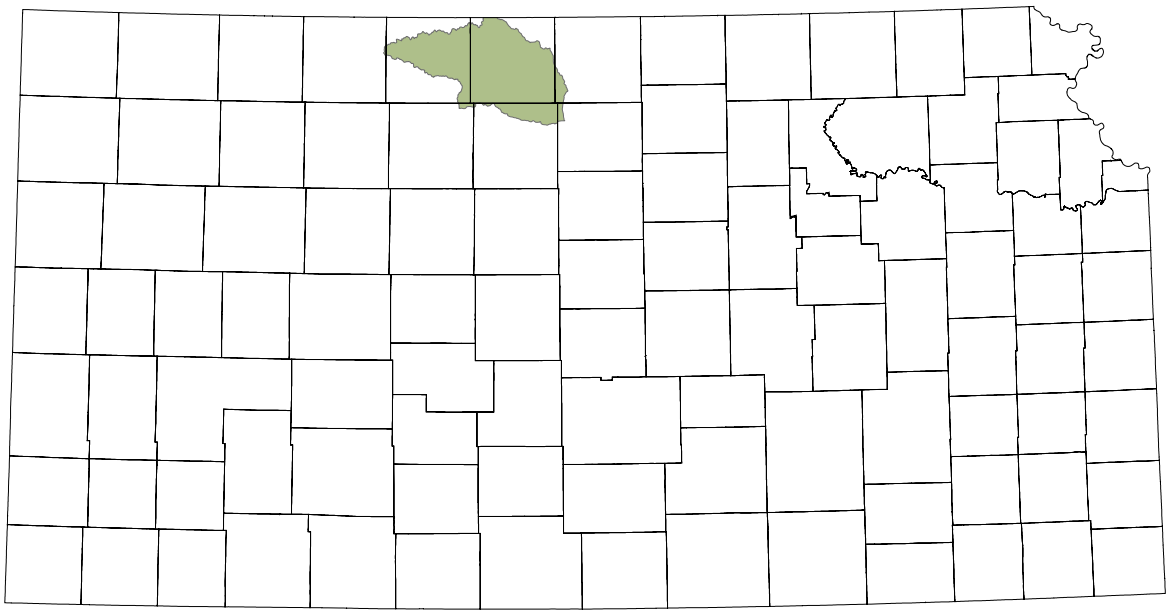
KANSAS
Rapid Watershed Assessment

Lower North Fork Solomon Watershed
Hydrologic Unit Code – 10260012



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Resource Profile

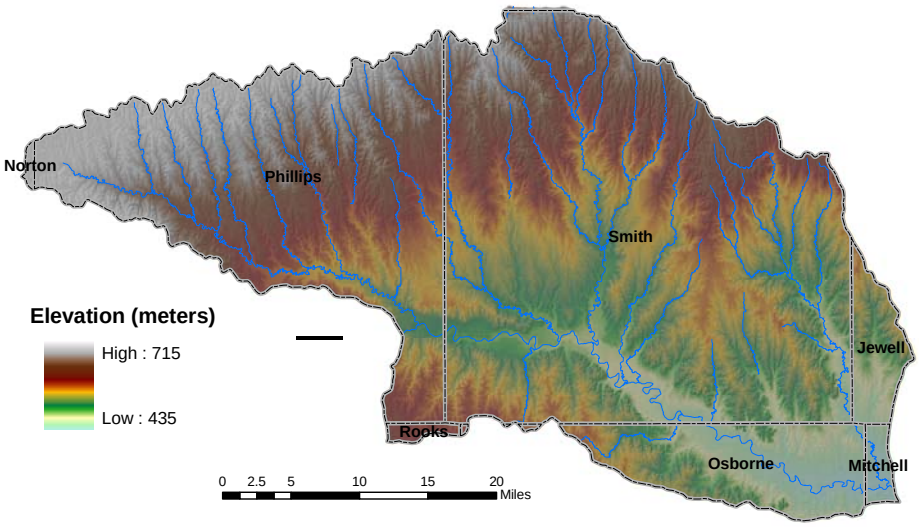
1.0 Purpose

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 Lower North Fork Solomon sub-basin's natural resources, resource concerns, conservation needs, and ability to resolve natural resource issues and concerns.

2.0 Introduction

The Lower North Fork Solomon 8-Digit Hydrologic Unit Code (HUC) sub-basin is comprised of 858,388 acres in northwestern Kansas and includes the counties of Phillips, Smith, and Osborne with small land coverages in the counties of Rooks, Jewell, and Mitchell. This sub-basin is located in the Solomon River Basin, and drains into Lake Waconda as it flows from west to east. Fifty percent of the sub-basin is in grain and row crop; 46 percent is in grassland, pasture, and hay; and the rest is in other various land uses (see Table 3.3.1).[5]

Relief Map[1]



Resource concerns are numerous in the sub-basin. Stakeholders in the watershed emphasize the importance of implementing use efficiency from surface and groundwater sources, promoting a reduction in commercial chemical and fertilizer runoff, reducing livestock and pet waste runoff, and increasing the awareness of the public concerning water quality in the watershed.

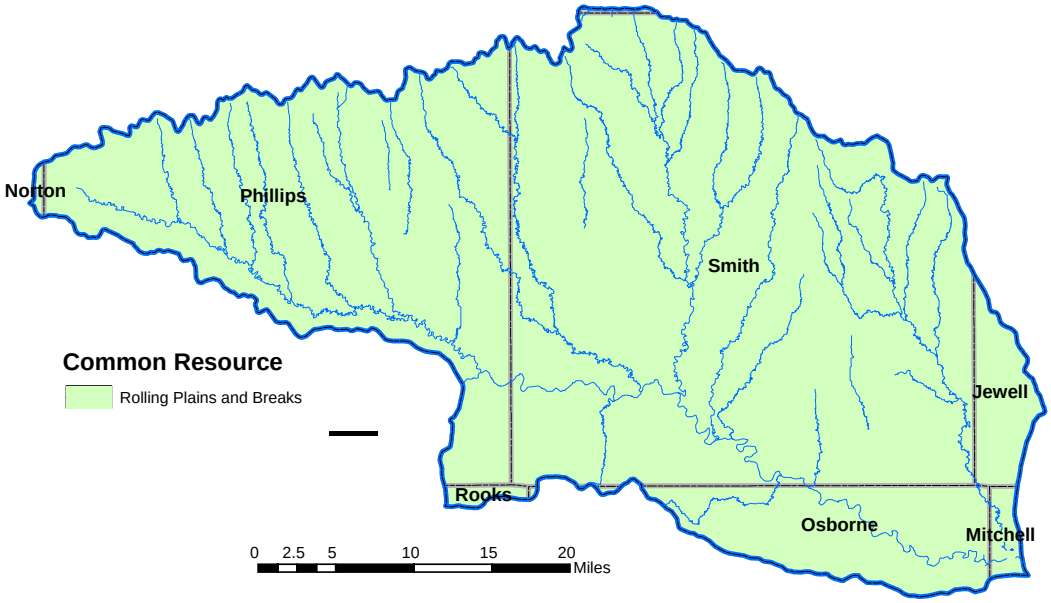
In 2002, there were approximately 793 farms of an average size of 996 acres in the Lower North Fork Solomon sub-basin.[2]

Seven Natural Resources Conservation Service (NRCS) field offices, seven county conservation districts (CDs), and the Solomon Valley and the Kansas Crossroads Resource Conservation and Development (RC&D) areas provide conservation assistance to all the counties in the watershed.

3.0 Physical Description

The physical description of the Lower North Fork Solomon sub-basin provides detailed information so the user can better understand the natural resources associated with this geographical land unit.

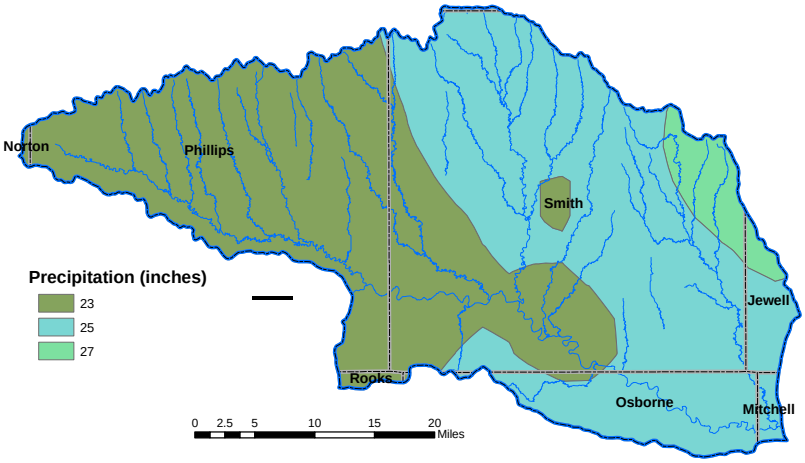
3.1 Common Resource Area (CRA) Map[3]



73.1 Rolling Plains and Breaks: The Rolling Plains and Breaks CRA is dissected plains having broad undulating to rolling ridge-tops, 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 ridge-tops and moderately deep to shallow on the side-slopes. Pre-settlement vegetation was mid grass prairies. Most of this land is in farms, both small grain crops and native grasses.

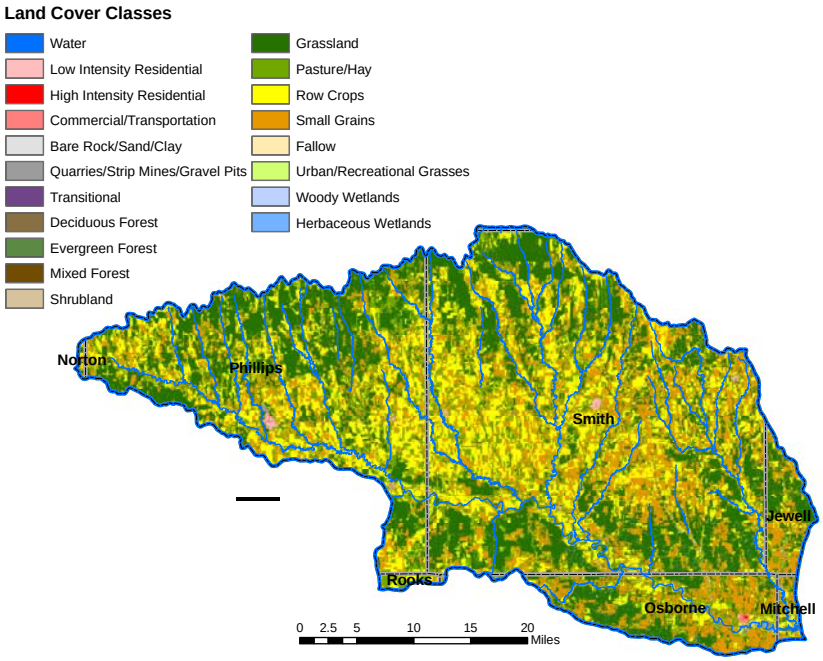
3.2 Precipitation Map[4]

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



3.3 Land Use and Land Cover Distribution Map[5]

The map below represents the distribution of land cover and land use as defined by the National Land Cover Dataset (NLCD).



3.3.1 Land Use and Land Cover Summary Table[5]

Land Cover/Land Use	Ownership							
	Public		Private		Tribal			
	Acres	%	Acres	%	Acres	%	Totals	%
Open Water	353	*	2,246	0.26	0	---	2,599	0.30
Low Intensity Residential	0	---	1,496	0.17	0	---	1,496	0.17
High Intensity Residential	0	---	110	0.01	0	---	110	0.01
Commercial/Industrial/ Transportation	0	---	2,659	0.31	0	---	2,659	0.31
Bare Rock/Sand/Clay	3	---	549	0.06	0	---	552	0.06
Quarries/Strip Mines/Gravel Pits	0	---	177	0.02	0	---	177	0.02
Transitional	0	---	3	0.00	0	---	3	0.00
Deciduous Forest	16	---	21,845	2.54	0	---	21,861	2.55
Evergreen Forest	0	---	1,636	0.19	0	---	1,636	0.19
Mixed Forest	0	---	0	0.00	0	---	0	0.00
Shrubland	10	---	1,436	0.17	0	---	1,446	0.17
Grasslands/Herbaceous	359	*	318,297	37.08	0	---	318,657	37.12
Pasture/Hay	29	---	75,787	8.83	0	---	75,817	8.83
Row Crops	427	*	226,622	26.40	0	---	227,049	26.45
Small Grains	830	*	200,231	23.33	0	---	201,060	23.42
Fallow	0	---	85	0.01	0	---	85	0.01
Urban/Recreational	0	---	151	0.02	0	---	151	0.02
Woody Wetlands	1	---	1,162	0.14	0	---	1,163	0.14
Emergent Herbaceous Wetlands	23	---	1,844	0.21	0	---	1,867	0.22
HUC Totals[a]	2,051	---	856,337	99.76	0	---	858,388	100.00

*: Less than 1 percent of total acres.

[a]: Totals are approximate due to rounding and small unknown acreages.

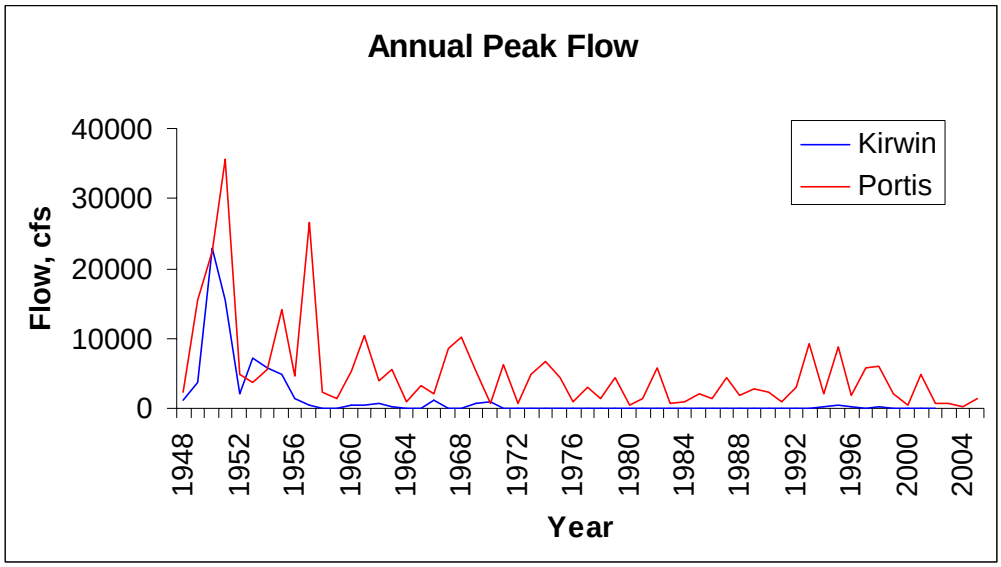
Special Considerations for This 8-Digit HUC:

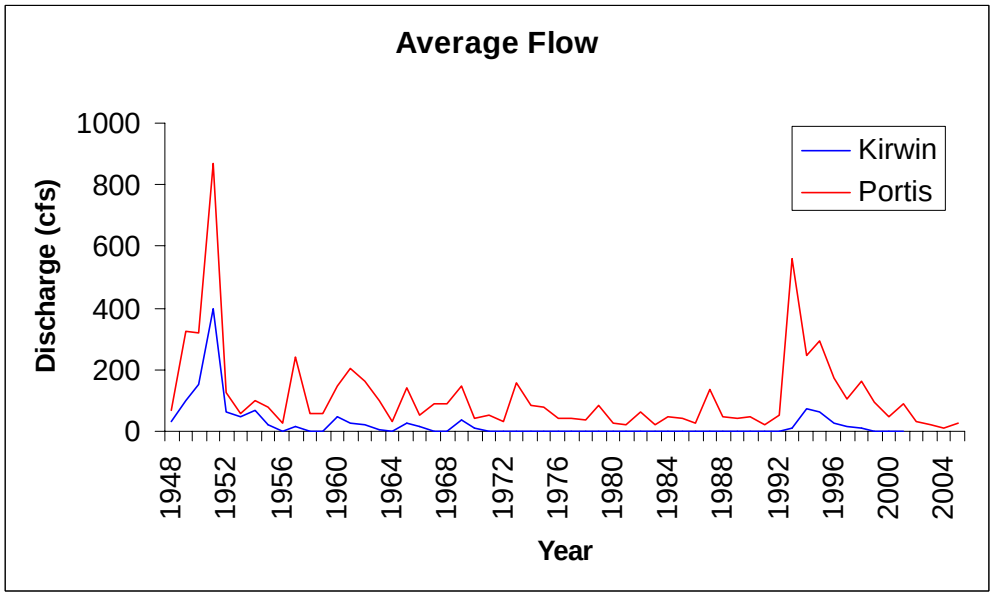
- Small grains and row crops are the predominant commodities grown in rotation on cropland. Wheat is the predominant crop grown. Corn is the predominant crop grown under irrigation.[6]
- Grasslands/Herbaceous and Pasture/Hay makes up approximately 46 percent of the watershed.
- Pasture is included on mostly beef operations, as well as a few small farms and ranches.
- Urban land comprises less than 1 percent of the HUC.

Irrigated Lands	Percent of Cropland	Percent of HUC
	2.9%	1.4%

3.4 Stream Flow Data[7, 8]

For this assessment, data was collected from two stream gage stations along the North Fork Solomon River: one at Kirwin and one at Portis. Stream flow data has been collected since 1916 at Kirwin and since 1946 at Portis.





3.5 Other Physical Descriptions

		MILES
Stream Data	Total Miles	700[9]
Land Cover/Land Use[10]	**Acres**	**%**
Water	837	0.93
Low Intensity Residential	34	0.04
High Intensity Residential	2	0.00
Commercial/Industrial/Transportation	285	0.32
Bare Rock/Sand/Clay	28	0.03
Quarries/Strip Mines/Gravel Pits	11	0.01
Transitional	0	0.00
Deciduous Forest	7,887	8.78
Evergreen Forest	544	0.61
Mixed Forest	0	0.00
Shrubland	347	0.39
Grasslands/Herbaceous	33,687	37.50
Pasture/Hay	9,347	10.40
Row Crops	17,242	19.19
Small Grains	18,330	20.40
Fallow	4	0.00
Urban/Recreational	9	0.01
Woody Wetlands	624	0.69
Emergent Herbaceous Wetlands	622	0.69
Total Acres of 100 foot Buffers[a]	89,842	100.00

**: Less than 1 percent of total acres.*
[a]: Totals are approximate due to rounding and small unknown acreages.

4.0 Resource Concerns

Resource concerns are issues related to the natural environment. Natural resources include soil, water, air, plants, animals, and humans. Watershed Restoration and Protection Strategy (WRAPS) Stakeholder Leadership Teams (SLT) identified major resource issues that affect the Lower North Fork Solomon sub-basin.

4.1 Summary of Resource Concerns[11]

Resource Concerns / Issues by Land Use								
Soil, Water, Air, Plant, Animal, plus Human (SWAPA +H) Concerns	**Specific Resource Concern / Issue**	Pasture/Hay	Grain Crops	Row Crops	Grazed Range	Forest	Wildlife	Urban
Water Quantity	Inefficient water use on irrigated land		X	X				
Water Quality, Ground Water	Harmful levels of pesticides			X				X
	Excessive nutrients and organics			X				
	Excessive salinity			X				
Water Quality, Surface	Harmful levels of pesticides		X	X				X
	Excessive nutrients and organics	X	X	X	X		X	X
	Excessive salinity			X				
	Harmful level of pathogens				X		X	X

Soil, Water, Air, Plant, Animal, plus Human (SWAPA +H) Concerns	Specific Resource Concern / Issue	Pasture/Hay	Grain Crops	Row Crops	Grazed Range	Forest	Wildlife	Urban
Animal: Domestic	Inadequate stock water	X			X			
Other Concerns: Water Conservation	Urban water conservation							X
	Flow meters and other water saving devices			X				
	Well head protection	X	X	X	X			X
	Comprehensive Nutrient Management Programs	X			X			
Human: Other Concerns	Household hazardous waste							X
	Municipal drought plan							X

Listed below are the concerns the SLT have expressed for their watershed.

Water Quantity

a. Low flow home units (show economic savings).
b. General education to the public about water use and possible pollutants to our water supply through newsletters, brochures in city water bills, newspaper articles, and CD newsletters.
c. Reduce the water wasted by inefficient irrigation.
d. Encourage CDs within the watershed to set up rules enforcing the use of flow meters and other water saving devices.
e. Demonstrate these tools in a field day setting.
f. Promote government programs such as Environmental Quality Incentives Program (EQIP).
g. Educate public on water usage during the growth cycle of a crop, both irrigated and non-irrigated. Also, educate about how economics play a role.
h. Plan for drought condition and educate public on ways to conserve water.
i. Promote conservation practices with urban and rural residents through education.
j. Make sure city drought plan is up to date.

Water Quality

a. Educate public about wellhead protection areas by placing signage and using source water brochures from the Kansas Department of Health and Environment (KDHE).
b. Make educational material available at place of purchase promoting proper application times and amounts.
c. Encourage the use of buffer strips by explaining the damage done to aquatic life from chemical and fertilizer contamination.
d. Hold a field day to demonstrate the use of alternative, organic, or more earth friendly fertilizers.
e. Educate public on the economics of over fertilization or chemical use.
f. Partner with organizations already existing to help get the word out.

Animal: Domestic

a. Demonstrate and educate on alternative livestock watering systems; i.e., stream crossing, fencing off ponds/river, automatic waters, etc.
b. Public signage and education of proper pet waste disposal placed in parks, vet offices, feed mill, city offices, etc.
c. Promote and create a comprehensive nutrient management program for ag producers' individual needs.

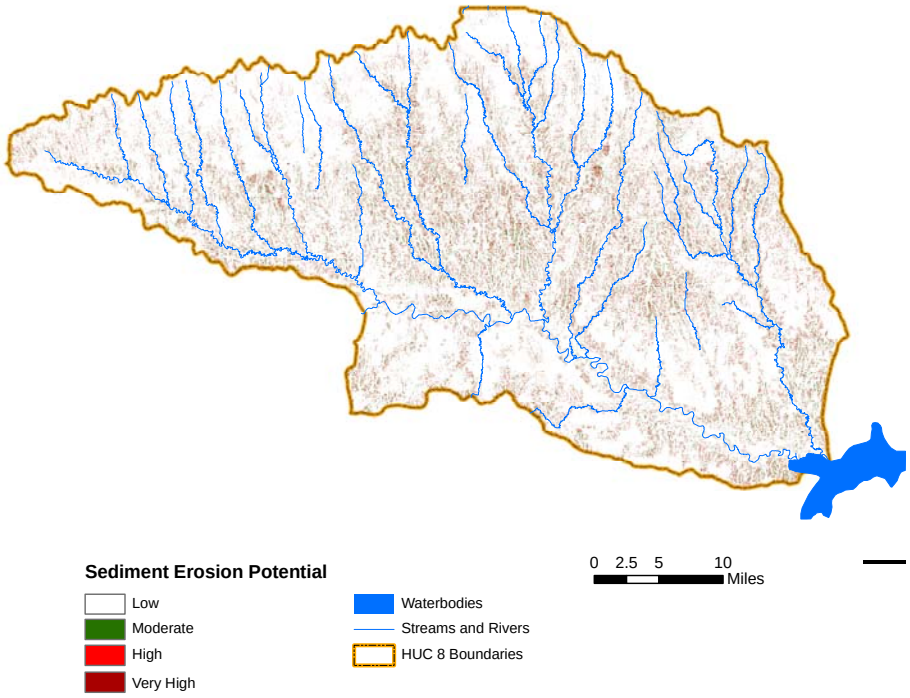
Human: Other Concerns

a. Illegal dumping of trash.
   1. Educate public on current household hazardous waste disposal sites and help coordinate sites for those areas where one is not available.
   2. Have an ag waste clean up day(s).
b. Increase the general education of the public about water quality and quantity.
   1. Newspaper articles or a weekly column
   2. Newsletters: Farm Service Agency, NRCS, Extension, etc.
   3. Radio Public Service Announcement (PSA).

4. City water bill brochures.
5. Short mailings with humor included.
6. Education on the windshield at ball games with humor included.
7. Girl Scouts.
8. E.A.R.T.H. program from middle school students.
9. World Water Monitoring Day for all ages.
10. Quick read of fact with eye appeal.
11. Brochures or placemats at restaurants.
12. Booth at county fairs.

4.2 Sediment Reduction Potential[12]

Geographic Information System (GIS) was utilized to assess terrestrial landscapes for erosion potential by calculating a Revised Universal Soil Loss Equation (RUSLE) value on a raster basis (30 m X 30 m).



4.3 Water Quality Conditions

The KDHE is responsible for monitoring water quality conditions in the state of Kansas. This section is provided by KDHE. For up-to-date water quality condition information, visit the KDHE Web site: http://www.kdheks.gov/tmdl/solomon.htm.

4.3.1 Confined Animal Feeding Operations

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.

Confined Animal Feeding Operations Registry Table[13]

Animal/Operation Type	Dairy	Feedlot	Poultry	Swine
Number of Permitted Farms	2	20	0	8
Number of Certified Farms	4	26	0	8
Total Number of Animal Units	1,176	31,920	0	8,903

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 and are comprised of water intakes, wells, and water treatment facilities. The KDHE oversees more than 1,080 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 approximately 38 active public water supply wells located within this watershed. Due to the lack of surface water in this watershed, all of the public water supply is pulled from groundwater. Major groundwater aquifers underlying this watershed include the Dakota Aquifer and a small portion of the High Plains Aquifer along with alluvial aquifers of the Solomon River and its tributaries.

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 SWA area, inventory of potential contaminant sources, and an analysis of the susceptibility of the water source to the potential contaminants. 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 http://www.kdheks.gov/nps/swap/SWreports.html.

4.3.3 Designated Uses[14]

According to the Kansas Surface Water Register, the most *common* designated uses for streams and rivers in this watershed include expected aquatic life use, secondary contact recreation, and food procurement. The table below lists designated uses by stream and impairments in the watershed.

Designated Uses Table								
Stream Name	**AL**	**PCR**	**DS**	**FP**	**GR**	**IW**	**IR**	**LW**
Beaver Creek	E			X				
Beaver Creek, E Br	E			X				
Beaver Cr, Middle	E							
Beaver Cr, West	E			X				
Big Cr	E							
Boughton Cr	E							
Buck Cr	S							
Cedar Cr	E							
Cedar Cr, West	E							
Cedar Cr, E	E			X				
Cedar Cr, East	E							
Cedar Cr, Middle	E							
Deer Cr, seg 23, 24, 27, 31	E			X				
Deer Cr, seg 29	E	O	X	X	X	X	X	X
Dry Cr	E		X					
Glen Rock Cr	E							
Lawrence Cr	E							
Lindley Cr	E							
Little Oak Cr	E							
Medicine Cr	E							
Oak Cr	E		X	X				
Oak Cr, West	E			X				
Oak Cr, East	E			X				
Plotner Cr	E	O	O	X	X	O	X	X
Plum Cr	E							
Solomon R, N Fk	E	X	X	X	X	X	X	X
Spring Cr	E			X				
Starvation Cr	E							
Twelvemile Cr	E							
Francis Wachs WA	E		O	X		O	O	O

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

E = Expected Aquatic Life Use Water
X = Referenced stream segment is assigned the indicated designated use
O = Referenced stream segment does not support the indicated beneficial 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 stream miles within the watershed 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 compromising 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 or to download the TMDL report, visit http://www.kdheks.gov/tmdl/index.htm.

Stream Data	
Stream Miles	700
Stream miles that do not meet designated uses, miles	398[15]

2004 Impaired Waters with TMDLs[16]			
Stream Segment	Stream/Lake with TMDL	Priority for TMDL Implementation	Impairments
10, 11, 12, 13, 14	Beaver Creek at Gaylord	Low	Sulfate
10, 11, 12, 13, 14	Beaver Creek at Gaylord	Low	Selenium
23, 25, 27, 29, 31	Deer Creek at Kirwin	Low	Sulfate
23, 25, 27, 29, 31	Deer Creek at Kirwin	Low	Selenium
7, 9, 15, 21, 22	Lower N Fk Solomon River	Low	Sulfate
7, 9, 15, 21, 22	Lower N Fk Solomon River	Low	Selenium
2, 3, 4, 39, 40, 43	Oak Creek	Low	Sulfate
2, 3, 4, 39, 40, 43	Oak Creek	Low	Selenium

2006 Impaired Waters Needing TMDLs[17]		
Impaired Stream/Lake	Impairment	Priority
Lower N Fork Solomon River	Biology	Low
Lower N Fork Solomon River	E. coli Bacteria	Low
Deer Creek	Dissolved Oxygen	Low
Beaver Creek	Dissolved Oxygen	Low

Impairment definitions:

Sulfate: Sulfate is a naturally occurring mineral that can cause taste and odor problems in drinking water. Sulfates are dissolved into groundwater as the water moves through gypsum rock formations. The water quality standard for sulfate in Kansas is 250ug/L.

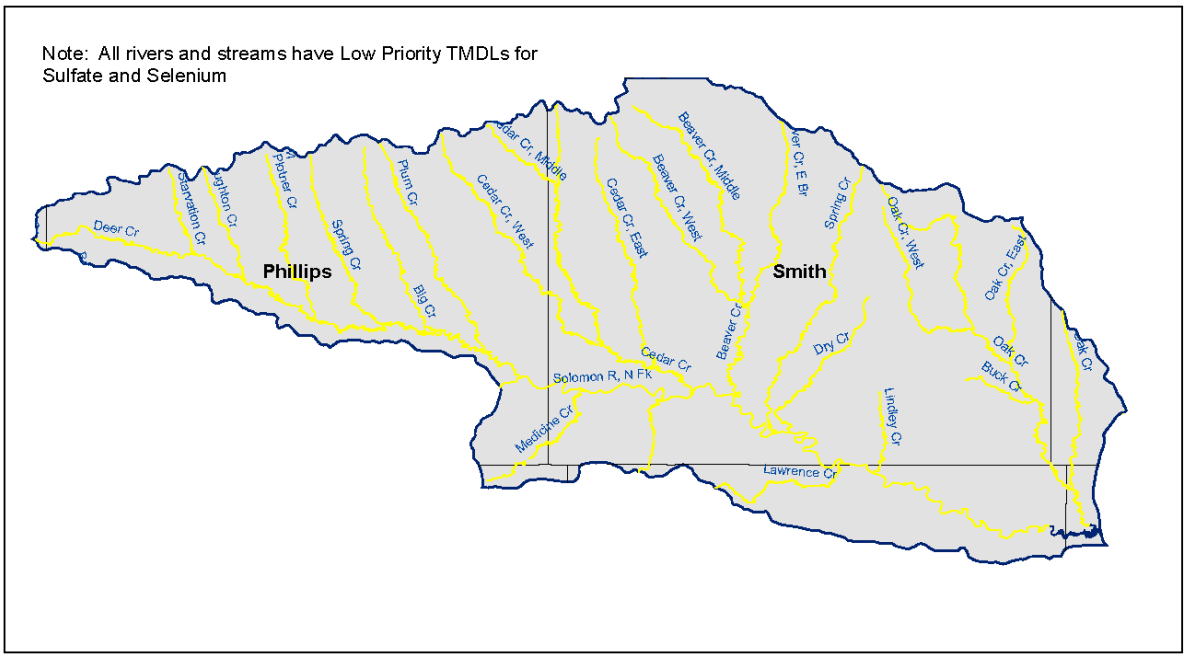
Selenium: A naturally occurring metal in marine shale that serves as a micronutrient. Excessive amounts impair aquatic life and bioaccumulation up the food chain occurs causing toxicity to birds, mammals, and humans. Kansas water quality standards are an average of 5ppb and a maximum of 20ppb.

Biology: Excess nutrients and organic enrichment in stream water can have a negative influence on aquatic populations. Nitrogen and phosphorus can originate from agricultural fertilizers, urban fertilizers, failing septic systems and livestock or wildlife manure in the stream.

E. coli Bacteria: Bacteria indicators (either fecal coliform or *E. coli*) are found in the digestive systems of warm-blooded animals. In surface waters, E. coli 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.

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

TMDLs for Lower North Fork Solomon Watershed



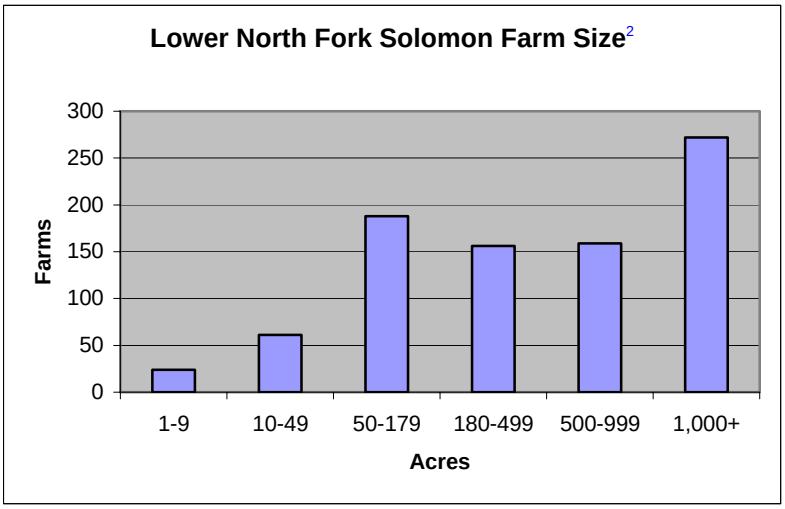
4.4 Threatened and Endangered Species Status[18]

The Endangered Species Act provides protection to animals 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 (*Scientific name*)	**Threatened (THR), Endangered (END), Proposed (P), Candidate (C)**	**Designated Critical Habitat (Y)es/(N)o**	**Listing: Federal (F), State (S)**
Animals, Vertebrates - Fishes			
Topeka Shiner (Notropis topeka)	END, THR	N	F, S
Silver Chub (Macrhybopsis storeriana)	END	Y	S
Animals, Vertebrate - Birds			
Bald Eagle (Haliaeetus leucocephalus)	THR	Y	F, S
Eskimo Curlew (Numenius borealis)	END	N	F, S
Least Tern (Sterna antillarum)	END	N	F, S
Peregrine Falcon (Falco peregrinus)	END	N	S
Piping Plover (Charadrius melodus)	THR	N	F, S
Snowy Plover (Charadrius alexandrinus)	THR	N	S
Whooping Crane (Grus americana)	END	N	F, S
Animals, Vertebrate – Mammal			
Eastern Spotted Skunk (Spilogale putorius)	THR	N	S

SPECIES IN NEED OF CONSERVATION		
Species Common Name (*Scientific name*)	**Status: Species in Need of Conservation (SNC)**	**Listing: Federal (F) State (S)**
Animals, Vertebrates - Fishes		
Plains Minnow (Hybognathus placitus)	SNC	S
Animals, Vertebrate - Birds		
Black Tern (Chlidonias niger)	SNC	S
Bobolink (Dolichonyx oryzivorus)	SNC	S
Ferruginous Hawk (Buteo regalis)	SNC	S
Golden Eagle (Aquila chrysaetos)	SNC	S
Long-billed Curlew (Numenius americanus)	SNC	S
Short-eared Owl (Asio flammeus)	SNC	S
Animals, Vertebrate – Mammal		
Franklin's Ground Squirrel (Spermophilus franklinii)	SNC	S
Southern Bog Lemming (Synaptomys cooperi)	SNC	S
Animals, Vertebrate – Reptiles		
Eastern Hognose Snake (Heterodon platirhinos)	SNC	S
Western Hognose Snake (Heterodon nasicus)	SNC	S

5.0 Census and Social Data



Number of Farms: 793
- Average Farm Size: **996 acres**

Number of Operators: 1,355
- Principle Full-Time Operators: **535**
- Principle Part-Time Operators: **820**

5.1 Estimated Level of Willingness and Ability to Participate in Conservation[19]

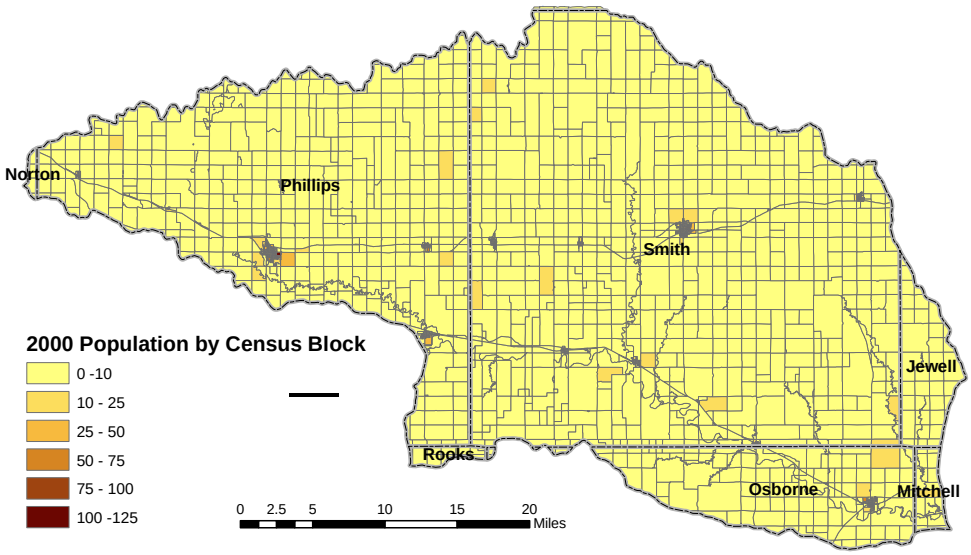
There is a likelihood of full conservation participation in the first 5 years with moderate adjustments in technical and financial assistance, and conservation marketing. There are high management skills in the watershed. Technical assistance delivery system is effective indicating that the residents of the watershed are aware that technical assistance is available. The information and education delivery system needs minor modifications. Existing financial incentives need to be expanded or increased to improve the participation rate and accelerate participation.

5.2 Evaluation of Social Capital[20]

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:

Watershed residents are highly motivated to be active citizens. They are actively involved in volunteering in community projects, church memberships, vote regularly, have a high school degree, and are connected via the Internet. They are also involved in Parent Teacher Associations, civic and charitable groups, and community decisions, with minority participation being slightly above average. They are average or slightly below average in participating in environmental concerns or public meetings.

5.3 Population Distribution Map (2000)[21]



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 information (PRS), visit http://ias.sc.egov.usda.gov/prsreport2006/PRSReports.aspx.

6.1 Reported Conservation Progress (2003 – 2007)

PRS Data	FY03	FY04	FY05	FY06	FY07	Avg/Year	Total
Total Conservation Systems Planned (no)	NA	NA	156	169	116	147	441
Total Conservation Systems Applied (no)	NA	NA	160	152	127	146	439
Conservation Treatment (Units/Acres)							
Access Road (ft)			2,000	3,605	260	1,173	5,865
Brush Management (ac)			15	310	298	125	623
Comprehensive Nutrient Management Plan (no)	3		2	2		1	7
Conservation Completion Incentive First Year (no)				1		*	1
Conservation Crop Rotation (ac)		921	7,868	5,415	15,359	5,913	29,563
Contour Buffer Strips (ac)	112	7		1		24	120
Contour Farming (ac)		746	2,290	2,614	1,439	1,418	7,089
Cover Crop (ac)		69	749	743	707	454	2,268
Critical Area Planting (ac)		20	21	24	18	17	83
Diversion (ft)			6,633	1,720	595	1,790	8,948

Lower North Fork Solomon

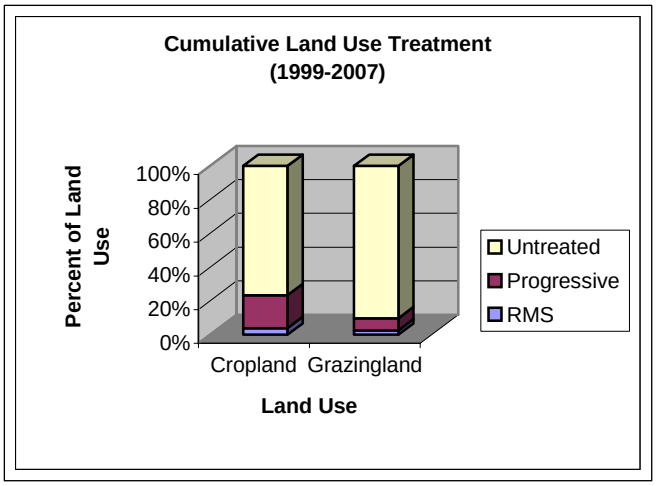
10260012

December 2007

Conservation Treatment (Units/Acres)	FY03	FY04	FY05	FY06	FY07	Avg/Year	Total
Erosion Reduction (ac)	3,593					719	3,593
Fence (ft)		2,640	20,972	38,616		12,446	62,228
Field Border (ft)				117,272	40,500	31,554	157,772
Filter Strip (ac)		22	11		3	7	36
Forage Harvest Management (ac)		47		24	217	58	288
Grade Stabilization Structure (no)		1				*	1
Grassed Waterway (ac)		11	14	9	15	10	49
Irrigation System, Microirrigation (no)		1				*	1
Irrigation System, Sprinkler (ac)			290			58	290
Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic (ft)			4,552			910	4,552
Irrigation Water Management (ac)				576		115	576
Manure Transfer (no)				2		*	2
Mulching (ac)		23	5	6	2	7	36
Nutrient Management (ac)	3,439	922	270	356	1,008	1,199	5,995
Pasture and Hay Planting (ac)		5				1	5
Pest Management (ac)	1,856	452	924	2,107	585	1,185	5,924
Pipeline (ft)		31,407	44,192	51,218	33,408	32,045	160,225
Pond (no)		1		1	1	1	3
Pond Sealing or Lining, Compacted Clay Treatment (no)			1	1	1	1	3
Pond Sealing or Lining, Soil Dispersant (no)				2		*	2
Prescribed Burning (ac)				92	271	73	363
Prescribed Grazing (ac)	1,286	1,359	227	6,049	2,368	2,258	11,289
Pumping Plant (no)			1		1	*	2
Range Planting (ac)		443	278	53	84	172	858
Residue and Tillage Management, Mulch Till (ac)					1,135	227	1,135
Residue and Tillage Management, No-Till/Strip Till/Direct Seed (ac)					1,068	214	1,068
Residue Management, Mulch Till (ac)		161	1,925	2,345	233	933	4,664
Residue Management, No-Till/Strip Till (ac)			4,251	3,530	16,364	4,829	24,145
Residue Management, Seasonal (ac)	2,384	633	1,492	734	544	1,157	5,787
Restoration and Management of Rare and Declining Habitats (ac)		52	33	365	669	224	1,119
Sediment Basin (no)			2	6	2	2	10
Spring Development (no)			1			*	1
Stream Crossing (no)					1	*	1
Strip Cropping (ac)			2			*	2
Terrace (ft)		169,904	124,586	127,415	77,108	99,803	499,013
Underground Outlet (ft)		757	1,367	795	423	668	3,342
Upland Wildlife Habitat Management (ac)	1,987	925	2,126	6,311	3,241	2,918	14,590
Use Exclusion (ac)		332	1,044	1,010	795	636	3,181
Waste Storage Facility (no)			1	4	1	1	6
Waste Utilization (ac)		424	325	235		197	984
Wastewater Treatment Strip (ac)			1,145			229	1,145
Water Well (no)		3		4	1	2	8
Watering Facility (no)		15	17	27	4	13	63
Well Decommissioning (no)					1	*	1
Wetland Enhancement (ac)	2		74			15	76
Wetland Restoration (ac)				1	7	2	8
Wetland Wildlife Habitat Management (ac)			2			*	2
Wildlife Watering Facility (no)			6	1	2	2	9
Windbreak/Shelterbelt Establishment (ft)	2	20,184	1,826	3,222	4,524	5,952	29,758

6.2 Cumulative Conservation Status

Conservation plans developed and applied from 1999 to 2007 are projected in the following graph.



Note:

- *Benchmark (BM) refers to untreated lands within the watershed.*
- *Progressive refers to a resource in which some practices have been implemented, but does not meet established quality criteria.*
- *Resource Management Systems (RMS) refers to a combination of practices that currently meet, or when installed will meet or exceed established quality criteria.*

6.3 Other Watershed Projects

Watershed 319 Projects
WRAPS – Lower North Fork, Lower South Fork, Upper North Fork and Upper South Fork Solomon Watersheds

6.4 Lands Applications through Farm Bill Programs[22]

Conservation Reserve Program (CRP) Re-enrollment and Extension of 2007 Expiring Contracts[23]	**13,827 acres**
Conservation Security Program (CSP)	**None**
EQIP 2006	**14,232 acres**
EQIP Ground and Surface Water Conservation (GSWC) 2002-2006	**1,326 acres**
Farm and Ranch Lands Protection Program (FRPP)	**None**
Grassland Reserve Program (GRP) 2003-2006	**58 acres**
Wetlands Reserve Program (WRP)	**None**
Wildlife Habitat Incentive Program (WHIP) 2006	**676 acres**

7.0 Assessment

Introduction

This assessment matrix has been developed to provide an estimate of conservation systems, which may be needed to address resource concerns identified in the RWA Resource Profile. This can also be described as likely future conditions within the watershed.

Conservation systems have been described in this assessment as systems of conservation practices developed to address resource concerns on various land uses. Systems include BM and RMS. BM systems are best described as land units that have had no treatment or one or more resource concerns treated with conservation practices. RMS are described as land units that have all known resource concerns treated with conservation practices. The level of treatment to an individual resource concern is credited when the practice(s) used meet or exceed a predetermined level of treatment, known as quality criteria.

Only priority resource concerns have been described in this RWA. Local resource professionals identified these concerns. Other resource concerns likely exist within the watershed but only make up a small percentage of what needs to be treated. Further investigation and analysis will need to be completed in order to better define all resource concerns.

Resource professionals provided an estimate by percent of conservation systems that will likely be applied to BM systems and untreated land units to address resource concerns identified in the resource profile. These systems are not meant to be comprehensive or address all resource concerns for each land unit in the watershed; rather, only the typical system of conservation practices that could be applied. Numerous alternatives and combinations of practices exist that should be made available to landowners and producers in order to meet their desired level of treatment.

Federal programs identified to implement conservation systems include, but are not limited to EQIP, WHIP, and WRP. Other funding available for implementation includes various private, local, and state program funds.

This assessment provides estimates only that have been developed using local conservationists and work groups to identify resource concerns, participation rates, and conservation systems likely to be applied. This information was merged with state average cost lists and estimated operation and maintenance costs to generate a cost estimate by individual practice for each conservation system projected to be applied.

Further investigation and analysis within the watershed is required to identify all resource concerns and locations of conservation practices and systems needed to address resource concerns.

7.1 Cropland

7.1.1 Dryland

Current Conditions	Cultivated / Non-Cultivated*	Dryland	Irrigated	Total	
Total Cropland	428,194	415,776	12,418	428,194	Acres
Cropland Needing Treatment	214,097	207,888	6,209	214,097	Acres
Cropland Currently at RMS Level**	17,128	16,631	497	17,128	Acres
Cropland Currently at Progressive Level***	85,639	83,155	2,484	85,639	Acres
Cropland Currently at Untreated Level	325,427	315,990	9,437	325,427	Acres
Typical Cropland-Dryland Management Unit	160				Acres

** Non-cultivated cropland is cropland that has been planted to a perennial crop such as alfalfa.*
*** RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.*
**** Progressive level defines a management unit that does not have all resource concerns treated to the RMS level.*
Note: For this analysis, all untreated units and progressive systems will be treated to RMS level.

Current Conditions for Cropland - Dryland

Management Systems		Quantity		Costs		Effects				
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Soil Condition	Water Quantity	Quality, Surface	Note: Effects are numerical values placed on benchmark conditions and degree of change in condition by conservation system(s) application. Scale range from -5 (most damaging to resources) to +5 (least damaging, best protection offered by treatment).
BM1		Ac.	315,990			-3	-1	-3	-2	
	Conservation Cropping Rotation	Ac.	315,990							
	Conventional Tillage	Ac.	315,990							
BM2			83,155			0	-1	-2	-1	
	Conservation Cropping Rotation	Ac.	83,155							
	Crop Residue Use	Ac.	83,155							
	Terrace	Ac.	74,840							
RMS		Ac.	16,631			+1	0	0	+1	
	Conservation Cropping Rotation	Ac.	16,631							
	Conservation Tillage	Ac.	16,631							
	Nutrient Management	Ac.	16,631							
	Pest Management	Ac.	16,631							
	Terrace	Ac.	14,968							

Desired / Estimated Participation Rates

	Proposed Practice Change	Rate	Acres
	Cropland-Dryland Conservation System	50%	103,944
	Cropland-Irrigation Conservation System	50%	3,104
		Total	107,049

Estimates:
44,650 Acres needing terraces
207,888 Acres needing treatment
103,944 Acres are not expected to be treated

Future Conditions	Total	BM1	BM2	RMS	RMS1	RMS2	RMS3	RMS4	RMS5
Crop - Dryland	415,776	118,080	177,121	16,631	49,893	30,144	14,552	5,197	4,158

Future Conditions for Cropland - Dryland

Management Systems		Quantity		Costs		Effects				Implementation			
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality, Surface	EQIP	WHIP	WRP	Other
BM1		Ac.	118,080			-3	-1	-3	-2				
	Conservation Cropping Rotation	Ac.	118,080		$70,848								
	Crop Residue Use	Ac.	118,080		$14,170								
BM2		Ac.	177,121			0	-1	-2	-1				
	Conservation Cropping Rotation	Ac.	177,121		$106,272								
	Crop Residue Use	Ac.	177,121		$21,254								
	Terrace	Ac.	159,409		$3,587								
RMS		Ac.	16,631			+1	0	0	+1				
(Current RMS)	Conservation Cropping Rotation	Ac.	16,631		$14,968								
	Conservation Tillage	Ac.	16,631		$14,968					X			
	Nutrient Management	Ac.	16,631		$13,305					X			
	Pest Management	Ac.	16,631		$9,979					X			
	Terrace	Ac.	14,968		$337					X			X
RMS1		Ac.	49,893			+2	+3	+1	+3				
(Reduce soil erosion by water)	Conservation Cropping Rotation	Ac.	49,893	$299,359	$29,936								
	Crop Residue Use	Ac.	49,893	$299,359	$5,987					X			
	Terrace	Ft.	5,149,247	$4,634,322	$115,858					X			X
RMS2		Ac.	30,144			+2	+3	+1	+2				
(Reduce sheet/rill erosion)	Conservation Cropping Rotation	Ac.	30,144	$180,863	$18,086								
	Crop Residue Use	Ac.	30,144	$180,863	$3,617					X			
	Terrace	Ft.	3,111,003	$2,799,903	$69,998					X			X
RMS3		Ac.	14,552			+4	+4	+2	+3				
(Reduce soil erosion by wind)	Conservation Cropping Rotation	Ac.	14,552	$87,313	$8,731								
	Crop Residue Use	Ac.	14,552	$87,313	$1,746					X			
RMS4		Ac.	5,197			+4	+4	0	+2				
(Conversion to range land)	Cover Crop	Ac.	5,197	$103,944	$10,394					X	X		X
	Range Planting	Ac.	5,197	$155,916	$1,559					X			
RMS5		Ac.	4,158			+4	+2	0	+1				
(Conversion to native vegetation)	Cover Crop	Ac.	4,158	$83,155	$8,316					X	X		X
	Restoration and Management of Declining Habitat	Ac.	4,158	$457,354	$4,574					X	X	X	X
	Total RMS Costs			**$9,369,664**	**$548,490**								

Potential RMS Effects Summary for Cropland - Dryland

Cost Items and Programs	Costs*	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		$148,806
Operator Investment (25% Cost Share)	$2,342,416	
Federal Costs (75% Cost Share)	$7,027,248	
Total RMS Costs	**$9,369,664**	**$548,490**
Estimated Level of Participation	50%	
Total acres projected to be in RMS System	120,575	
Total Annual Crop Production Benefit	$99,182	

** 2006 Cost List*

Resource Management Systems application estimates provided by District Conservationists.

Beneficial Effects of Proposed RMS System

- Improves soil condition
- Increases soil organic matter
- Improves water quality by reducing erosion and sediment delivery to streams

7.1 Cropland

7.1.2 Irrigated

Current Conditions	Cultivated / Non-Cultivated*	Dryland	Irrigated	Total	
Total Cropland	428,194	415,776	12,418	428,194	Acres
Cropland Needing Treatment	214,097	207,888	6,209	214,097	Acres
Cropland Currently at RMS Level**	17,128	16,631	497	17,128	Acres
Cropland Currently at Progressive Level***	85,639	83,155	2,484	85,639	Acres
Cropland Currently at Untreated Level	325,427	315,990	9,437	325,427	Acres
Typical Cropland-Dryland Management Unit	160				Acres

** Non-cultivated cropland is cropland that has been planted to a perennial crop such as alfalfa.*
*** RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.*
**** Progressive level defines a management unit that does not have all resource concerns treated to the RMS level.*
Note: For this analysis, all untreated units and progressive systems will be treated to RMS level.

Current Conditions for Cropland - Irrigated

Management Systems		Quantity		Costs		Effects				
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality, Surface	Note: Effects are numerical values placed on benchmark conditions and degree of change in condition by conservation system(s) application. Scale range from -5 (most damaging to resources) to +5 (least damaging, best protection offered by treatment).
BM1		Ac.	9,437			-3	-1	-3	-2	
	Conservation Cropping Rotation	Ac.	9,437							
	Conventional Tillage	Ac.	9,437							
BM2			2,484			0	-1	0	-1	
	Conservation Cropping Rotation	Ac.	2,484							
	Crop Residue Use	Ac.	2,484							
	Irrigation Water Management	Ac.	2,484							
RMS		Ac.	497			+2	0	+1	+1	
	Conservation Cropping Rotation	Ac.	497							
	Conservation Tillage	Ac.	497							
	Nutrient Management	Ac.	497							
	Pest Management	Ac.	497							
	Irrigation Water Management	Ac.	497							

Desired / Estimated Participation Rates

	Proposed Practice Change	Rate	Acres
	Cropland-Dryland Conservation System	50%	103,944
	Cropland-Irrigation Conservation System	50%	3,104
		Total	107,049

Estimates:

6,209 Acres needing treatment

3,104 Acres are not expected to be treated

Future Conditions		Total	BM1	BM2	RMS	RMS1	RMS2	RMS3
	Crop - Irrigated	12,418	3,526	5,290	497	1,738	1,118	248

Future Conditions for Cropland - Irrigated

Management Systems		Quantity		Costs		Effects				Implementation			
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality, Surface	EQIP	WHIP	WRP	Other
BM1		Ac.	3,526			-3	-1	-3	-2				
	Conservation Cropping Rotation	Ac.	3,526		$2,116								
	Crop Residue Use	Ac.	3,526		$423								
BM2		Ac.	5,290			0	-1	0	-1				
	Conservation Cropping Rotation	Ac.	5,290		$3,174								
	Crop Residue Use	Ac.	5,290		$635								
	Irrigation Water Management	Ac.	5,290		$5,819								
RMS		Ac.	497			+2	0	+1	+1				
(Current RMS)	Conservation Cropping Rotation	Ac.	497		$298								
	Conservation Tillage	Ac.	497		$447					X			
	Crop Residue Use	Ac.	497		$60					X			
	Nutrient Management	Ac.	497		$397					X			
	Pest Management	Ac.	497		$298					X			
	Irrigation Water Management	Ac.	497		$546					X			
RMS1		Ac.	1,738			+3	+3	+1	+3				
(Improve irrigation water management)	Conservation Cropping Rotation	Ac.	1,738	$10,431	$1,043								
	Crop Residue Use	Ac.	1,738	$10,431	$209					X			
	Irrigation Water Management	Ac.	1,738	$19,123	$1,912					X			
RMS2		Ac.	1,118			+4	+3	+3	+2				
(Conversion to pivot system)	Conservation Cropping Rotation	Ac.	1,118	$6,706	$671								
	Crop Residue Use	Ac.	1,118	$6,706	$134					X			
	Irrigation System, Sprinkler (conversion)	No.	7	$399,000	$1,995					X			X
	Irrigation Water Management	Ac.	1,118	$12,293	$1,229					X			
RMS3		Ac.	248			+4	+3	+3	+3				
(Convert to dryland)	Conservation Cropping Rotation	Ac.	248	$1,490	$149								
	Crop Residue Use	Ac.	248	$1,490	$30					X			
	Irrigation Water Management	Ac.	248	$2,732	$273					X			
	Total RMS Costs			**$470,401**	**$21,858**								

Potential RMS Effects Summary for Cropland - Irrigated

Cost Items and Programs	Costs*	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		$15,579
Operator Investment (25% Cost Share)	$117,600	
Federal Costs (75% Cost Share)	$352,801	
Total RMS Costs	**$470,401**	**$21,858**
Estimated Level of Participation	50%	
Total acres projected to be in RMS System	3,601	
Total Annual Crop Production Benefit	$4,923	

**2006 Cost List*

Resource Management Systems application estimates provided by District Conservationists.

Beneficial Effects of Proposed RMS System

- Improves soil condition
- Increases soil organic matter
- Improves water quality by reducing erosion and sediment delivery to streams
- Decreases aquifer overdraft

7.2 Grazed Range

Native Grassland

Current Conditions	Grazed	Ungrazed	Total	
Total Grazed Range	318,657	0	318,657	Acres
Grazed Range Needing Treatment	178,448	0	178,448	Acres
Total Range with Brush Invasion	95,597	0	95,597	Acres
Cropland Currently at RMS Level**	4,461			Acres
Cropland Currently at Progressive Level***	12,848			Acres
Cropland Currently at Untreated Level	161,138			Acres
Typical Range Management Unit	320			Acres

*** RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.*
**** Progressive level defines a management unit that does not have all resource concerns treated to the RMS level.*
Note: For this analysis, all untreated units and progressive systems will be treated to RMS level.

Current Conditions for Grazed Range

Grazed Range		Quantity		Costs		Effects			
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Plant Condition	Water Storage	Habitat	Water Quality
BM1		Ac.	161,138			-3	-1	-3	-2
	Pond	No.	1,007						
	Watering Facility	No.	755						
	Fence	Mi.	1,511						
BM2		Ac.	12,848			0	+1	+1	+1
	Prescribed Grazing	Ac.	12,848						
	Pond	No.	80						
	Watering Facility	No.	60						
	Pipeline	Ft.	169,838						
	Fence	Mi.	120						
RMS		Ac.	4,461			+2	+2	+1	+1
	Brush Management	Ac.	4,461						
	Prescribed Burning	Ac.	4,461						
	Watering Facility	No.	21						
	Pipeline	Ft.	58,971						
	Pond	No.	28						
	Fence	Mi.	28						

Note: Effects are numerical values placed on benchmark conditions and degree of change in condition by conservation system(s) application. Scale range from -5 (most damaging to resources) to +5 (least damaging, best protection offered by treatment).

Desired/Estimated Participation Rates

	Proposed Practice Change	Rate	Acres
	Grazing System	50%	89,224
	Brush Management	50%	47,799
	Prescribed Burning	50%	89,224

Future Conditions		Total	BM1	BM2	RMS	RMS1	RMS2	RMS3
	Grazed Range	318,657	89,989	134,983	4,461	32,121	29,444	27,659

Future Conditions for Grazed Range

Grazed Range		Quantity		Costs		Effects				Implementation			
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Plant Condition	Water Storage	Habitat	Water Quality	EQIP	WHIP	WRP	Other
BM1		Ac.	89,989			-3	-1	-3	-2				
	Pond	No.	562		$67,492								
	Watering Facility	No.	422		$19,404								
	Fence	Mi.	844		$34								
BM2		Ac.	134,983			0	+1	+1	+1				
	Prescribed Grazing	Ac.	134,983		$133,633								
	Pond	No.	844		$101,237								
	Watering Facility	No.	633		$29,106								
	Pipeline	Ft.	1,784,308		$32,118								
	Fence	Mi.	1,265		$51								
RMS		Ac.	4,461			+2	+2	+1	+1				
(Current RMS)	Brush Management	Ac.	4,461		$6,692								
	Prescribed Burning	Ac.	4,461		$9								
	Watering Facility	No.	21		$962								
	Pipeline	Ft.	58,971		$1,061								
	Pond	No.	28		$3,346								
	Fence	Mi.	42		$2								
RMS1		Ac.	32,121			+5	+1	+4	+2				
(Range planting)	Prescribed Grazing	Ac.	32,121	$96,362	$31,799					X			
	Upland Wildlife Habitat Management	Ac.	32,121	$2,890,856	$36,136					X	X		X
	Streambank and Shoreline Protection*	Ft.	221,760	$13,305,600	$266,112					X			
RMS2		Ac.	29,444			+5	+2	+3	+2				
(Wildlife protection)	Brush Management	Ac.	29,444	$1,472,195	$44,166					X	X		
	Prescribed Grazing	Ac.	29,444	$88,332	$29,149					X			
	Upland Wildlife Habitat Management	Ac.	29,444	$2,649,952	$33,124					X	X		X
RMS3		Ac.	27,659			+5	+3	+2	+3				
(Improve livestock grazing)	Brush Management	Ac.	27,659	$1,382,971	$41,489					X	X		
	Prescribed Grazing	Ac.	27,659	$82,978	$27,383					X			
	Total RMS Costs			**$21,969,247**	**$509,359**								

Potential RMS Effects Summary for Grazed Range

Cost Items and Programs	Costs**	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		$729,740
Operator Investment (25% Cost Share)	$5,492,312	
Federal Costs (75% Cost Share)	$16,476,935	
Total RMS Costs	**$21,969,247**	**$509,359**
Estimated Level of Participation	50%	
Total acres projected to be in RMS System	89,224	
Total Annual Forage Production Benefits	$224,786	

** Estimation by KCARE work group and local District Conservasionist (12% of total stream miles need protection)*

*** 2006 Cost List*

Resource Management Systems application estimates provided by District Conservationists.

Beneficial Effects of Proposed RMS System

Improves plant condition, health and vigor

Improves upland wildlife habitat for prairie chicken and other range dependant species

Improves water quality by reducing erosion and sediment delivery to streams

7.3 Pasture

Non-irrigated Pasture

Current Conditions	Grazed	Ungrazed	Total	
Total Pasture	75,817	0	75,817	Acres
Pasture Needing Treatment	15,012	0	15,012	Acres
Typical Pasture Management Unit	10			Acres

RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.
Benchmark defines a management unit that does not have all resource concerns treated to the RMS level.
Note: For this analysis, all benchmark systems will be treated to RMS level.

Current Conditions for Non-Irrigated Pasture

Pasture		Quantity		Costs		Effects				Note: Effects are numerical values placed on benchmark conditions and degree of change in condition by conservation system(s) application. Scale range from -5 (most damaging to resources) to +5 (least damaging, best protection offered by treatment).
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Plant Condition	Water Storage	Habitat	Water Quality	
BM1		Ac.	15,012			-3	-1	-3	-2	
	Pond	No.	94							
	Watering Facility	No.	70							
	Fence	Mi.	751							
BM2		Ac.	60,805			-1	+1	+1	+1	
	Prescribed Grazing	Ac.	60,805							
	Pond	No.	380							
	Watering Facility	No.	6,081							
	Pipeline	Ft.	17,147,076							
	Fence	Mi.	3,040							

Desired/Estimated Participation Rates

	Proposed Practice Change	Rate	Acres
	Pasture System	50%	7,506

Future Conditions		Total	BM1	BM2	RMS
	Pasture	75,817	27,324	40,987	7,506

Future Conditions for Non-Irrigated Pasture

Pasture		Quantity		Costs		Effects				Implementation			
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Plant Condition	Water Storage	Habitat	Water Quality	EQIP	WHIP	WRP	Other
BM1		Ac.	27,324			-3	-1	-3	-2				
	Pond	No.	43		$5,123								
	Water Facility	No.	1,324		$158,823								
	Fence	Mi.	2,732		$577,092								
BM2		Ac.	40,987			-1	+1	+1	+1				
	Prescribed Grazing	Ac.	40,987		$40,577								
	Pond	No.	256		$30,740								
	Water Facility	No.	192		$23,055								
	Pipeline	Ft.	541,793		$9,752								
	Fence	Mi.	2,049		$432,819								
RMS		Ac.	7,506			+3	+2	+1	+2				
(Convert to pasture)	Prescribed Grazing	Ac.	7,506	$22,518	$7,431					X			
	Pasture and Hay Planting	Ac.	7,506	$450,360	$4,504					X	X		X
	Fence	Mi.	375	$3,963,106	$79,262					X			X
	Nutrient Management	Ac.	7,506	$60,047	$6,005					X			
	Pest Management	Ac.	7,506	$45,035	$4,504					X			
	Water Facility	No.	35	$211,103	$4,222					X			X
	Pipeline	Ft.	99,218	$178,593	$1,786					X			X
	Total RMS Costs			**$4,930,762**	**$1,385,695**								

Potential RMS Effects Summary for Non-Irrigated Pasture

Cost Items and Programs	Costs*	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		$17,939
Operator Investment (25% Cost Share)	$1,232,691	
Federal Costs (75% Cost Share)	$3,698,072	
Total RMS Costs	**$4,930,762**	**$1,385,695**
Estimated Level of Participation	50%	
Total acres projected to be in RMS System	7,506	
Total Annual Forage Production Benefits	$63,165	

**2006 Cost List*

Resource Management Systems application estimates provided by District Conservationists.

Beneficial Effects of Proposed RMS System

Improves plant condition, health and vigor

Improves water quality by reducing erosion and sediment delivery to streams

8.0 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.

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