

The West Fork of the Cedar River Rapid Watershed Assessment (RWA) provides initial estimates of where conservation investments would best address the resource concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best actions to achieve their goals to conserve and improve soil and water resources.

The West Fork of the Cedar River 8-Digit Hydrologic Unit Code (HUC) watershed contains 550,684 acres (1). Forty-five percent of the watershed is in Franklin County, 29 percent in Butler County, 24 percent in Cerro Gordo County, and the remaining 2 percent is split between Black Hawk, Bremer, and Hancock counties (1). Ninety-five percent of the watershed is privately owned, 1.8 percent is publicly owned, and the remaining 3.2 percent is split between municipal areas and private conservation areas (2).

Eighty-two percent of the watershed is in cropland, 8.2 percent is pasture or hayland, 3.6 percent is woodland or natural areas, and 6.2 percent is split between water, wetlands, and developed/urban areas (3).

Elevations range from 853 feet to 1,306 feet (4). The average watershed slope is 6.3 percent (5). The primary Land Capability Class in the watershed is class 2. The Land Capability Class (LCC) breakdown for the watershed is: 8.6 percent in class 1; 71.4 percent in class 2; 14.9 percent in class 3; 2 percent in class 4; and the remaining 3.1 percent is split between classes 5, 6, 7, and 8 (6). Rainfall ranges from 31 to 35 inches per year (7). The HUC includes one interstate highway (35), one US highway (65), and three state highways (3, 14, and 107) (8).

Conservation assistance is provided by six Soil and Water Conservation Districts (SWCD) and Natural Resources Conservation Service (NRCS) field offices located in Allison, Garner, Hampton, Mason City, Waterloo, and Waverly. There are two Resource Conservation and Development (RC&D) offices that cover the watershed, including Prairie Winds in Garner and Cedar Valley in Charles City. An office locator is found at <http://offices.sc.egov.usda.gov/locator/app>

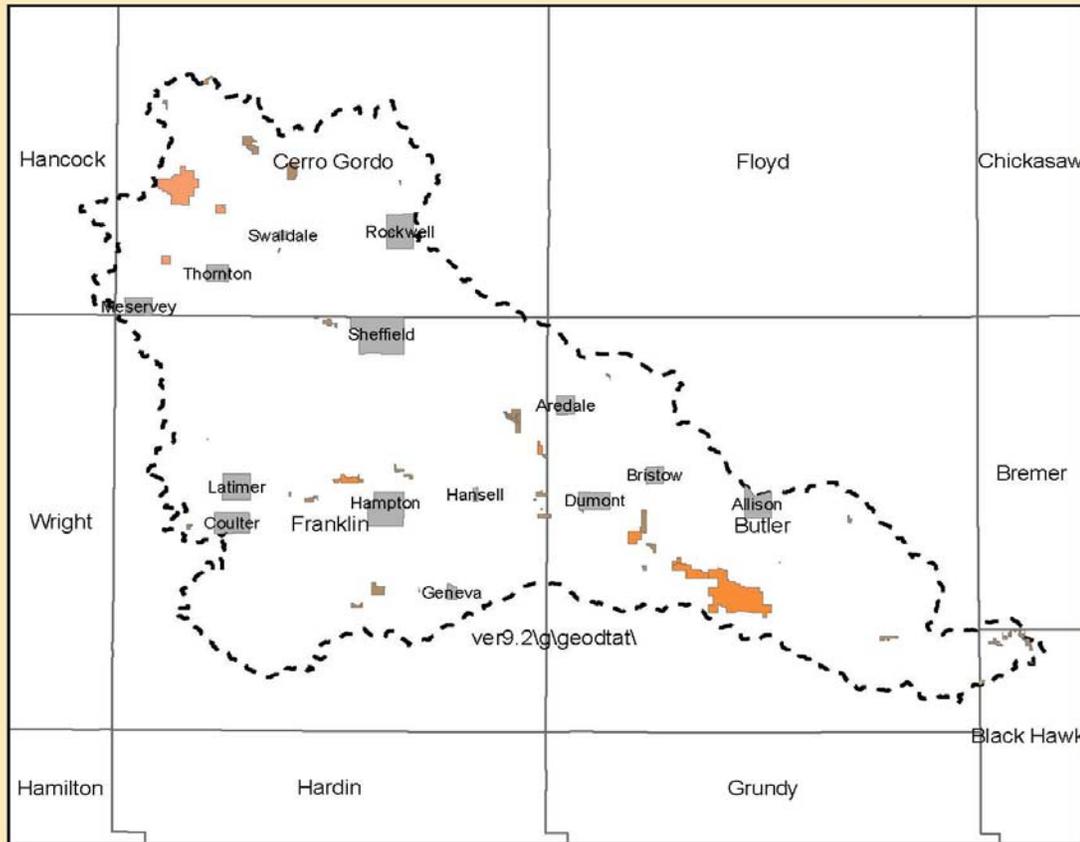
The West Fork of the Cedar River HUC includes 32 NRCS conservation easements totaling 3,772.3 acres. The easements include the Emergency Watershed Protection (EWP) program, Wetlands Reserve Program (WRP), and the Emergency Wetlands Restoration Program (EWRP). Fifty-eight percent of the easements are in Butler County, 27 percent in Cerro Gordo County, and 15 percent in Franklin County (9).

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Iowa Rapid Watershed Assessment

West Fork of the Cedar River - Ownership/Stewardship

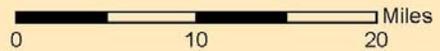


Data Source: Iowa Gap Analysis Program, 01/01/2002, Iowa DNR & Iowa DOT INCORP Data Set, 1997

Ownership	No. Of Areas	Acres
County Conservation Board	40	2,966
FWS	3	2,208
Iowa DNR	13	4,927
Private Conservation Area	1	1
State Land	1	3
The Nature Conservancy	1	25
Municipal Areas	15	17,023
Private Agricultural Land	0	523,542

Total Acres in West Fork Cedar Watershed - 550,684
 Municipal City Boundary Acres - 17,023 (3.1% of basin)
 GAP Stewardship Acres - 10,129 (1.8% of basin)
 Private Agricultural Land Acres - 523,542 (95.1%)

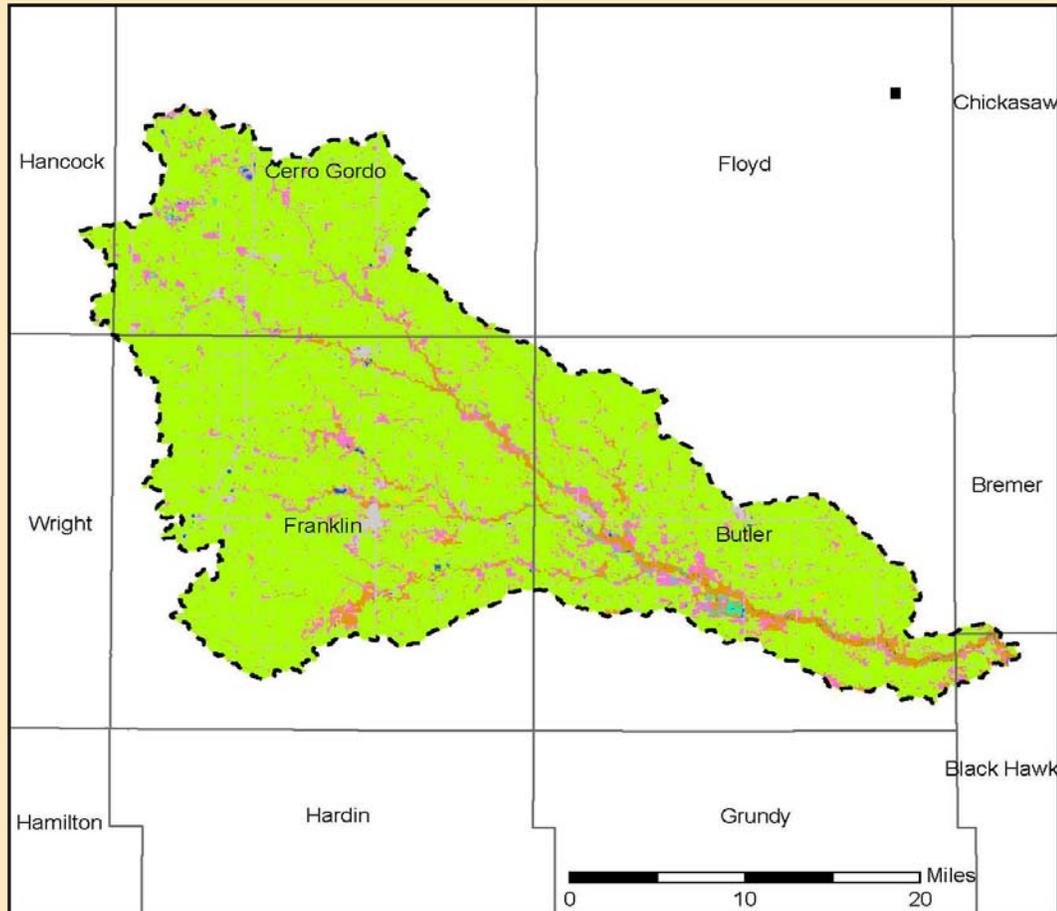
Stewardship data identifies ownership and management boundaries for conservation and recreation areas.



Legend

-  County Boundary
-  Cities/Towns
-  West Fork Cedar River Basin
-  Iowa DNR
-  Private
-  State Land
-  The Nature Conservancy
-  Co. Cons. Board
-  FWS

Iowa Rapid Watershed Assessment West Fork of the Cedar River - Landuse/Landcover



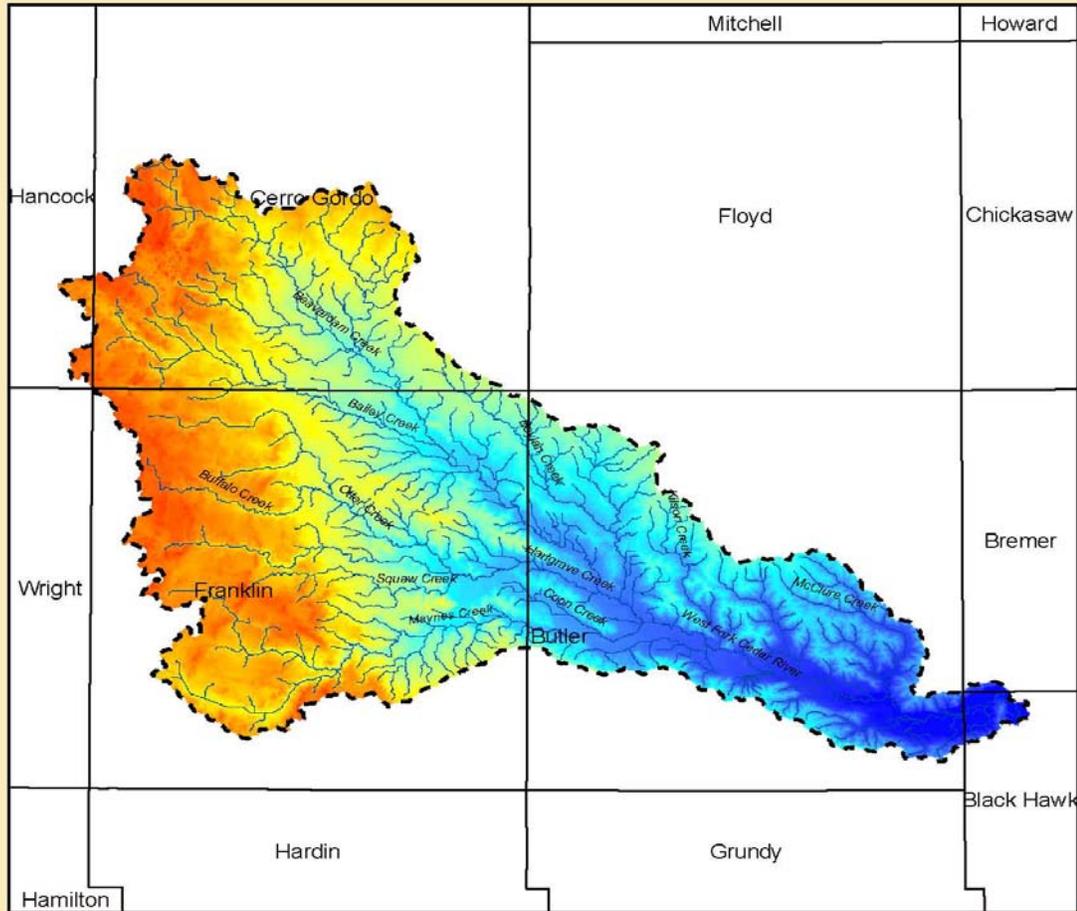
Data Source: USDA - National Ag Statistics Service; Reclassified Landuse

ACRES	PERCENT	Landuse
451,470	82.0%	Row Crop
6,161	1.1%	Hayland
38,843	7.1%	Pastureland
1,159	0.2%	Water
30,945	5.6%	Developed-Urban
19,731	3.6%	Woodland-Natural Areas
2,361	0.4%	Wetland

Legend

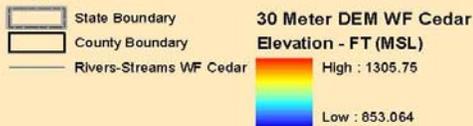
 State Boundary	Landuse Classifications	 Row Crop
 County Boundary	 Developed-Urban	 Water
	 Hayland	 Wetland
	 Pastureland	 Woodland-Natural Areas

Iowa Rapid Watershed Assessment West Fork of the Cedar River - Elevation Map

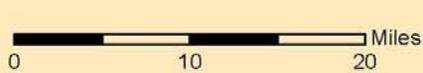
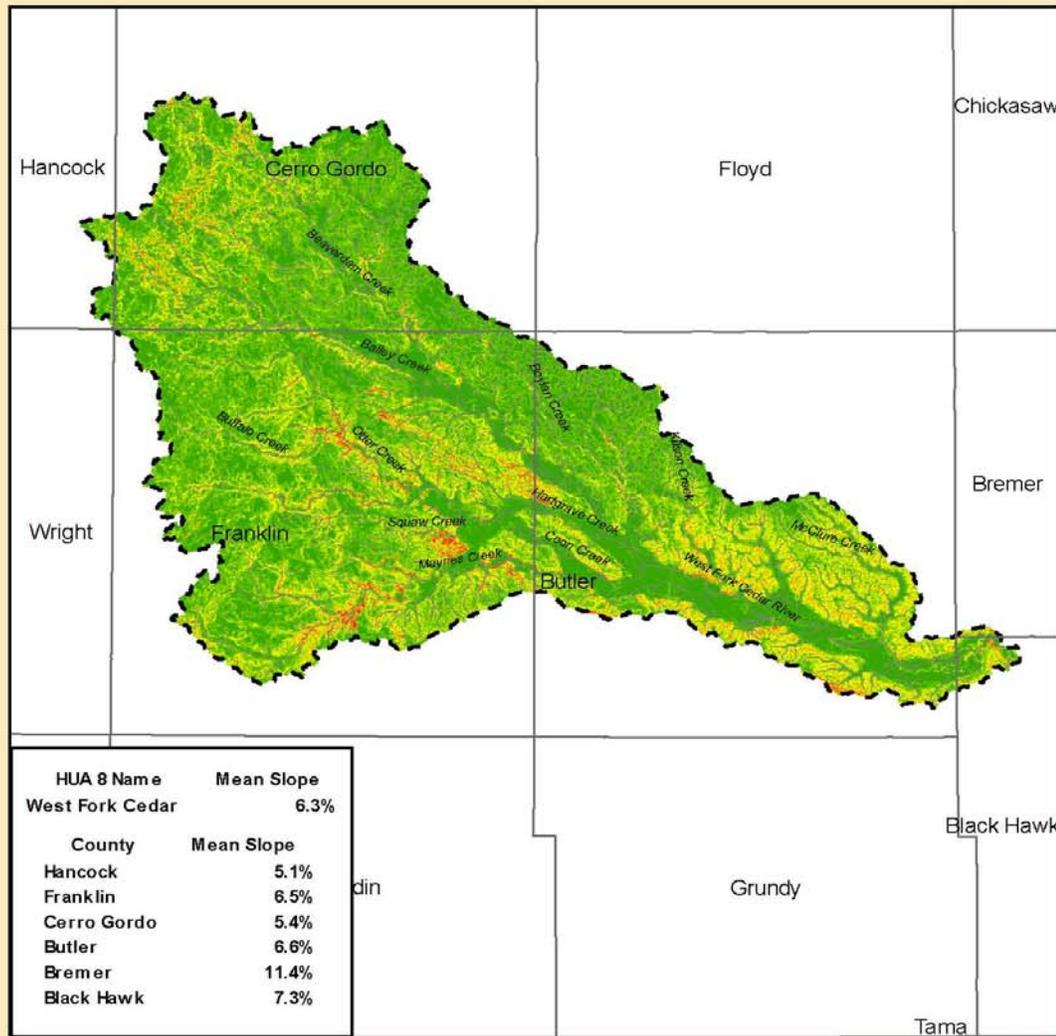


Digital Elevation Model (DEM) Data from USGS 7.5' (1:24,000) Quadrangle Topographic Base Maps

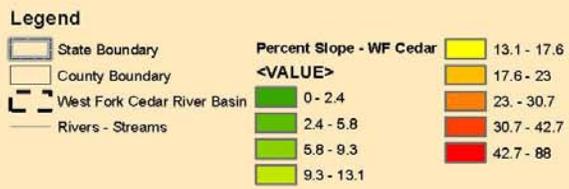
Legend



Iowa Rapid Watershed Assessment West Fork of the Cedar River - Percent Slope

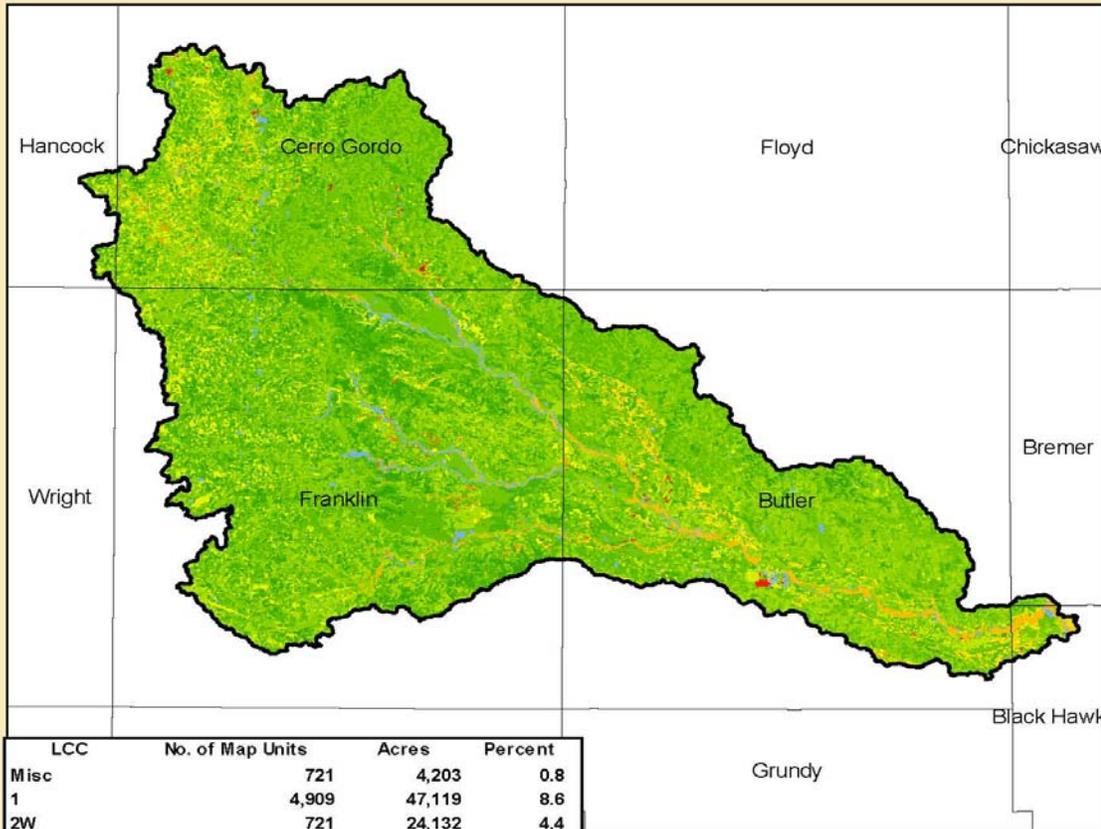


Data Source: USGS Digital Elevation Model (DEM)
 Average Watershed Slope: 6.3 %;
 Slope Calculations Done Using ArcMap Spatial Analyst Tools



Iowa Rapid Watershed Assessment

 West Fork of the Cedar - Land Capability Class



LCC	No. of Map Units	Acres	Percent
Misc	721	4,203	0.8
1	4,909	47,119	8.6
2W	721	24,132	4.4
2e	12,314	146,568	26.6
2s	3,338	36,701	6.7
2w	11,098	185,824	33.7
3e	8,509	62,601	11.4
3s	535	4,438	0.8
3w	2,781	14,843	2.7
4e	749	3,917	0.7
4s	894	7,377	1.3
5w	274	9,478	1.7
6e	305	1,761	0.3
6s	61	289	0.1
7e	140	675	0.1
7s	19	69	0
7w	56	552	0.1
8s	22	135	0



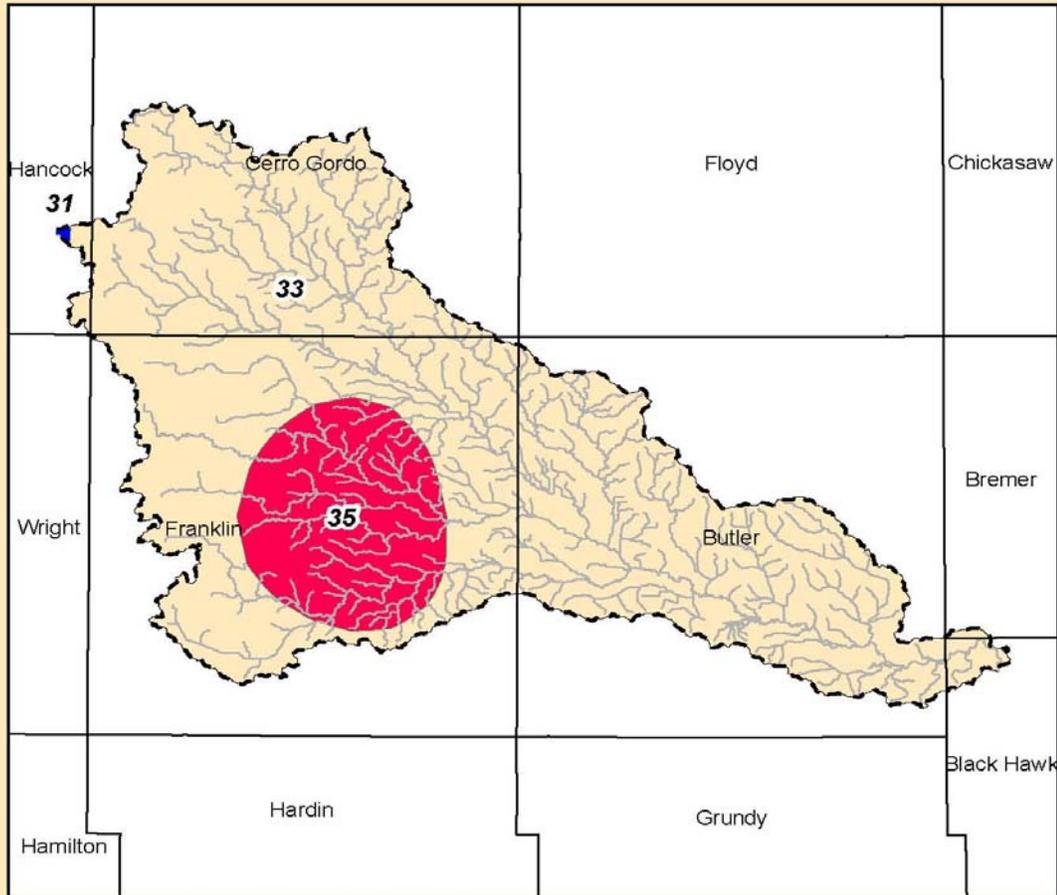
*Misc - Includes Water, Pits, Lagoons, Quarries and Orthents, Loamy type soil

Data Source: Iowa USDA-NRCS Soil Survey
 Des Moines, Iowa, July 2008. Summarized data
 from individual County SSURGO data sets.



USDA-NRCS GIS Staff
 Des Moines, IA October 2008

Iowa Rapid Watershed Assessment West Fork of the Cedar River - Annual Precipitation



Data Source: National Climatic Data Center (NCDC)
Average Rainfall from 1961 - 1990

0 10 20 Miles

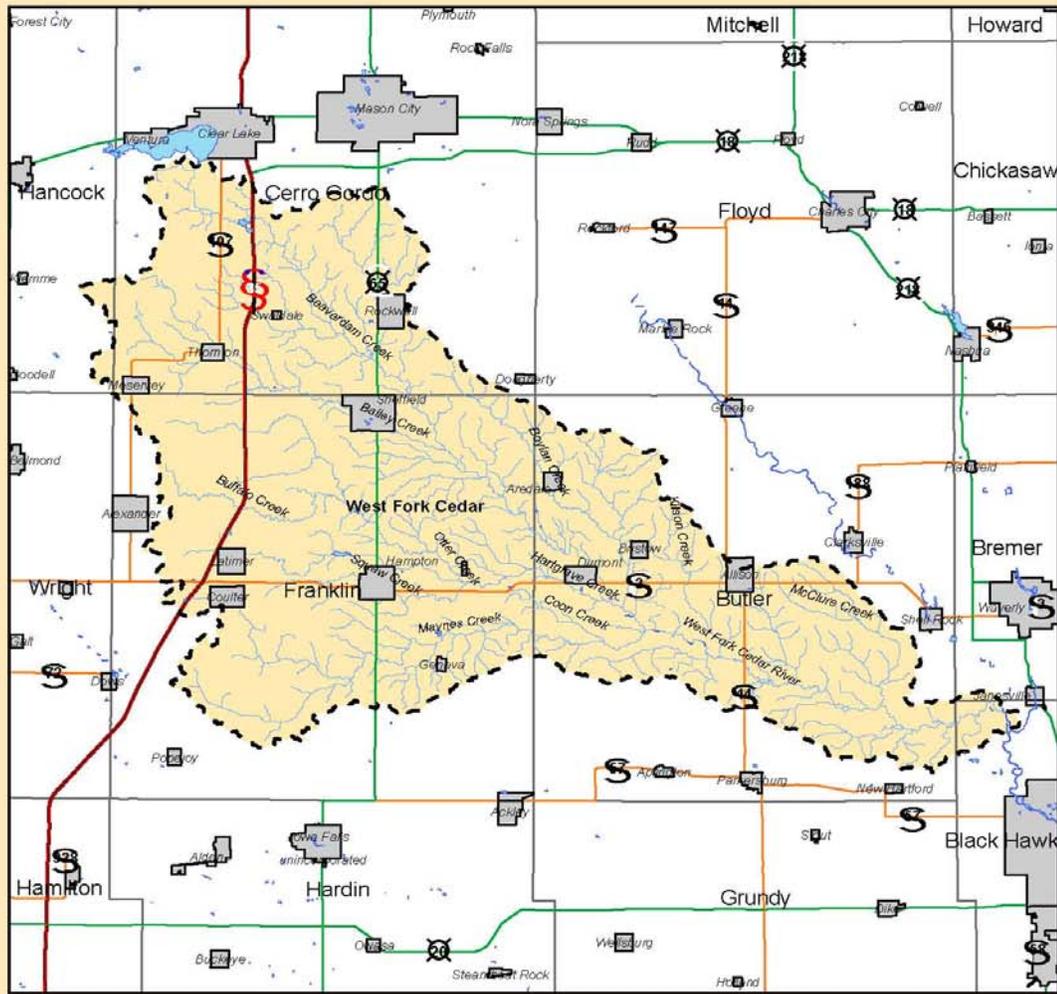


Legend

- | | |
|---|--|
|  West Fork Cedar River Basin | Precipitation (Inches Per Year) |
|  County Boundary - IA | RANGE |
|  Rivers/Streams - WF Cedar |  31 |
| |  33 |
| |  35 |

Iowa Rapid Watershed Assessment

West Fork of the Cedar River - Project Map



Legend

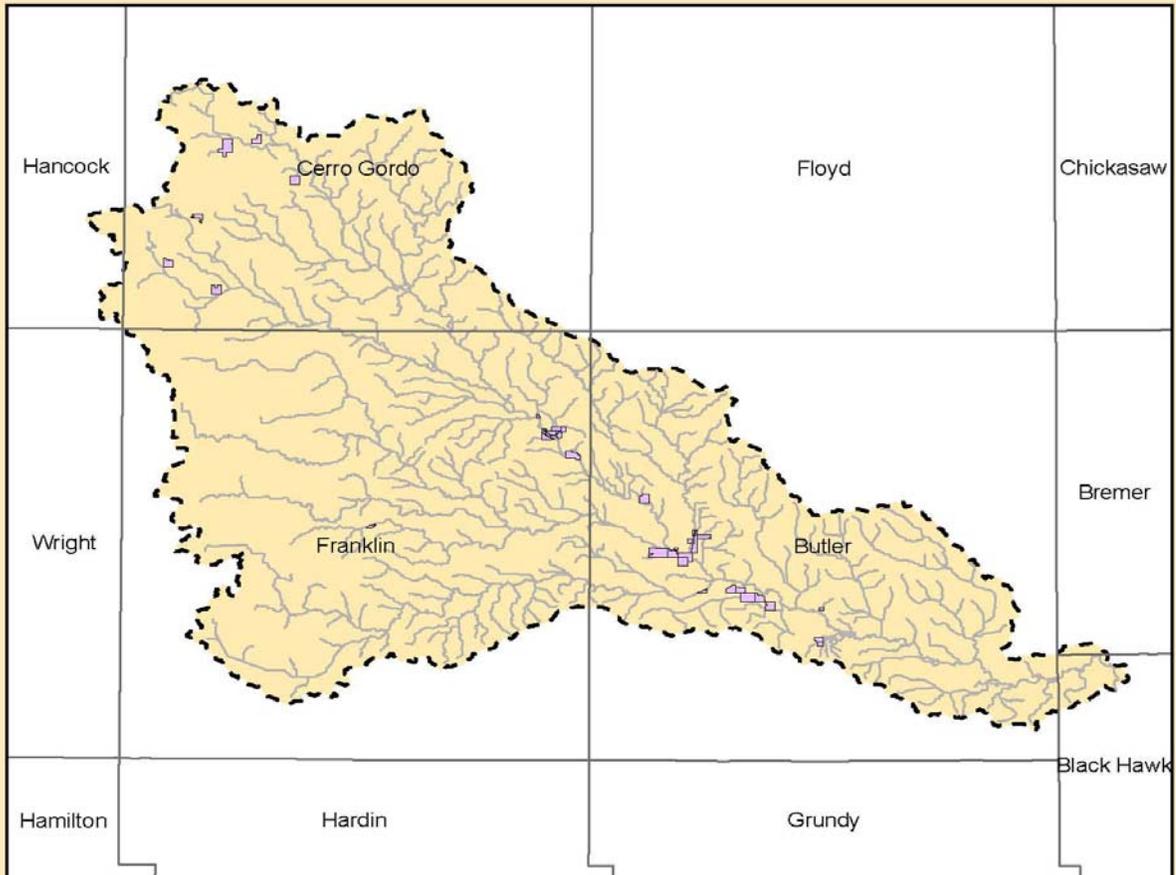
ESRI Highway Iowa TYPE

-  INTERSTATE
-  STATE
-  US
-  Rivers/Streams
-  Cities/Towns
-  State Boundary
-  County Boundary
-  West Fork Cedar River Basin



County	Acres	Percent
Wright County, Iowa	0.1	0.0%
Hancock County, Iowa	3,233.5	0.6%
Franklin County, Iowa	248,623.5	45.2%
Cerro Gordo County, Iowa	132,965.1	24.2%
Butler County, Iowa	160,263.1	29.1%
Bremer County, Iowa	707.9	0.1%
Black Hawk County, Iowa	4,890.7	0.9%

Iowa Rapid Watershed Assessment West Fork of the Cedar River - NRCS Easements



County - Program	Number of Areas	Total Acres
BUTLER - EWP	7	960.4
BUTLER - WRP	10	1,208.3
CERRO GORDO - WRP	7	1,027.4
FRANKLIN - EWP	1	178.3
FRANKLIN - EWRP	3	171.4
FRANKLIN - WRP	4	226.5

Data Source: USDA - NRCS Wetland Restoration Team
Total NRCS Easement Acres (W.F.Cedar): 3,772.3

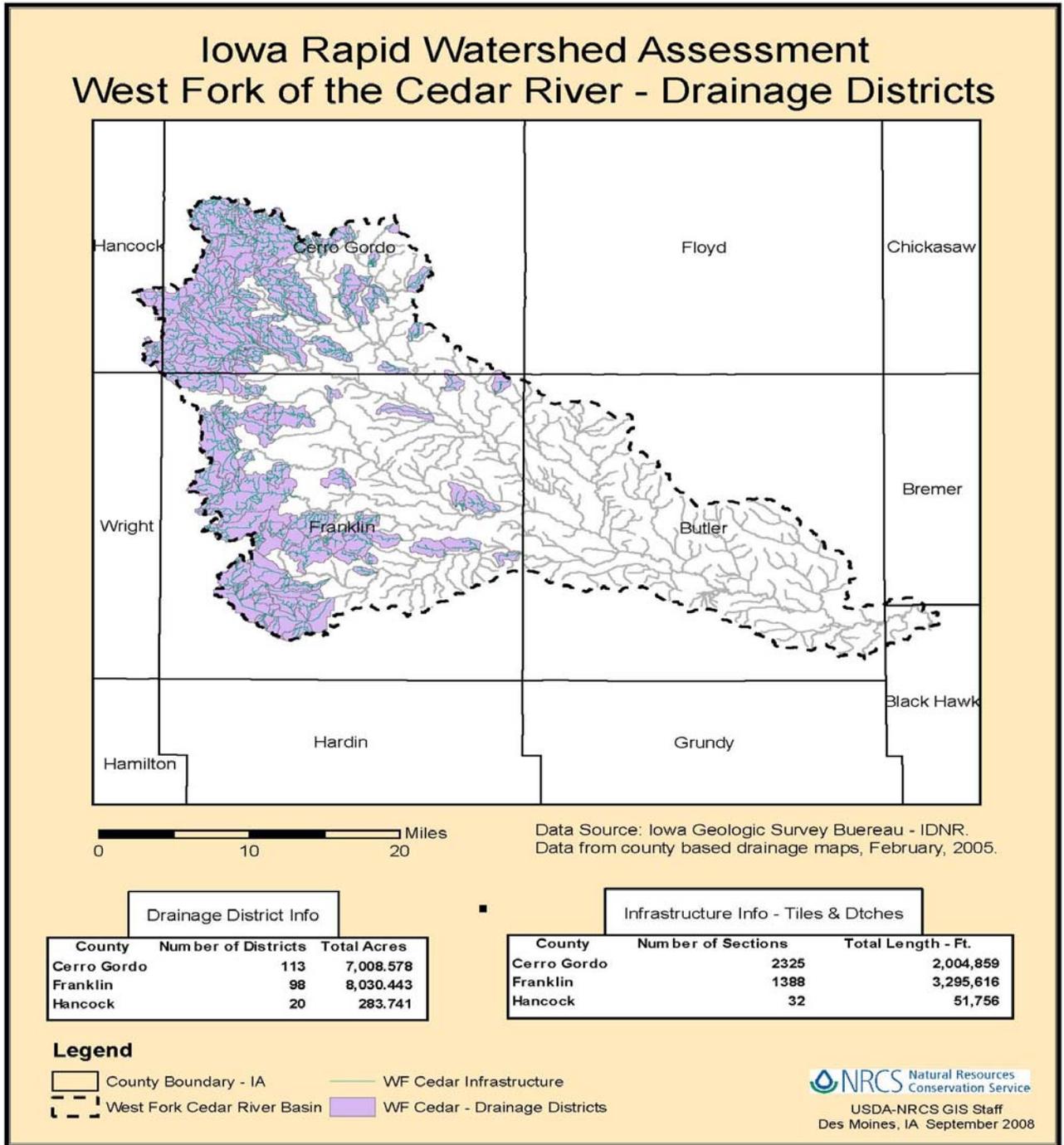


Legend

- NRCS Easement Areas
- County Boundary
- State Boundary
- West Fork Cedar River Basin
- Rivers/Stream

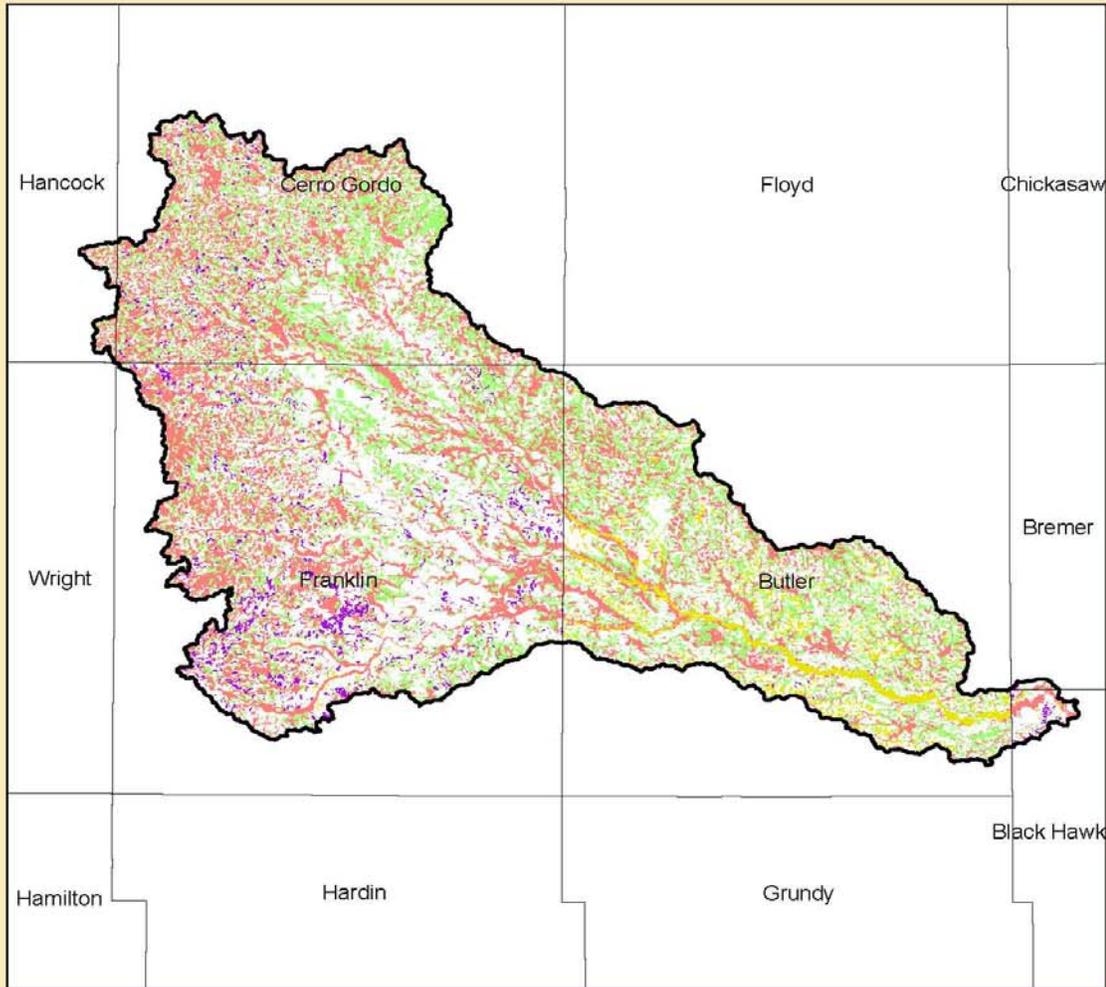
Physical Description

There are 231 drainage districts in the West Fork of the Cedar River HUC. Forty-nine percent of the districts are located in Cerro Gordo County, 42 percent in Franklin County, and 9 percent in Hancock County (11).



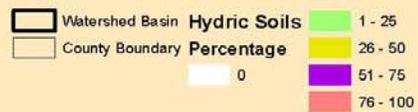
Iowa Rapid Watershed Assessment

West Fork of the Cedar - Percent Hydric Soil Components



% Hydric Components	Acres	% of Watershed
0%	230,059	41.8%
1 - 25%	111,503	20.2%
26 - 50%	15,499	2.8%
51 - 75%	16,367	3.0%
75 - 100%	177,254	32.2%

Legend

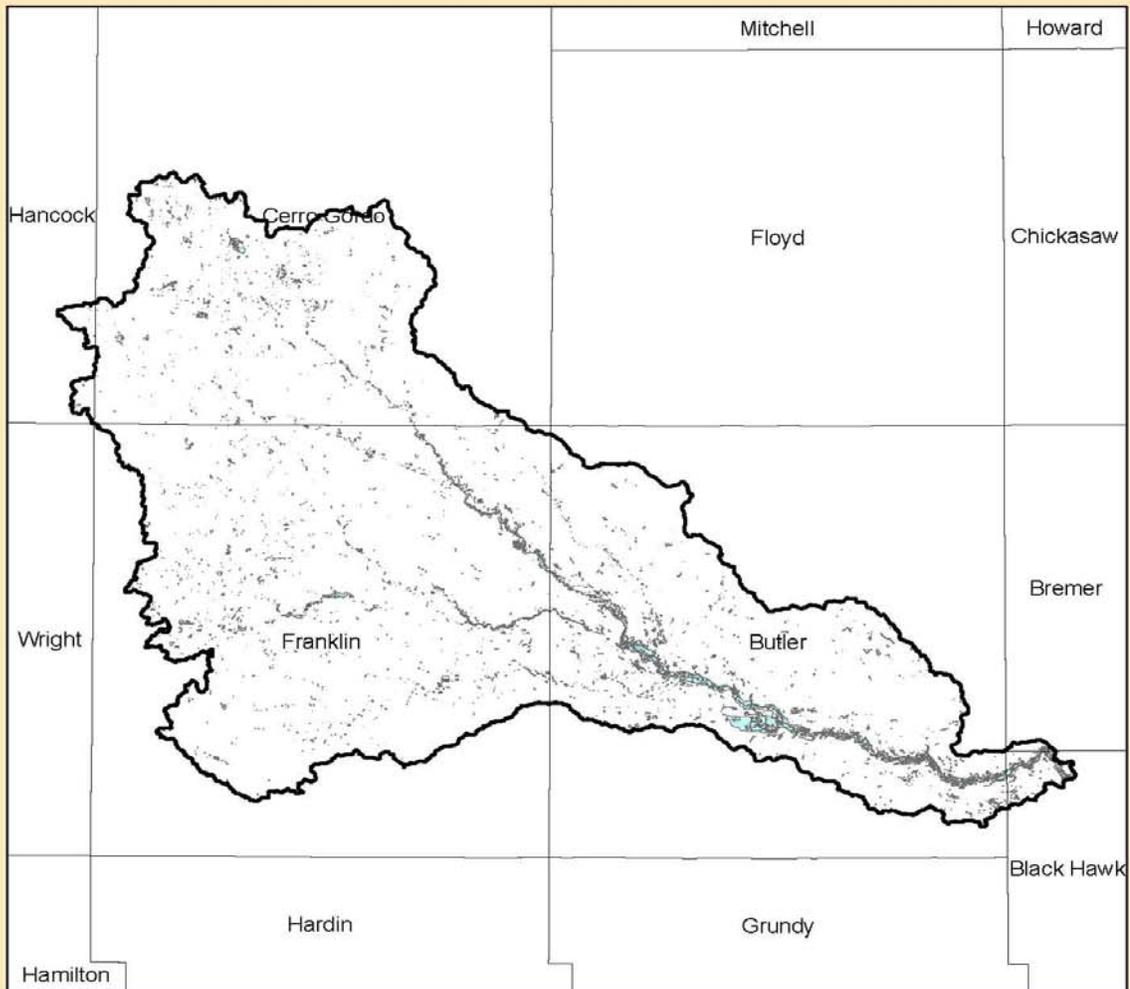


Data Source: Iowa USDA-NRCS Soil Survey
 Des Moines, Iowa, July 2008. Summarized data
 from individual County SSURGO data sets.

USDA-NRCS GIS Staff
 Des Moines, IA October 2008

Iowa Rapid Watershed Assessment

West Fork of the Cedar - National Wetland Inventory



Wetland Type	No. of Areas	Total Acres
Freshwater Emergent Wetland	3,305	5,563
Freshwater Forested/Shrub Wetland	763	4,257
Freshwater Pond	496	970
Lake	7	236
Other	5	2
Riverine	147	1,602

Legend

-  County Boundary - IA
-  Watershed Basin
-  Wetland Areas - WFC



U.S. Fish and Wildlife Service, 200605, ia_nwi: Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Branch of Habitat Assessment, Washington, D.C..

Special Considerations

Drainage laws in Iowa are contained in the *Code of Iowa*. Chapter 465 applies to individual drainage rights, including tile drainage. Chapter 455 applies to levee and drainage districts, and Chapter 455B applies to the Department of Natural Resources (10).

Legal drainage districts are formed according to state laws. Chapter 455 of the *Code of Iowa* applies to formation by County Board of Supervisors of legal drainage districts. Two or more landowners can petition for the formation of a drainage district, and single individuals can petition for sub-districts. Once established, installation and maintenance is under the direct control of the County Board of Supervisors or Drainage District Trustees (10).

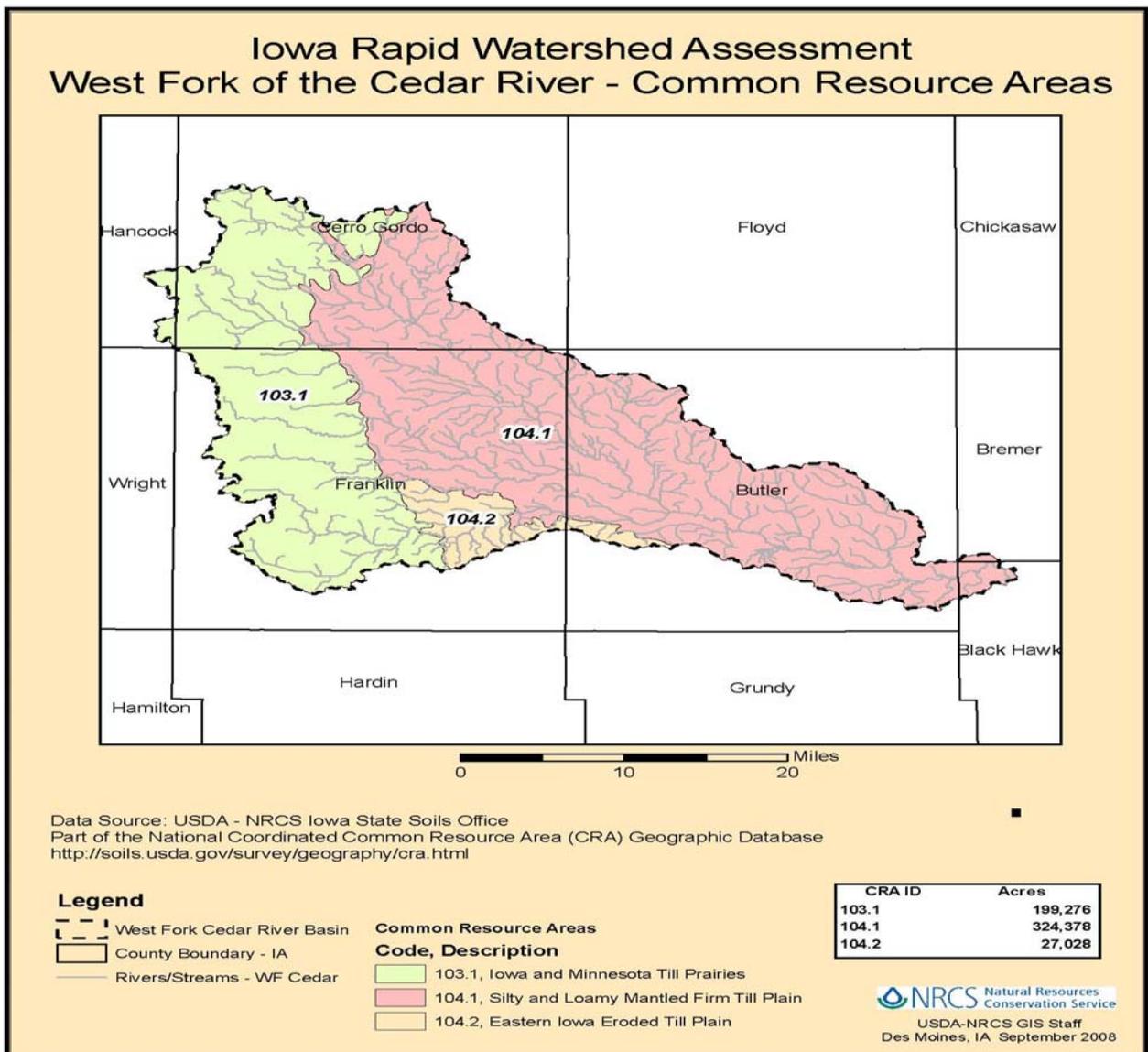
Iowa source water faces increasing pressure from development, pollution, land use changes, and growing demands for drinking water. Source water is a lake, stream, river, or aquifer where drinking water is obtained. Source Water Protection (SWP) is the act of preventing contaminants from entering public drinking water sources. SWP includes ground water (wellhead) protection and surface water protection (12).

Iowa Department of Natural Resources' (IDNR) SWP Program has developed two main phases to the SWP Program: SWP Assessment Reports (Phase 1) and the SWP Plan (Phase 2). In addition, the program has recently included implementation as part of the SWP planning (12).

IDNR's SWP Program has developed a list of Priority Community Water Supplies. The West Fork of the Cedar River Watershed includes one Priority SWP community, the town of Bristow, which is located in Butler County. Bristow is identified by the DNR SWP Program as one of the top 40 priority communities listed for high nitrates (12).

The West Fork of the Cedar River HUC includes portions of three National Common Resource Areas (CRA): 103.1; 104.1; and 104.2. Fifty-nine percent of the watershed is in CRA 104.1, 36 percent in 103.1, and 5 percent in 104.2 (13, 14).

The CRAs delineated below for the West Fork of the Cedar River HUC are described in the next section (for additional information, see <http://soils.usda.gov/survey/geography/cra.html>). A CRA is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a CRA (General Manual Title 450, Subpart C, §401.21) (13, 14).



Common Resource Area Descriptions (13, 14)

The National Coordinated CRA Geographic Database provides:

- A consistent CRA geographic database;
- CRA geographic data compatible with other GIS data digitized from 1:250,000 scale maps, such as land use/land cover, political boundaries, Digital General Soil Map of the U.S. (updated STATSGO), and ecoregion boundaries;
- A consistent (correlated) geographic index for Conservation Management Guide Sheet information and the eFOTG;
- A geographic linkage with the national MLRA framework.

103.1 Iowa and Minnesota Till – Prairies

Primarily loamy glacial till soils with scattered lacustrine areas, potholes, outwash, and floodplains. Nearly level to gently undulating with relatively short slopes. Most of the wet soils have been artificially drained to maximize crop production. Primary land use is cropland. Corn, soybeans, sugar beets, peas, and sweet corn are the major crops. Native vegetation was dominantly tall grass prairie. Resource concerns are water and wind erosion, nutrient management, and water quality.

104.1 Silty and Loamy Mantled – Firm Till Plain

Gently sloping to very steep dissected till plain. Soils are predominantly well drained and are formed in thin silty material over loamy till, underlain by sedimentary bedrock. Cropland and grazing land on ridge tops and valley bottoms with a mix of dairy, beef, and cash grain agricultural enterprises. Deciduous forest on side slopes. Primary resource concerns are cropland erosion, surface water quality, grazing land and woodland productivity, and soil erosion during timber harvest.

104.2 Eastern Iowa Eroded Till – Plain

This area is made up of broad upland, nearly level to moderately sloping, moderately well drained to poorly drained soils that formed in silty/loamy material over glacial till. Many low gradient drainage ways are common in this unit. Native vegetation was mostly prairie with timber and brush in valleys and steeper side slopes. Corn and soybeans are common crops with many swine and poultry production facilities. Resource concerns are soil erosion, water quality and nutrient management.

Geology

This watershed is drained by the West Fork of the Cedar River and its main tributaries, Maynes Creek and Hartgrave Creek. Soils and landforms of the watershed formed in deposits laid down by ice and water during the Pleistocene and Holocene Epochs. The unconsolidated deposits rest on Paleozoic bedrock. A narrow band of Devonian shale — 2-3 miles in width and extending from Thornton in the northwest to Applington in the south — separates Devonian dolomite and limestone in the northeast half of the watershed from Mississippian dolomite and limestone in the southwest half. The bedrock is rarely exposed except in quarries.

The western one-quarter of the RWA area is characterized in Cerro Gordo County by wide bands of hummocky terrain, which mark the major glacial end moraines and are pocked by numerous kames and kettles (prairie potholes), glacial lake plains, and smaller areas of level till plain. In western Franklin County, the glacial terrain is mainly low-relief ground moraine. The lower (eastern) three-quarters of the watershed consists of gently sloping till plain dissected by narrow and shallow stream valleys. Elevations in the watershed range from about 900 feet to 1,280 feet.

The glacial deposits in the watershed belong to two distinctly different glacial eras, separated temporally by nearly a half million years. The upper portion belongs to the Des Moines Lobe landform region, which geologically speaking is a very young landscape. It is the result of a surging ice lobe that extended southward from the last continental glacier some 12,000 to 14,000 years ago. This late-Wisconsinan ice left a range of deposits, including dense basal till, variable supraglacial till, and a complex suite of sorted sediments—silty lake deposits, sands interstratified with loamy till, and outwash sands and gravels. The lower three-quarters of the watershed is part of the Iowan Erosion Surface, which developed on much older Pre-Illinoian till as a result of the intense periglacial conditions and strong winds during the Wisconsinan glaciation. The erosion left behind a lag deposit called a “stone line,” which is covered by loamy sediments of variable thickness. Loess mantles the till on isolated topographic highs that survived the widespread erosion.

In the upper portion of the watershed, soils are predominantly loams and clay loams formed in glacial till and glacial lacustrine sediments. The lower portion of the watershed consists mainly of loamy soils that formed in surficial sediments and the underlying till on uplands, and in loamy and sandy alluvium on stream benches in the major river valleys. Drainage class of the soils ranges from poorly-drained to well-drained and is largely dependent on landscape position.

Resource Concerns

Resource Concerns by Land Use

Pasture (16)

Vegetation typically consists of introduced cool season forage. Predominant species are introduced cool season forages, including Kentucky Bluegrass and Smooth Bromegrass, with lesser amounts of Tall Fescue and Orchardgrass. Some introduced legumes are present, with White (Ladino) Clover being the most predominant. Some Red Clover, Birdsfoot Trefoil and Alfalfa are included in lesser amounts. Continuous overgrazing is common.

Typically soil erosion as a result of sheet and rill will be less than 1 ton/acre/year. There is evidence of a small amount of gully erosion. Stream bank erosion may be significant because grazing animals typically have unlimited access to streams. In time, undesirable woody species may invade older pastures and decrease the productivity of the forage. Soil compaction on cattle paths and around watering sources can increase soil erosion and create a niche for undesirable plant species. Availability of a reliable watering source can be a hindrance to developing rotational grazing systems.

Hayland (16)

Hayland has been seeded to introduce species, including predominantly Smooth Bromegrass and Alfalfa. There also exists Orchardgrass and Red Clover, to a lesser extent. Erosion is not typically a problem on hayland. Nutrient and pest management are often under-utilized. Typically, three cuttings of hay are taken from May through early September.

Cropland (17, 18, 19)

Cropland is intensively used, primarily for corn and soybeans production, with a very small amount of oats and meadow as part of a rotation. Corn acres increased in recent years, compared to soybean acres, due to increased grain prices and ethanol plant development.

The average slope is 6.3 percent. Predominant resource concerns on cropland include soil erosion (sheet and rill, gully, and wind); soil compaction; soil eutrophication; weed infestation; and decrease in soil carbon. Over-application of nutrients (commercial and manure-based) and pesticides typically does not meet Iowa NRCS standards. In recent years, no-till systems on soybean acres have increased, although no-till on corn acres has decreased.

Natural Areas/Woodland (20)

Natural areas in Iowa consist mostly of poor quality woodlands, degraded meadow found mostly in odd areas along property corners, fence lines, or abandoned pastures. In many locations, these areas include steeper slopes than cropland and pasture. Vegetation includes a mix of native trees and shrubs with increasing undesirable populations of introduced and often noxious species of woody or non-woody plants. Predominant resource concerns include invasive species, classic gully erosion, habitat fragmentation, increasing homogeneity, and land use conversion to cropland.

SWAPA+H stands for soils, water, air, plants, animals, and humans. SWAPA+H is used in watershed and ecosystem planning to identify natural systems and how they relate to social and economic conditions. The table below lists the resource concern priorities of stakeholders and landowners in the watershed.

SWAPA + H Concerns Table (26)

Resource Concerns/Issues by Land Use					
SWAPA *	Specific Resource Concerns/Issues	Cropland	Pasture	Natural Areas	Farmstead
Soil Erosion	Sheet and Rill	X			
	Ephemeral Gully	X			
	Classic Gully		X	X	
	Streambank		X		
	Wind	X			
Water Quality, Surface	Suspended Sediment & Turbidity	X			
	Pesticides	X			
	Excessive Nutrients & Organics		X		
Water Quality, Ground	Excessive Nutrients & Organics	X			X
Soil Condition	Animal Waste & Other Organics (N,P,K)	X			
Plant Condition	Productivity, Health, and Vigor		X		
	Palatability		X		
Domestic Animals	Inadequate Quantity & Quality Feed & Forage		X		
	Inadequate Stock Water		X		
Air Quality	Particulates, Ammonia, CO2				X
Wildlife	Inadequate cover & shelter			X	
	T & E Species			X	

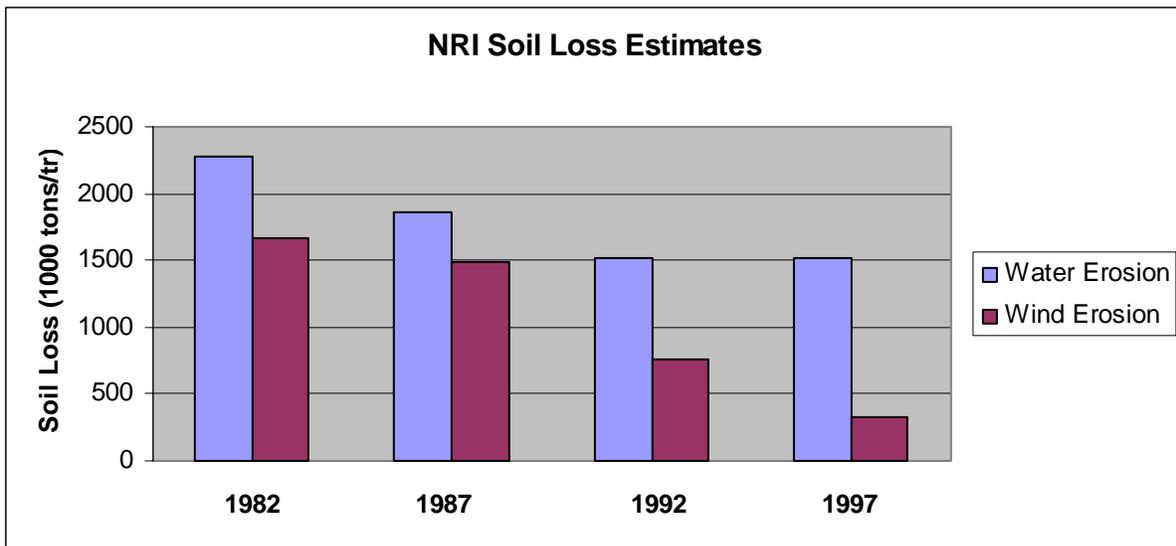
* SWAPA: - Soil, Water, Air, Plants, and Animals

Human Considerations: Implementation of conservation practices and enhancements has the potential for change in management and cost of production. Installation of practices will have an upfront cost and require maintenance. In the short run, increased management may be required as new techniques are learned. Land may be taken out of production for installation of practices or conversion to other uses, such as wildlife habitat. Long term benefits should result from increased soil health, benefits to water quality, improved domestic livestock, air quality, and wildlife habitat. Other considerations by humans in the watershed may include recreation, rural and urban perceptions, market trends and how they relate to conservation practice costs, profitability, and current high land values.

Soil Loss

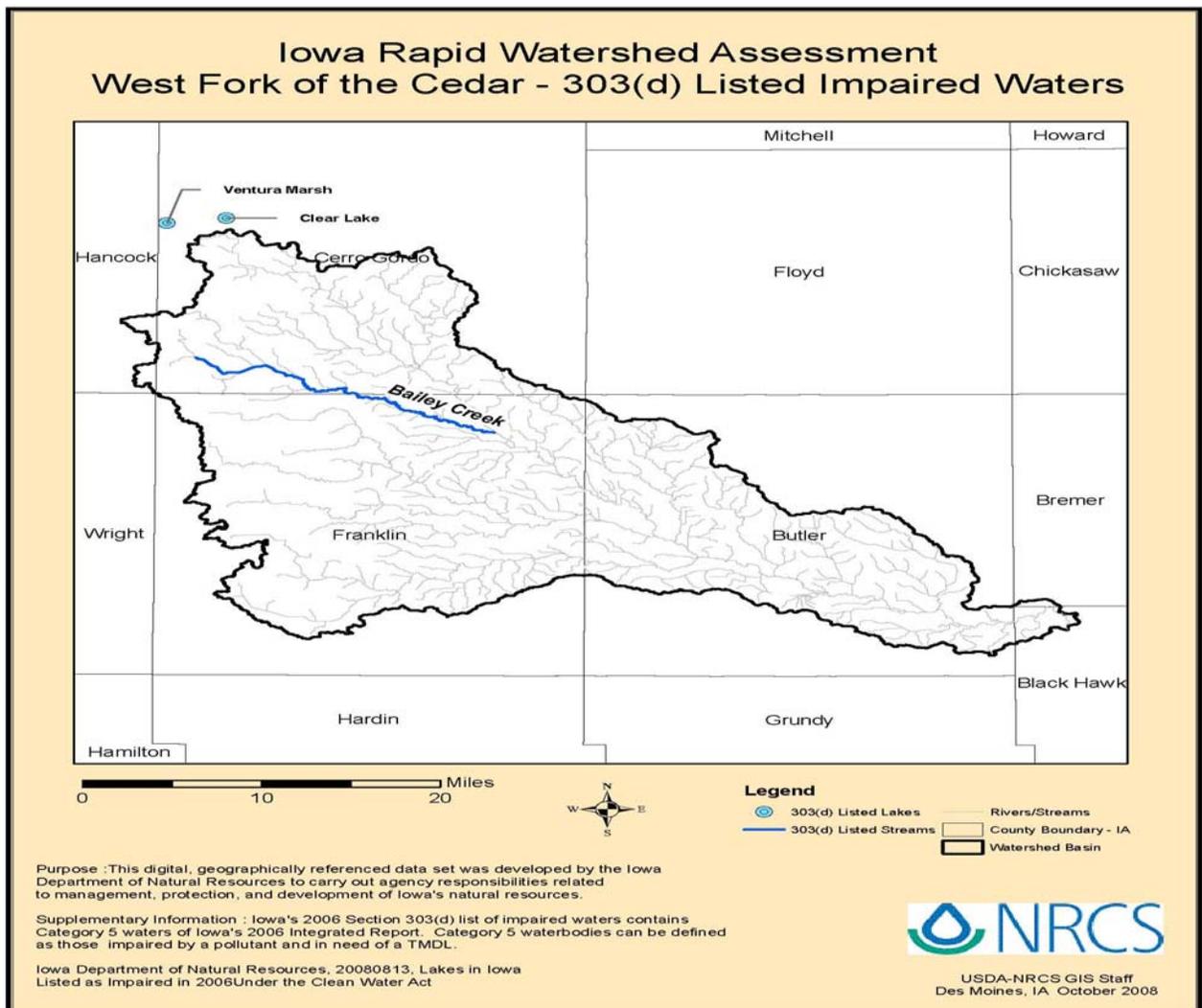
Water erosion (sheet and rill) from cropland accounts for nearly 90 percent of Iowa’s soil erosion. In Iowa, there has been a steady decline in sheet and rill erosion from 1982 to 1997, but on average soil erosion remains above the sustainable levels. In order to maintain sustainable levels of soil stability, soil erosion should not exceed 5 tons/acre/year (22).

National Resource Inventory (NRI) estimates for sheet and rill erosion by water on cropland and pastureland decreased by approximately 760.9 tons (33 percent) of soil loss between 1982 and 1997. NRCS estimates indicate wind erosion rates decreased by 1,339.6 tons (81 percent) between 1982 and 1997 (22).



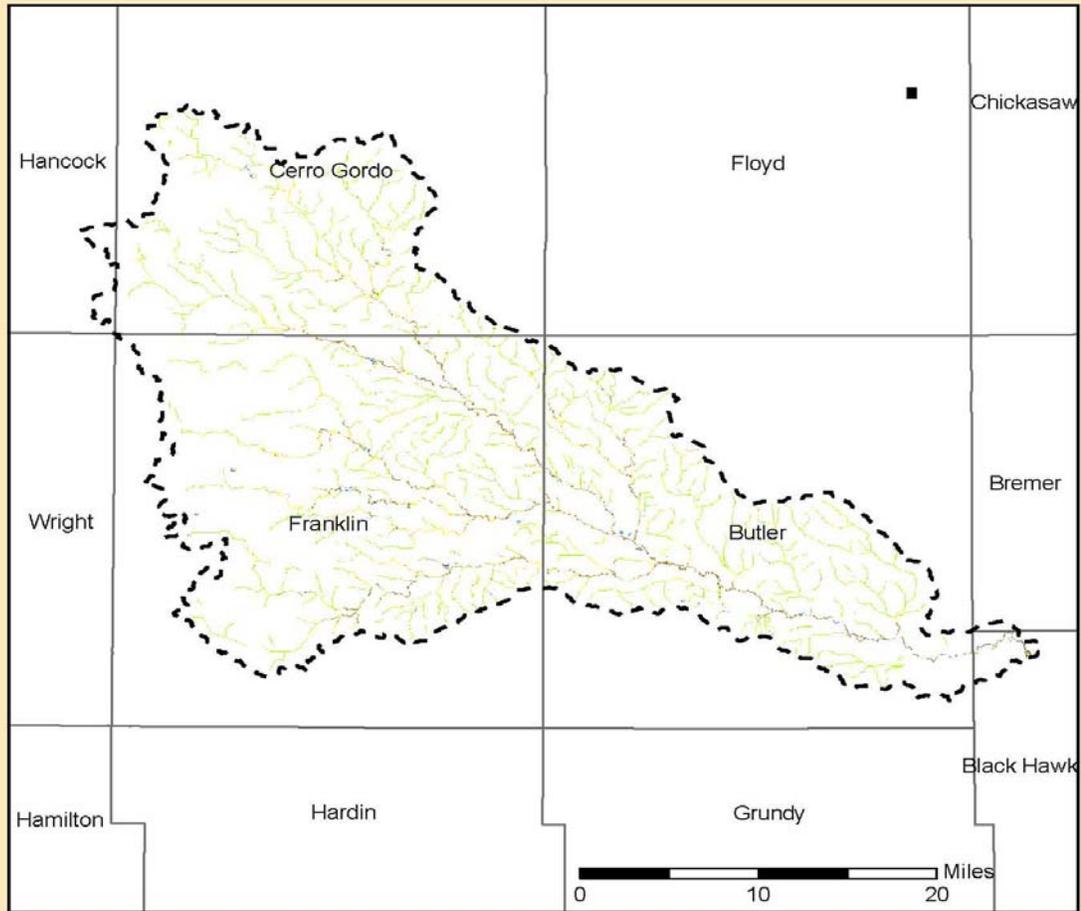
Under Section 303(d) of the Clean Water Act, states are required from "time to time" to submit a list of waters for which effluent limits will not be sufficient to meet all state water quality standards. EPA has defined "time to time" to mean April 1 of even numbered years. The failure to meet water quality standards might be due to an individual pollutant, multiple pollutants, "pollution," or an unknown cause of impairment. The 303(d) listing process includes waters impaired by point sources and nonpoint sources of pollutants. States must also establish a priority ranking for the listed waters, taking into account the severity of pollution and uses. The EPA regulations that govern 303(d) listing can be found in the Code of Federal Regulations 40 CFR 130.7.

The Iowa Department of Natural Resources compiles this impaired water list, or 303(d) listing. The 303(d) listing is composed of those lakes, wetlands, streams, rivers, and portions of rivers that do not meet all state water quality standards. These are considered "impaired waterbodies" and states are required to calculate total maximum daily loads (TMDLs) for pollutants causing impairments (15).



Iowa Rapid Watershed Assessment

West Fork of the Cedar - 100' Stream Buffer Landuse



Data Source: USDA - National Ag Statistics Service; Reclassified Landuse

ACRES	PERCENT	Landuse
1,079	4.6%	Developed-Urban
204	0.9%	Hayland
5,000	21.4%	Pastureland
13,133	56.1%	Row Crop
336	1.4%	Water
362	1.6%	Wetland
3,285	14.0%	Woodland-Natural Areas

Legend

-  State Boundary
-  County Boundary
-  Pastureland
-  Row Crop
- Landuse Classifications**
-  Developed-Urban
-  Water
-  Hayland
-  Wetland
-  Woodland-Natural Areas

Water Quality Concerns Data Graph/Table (23)

Impaired Water Bodies	Stream Miles	Sediment & Siltation	Nutrients	Ammonia	Bacteria & Pathogens	Temperature	Turbidity	Flow Alteration	Organic Enrichment	Other or Unknown
Bailey Creek (WFC-0110_0)	23.5									X
Beeds Lake (WFC-0090-L_0)	100 ac	X			X		X			
Unnamed Tributary to West Fork Cedar (WFC-0150_0)	8.2			X						

Impaired and TMDL Needed

Other Impairments, TMDL not needed

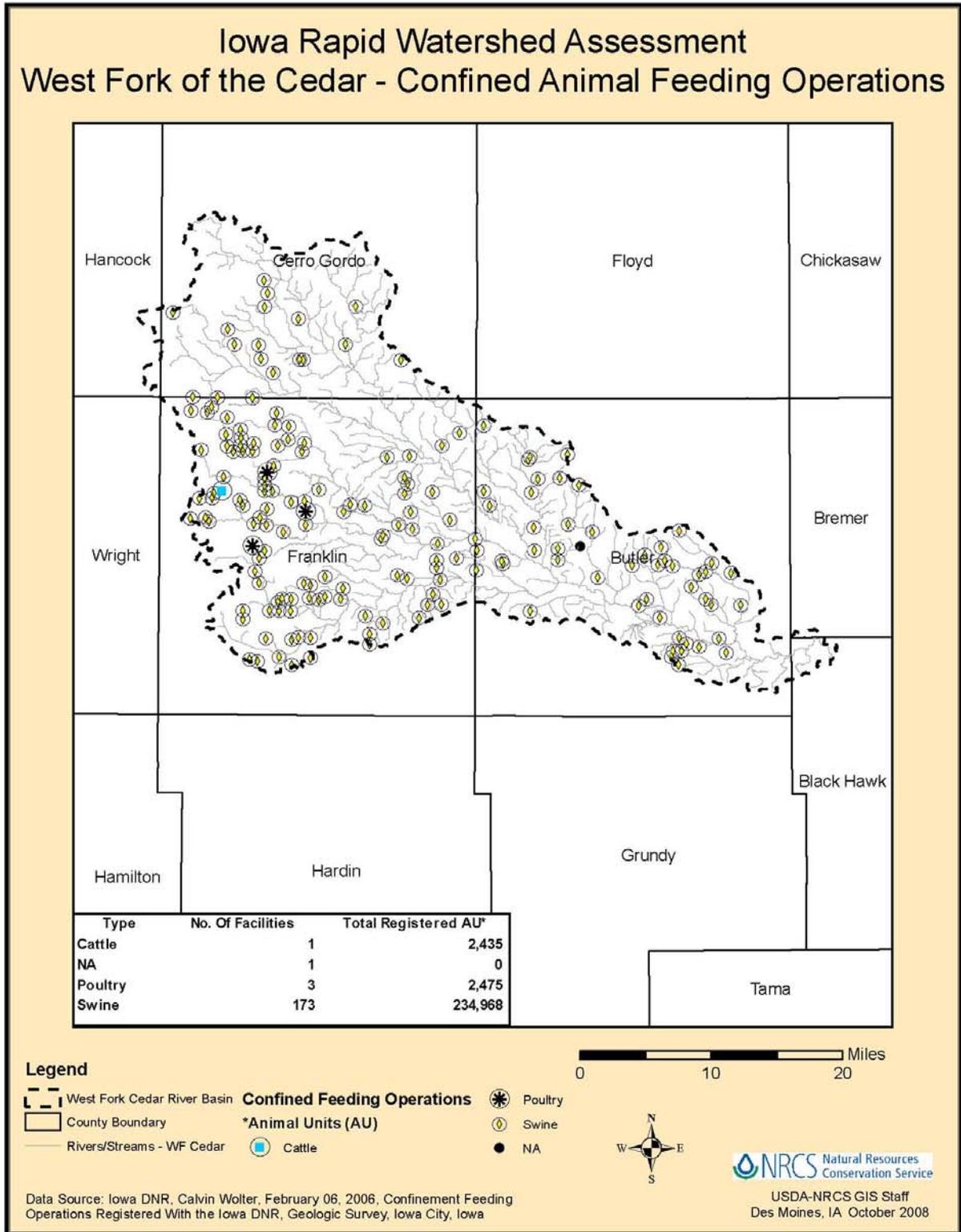
Impaired, TMDL Complete & Approved

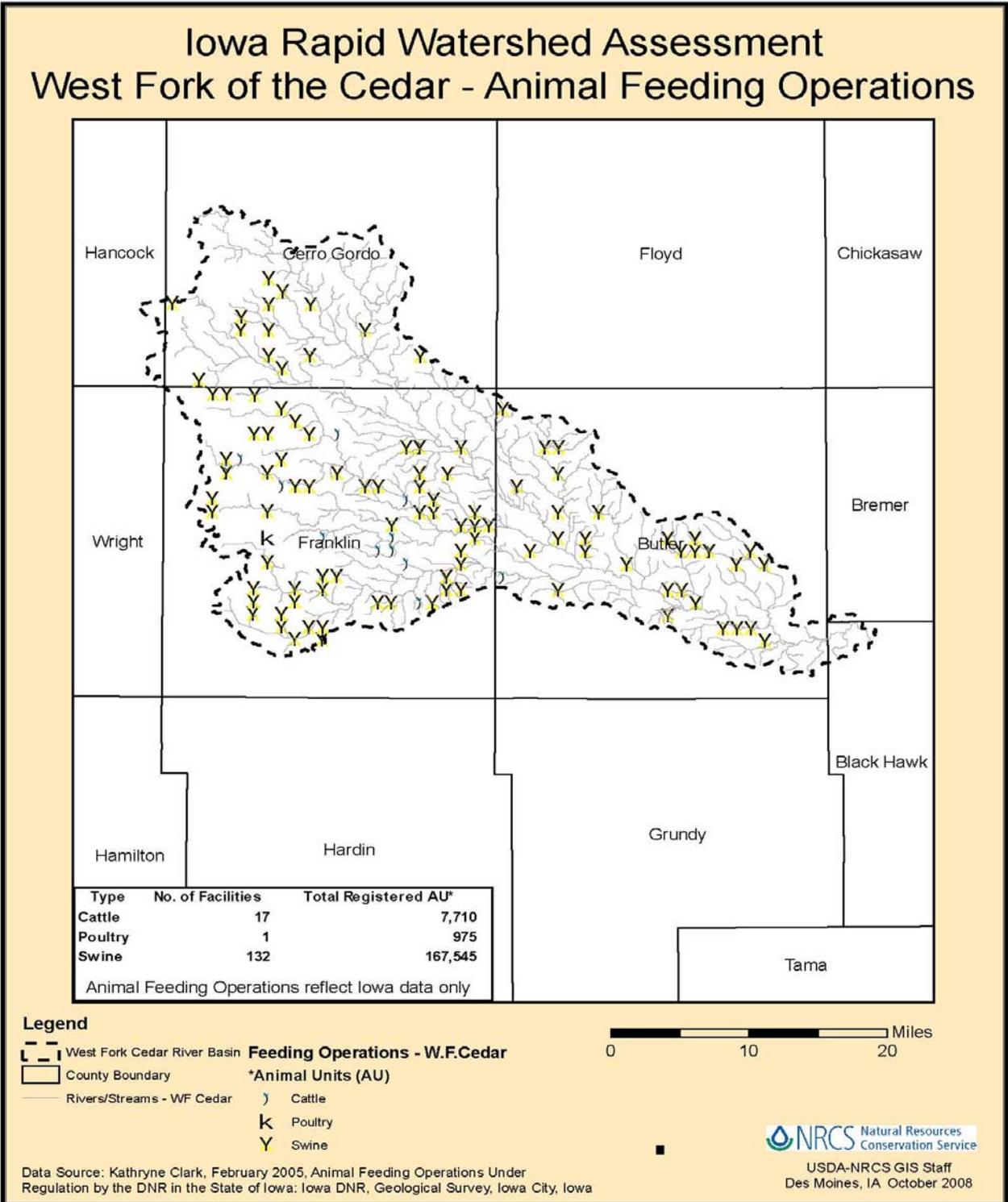
Watershed Projects, Plans, Studies, and Assessments *	
<i>Federal:</i>	<i>State:</i>
NRCS Watershed Plans/Studies/Assessments	IDNR TMDLs
West Fork of the Cedar River Rapid Watershed Assessment (10/08)	Beeds Lake (2006)
	IDNR 319 Projects
	None

* Listing includes past efforts in the watershed, and ongoing studies and assessments.

Sediment, nutrients, pathogens, and their affects are the major pollutants impacting surface waters of the West Fork of the Cedar Watershed. Surface waters, especially lakes and ponds, have a repeated history of algal blooms. A variety of human activities contribute directly to pollutant loads in the water bodies, including intensive row crop agriculture; urban storm run off; failing septic systems; and Confined Animal Feeding Operations (CAFOs). The change in hydrology due to stream channel straightening, subsurface drainage systems, wetland destruction, and lack of perennial groundcover has resulted in flashy stream flows, thus contributing to stream down cutting and increased stream bank instability.

Conservation practices that can be used to address these water quality issues include erosion control structures, residue management, nutrient management, riparian buffers, drainage control structures, wetland restoration, urban Best Management Practices (BMPs), and improved septic systems (24).





Threatened and Endangered Species (21)

	SPECIES	Status		County						
		State	Federal	Black Hawk	Bremer	Cerro Gordo	Butler	Hancock	Franklin	Wright
Birds	Bald Eagle (<i>Haliaeetus leucocephalus</i>)	E								
	Red-shouldered Hawk (<i>Buteo lineatus</i>)	E								
	Short-eared Owl (<i>Asio flammeus</i>)	E								
Mammals	Southern Bog Lemming (<i>Synaptomys cooperi</i>)	T								
	Plains Pocket Mouse (<i>Perognathus flavescens</i>)	E								
	Spotted Skunk (<i>Spilogale putorius</i>)	E								
Reptile	Blandings Turtle (<i>Emydoidea blandingii</i>)	T								
	Ornate Box Turtle (<i>Terrapene ornata</i>)	T								
	Massasauga Rattlesnake (<i>Sistrurus catenatus</i>)	E								
	Bullsnake (<i>Pituophis catenifer sayi</i>)	C								
	Wood Turtle (<i>Clemmys insculpta</i>)	E								
	Smooth Green Snake (<i>Liochlorophis vernalis</i>)	C								

Threatened and Endangered Species (21)

		SPECIES	Status		County						
			State	Federal	Black Hawk	Bremer	Cerro Gordo	Butler	Hancock	Franklin	Wright
Fish		Black Redhorse (<i>Moxostoma duquesnel</i>)	T								
		Blacknose Shiner (<i>Notropis heterolepis</i>)	T								
		Western Sand Darter (<i>Ammocrypta clara</i>)	T								
		Weed Shiner (<i>Notropis texanus</i>)	E								
		American Brook Lamprey (<i>Lampetra appendix</i>)	T								
		Topeka Shiner (<i>Notropis topeka</i>)	T	E							
Mussel		Creek Heelsplitter (<i>Lasmigona compressa</i>)	T								
		Yellow Sandshell (<i>Lampsilis teres</i>)	E								
		Ellipse (<i>Venustaconcha ellipsiformis</i>)	T								
		Round Pigtoe (<i>Pleurobema sintoxia</i>)	E								
		Cylindrical Papershell (<i>Anodontoides ferussacianus</i>)	T								
		Creeper (<i>Strophitus undulatus</i>)	T								
Insects		Baltimore (<i>Euphydryas phaeton</i>)	T								
		Purplish Copper (<i>Lycaena helloides</i>)	C								
		Poweshiek Skipperling (<i>Oarisma powesheik</i>)	T								
		Acadian Hairstreak (<i>Satyrium acadicum</i>)	C								
		Arogos Skipper (<i>Atrytone arogos</i>)	C								
		Broad-winged Skipper (<i>Poanes viator</i>)	C								
		Dion Skipper (<i>Euphyes dion</i>)	C								
		Regal Fritillary (<i>Speyeria idalia</i>)	C								

Threatened and Endangered Species (21)

	SPECIES	Status		County						
		State	Federal	Black Hawk	Bremer	Cerro Gordo	Butler	Hancock	Franklin	Wright
Plants (Dicots)	Bog Bedstraw (<i>Galium labradoricum</i>)	E								
	Bog Willow (<i>Salix pedicellaris</i>)	T								
	Sweet Indian Plantain (<i>Cacalia suaveolens</i>)	T								
	Buckbean (<i>Menyanthes trifoliata</i>)	T								
	Bent Milk-vetch (<i>Astragalus distortus</i>)	C								
	Ragwort (<i>Senecio pseudareus</i>)	C								
	Rush Aster (<i>Symphotrichum boreale</i>)	T								
	Sage Willow (<i>Salix candida</i>)	C								
	Showy Milkweed (<i>Asclepias speciosa</i>)	T								
	Swamp Thistle (<i>Cirsium muticum</i>)	C								
	Yellow Monkey Flower (<i>Mimulus glabratus</i>)	T								
	Purple Angelica (<i>Angelica atropurpurea</i>)	C								
	Small Fringed Gentian (<i>Gentianopsis procera</i>)	C								
	Valerian (<i>Valeriana edulis</i>)	C								
	Water Shield (<i>Brasenia schreberi</i>)	C								

Threatened and Endangered Species (21)

	SPECIES	Status		County						
		State	Federal	Black Hawk	Bremer	Cerro Gordo	Butler	Hancock	Franklin	Wright
Plant (Dicots) (cont.)	Flat Top White Aster (<i>Doellinger umbellata</i>)	C								
	Lesser Bladderwort (<i>Utricularia minor</i>)	C								
	Roundleaf Sundew (<i>Drosera rotundifolia</i>)	E								
	Brook Lobelia (<i>Lobelia kalmii</i>)	C								
	Common Mare's-tail (<i>Hippuris vulgaris</i>)	C								
	Earleaf Foxglove (<i>Tomanthera auriculata</i>)	C								
	Fragrant False Indigo (<i>Amorpha nan</i>)	T								
	Pale Corydalis (<i>Corydalis sempervirens</i>)	T								
	Prairie Bush Clover (<i>Lespedeza leptostachya</i>)	T	T							
	Shining Willow (<i>Salix lucida</i>)	T								
	Water Marigold (<i>Megalodonta beckii</i>)	E								
	Glade Mallow (<i>Napaea dioica</i>)	C								
	Hill's Thistle (<i>Cirisium hillii</i>)	C								
	Kitten Tails (<i>Besseya bullii</i>)	T								
	Bog Birch (<i>Betula pumila</i>)	T								

Threatened and Endangered Species (21)

	SPECIES	Status		County						
		State	Federal	Black Hawk	Bremer	Cerro Gordo	Butler	Hancock	Franklin	Wright
Plants (Dicots) (cont.)	Pink Milkwort (<i>Polygala incarnata</i>)	T								
	Cleft Phlox (<i>Phlox bifida</i>)	C								
	Hawksbeard (<i>Crepis runcinata</i>)	C								
	Marsh Speedwell (<i>Veronica scutellata</i>)	C								
	Pretty Dodder (<i>Cuscuta indecora</i>)	C								
	Silky Prairie Clover (<i>Dalea villosa</i>)	E								
	Silver Bladderpod (<i>Lesquerella ludoviciana</i>)	C								
	Toothcup (<i>Rotala ramosior</i>)	C								
	Water Milfoil (<i>Myriophyllum verticillatum</i>)	C								
	False Mermaid-weed (<i>Floerkea prosperpinacoides</i>)	E								
	Lance-leaved Violet (<i>Viola lanceolata</i>)	C								
	Spring Avens (<i>Geum vernum</i>)	C								
	Winterberry (<i>Ilex verticillata</i>)	E								
	Narrowleaf Pinweed (<i>Lechea intermedia</i>)	T								
	Pearly Everlasting (<i>Anaphalis margaritacea</i>)	C								

Threatened and Endangered Species (21)

	SPECIES	Status		County						
		State	Federal	Black Hawk	Bremer	Cerro Gordo	Butler	Hancock	Franklin	Wright
Plants (Monocots)	Arrow Grass (<i>Triglochin maritimum</i>)	T								
	Hidden Sedge (<i>Carex umbellata</i>)	C								
	Yellow-eyed Grass (<i>Xyris torta</i>)	E								
	Small White Lady's Slipper (<i>Cypripedium candidum</i>)	C								
	Norther Panic-grass (<i>Dichantherium boreale</i>)	E								
	Tall Cotton Grass (<i>Eriophorum angustifolium</i>)	C								
	Crawe Sedge (<i>Carex crawei</i>)	C								
	Leafy Northern Green Orchid (<i>Platanthera hyperborea</i>)	T								
	Richardson Sedge (<i>Carex richardsonii</i>)	C								
	Slender Sedge (<i>Carex lepalea</i>)	C								
	Creeping Sedge (<i>Carex chordorrhiza</i>)	E								
	Green's Rush (<i>Juncus greenei</i>)	C								
	Large-leaf Pondweed (<i>Potamogeton amplifolius</i>)	C								
	Ovate Spikerush (<i>Eleocharis ovata</i>)	C								
	Philadelphia Panic Grass (<i>Panicum philadelphicum</i>)	T								
	Star Sedge (<i>Carex cephalantha</i>)	C								
	Shore Sedge (<i>Carex limosa</i>)	C								
	Slender Cotton Grass (<i>Eriophorum gracile</i>)	T								
	Western Prairie Fringed Orchid (<i>Platanthera praeclara</i>)	T	T							
	Beakrush (<i>Rhynchospora capillacea</i>)	T								

Threatened and Endangered Species (21)

	SPECIES	Status		County						
		State	Federal	Black Hawk	Bremer	Cerro Gordo	Butler	Hancock	Franklin	Wright
Plants (Monocots) (cont.)	Lesser Panicked Sedge (<i>Carex diandra</i>)	C								
	Slender Arrow Grass (<i>Triglochin palustris</i>)	T								
	Slender Cotton Grass (<i>Eriophorum gracile</i>)	T								
	Smith Bulrush (<i>Scirpus smithii</i>)	C								
	Straight-leaf Pondweed (<i>Potamogeton strictifolius</i>)	C								
	Field Sedge (<i>Carex conoidea</i>)	C								
	Tuberclad Orchid (<i>Platanthera flava</i>)	E								
	Slender Ladies'-tresses (<i>Spiranthes lacera</i>)	T								
	Great Plains Ladies'-tresses (<i>Spiranthes magnicamponum</i>)	C								
	Purple Fringed Orchid (<i>Platanthera psycodes</i>)	T								
Pteridophytes	Meadow Spikemoss (<i>Selaginella eclipses</i>)	E								
	Oak Fern (<i>Gymnocarpium dryopteris</i>)	T								
	Leathery Grape Fern (<i>Botrychium multifidum</i>)	T								
	Ledge Spikemoss (<i>Selaginella rupestris</i>)	C								
	Little Grape Fern (<i>Botrychium simplex</i>)	T								
	Woodland Horsetail (<i>Equisetum sylvaticum</i>)	T								
	Norther Adder's-tongue (<i>Ophioglossum pusillum</i>)	C								
	Prairie Moonwort (<i>Botrychium capestre</i>)	C								

Threatened and Endangered Species (21)

	SPECIES	Status		County						
		State	Federal	Black Hawk	Bremer	Cerro Gordo	Butler	Hancock	Franklin	Wright
Amphibians	Blue-spotted Salamander (<i>Ambystoma laterale</i>)	E								
	Central Newt (<i>Notophthalmus viridescens</i>)	T								
	Mudpuppy (<i>Necturus maculosus</i>)	T								
	E = Endangered Specie T = Threatened Specie C = Candidate/Species of Concern									

Census and Social Data

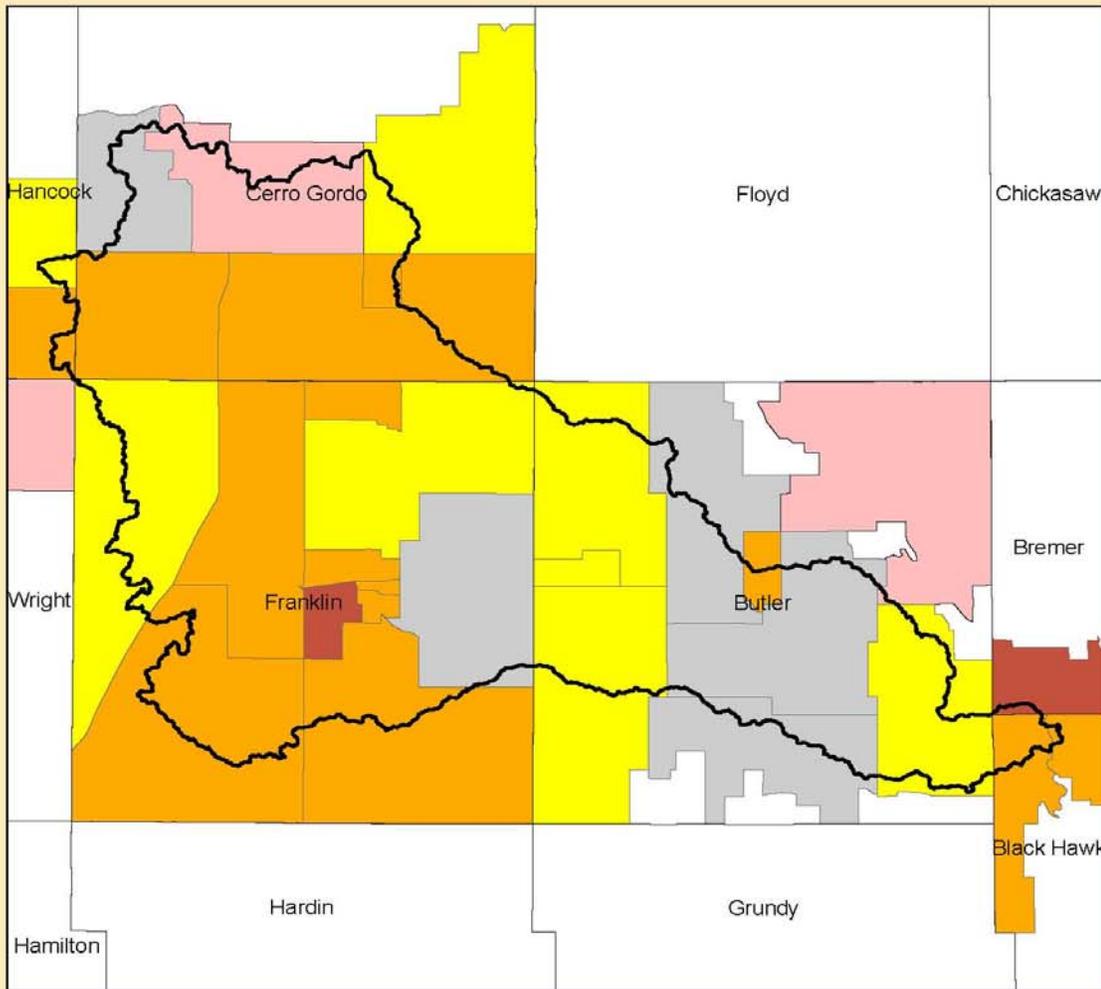
There are 1,324 total farm operators in the watershed. Of these, 1,260 are male and 64 are female. There are 686 principal operators, including 66 percent working full time on the farm (27).

There are 892 farms in the West Fork of the Cedar Watershed with farm size ranging from one acre to over 1,000 acres. Size of farms: 7 percent are 1-9 acres; 20 percent are 10-49 acres; 22 percent are 50-179 acres; 25 percent are 180-499 acres; 16 percent are 500-999 acres; and 10 percent are over 1,000 acres. The Census of Agriculture is authorized under Public Law (PL) 105-113 and uses the definition of a farm as any place from which \$1,000 or more of agricultural products are produced and sold, or normally would have been sold, during the census year (27).

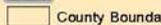
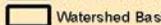
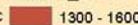
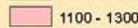
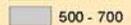
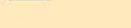
Limiting factors to conservation practice application include such human issues as lack of knowledge, prohibitive costs, lack of management knowledge and skills, resistance to changes in crop yield and profitability (28).

Iowa Rapid Watershed Assessment

 West Fork of the Cedar - 2000 Census Population



Legend

- | | |
|---|--|
|  State Boundary |  Census Block Groups - West Fork Cedar |
|  County Boundary | TOTAL_POP |
|  Watershed Basin - WFC |  1300 - 1800 |
| |  1100 - 1300 |
| |  900 - 1100 |
| |  700 - 900 |
| |  500 - 700 |



Total Farms By Size Per County West Fork of the Cedar Watershed

County	Acres	Percent of Co.	1 - 9 Acres	10 - 49 Acres	50 - 179 Acres	180 - 499 Acres	500 - 999 Acres	> 1000 Acres	Total Farms
Wright	18	0.00%	0	0	0	0	0	0	0
Webster	349,974	31.71%	19	47	62	78	47	43	296
Story	168	0.02%	0	0	0	0	0	0	0
Polk	99,649	9.03%	6	22	16	12	6	6	68
Pocahontas	165,996	15.04%	5	14	18	30	27	15	109
Palo Alto	15,070	1.37%	1	2	2	3	2	1	11
Humboldt	40,280	3.65%	2	3	4	7	4	3	23
Hamilton	12,496	1.13%	1	2	2	2	2	1	10
Greene	34,577	3.13%	1	4	4	6	4	4	23
Dallas	86,751	7.86%	6	22	17	14	8	7	74
Clay	13,573	1.23%	0	1	2	2	2	1	8
Calhoun	6,346	0.57%	0	1	1	1	1	1	5
Buena Vista	146	0.01%	0	0	0	0	0	0	0
Boone	278,614	25.24%	18	45	45	47	29	25	209
	1,103,657	100%	59	163	173	202	132	107	836

Data Source: 2002 National Ag Statistics

County numbers obtained by correlating the percent county which lies within the watershed to determine an estimated number (shown in table).

NASS Farm Operators West Fork of the Cedar Watershed

COUNTY	STATE	Ac. Co. In Wtshd	% Co. In Wtshd	All Operators	Female Op	Male Op	Principal Operators	Full Time Op	Part Time Op
Wright	Iowa	0	0.00%	0	0	0	0	0	0
Hancock	Iowa	3,233	0.59%	7	0	7	4	2	2
Franklin	Iowa	248,623	45.15%	551	31	520	279	178	101
Cerro Gordo	Iowa	132,965	24.15%	287	12	275	166	115	51
Butler	Iowa	160,262	29.10%	464	20	444	229	154	75
Bremer	Iowa	708	0.13%	2	0	2	1	1	0
Black Hawk	Iowa	4,891	0.89%	13	1	12	7	5	2
		550,684	100%	1,324	64	1260	686	455	231

Data Source: 2002 National Ag Statistics
County numbers obtained by correlating the percent county which lies within the watershed to determine an estimated number (shown in table).

Principal Operators - Person considered to be primarily responsible for managing operations on a farm.
Full Time - Works > 200 Days per year conducting farming activities
Part Time - Works < 200 Days per year conducting farming activities

Resource Concern Trends

Focus of Past 7 Years of Progress

Efforts in the past seven years have included: promotion of conservation tillage and no-till; promotion of Conservation Reserve Program (CRP) and contract extensions to protect sensitive lands; applying comprehensive nutrient management plans; pest management plans; and water monitoring through IOWATER (Iowa's volunteer water monitoring program).

Increase in ethanol plant manufacturing utilizes crop residues which adversely affects soil quality and increases soil erosion. This creates more of a need for increased conservation efforts.

Resource Concerns that Require Ongoing Attention

Water quality concerns are increased by manure from livestock that is commonly spread on cropland as fertilizer. Using manure as a fertilizer creates potential water quality challenges from bacteria and nutrients delivered through runoff and subsurface drainage (29). Additional water quality concerns include cattle feedlots and pastures, especially with livestock grazing along streams. Grazing along streams also creates problems with stream bank stability and creates erosion, which is reduced when management restricts cattle access.

Underground storage tanks create resource issues due to storage of substances, primarily petroleum products (30).

In the state of Iowa, as of November 2008, there were approximately 60 biofuel plants that are in operation or under construction. At this time, there is one ethanol plant and one biodiesel plant in operation in the West Fork of the Cedar Watershed. It is reported that 2 - 4 gallons of water is required for every gallon of biofuel produced, creating a concern about water quantity (31).

Soil erosion by water is an ongoing concern, especially on cropland. Ongoing efforts are needed to increase acres utilizing conservation tillage and no-till and contoured buffer strips.

Wildlife habitat and recreational area resource protection and improvement are ongoing concerns. This includes agricultural land and urban/rural lands that have a lack of recreation trails and greenbelts along river systems.

The primary natural resource concerns with animal feeding operations are water and air pollution. Concerns include over-application of manure and associated spills; odor; particulates; and ammonia. Potential air quality issues include: effects on human and animal health; impacts on property values; increased risk of nuisance litigation; and NO and NO² pollution (32). There are 177 Confined Animal Feeding Operations (CAFO) in the watershed, with a total of 239,878 animal units. Ninety-eight percent of the CAFOs are swine, 1 percent cattle, and 1 percent poultry. There are 150 Animal Feeding Operations (AFO) in the watershed, with a total number of 176,230 animal units. Ninety-five percent of the AFOs are swine, 4 percent cattle, and 1 percent poultry (33, 34).

Educational activities are needed to promote extension of expiring CRP contracts.

Other resource concerns include flood damage to land, infrastructure and buildings along major rivers and streams, lack of adequate wastewater facilities and safe drinking water in small towns and unincorporated towns; and lack of infrastructure for renewable energy efforts. There is a need for development of alternative and renewable energy resources such as wind, geothermal, biomass, or methane from livestock facilities (28).

There is a lack of alternative crop production and agricultural diversity, thus decreasing opportunities for positive affects on water quality (28).

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WATERSHED NAME & CODE		WEST FORK OF CEDAR - 07080204						LANDUSE ACRES			451,467
LANDUSE TYPE		ROW CROP						TYPICAL UNIT SIZE ACRES			179
POSSIBLE SOURCES OF FUNDING							ESTIMATED PARTICIPATION			37%	
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT						OTHERS			NOTES/COMMENTS
	New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/ CREP	Fed	State	Local	
Progressive System Acres Treated	120,451										
Conservation Crop Rotation (ac.) 328	0	X	X			X					
Grassed Waterway (ac.) 412	0	X	X				X		X		IFIP
Nutrient Management (ac.) 590	115,633	X	X			X					
Pest Management (ac.) 595	115,633	X	X			X					
Residue and Tillage Management, Mulch Till (ac.) 345	0	X	X			X					
Residue Management, Seasonal (ac.) 344	0	X									
Waste Utilization (ac.) 633	22,886	X	X								
Resource Management System (RMS) Acres Treated	31,151										
Conservation Crop Rotation (ac.) 328	0	X	X			X					
Filter Strip (ac.) 393	2,492	X	X				X				REAP
Grassed Waterway (ac.) 412	0	X	X				X				IFIP
Nutrient Management (ac.) 590	11,464	X	X			X					
Pest Management (ac.) 595	11,464	X	X			X					
Residue and Tillage Management, Mulch Till (ac.) 345	0	X	X			X					
Residue Management, Seasonal (ac.) 344	0	X									
Upland Wildlife Habitat Management (ac.) 645	20,248	X	X	X	X		X				
Waste Utilization (ac.) 633	2,367	X	X								

WATERSHED NAME & CODE		WEST FORK OF CEDAR - 07080204			LANDUSE ACRES		451,467	
LANDUSE TYPE		ROW CROP			TYPICAL UNIT SIZE ACRES		179	
ASSESSMENT INFORMATION					ESTIMATED PARTICIPATION		37%	
CONSERVATION SYSTEMS BY TREATMENT LEVELS	CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS			
	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Sheet and Rill	Soil Erosion – Ephemeral Gully	Water Quality – Excessive Nutrients and Organics in Surface Water	Water Quality – Excessive Suspended Sediment and Turbidity in Surface Water
Baseline System	System Rating ->				2	3	1	2
Total Acreage at Baseline Level	207,675	74,763	0	74,763				
Conservation Crop Rotation (ac.) 328	207,675	74,763	0	74,763	4	2	2	2
Grassed Waterway (ac.) 412	2,077	748	0	748	0	5	2	2
Residue and Tillage Management, Mulch Till (ac.) 345	72,686	26,167	0	26,167	1	0	0	1
Residue Management, Seasonal (ac.) 344	134,989	48,596	0	48,596	2	1	0	1
Progressive System	System Rating ->				3	3	4	2
Total Acreage at Progressive Level	207,675	188,984	120,451	309,435				
Conservation Crop Rotation (ac.) 328	207,675	309,435	0	309,435	4	2	2	2
Grassed Waterway (ac.) 412	2,077	3,094	0	3,094	0	5	2	2
Nutrient Management (ac.) 590	199,368	181,425	115,633	297,058	0	0	5	0
Pest Management (ac.) 595	199,368	181,425	115,633	297,058	0	0	0	2
Residue and Tillage Management, Mulch Till (ac.) 345	72,686	108,302	0	108,302	1	0	0	1
Residue Management, Seasonal (ac.) 344	134,989	201,133	0	201,133	2	1	0	1
Waste Utilization (ac.) 633	39,458	35,907	22,886	58,793	2	0	2	0
Resource Management System (RMS)	System Rating ->				3	4	4	3
Total Acreage at RMS Level	36,117	36,117	31,151	67,269				
Conservation Crop Rotation (ac.) 328	32,867	61,214	0	61,214	4	2	2	2
Filter Strip (ac.) 393	2,889	2,889	2,492	5,381	0	0	4	4
Grassed Waterway (ac.) 412	361	673	0	673	0	5	2	2
Nutrient Management (ac.) 590	33,228	50,423	11,464	61,887	0	0	5	0
Pest Management (ac.) 595	33,228	50,423	11,464	61,887	0	0	0	2
Residue and Tillage Management, Mulch Till (ac.) 345	12,641	23,544	0	23,544	1	0	0	1
Residue Management, Seasonal (ac.) 344	20,226	37,670	0	37,670	2	1	0	1
Upland Wildlife Habitat Management (ac.) 645	23,476	23,476	20,248	43,725	3	3	0	2
Waste Utilization (ac.) 633	6,862	10,414	2,367	12,781	2	0	2	0

CONSERVATION INVESTMENT INFORMATION								
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive System Acres Treated	120451.3956							
Conservation Crop Rotation (ac.) 328	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Grassed Waterway (ac.) 412	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Nutrient Management (ac.) 590	115,633	\$0	\$4,509,700	\$901,940	\$4,920,101	\$0	\$1,503,233	\$2,314,005
Pest Management (ac.) 595	115,633	\$0	\$1,387,600	\$277,520	\$1,513,877	\$0	\$462,533	\$712,002
Residue and Tillage Management, Mulch Till (ac.) 345	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residue Management, Seasonal (ac.) 344	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Waste Utilization (ac.) 633	22,886	\$0	\$205,972	\$41,194	\$224,716	\$0	\$68,657	\$105,688
	Subtotal	\$0	\$6,103,272	\$1,220,654	\$6,658,694	\$0	\$2,034,424	\$3,131,694
Resource Management System (RMS) Acres Treated	31151.223							
Conservation Crop Rotation (ac.) 328	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Filter Strip (ac.) 393	2,492	\$4,984,196	\$0	\$996,839	\$5,981,035	\$4,984,196	\$199,368	\$5,824,005
Grassed Waterway (ac.) 412	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Nutrient Management (ac.) 590	11,464	\$0	\$447,082	\$89,416	\$487,769	\$0	\$149,027	\$229,406
Pest Management (ac.) 595	11,464	\$0	\$137,564	\$27,513	\$150,083	\$0	\$45,855	\$70,586
Residue and Tillage Management, Mulch Till (ac.) 345	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residue Management, Seasonal (ac.) 344	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upland Wildlife Habitat Management (ac.) 645	20,248	\$0	\$607,449	\$121,490	\$662,729	\$0	\$202,483	\$311,693
Waste Utilization (ac.) 633	2,367	\$0	\$21,307	\$4,261	\$23,246	\$0	\$7,102	\$10,933
	Subtotal	\$4,984,196	\$1,213,402	\$1,239,520	\$7,304,862	\$4,984,196	\$603,835	\$6,446,623
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	151602.6186	\$4,984,196	\$7,316,675	\$2,460,174	\$13,963,556	\$4,984,196	\$2,638,259	\$9,578,318

WATERSHED NAME & CODE		WEST FORK OF CEDAR - 07080204						LANDUSE ACRES			4,046
LANDUSE TYPE		FARMSTEAD						TYPICAL UNIT SIZE ACRES			4
POSSIBLE SOURCES OF FUNDING							ESTIMATED PARTICIPATION			37%	
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT					OTHERS			NOTES/COMMENTS	
	New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/ CREP	Fed	State		Local
Progressive System Acres Treated	1,080										
Animal Mortality Facility (no.) 316	274	X	X								
Pest Management (ac.) 595	313	X	X				X				
Waste Storage Facility (no.) 313	0	X	X								
Windbreak/Shelterbreak Establishment (ft.) 380	0	X	X		X		X		X		REAP
Resource Management System (RMS) Acres Treated	279										
Animal Mortality Facility (no.) 316	28	X	X								
Pest Management (ac.) 595	32	X	X				X				
Upland Wildlife Habitat Management (ac.) 645	128	X			X						
Waste Storage Facility (no.) 313	0	X	X								
Windbreak/Shelterbreak Establishment (ft.) 380	0	X	X		X		X		X		REAP

WATERSHED NAME & CODE		WEST FORK OF CEDAR - 07080204			LANDUSE ACRES		4,046		
LANDUSE TYPE		FARMSTEAD			TYPICAL UNIT SIZE ACRES		4		
ASSESSMENT INFORMATION					ESTIMATED PARTICIPATION		37%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS		CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS			
		Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Water Quality – Excessive Nutrients and Organics in Groundwater	Air Quality – Particulate matter less than 10 micrometers in diameter (PM 10)	Air Quality – Excessive Greenhouse Gas: CO2 (carbon dioxide)	Air Quality – Ammonia (NH3)
Baseline System		System Rating ->			1	1	1	1	
Total Acreage at Baseline Level		1,861	670	0	670				
Waste Storage Facility (no.) 313		472	170	0	170	2	0	0	2
Windbreak/Shelterbreak Establishment (ft.) 380		298,097	107,315	0	107,315	1	2	2	2
Progressive System		System Rating ->			2	1	1	1	
Total Acreage at Progressive Level		1,861	1,694	1,080	2,773				
Animal Mortality Facility (no.) 316		472	430	274	704	2	1	-1	0
Pest Management (ac.) 595		540	491	313	804	0	0	0	0
Waste Storage Facility (no.) 313		472	704	0	704	2	0	0	2
Windbreak/Shelterbreak Establishment (ft.) 380		298,097	444,165	0	444,165	1	2	2	2
Resource Management System (RMS)		System Rating ->			2	2	1	1	
Total Acreage at RMS Level		324	324	279	603				
Animal Mortality Facility (no.) 316		82	125	28	153	2	1	-1	0
Pest Management (ac.) 595		94	142	32	175	0	0	0	0
Upland Wildlife Habitat Management (ac.) 645		149	149	128	277	0	2	2	0
Waste Storage Facility (no.) 313		82	153	0	153	2	0	0	2
Windbreak/Shelterbreak Establishment (ft.) 380		51,843	96,558	0	96,558	1	2	2	2

CONSERVATION INVESTMENT INFORMATION								
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
	New Treatment Units	Installation Cost	Management Cost - 3 yrs	Technical Assistance	Total Present Value Cost	Installation Cost	Annual O & M + Mgt Costs	Total Present Value Cost
		50%	100%	20%		50%	100%	
Progressive System Acres Treated	1079.574184							
Animal Mortality Facility (no.) 316	274	\$2,877,038	\$0	\$575,408	\$3,452,445	\$2,877,038	\$287,704	\$4,088,951
Pest Management (ac.) 595	313	\$0	\$3,757	\$751	\$4,099	\$0	\$1,252	\$1,928
Waste Storage Facility (no.) 313	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windbreak/Shelterbreak Establishment (ft.) 380	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$2,877,038	\$3,757	\$576,159	\$3,456,544	\$2,877,038	\$288,956	\$4,090,879
Resource Management System (RMS) Acres Treated	279.20022							
Animal Mortality Facility (no.) 316	28	\$297,625	\$0	\$59,525	\$357,150	\$297,625	\$29,762	\$422,995
Pest Management (ac.) 595	32	\$0	\$389	\$78	\$424	\$0	\$130	\$199
Upland Wildlife Habitat Management (ac.) 645	128	\$0	\$3,853	\$771	\$4,204	\$0	\$1,284	\$1,977
Waste Storage Facility (no.) 313	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windbreak/Shelterbreak Establishment (ft.) 380	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$297,625	\$4,242	\$60,373	\$361,777	\$297,625	\$31,176	\$425,171
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	1358.774404	\$3,174,662	\$7,999	\$636,532	\$3,818,321	\$3,174,662	\$320,132	\$4,516,050

WATERSHED NAME & CODE		WEST FORK OF CEDAR - 07080204					LANDUSE ACRES			10,315	
LANDUSE TYPE		NATURAL AREAS					TYPICAL UNIT SIZE ACRES			42	
POSSIBLE SOURCES OF FUNDING						ESTIMATED PARTICIPATION			37%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT					OTHERS			NOTES/COMMENTS	
	New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/ CREP	Fed	State		Local
Progressive System Acres Treated	2,752										
Forest Stand Improvement (ac.) 666	1,073	X	X		X		X		X		REAP
Pasture & Hayland Planting (ac.) 512	0	X	X						X		REAP, IFIP
Tree/Shrub Establishment (ac.) 612	0	X	X		X		X		X		REAP
Upland Wildlife Habitat Management (ac.) 645	83	X			X						
Wetland Wildlife Habitat Management (ac.) 644	28	X		X	X		X				
Resource Management System (RMS) Acres Treated	712										
Early Successional Habitat Development/Management (ac.) 647	28	X			X						
Forest Stand Improvement (ac.) 666	545	X	X		X		X		X		REAP
Pasture & Hayland Planting (ac.) 512	0	X	X						X		REAP, IFIP
Pest Management (ac.) 595	712	X	X			X					
Tree/Shrub Establishment (ac.) 612	0	X	X		X		X		X		REAP
Upland Wildlife Habitat Management (ac.) 645	286	X		X	X						
Use Exclusion (ac.) 472	712	X	X				X		X		REAP
Wetland Wildlife Habitat Management (ac.) 644	10	X		X	X		X				

WATERSHED NAME & CODE		WEST FORK OF CEDAR - 07080204			LANDUSE ACRES		10,315		
LANDUSE TYPE		NATURAL AREAS			TYPICAL UNIT SIZE ACRES		42		
ASSESSMENT INFORMATION					ESTIMATED PARTICIPATION		37%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS		CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS			
		Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Classic Gully	Soil Erosion – Streambank	Fish and Wildlife – Inadequate Cover/Shelter	Fish and Wildlife – T & E Species: Declining Species, Species of Concern
Baseline System		System Rating ->			1	0	3	1	
Total Acreage at Baseline Level		4,745	1,708	0	1,708				
Pasture & Hayland Planting (ac.) 512		190	68	0	68	0	0	3	0
Tree/Shrub Establishment (ac.) 612		1,851	666	0	666	2	0	4	3
Progressive System		System Rating ->			1	0	5	3	
Total Acreage at Progressive Level		4,745	7,117	2,752	9,869				
Forest Stand Improvement (ac.) 666		1,851	2,776	1,073	3,849	0	0	3	1
Pasture & Hayland Planting (ac.) 512		190	395	0	395	0	0	3	0
Tree/Shrub Establishment (ac.) 612		1,851	3,849	0	3,849	2	0	4	3
Upland Wildlife Habitat Management (ac.) 645		142	214	83	296	0	1	5	4
Wetland Wildlife Habitat Management (ac.) 644		47	71	28	99	0	0	5	4
Resource Management System (RMS)		System Rating ->			1	2	5	4	
Total Acreage at RMS Level		825	825	712	1,537				
Early Successional Habitat Development/Management (ac.) 647		33	33	28	61	0	0	4	4
Forest Stand Improvement (ac.) 666		825	992	545	1,537	0	0	3	1
Pasture & Hayland Planting (ac.) 512		33	61	0	61	0	0	3	0
Pest Management (ac.) 595		825	825	712	1,537	0	0	3	0
Tree/Shrub Establishment (ac.) 612		322	599	0	599	2	0	4	3
Upland Wildlife Habitat Management (ac.) 645		347	359	286	646	0	1	5	4
Use Exclusion (ac.) 472		825	825	712	1,537	2	4	3	2
Wetland Wildlife Habitat Management (ac.) 644		17	21	10	31	0	0	5	4

CONSERVATION INVESTMENT INFORMATION								
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive System Acres Treated	2752.042							
Forest Stand Improvement (ac.) 666	1,073	\$65,471	\$0	\$13,094	\$78,565	\$65,471	\$3,928	\$82,018
Pasture & Hayland Planting (ac.) 512	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tree/Shrub Establishment (ac.) 612	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upland Wildlife Habitat Management (ac.) 645	83	\$0	\$2,477	\$495	\$2,702	\$0	\$826	\$1,271
Wetland Wildlife Habitat Management (ac.) 644	28	\$0	\$412,806	\$82,561	\$450,373	\$0	\$137,602	\$211,818
0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal		\$65,471	\$415,283	\$96,151	\$531,641	\$65,471	\$142,356	\$295,107
Resource Management System (RMS) Acres Treated	711.735							
Early Successional Habitat Development/Management (ac.) 647	28	\$1,096	\$0	\$219	\$1,315	\$1,096	\$0	\$1,096
Forest Stand Improvement (ac.) 666	545	\$33,257	\$0	\$6,651	\$39,908	\$33,257	\$1,995	\$41,662
Pasture & Hayland Planting (ac.) 512	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pest Management (ac.) 595	712	\$0	\$8,541	\$1,708	\$9,318	\$0	\$2,847	\$4,382
Tree/Shrub Establishment (ac.) 612	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upland Wildlife Habitat Management (ac.) 645	286	\$0	\$8,584	\$1,717	\$9,365	\$0	\$2,861	\$4,404
Use Exclusion (ac.) 472	712	\$14,235	\$0	\$2,847	\$17,082	\$14,235	\$854	\$17,832
Wetland Wildlife Habitat Management (ac.) 644	10	\$0	\$149,464	\$29,893	\$163,066	\$0	\$49,821	\$76,693
0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal		\$48,587	\$166,589	\$43,035	\$240,054	\$48,587	\$58,379	\$146,070
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	3463.777	\$114,058	\$581,872	\$139,186	\$771,695	\$114,058	\$200,735	\$441,177

WATERSHED NAME & CODE		WEST FORK OF CEDAR - 07080204						LANDUSE ACRES			27,945
LANDUSE TYPE		PASTURE/HAYLAND						TYPICAL UNIT SIZE ACRES			23
POSSIBLE SOURCES OF FUNDING							ESTIMATED PARTICIPATION			37%	
CONSERVATION SYSTEMS BY TREATMENT LEVELS		FUTURE	USDA INVESTMENT					OTHERS			NOTES/COMMENTS
		New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/CREP	Fed	State	
Progressive System Acres Treated		7,456									
Fence (ft.) 382	103,084	X	X		X		X			X	REAP
Pasture & Hayland Planting (ac.) 512	0	X	X				X			X	REAP, IFIP
Upland Wildlife Habitat Management (ac.) 645	820	X		X	X						
Wetland Wildlife Habitat Management (ac.) 644	6,636	X		X	X		X				
Resource Management System (RMS) Acres Treated		1,928									
Early Successional Habitat Development/Management (ac.) 647	1,716	X			X		X				
Fence (ft.) 382	10,664	X	X		X		X			X	REAP
Nutrient Management (ac.) 590	1,928	X	X				X				
Pasture & Hayland Planting (ac.) 512	212	X	X				X			X	REAP, IFIP
Pest Management (ac.) 595	1,928	X	X				X				
Pipeline (ft.) 516	60,948	X	X							X	
Prescribed Grazing (ac.) 528	1,928	X	X				X			X	REAP
Upland Wildlife Habitat Management (ac.) 645	85	X		X	X		X				
Watering Facility (no.) 614	419	X	X				X				
Wetland Wildlife Habitat Management (ac.) 644	686	X		X	X		X				

WATERSHED NAME & CODE		WEST FORK OF CEDAR - 07080204			LANDUSE ACRES		27,945		
LANDUSE TYPE		PASTURE/HAYLAND			TYPICAL UNIT SIZE ACRES		23		
ASSESSMENT INFORMATION					ESTIMATED PARTICIPATION		37%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS		CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS			
		Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Streambank	Water Quality – Excessive Nutrients and Organics in Surface Water	Domestic Animals – Inadequate Quantities and Quality of Feed and Forage	Domestic Animals – Inadequate Stock Water
Baseline System		System Rating ->			0	1	3	0	
Total Acreage at Baseline Level		12,855	4,628	0	4,628				
Pasture & Hayland Planting (ac.) 512		11,441	4,119	0	4,119	0	2	5	0
Progressive System		System Rating ->			0	1	4	0	
Total Acreage at Progressive Level		12,855	19,282	7,456	26,738				
Fence (ft.) 382		177,730	266,596	103,084	369,680	0	0	4	0
Pasture & Hayland Planting (ac.) 512		11,441	23,797	0	23,797	0	2	5	0
Upland Wildlife Habitat Management (ac.) 645		1,414	2,121	820	2,941	1	0	2	0
Wetland Wildlife Habitat Management (ac.) 644		11,441	17,161	6,636	23,797	0	0	1	1
Resource Management System (RMS)		System Rating ->			2	3	5	4	
Total Acreage at RMS Level		2,236	2,236	1,928	4,164				
Early Successional Habitat Development/Management (ac.) 647		1,990	1,990	1,716	3,706	0	0	1	0
Fence (ft.) 382		30,910	46,905	10,664	57,569	0	0	4	0
Nutrient Management (ac.) 590		2,236	2,236	1,928	4,164	0	5	4	0
Pasture & Hayland Planting (ac.) 512		2,236	3,952	212	4,164	0	2	5	0
Pest Management (ac.) 595		2,236	2,236	1,928	4,164	0	0	4	0
Pipeline (ft.) 516		70,664	70,664	60,948	131,612	2	0	0	5
Prescribed Grazing (ac.) 528		2,236	2,236	1,928	4,164	3	1	5	0
Upland Wildlife Habitat Management (ac.) 645		246	373	85	458	1	0	2	0
Watering Facility (no.) 614		486	486	419	905	0	0	4	5
Wetland Wildlife Habitat Management (ac.) 644		1,990	3,019	686	3,706	0	0	1	1

CONSERVATION INVESTMENT INFORMATION								
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive System Acres Treated	7455.726							
Fence (ft.) 382	103,084	\$95,868	\$0	\$19,174	\$115,041	\$95,868	\$3,835	\$112,021
Pasture & Hayland Planting (ac.) 512	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upland Wildlife Habitat Management (ac.) 645	820	\$0	\$24,604	\$4,921	\$26,843	\$0	\$8,201	\$12,625
Wetland Wildlife Habitat Management (ac.) 644	6,636	\$0	\$99,533,942	\$19,906,788	\$108,591,927	\$0	\$33,177,981	\$51,072,586
0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$95,868	\$99,558,546	\$19,930,883	\$108,733,811	\$95,868	\$33,190,017	\$51,197,231
Resource Management System (RMS) Acres Treated	1928.205							
Early Successional Habitat Development/Management (ac.) 647	1,716	\$66,070	\$0	\$13,214	\$79,284	\$66,070	\$0	\$66,070
Fence (ft.) 382	10,664	\$9,917	\$0	\$1,983	\$11,901	\$9,917	\$397	\$11,588
Nutrient Management (ac.) 590	1,928	\$0	\$75,200	\$15,040	\$82,043	\$0	\$25,067	\$38,586
Pasture & Hayland Planting (ac.) 512	212	\$14,317	\$0	\$2,863	\$17,180	\$14,317	\$286	\$15,523
Pest Management (ac.) 595	1,928	\$0	\$23,138	\$4,628	\$25,244	\$0	\$7,713	\$11,873
Pipeline (ft.) 516	60,948	\$48,758	\$0	\$9,752	\$58,510	\$48,758	\$1,950	\$56,974
Prescribed Grazing (ac.) 528	1,928	\$54,954	\$0	\$10,991	\$65,945	\$54,954	\$0	\$54,954
Upland Wildlife Habitat Management (ac.) 645	85	\$0	\$2,545	\$509	\$2,777	\$0	\$848	\$1,306
Watering Facility (no.) 614	419	\$209,588	\$0	\$41,918	\$251,505	\$209,588	\$12,575	\$262,559
Wetland Wildlife Habitat Management (ac.) 644	686	\$0	\$10,296,615	\$2,059,323	\$11,233,648	\$0	\$3,432,205	\$5,283,371
0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$403,604	\$10,397,498	\$2,160,220	\$11,828,037	\$403,604	\$3,481,041	\$5,802,804
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	9383.931	\$499,472	\$109,956,044	\$22,091,103	\$120,561,848	\$499,472	\$36,671,058	\$57,000,035