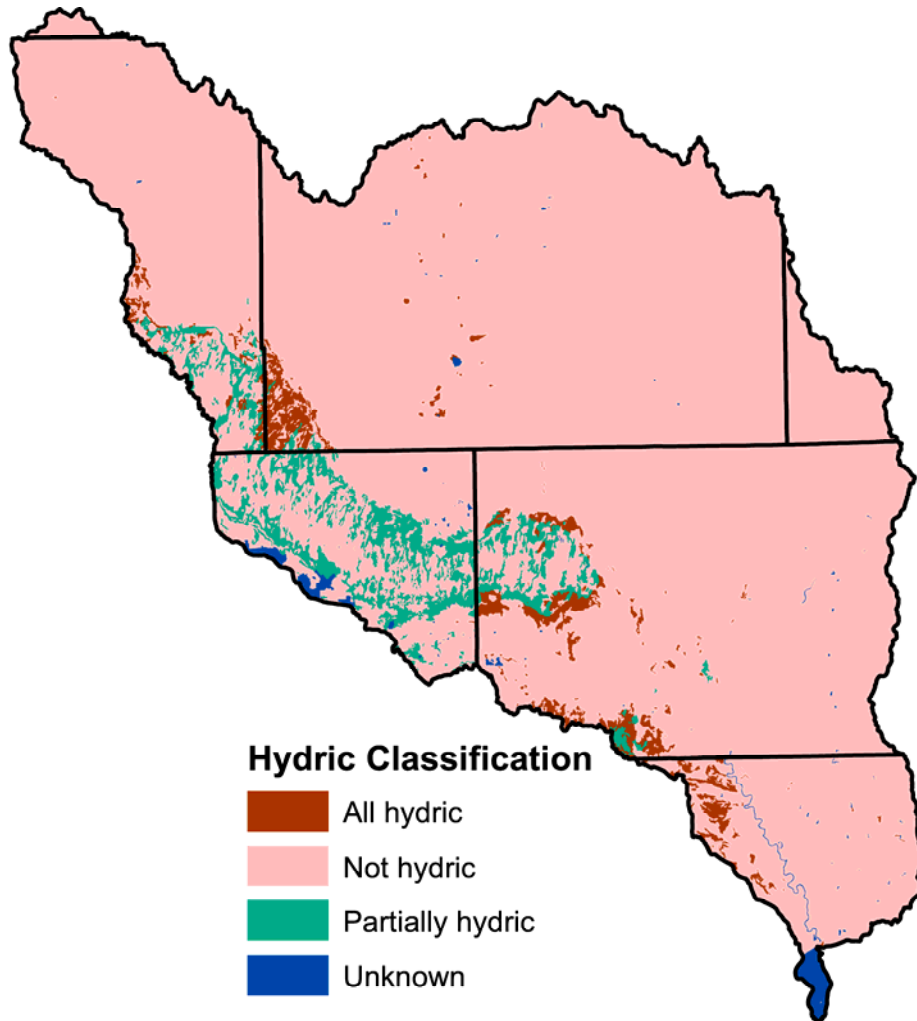


3.6.1 Farmland Classification Summary

Farmland Classification	Acres	Percent
All areas are prime farmland	690,868	76
Farmland of statewide importance	140,384	15
Not prime farmland	78,354	9
Total	909,606	100

3.7 Hydric Soils ¹²

Hydric soils are 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 may be protected at the federal level.



3.7.1 Hydric Soils Summary

Hydric Classification	Acres	Percent
All Hydric	18,192	2
Not Hydric	845,933	93
Partially Hydric	36,384	4
Unknown	9,097	1
Total	909,606	100

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 Little Arkansas sub-basin.

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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				
	Classic Gully		X	X	X			
	Streambank			X				
	Road, Roadsides and Construction Sites							X
Soil Condition	Organic Matter Depletion		X	X				
	Rangeland Site Stability				X			
	Compaction		X	X				
	Contaminants: Animal Waste and Other Organics - P		X	X				
	Contaminants: Commercial Fertilizer - P		X	X				
	Damage from Sediment Deposition*		X	X				
Water Quantity	Excessive Runoff, Flooding, or Ponding*	X	X	X	X			X
	Inefficient Water Use on Irrigated Land			X				
	Reduced Capacity of Conveyances by Sediment Deposition*		X	X				
	Reduced Storage of Water Bodies by Sediment Accumulation				X			
Water Quality, Groundwater	Excessive Nutrients and Organics		X	X				
	Harmful Levels of Pesticides							X
Water Quality, Surface	Excessive Nutrients and Organics		X	X				X
	Excessive Suspended Sediment and Turbidity		X	X				
	Harmful Levels of Pathogens*							X
	Chemical Drift*		X	X				
Air Quality	Reduced Visibility		X	X				
	Noxious and Invasive Plants				X			
Plant Condition	Forage Quality and Palatability	X			X			
	Wildfire Hazard*				X			
	Inadequate Cover/Shelter		X					
Animal: Fish and Wildlife	Habitat Fragmentation							X
	Inadequate Quantities and Quality of Feed and Forage				X			
Animal: Domestic	Inadequate Stock Water				X			
	High Risk & Uncertainty		X	X				
Human, Economics	High Capital/Financial Costs		X	X				
	High Labor Costs or Availability		X	X				
	High Management Level Required		X	X				

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.
- Over application of nutrients and organics has created surface water quality concerns.
- Erosion concerns exist due to lack of residue and erosion control measures on cropland.

Grazed Range

- Rangeland is commonly over-utilized, affected by timing of grazing and invasive weeds which affects productivity, health and vigor, and increases erosion.
- Over-utilization creates site stability, forage quality, and palatability concerns.
- Inadequate livestock water supply affects grazing distribution and animal health and condition.

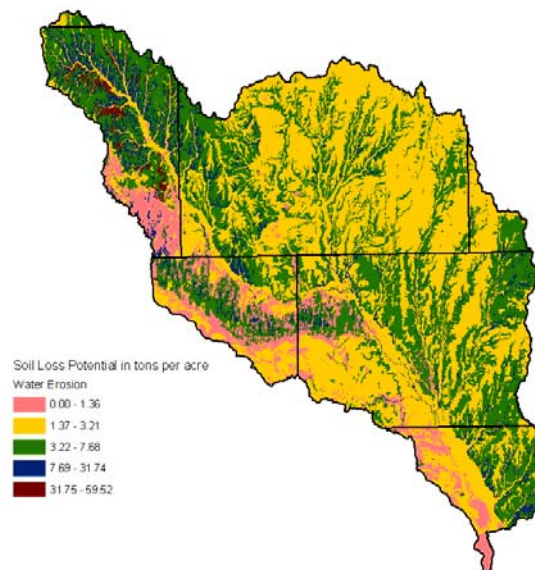
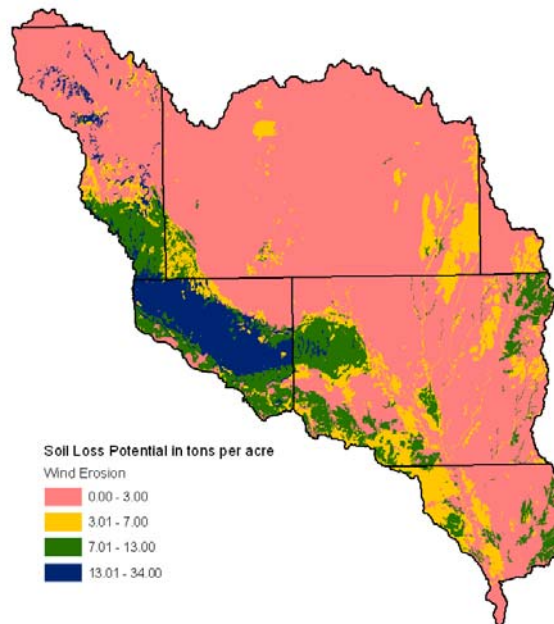
General

- Inputs needed to operate and manage agricultural operations, costs of production, and fluctuating commodity values require capital outlay and place financial burdens on operators.

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4.2 Potential Soil Loss¹²

Soil loss through wind and water erosion is critical to consider for dealing with air and water quality issues. As 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 Little Arkansas 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 at http://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	14	11	2	28	1	2
No. of Permitted Animal Units	2,558	13,371	0	14,242	0	40

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 127 active public water supply sites located within the HUC 8 11030012 watershed. The public water in this watershed is provided by three groundwater aquifers. The High Plains Aquifer is often used for irrigation. The Dakota Aquifer, in the northwestern portion of the watershed, provides water for irrigation, public use, and rural-domestic water supplies. Alluvial aquifers of the Little Arkansas River and its tributaries exist throughout the watershed (though concentrated in the southeastern portion) and provide the primary water source for many public water supplies. Aquifer water quality is generally good although nitrates, minerals, pesticides, and bacteria can be pollutant concerns. Surface water quality for streams and rivers is generally in fair to poor condition. The primary pollutant concerns are chloride, fecal coliform bacteria (FCB), and eutrophication.

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.

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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 <http://www.kdheks.gov/nps/swap/SWreports.html>.

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
Dillon Park Lakes	E	B	O	X		O	O	O
Harvey Co. Camp Hawk Lake	E	A	O	X		O	O	O
Harvey Co. West Park Lake	E	A		X	X			
Inman Lake	E	a	O			O		
McPherson Wetlands	E			X				
Mingenback Lake	E	B	O	X		O	O	O
Newton City Park Lake	E	B		X				
Stream Name	AL	CR	DS	FP	GR	IW	IR	LW
Beaver Cr	E	b						
Black Kettle Cr	E	B						
Bull Cr	E	C	X	X	X	X	X	X
Chisholm Cr, Middle Fork	E	b	X	X	X	X	X	X
Chisolm Cr	E	C	X	X	X	X	X	X
Dry Cr	E	b						
Dry Turkey Cr	E	B	X	X	X	X	X	X
Emma Cr	E	b		X				
Emma Cr, Middle	E	B						
Emma Cr, West	E	C						
Gooseberry Cr	E	b						
Horse Cr	E	b						
Jester Cr	E	C						
Jester Cr, W Fk	E	C						
Kisiwa Cr	E	b						
Little Arkansas R	E	C	X	X	X	X	X	X
Little Arkansas R	E	B	X	X	X	X	X	X
Little Arkansas R	E	C	X	X	X	X	X	X
Little Arkansas R	E	C	X	X	X	X	X	X
Little Arkansas R	E	B	X	X	X	X	X	X
Little Arkansas R	E	C	X	X	X	X	X	X
Lone Tree Cr	E	b						
Mud Cr	E	b						
Running Turkey Cr	E	b						
Salt Cr	E	b						
Sand Cr	E	B		X				
Sand Cr	E	C		X				
Turkey Cr	E	b		X				
Turkey Cr	E	C						

AL = Aquatic Life Support
CR = Contact Recreation
DS = Domestic Water Supply

FP = Food Procurement
GR = Groundwater Recharge
IR = Irrigation Water Supply

IW = Industrial Water Supply
LW = Livestock Water Supply

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- 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

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 11030012 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. For additional TMDL information, visit <http://www.kdheks.gov/tmdl/index.htm>.

Stream Data	303d/TMDL Listed Streams (DEQ)	456 miles	95%
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2006 Impaired Waters with TMDLs			
Stream Segment	Stream/Watershed/Lake with TMDL	Priority for TMDL Implementation	Impairments
	Upper Little Arkansas River including Horse Creek, Salt Creek, Dry Creek, Sand Creek, and Lone Tree Creek	High High High Medium	Bacteria Impaired Biology Atrazine Chloride
	Turkey Creek including: Dry Turkey Creek, Running Turkey Creek, and Bull Creek	High High High Medium	Bacteria Impaired Biology Atrazine Dissolved Oxygen Chloride
	Middle Little Arkansas River including Black Kettle Creek, Kisiwa Creek, West Emma Creek, Middle Emma Creek, Emma Creek, Sand Creek, Beaver Creek, Mud Creek, Jester Creek, West		

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2006 Impaired Waters with TMDLs			
Stream Segment	Stream/Watershed/Lake with TMDL	Priority for TMDL Implementation	Impairments
	Fork Jester Creek, and Gooseberry Creek	High High High	Bacteria Impaired Biology Atrazine
	Sand Creek	High Medium	Nitrate Dissolved Oxygen
	Lower Little Arkansas River including Chisholm Creek and Middle Fork Chisholm Creek	High High High Low	Bacteria Impaired Biology Atrazine Chlordane
	Newton City Park Lake	High	Eutrophication
	Mingenback Lake	Medium	Eutrophication and Dissolved Oxygen
	Dillon Park Lakes	Medium	Eutrophication and pH
	Harvey County West Lake	Low	Eutrophication
	Harvey County Camp Hawk Lake	Low Low	Eutrophication Siltation

2006 Impaired Waters needing TMDLs	
Impaired Stream/Lake	Impairment
Dry Turkey Creek	Selenium Zinc
Middle Little Arkansas River	Copper
Black Kettle Creek	Copper
Emma Creek	Dissolved Oxygen
Lower Little Arkansas River	Copper Mercury

Impairment definitions:

Atrazine: Herbicide used to combat weeds in row crops, current water quality standard is 3 parts per billion to protect aquatic life and an annual average of 3 parts per billion to protect drinking water supplies.

Bacteria: Bacteria indicators (either fecal coliform or *E. coli*) are found in the digestive systems of warm-blooded animals. In surface waters, bacteria are an indicator of potential disease-causing organisms. Potential sources of bacteria contamination in surface waters include municipal wastewater, livestock, septic systems, pets, and wildlife.

Impaired Biology: Impairments caused by excessive nutrients/sediments, toxic ammonia or organic material present in the stream, decreasing the diversity of clean water biological organisms in the stream.

Chlordane: Banned pesticide used for termite treatment in urban development, suspected of causing cancer through food chain, accumulates in tissue of aquatic life, no longer legally used.

Chloride: A naturally occurring mineral which, in high concentrations, can cause deterioration of domestic plumbing, adverse water taste, and hypertension in humans. The primary source of chloride impacted groundwater is intrusion of salt water from deeper formations.

Copper: A heavy metal which has minimal health effects although it can produce taste problems in drinking water.

Dissolved Oxygen: 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.

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

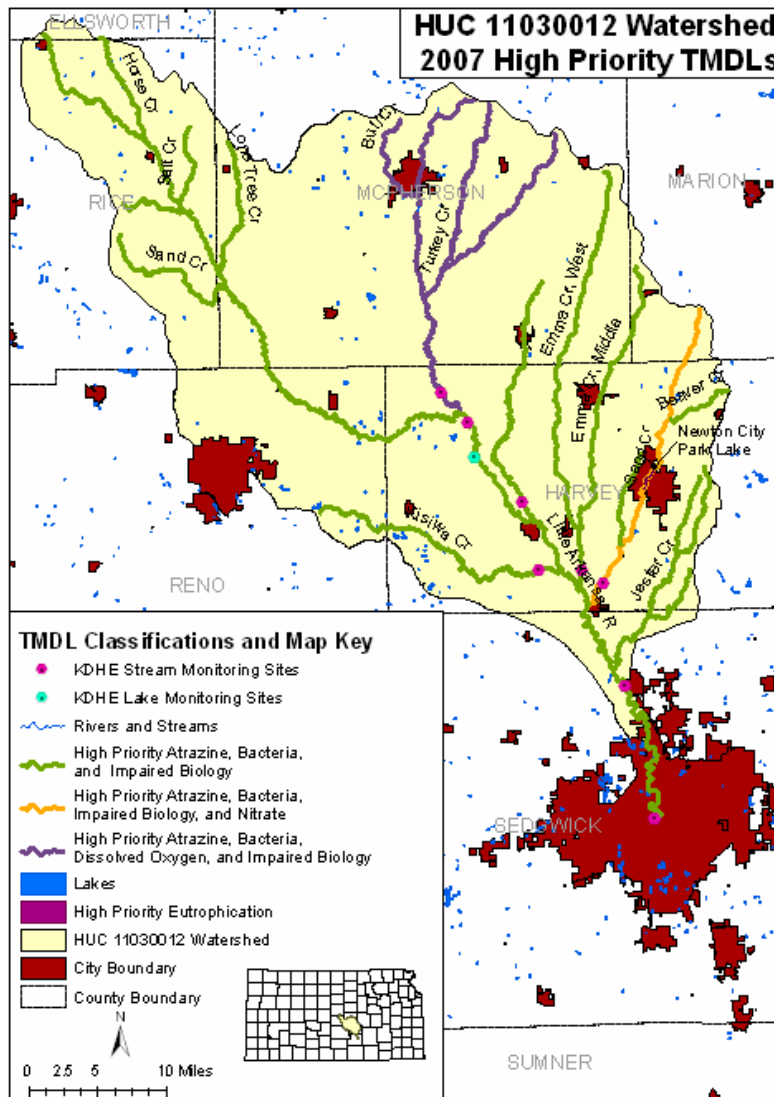
Mercury: A naturally occurring element that can be toxic when consumed by animals and humans. Sources of mercury include weathering of the earth's crust, the burning of garbage and fuels, and industrial emissions.

Nitrate: A naturally occurring mineral that is an essential component of all living matter. However, high concentrations in drinking water can cause adverse health effects. Sources of nitrate include municipal waste water treatment plant discharges, runoff from livestock operations, leaching of fertilizer from urban and agricultural areas, and failing septic systems.

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.

Siltation: Loading of silt into lakes and streams caused by soil erosion, reducing lake accessibility, and causing high turbidity levels in the water column.

Zinc: A heavy metal often resulting from mining operations. It is usually associated with taste problems in drinking water.



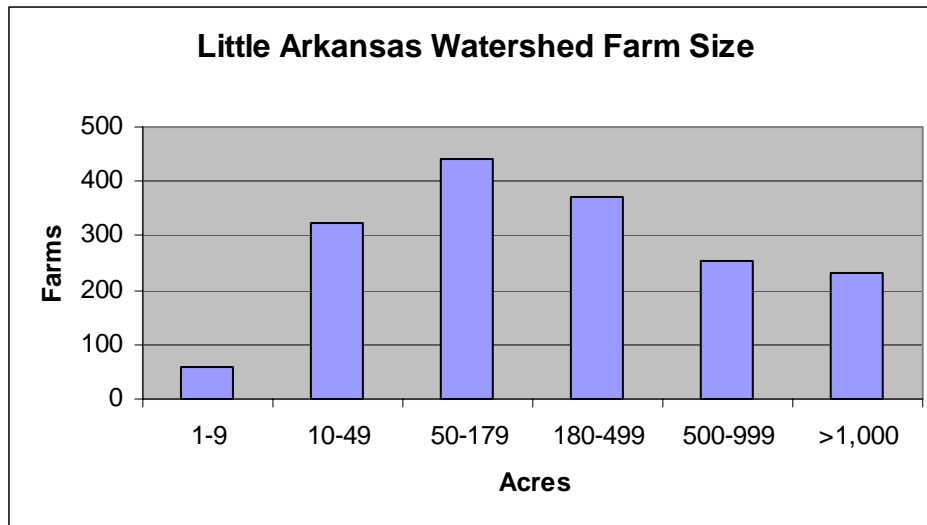
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4.4 Threatened and Endangered Species Status¹⁷

The Endangered Species Act (ESA) and Kansas Environmental Coordination Act provide protection to animals and their habitat that are experiencing a decline in population, or nearing extinction. 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), Species in Need of Conservation (SINC)	Designated Critical Habitat (Y)es/(N)o	Listing: Federal (F), State (S)
Animals, Vertebrates – Fishes			
Arkansas Darter (<i>Etheostoma cragini</i>)	C/T	Y	F/S
Arkansas River Shiner (<i>Notropis gerardi</i>)	T/E	Y	F/S
Arkansas River Speckled Chub (<i>Macrhybopsis tetranema</i>)	E	Y	S
Plains Minnow (<i>Hybognathus americanus</i>)	SINC	N	S
River Shiner (<i>Notropis blennioides</i>)	SINC	N	S
Silver Chub (<i>Macrhybopsis storeriana</i>)	E	Y	S
Spotted Sucker (<i>Minytrema meoanops</i>)	SINC	N	S
Topeka Shiner (<i>Notropis topeka</i>)	T/E	N	F/S
Animals, Vertebrate – Birds			
Bald Eagle (<i>Haliaeetus leucocephalus</i>)*	T	Y	S
Black Tern (<i>Chidonias niger</i>)	SINC	N	S
Bobolink (<i>Dolichonyx oryzivorus</i>)	SINC	N	S
Cerulean Warbler (<i>Dendroica cerulean</i>)	SINC	N	S
Curve-Billed Thrasher (<i>Toxostoma curvirostre</i>)	SINC	N	S
Chihuahuan Raven (<i>Corvus cryptoleucus</i>)	SINC	N	S
Ferruginous Hawk (<i>Buteo regalis</i>)	SINC	N	S
Eskimo Curlew (<i>Numenius borealis</i>)	E/E	N	F/S
Golden Eagle (<i>Aquila chrysaetos</i>)	SINC	N	S
Least Tern (<i>Sterna antillarum</i>)	E/E	N	F/S
Long-Billed Curlew (<i>Numenius americanus</i>)	SINC	N	S
Peregrine Falcon (<i>Falco peregrinus</i>)	E	N	S
Piping Plover (<i>Charadrius melodus</i>)	T/T	N	F/S
Short-Eared Owl (<i>Asio flammeus</i>)	SINC	N	S
Snowy Plover (<i>Charadrius alexandrinus</i>)	T	N	S
Whip-poor-will (<i>Camprimulgus vociferous</i>)	SINC	N	S
Whooping Crane (<i>Grus Americana</i>)	E/E	N	F/S
Yellow-throated Warbler (<i>Dendroica dominica</i>)	SINC	N	S
Animals, Vertebrate – Amphibians/Reptiles			
Eastern Hognose Snake (<i>Jeterodon platirrhinos</i>)	SINC	N	S
Glossy Snake (<i>Arizona elegans</i>)	SINC	N	S
Western Hognose Snake (<i>Heterodon nasicus</i>)	SINC	N	S
Animals, Vertebrate – Mammals			
Eastern Spotted Skunk (<i>Spilogale putorius interrupta</i>)	T	Y	S
Franklin's Ground Squirrel (<i>Spermophilus franklinii</i>)	SINC	N	S
Animals, Invertebrate - Crustaceans			
Flutedshell Mussell (<i>Lasmigona costata</i>)	T	N	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



Estimated Number of Farms: 1,680

Average Farm Size (acres by county): 520

Estimated Number of Total Farm Operators: 1,680

Principal Operators – Full-Time: 1,060

Principal Operators – Part-Time: 620

5.1 Estimated Level of Willingness and Ability to Participate in Conservation ⁹

The Little Arkansas sub-basin exhibits a good likelihood of full participation in the first 3 years of the project, with only slight adjustments in technical and financial assistance and conservation marketing. Management skills are high and educational assistance and technical assistance may only need slight increases 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 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.

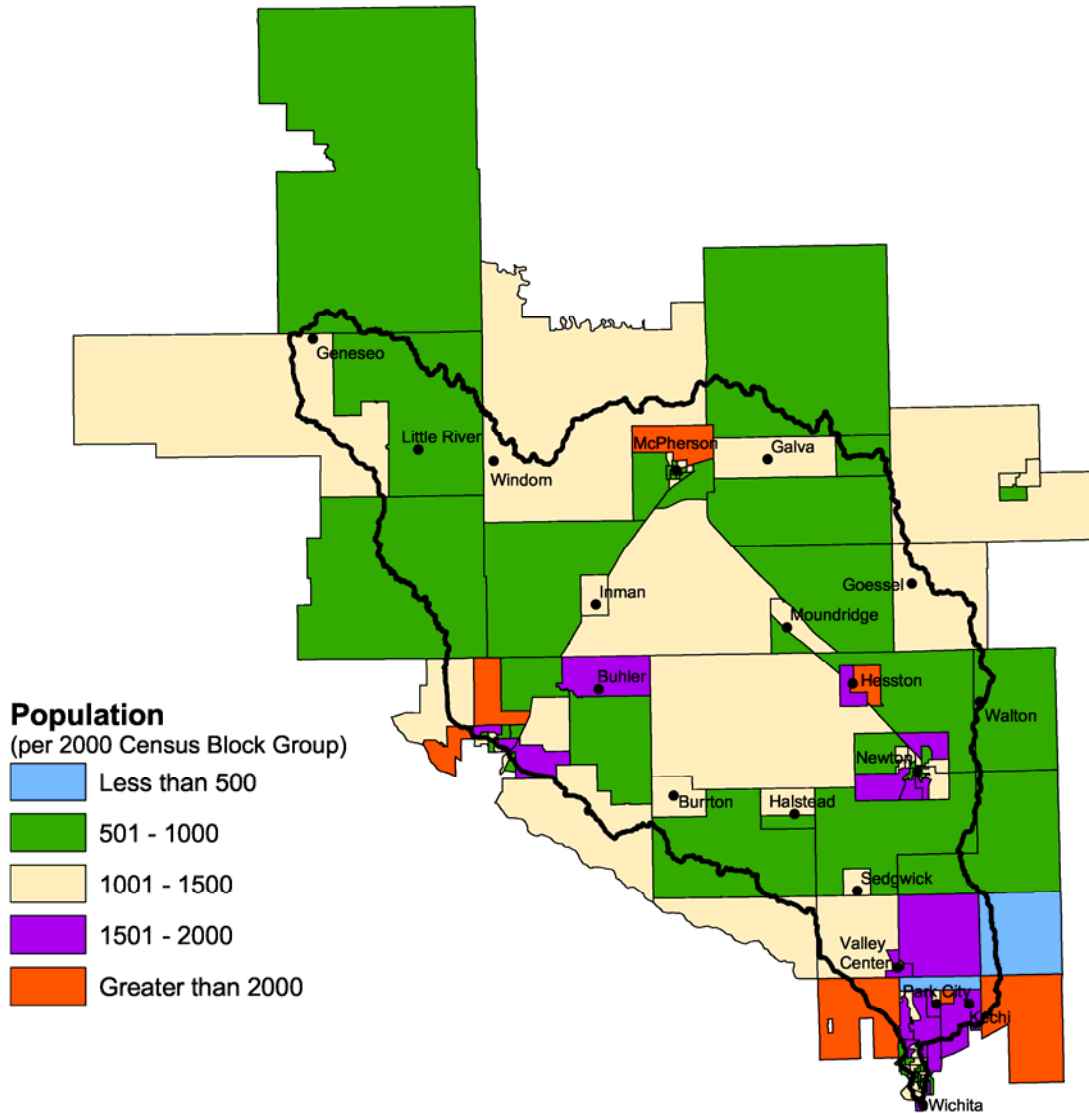
5.2 Evaluation of Social Capital ¹⁰

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 Little Arkansas sub-basin are reported to be fairly effective at solving problems. Rural communities are willing to assist their neighbors by pooling their resources to overcome adversity. Large communities are strong economic centers and provide tremendous cultural activities but may be somewhat distant from the rural communities and agriculture. Although, large communities recognize the importance of agri-business and the environment which indicates a willingness to support conservation.

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5.3 Population Distribution Map (2000)



6.0 Conservation Progress

Conservation on the land is defined by the progress made by local landowners and operators addressing resource issues. Progress is typically 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/PRSHOME/>.

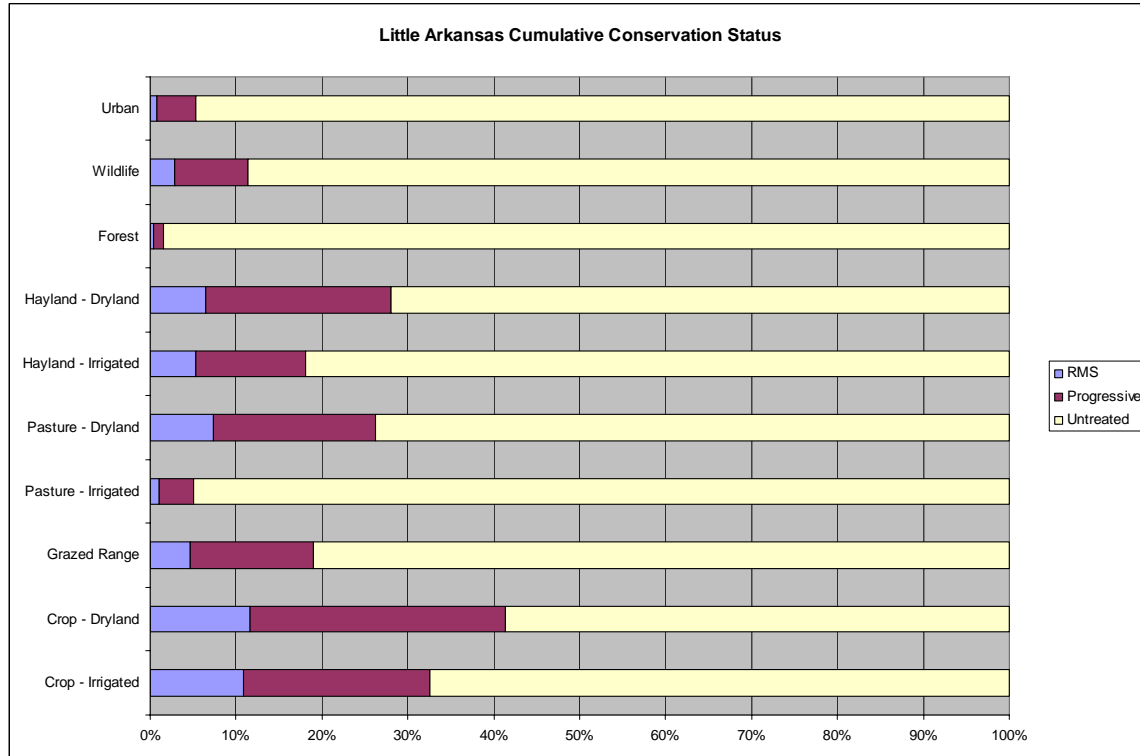
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6.1 Reported Conservation Progress (Fiscal Years (FY) 2002–2007)

PRS Data	FY02	FY03	FY04	FY05	FY06	FY07	Avg/ Year	Total
Conservation Systems Planned (ac)	13,581	14,956	N/A	13,570	19,618	11,171	14,579	72,896
Conservation Systems Applied (ac)	7,818	8,587	N/A	9,082	13,239	4,854	8,716	43,580
Conservation Treatment (Units/Acres)								
Brush Management (ac)			336	28	197	65	157	626
Conservation Crop Rotation (ac)			6,614	3,808	7,204	6,296	5981	23922
Contour Buffer Strips (ac)	12	1		8			7	21
Contour Farming (ac)			1,190	1,453	1,302	1,118	1266	5063
Cover Crop (ac)			737	505	221	75	385	1538
Critical Area Planting (ac)			58	54	99	16	57	227
Diversion (ft)					238	822	530	1060
Fence (ft)			5,288	5,650	9,049	1,709	5424	21696
Field Border (ft)	1		3,650		42,235	12,540	14607	58426
Filter Strip (ac)	197	154	34	28	31	10	76	454
Forage Harvest Management (ac)			19	54	601	133	202	807
Grade Stabilization Structure (no)			2		13	1	5	16
Grassed Waterway (ac)	51	16	72	62	239	21	77	461
Heavy Use Area Protection (ac)				21	1		11	22
Irrigation System, Micro-irrigation (ac)			20 (no.)	147	661	74	294	882
Irrigation System, Sprinkler (ac)			3 (no.)	52			52	52
Irrigation Water Management (ac)	2,061	1,475		428	349	403	943	4716
Mulching (ac)						4	4	4
Nutrient Management (ac)	2,857	1,615	2,527	2,120	943	237	1717	10299
Pasture and Hay Planting (ac)			83	45	84		71	212
Pest Management (ac)	2,939	1,287	3,555	1,323	1,944	683	1955	11731
Pond (no)					3	2	3	5
Prescribed Burning (ac)			356	271		319	315	946
Prescribed Grazing (ac)	1,137	367	594	1,681	1,101	779	943	5659
Range Planting (ac)			218	50	6	47	80	321
Residue Mgt, Mulch Till (ac)	3,444	456	55	1,129	505		1118	5589
Residue Mgt, No-Till/Strip Till (ac)	158	4,595	3,495	586	1,030	574	1740	10438
Residue Mgt, Seasonal (ac)			4,148	1,567	2,047	1,768	2383	9530
Restoration and Management of Declining Habitats (ac)			716	703	224	119	441	1762
Shallow Water Management for Wildlife (ac)			4	16	93		38	113
Terrace (ft)			52,550	72,197	59,292	30,400	53610	214439
Tree/Shrub Establishment (ac)	6	11	37				18	54
Upland Wildlife Habitat Management (ac)	1,209	1,387	2,650	1,195	4,415	788	1941	11644
Use Exclusion (ac)			2,165	343	732	501	935	3741
Waste Storage Facility (no)	1	1	2	1			1	5
Waste Treatment Lagoon (no)	1			1		1	1	3
Waste Utilization (ac)			213	373			293	586
Wastewater Treatment Strip (ac)				2		5	4	7
Watering Facility (no)				1	5	1	2	7
Wetland Enhancement (ac)	8	1		3	5		4	17
Wetland Restoration (ac)	21		4		93		39	118
Wetland Wildlife Habitat Management (ac)			21	3	43	8	19	75
Windbreak/Shelterbelt Establishment (ft)		6,207	9,695	1		1,934	4459	17837

6.2 Cumulative Conservation Status

Conservation plans developed and applied from 1995 to 2006 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
- Progress over the last 10 years has been focused on:
 - Nutrient and pest management on cropland
 - Erosion control on cropland
- Range, pasture, and hay 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

<i>Watershed Projects, Plans, Studies, and Assessments</i> ^{11, 13}
Little Arkansas Watershed Restoration and Protection Strategy (WRAPS) Projects and Implementation
Lower Arkansas River WRAPS (Wichita Environs)
Upper Little Arkansas Watershed Joint District No. 95
Sand Creek Watershed Joint District No. 68

6.4 Lands Removed from Production through Farm Bill Programs¹⁴

Conservation Reserve Program (CRP)^a: **14,978 acres**
Wetlands Reserve Program (WRP): **156 acres**

^aData from 2006 Farm Service Agency, CRP information

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7.0 Footnotes/Bibliography

All data is provided "as is." There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

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 Dataset (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 the 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=11030012.
2. U.S. Environmental Protection Agency, Surf Your Watershed at
http://cfpub.epa.gov/surf/huc.cfm?huc_code=11030012.