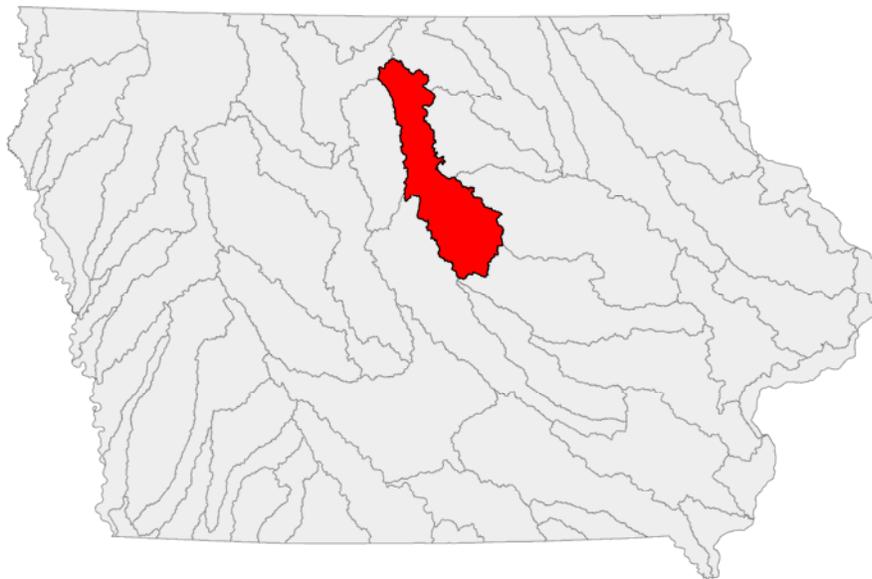


Iowa River, Upper, Watershed Rapid Watershed Assessment



The Iowa River, Upper, Watershed assessment provides initial estimates of where conservation investments would best address the Resource Priorities/Capabilities 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 soil and water resources.

In the Iowa River, Upper, Watershed conservation assistance is available from NRCS service centers in the ten counties that are part of the watershed (*see appendix for a list of all the service centers by county*). There are also four resource conservation and development (RC&D) offices that cover the Iowa River, Upper, Watershed in central Iowa which include: Prairie Partners in Humboldt, Prairie Winds in Garner, Prairie Rivers of Iowa in Ames and Cedar Valley in Charles City, IA.



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Introduction

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Most of the Iowa River 8-digit hydrologic code (HUC) subbasin is located in the prairie pothole region in the Des Moines Lobe. The southeastern part of the watershed is in the Southern Iowa Drift Plain and the Iowan Surface. The whole watershed covers parts of ten counties, with most of the area located in Hardin, Wright and Hancock counties. This region of Iowa receives a moderate amount of precipitation and has a humid continental climate. Prior to the installation of subsurface drainage, this region had abundant wetlands, many of which were interconnected prairie potholes, specifically in the Des Moines Lobe. Now a large portion of the region is artificially drained in order to support row crop agriculture. Approximately 98% of this watershed is privately owned with almost 79% in corn and soybean production (1). There are also over 300 animal feeding operations (AFO) in the watershed (2).

The Iowa River, Upper, Watershed has a drainage area of approximately 932,500 acres or 1,457mi². The watershed has over 1,280 miles of streams that supports a diversity of fish and wildlife species. Approximately 118 miles of stream in the Iowa River, Upper, Watershed in central Iowa is designated as a Protected Water Area by the Iowa DNR (3).

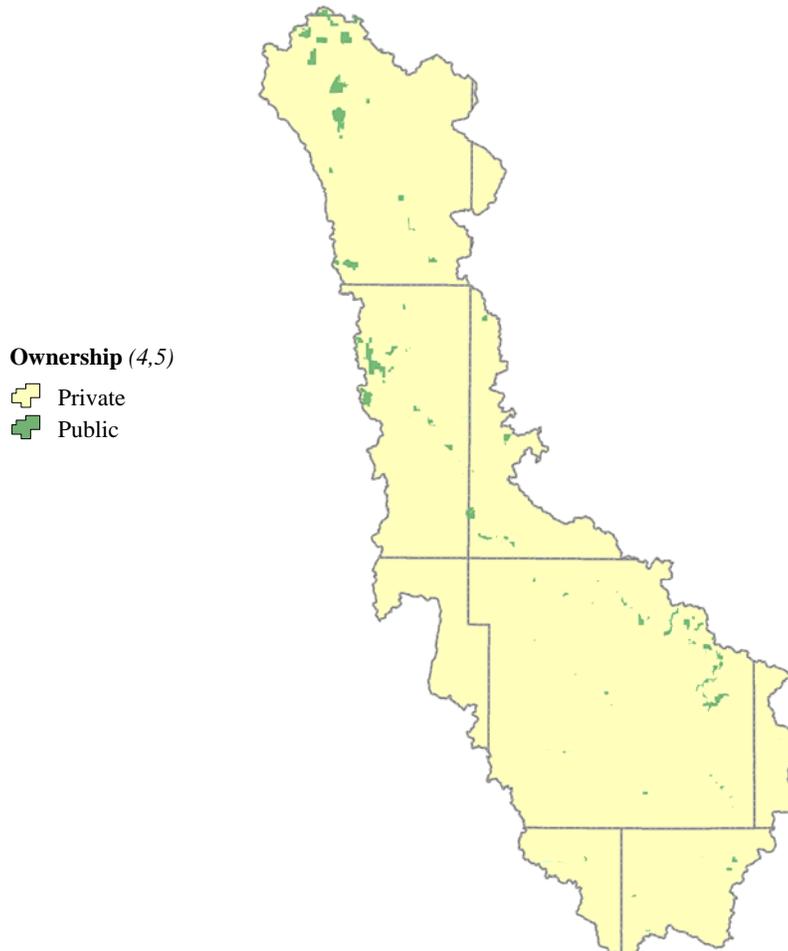


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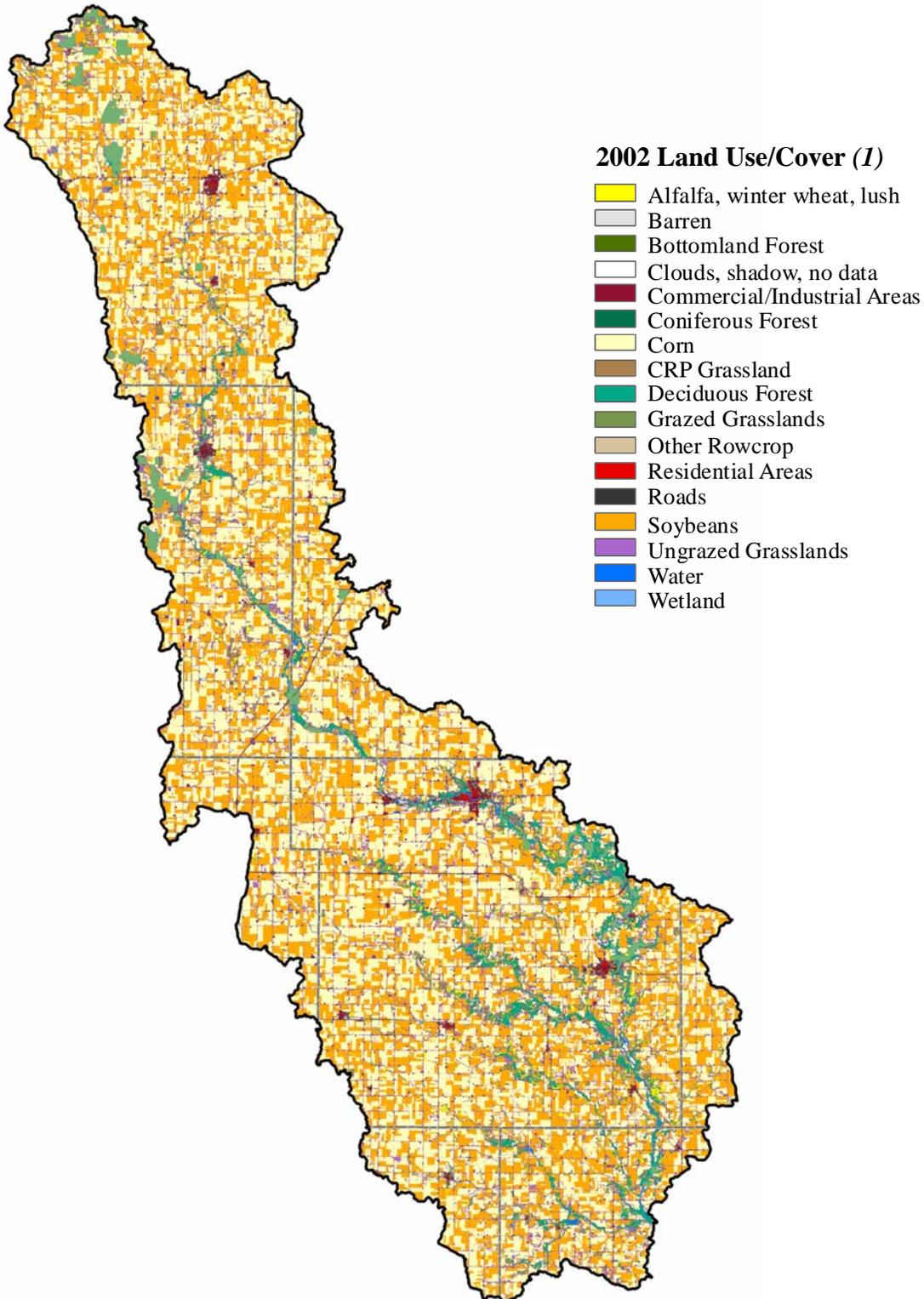
2002 Land Use/ Land Cover (1)	Ownership - (GAP Stewardship (4) and IA DNR Lands (5))					
	Private		Public		Totals	%
	Acres	%	Acres	%		
Forest	22,591	2.42	3,611	0.39	26,202	2.81
Row Crops	731,345	78.43	2,197	0.24	733,542	78.67
Grassland/Alfalfa	109,932	11.79	3,233	0.35	113,165	12.14
CRP	9,508	1.02	1,024	0.11	10,532	1.13
Grazed Grassland	19,205	2.06	968	0.10	20,174	2.16
Developed*	20,989	2.25	369	0.04	21,358	2.29
Water/Wetland	4,051	0.43	2,649	0.28	6,700	0.72
Other	763	0.08	0	0.00	763	0.08
Upper Iowa HUC Totals	918,385	98	14,052	2	932,437	100

*: Developed land includes Residential Areas, Roads, and Commercial/Industrial Areas



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Common Resource Areas

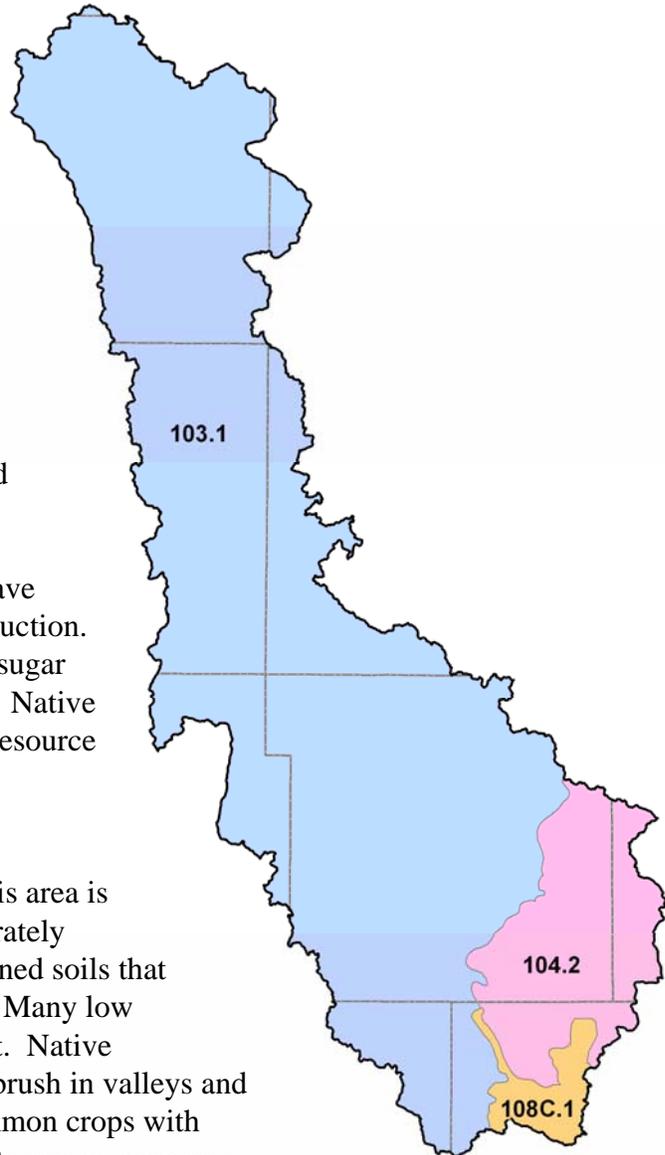
A Common Resource Area (CRA) is a geographic area defined by the USDA NRCS that identifies similar areas of resource concerns, problems, and/or treatment needs (6). Natural resource information such as soil, climate, landscape conditions and human influences are considered when defining the boundaries of a CRA. The Iowa River, Upper, Watershed is comprised of three Common Resource Areas:

103.1 - Iowa and Minnesota Till Prairies:

“Primarily loamy glacial till soils with scattered lacustrine areas, potholes, outwash and flood plains. 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” (6).

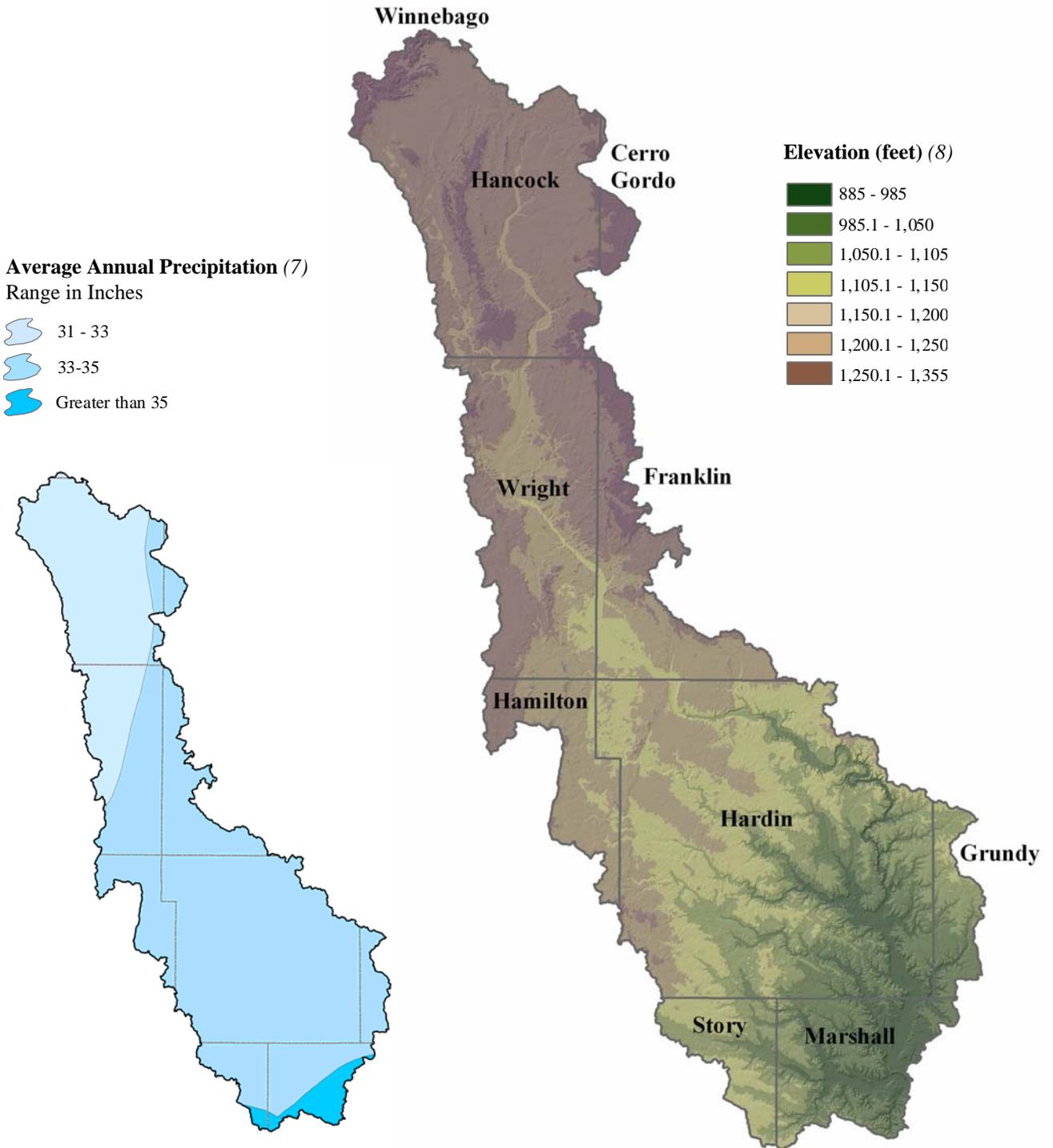
104.2 - Eastern Iowa Eroded Till Plain: “This area is made up of broad upland, nearly level to moderately sloping, moderately well drained to poorly drained soils that formed in silty/loamy material over glacial till. Many low gradient drainage ways are common in this unit. Native vegetation was mostly 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” (6).

108C.1 - Iowa River Loess and Till – “This area consists of silty soils on ridge tops and highly dissected side slopes with drainage ways and streams. Glacial till soils dominate the steeper side slopes. Native vegetation was prairie on the ride tops with thin bands of timber in the valleys and ravines. Common crops are corn and soybeans with some hay. Swine and poultry operations are numerous. Resource concerns are soil erosion, soil quality, nutrient management, water quality and wildlife habitat” (6).



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Soils, Landforms and Vegetation

The majority of the soils in the Iowa River, Upper, Watershed developed approximately 12,000 - 14,000 years ago with the melting of the Des Moines Lobe glacier. After the ice sheet had retreated the landscape was covered in glacial till, with sand and gravel in the meltwater streams, and clay and peat left from glacial lakes (9). The glacier left behind a landscape that was relatively flat to gently rolling.

This part of the watershed is near the southern-most extent of the Prairie Pothole Region and approximately 38% of the soils in the watershed are poorly drained (10). A majority of the watershed once was covered in tall grass prairie interspersed with wetlands, many of which were linked drainage depressions. The root system of the prairie vegetation and the accumulation of rich organic matter from these young hydric soils created deep, dark colored soil, rich in nutrients (11).

As mentioned above, most of the Iowa River, Upper, Watershed is in the Des Moines Lobe or Iowa and Minnesota Till Prairies (page 6), but in the southeastern portion of the watershed 15% of the watershed is in the Southern Iowa Drift Plain and Iowan Surface. The Southern Iowa Drift Plain is primarily covered by glacial deposits left by ice sheets 500,000 years ago (9). The landscape was then carved out through stream erosion creating a well connected drainage system through time and a steeply rolling landscape compared to the Des Moines Lobe or Iowa and Minnesota Till Prairies. Loess covers the upland areas including the high slopes (9). The Iowan Surface was once part of the Southern Iowa Drift Plain but then went through a period of intense glacial cold and accelerated erosion approximately 21,000 to 16,000 years ago (9). The once hilly terrain eroded away leaving a gently rolling landscape. Since the Iowan Surface was once the Southern Iowa Drift Plain the drainage system is well established and well defined.

The soils in the Iowa River, Upper, Watershed vary tremendously because of the long glacial history described above. The Clarion-Nicollet-Webster, Canisteo-Clarion-Nicollet and Canisteo-Nicollet-Clarion associations are the most extensive in the watershed and are primarily associated with pothole wetlands. The Clarion-Nicollet-Webster association is found on flat to strongly sloping areas that are well to poorly drained that formed in glacial drift. This association is typically associated with areas that are interspersed with depressions ranging in size, most of which were poorly drained and would often pool with water before the time of artificial drainage. The Canisteo-Clarion-Nicollet association has similar drainage and slope characteristics but is described as having silty and loamy soils that developed in glacial sediments and till. Flats and swales in addition to gently rolling areas on rises, knolls, and low hills are typical of this association. Similar to the Clarion-Nicollet-Webster association, this association had many areas with marshes and ponded depressions before artificial drainage. The Canisteo-Nicollet-Clarion is similar in drainage and slope characteristics to the previous described associations except it is described as loamy soils formed in glacial till. These soils are typically found on convex knolls and ridges and on slightly convex to slightly concave slopes.

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Soils, Landforms and Vegetation *con't*

The southeastern portion of the watershed that is in the Southern Iowa Drift Plain and Iowan Surface is dominated by the Tama-Colo, Tama-Muscatine, Tama and Killduff-Tama-Shelby associations. Each association varies slightly but overall they are well to moderately well drained, located on moderate to steep slopes, and are silty to loamy soils formed in loess.

The first soil survey reports to be published in the Iowa River, Upper, Watershed were Cerro Gordo and Story Counties in 1903. All of the soil survey reports have been updated, with the two most recent surveys ranging from 1989 in Hancock County to 1992 in Wright County. The Iowa Soil Properties and Interpretations Database (ISPAID) was the first complete digital soil survey for the state of Iowa, which was completed in 1996 (12). ISPAID is composed of digitized soil maps from each soil survey, most of the information in the published survey, in addition to some extra information that is not available in the surveys. A new revision comes out every time the USDA updates a county soil survey (12). At the end of 2006, the NRCS Soil Survey Geographic (SSURGO) Database was completed for all the counties in the Iowa River, Upper, Watershed, except Grundy County which was finished in 2007 (10). The data and maps in SSURGO correspond to all the data in the published soil survey report. The maps are digitized from the soil survey manual and the data is linked to the National Soil Information System (NASIS) Database.

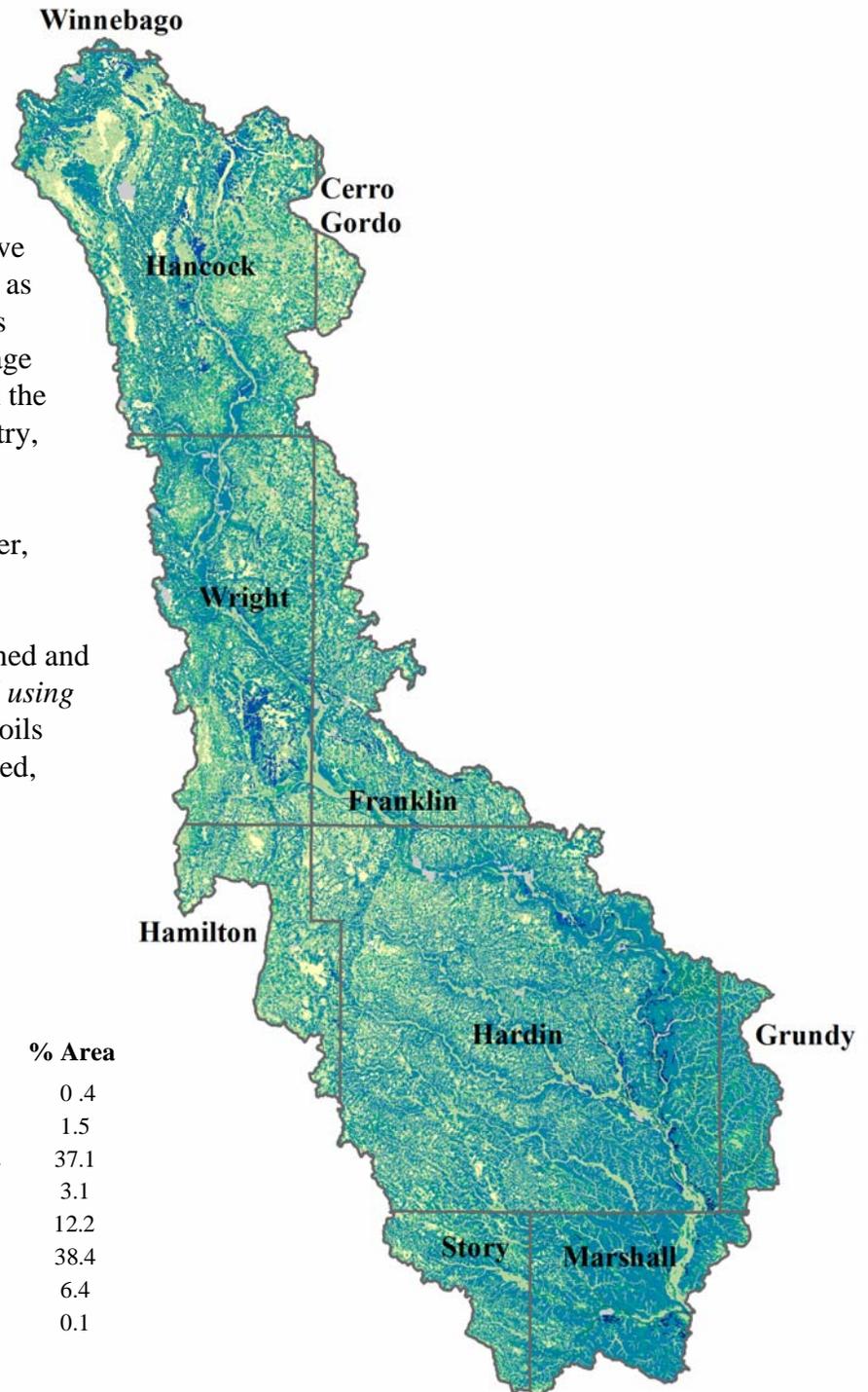
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Drainage Classification

The drainage classification refers to the frequency and duration of soil saturation during soil formation under natural conditions (13). Areas on the landscape that have been altered by human activity, such as artificial drainage, are not part of this classification. The purpose of drainage classes is to provide better insight on the capacity of soil for agriculture, forestry, wildlife and recreation (13).

Approximately 38% of the Iowa River, Upper, Watershed is poorly drained. Nearly 346,553 acres of row crop agriculture land use is in poorly drained and very poorly drained soils (*calculated using land use data from page 4*). Of the soils that are poorly and very poorly drained, eighty-three percent are in row crop agriculture.



Drainage Class (10)	Acres	% Area
 Excessively drained	3,598	0.4
 Somewhat excessively drained	13,746	1.5
 Well drained	346,252	37.1
 Moderately well drained	28,904	3.1
 Somewhat poorly drained	113,477	12.2
 Poorly drained	357,663	38.4
 Very poorly drained	59,561	6.4
 No Data	9,271	0.1

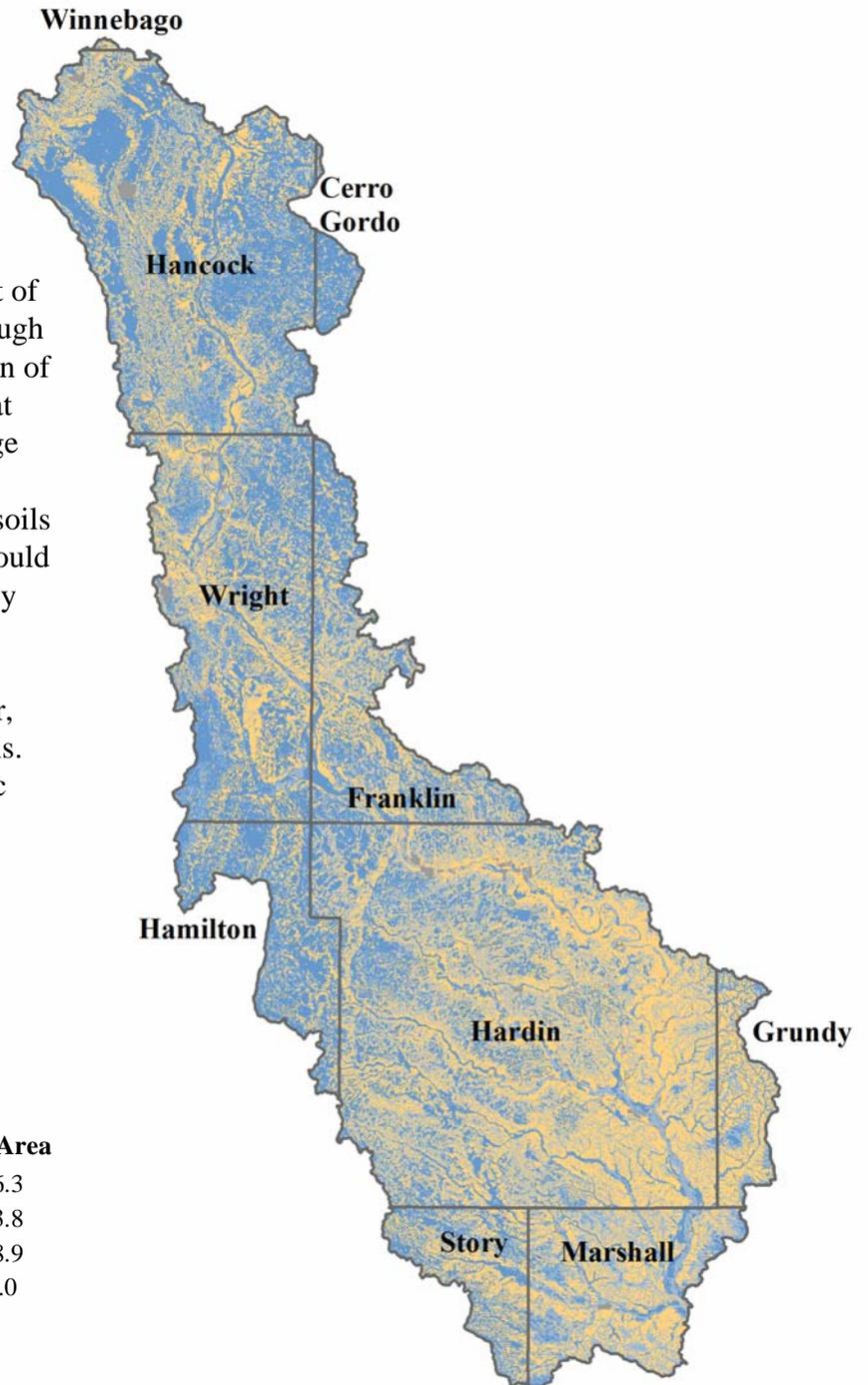
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Hydric Soils

Hydric soils are soils that are saturated, flooded, or ponded sufficiently during the growing season to periodically produce anaerobic conditions in the upper part of the soil (14). These soils are wet enough to support the growth and regeneration of hydrophytic vegetation (14). Soils that have been altered by artificial drainage are considered hydric regardless of drainage modification because these soils still have hydric characteristics and could still support a wetland if the hydrology was restored (15).

A little over a third of the Iowa River, Upper, Watershed has All Hydric soils. Approximately 85% of the All Hydric soils are in row crop agriculture (calculated using land use data from page 4).



Hydric Soils (10)	Acres	% Area
All Hydric	338,656	36.3
Partially Hydric	221,773	23.8
Not Hydric	362,494	38.9
No Data	9,548	1.0

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Land Capability Classification (LCC)

The land capability classification represents the suitability of soils for common field crops. Soils are grouped together based on limitations for cultivated crops and pasture plants and the capability of soils to be productive without deteriorating over time (13). The land capability class is divided into capability classes (1-8) and subclasses (e, w, s, c) (13). For simplicity, only the capability class is shown in the map to the right.

Seventy-three percent of the Iowa River, Upper, Watershed has slight to moderate limitations. A majority of the severe to very severe limitations occur along the river valley.



Land Capability Class (10)	Acres	% Area
1 - Slight Limitations	105,831	11.3
2 - Moderate Limitation	579,455	62.1
3 - Severe Limitations	200,225	21.5
4 - Very Severe Limitations	15,767	1.7
5 - No Erosion Hazard - but other limitations exist that are impractical to remove, that limit their use	11,176	1.2
6 - Severe Limitations: Limited to Pasture, Range, & Forest	4,384	0.5
7 - Severe Limitations: Limited to Grazing, Forest, & Wildlife Habitat	5,613	0.6
8 - Miscellaneous Area	0	0
No Data or Water	10,021	1.1

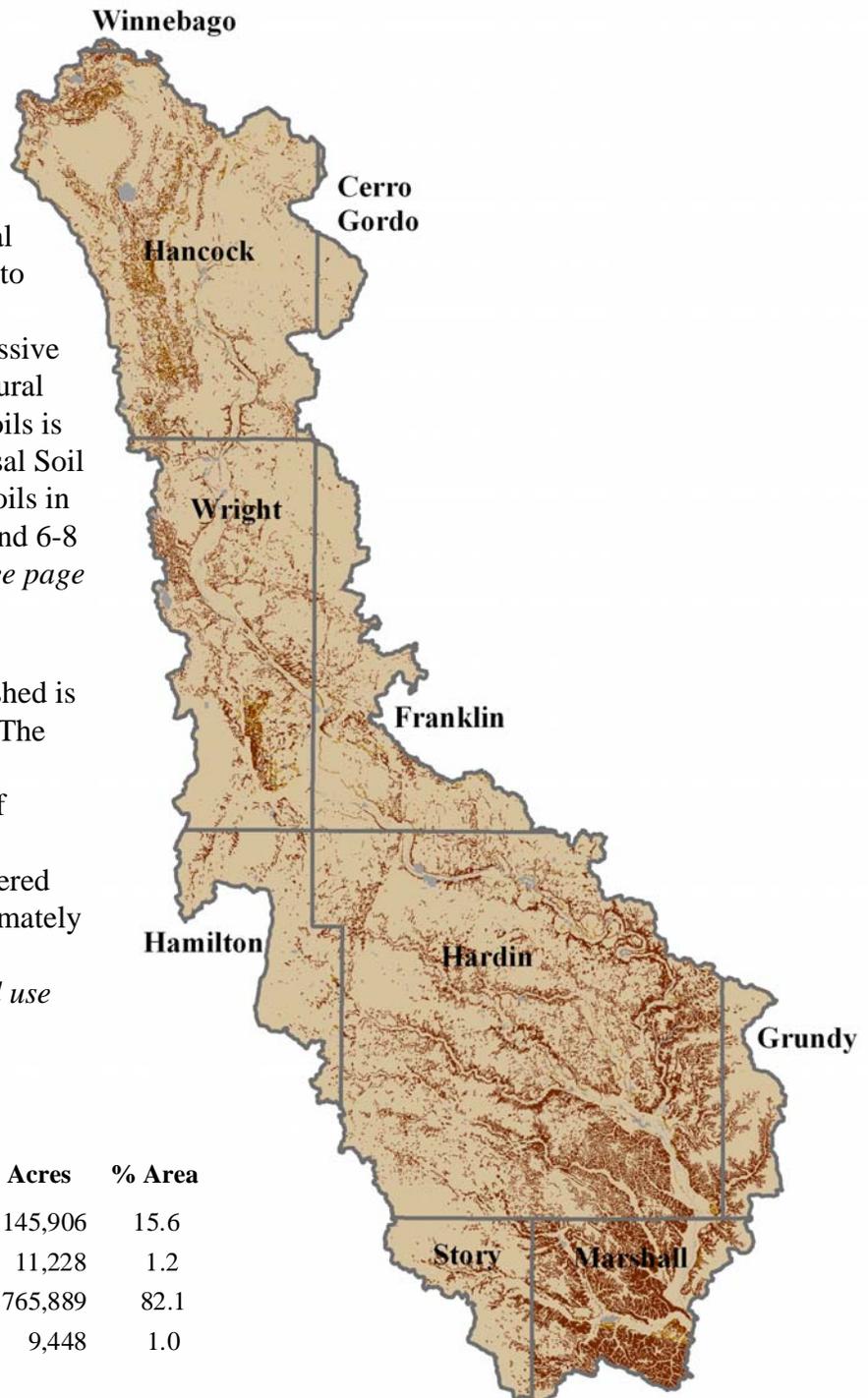
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Highly Erodible Land (HEL) Based on Water HEL

Water HEL is a National Food Security Act definition of a soil mapping unit with certain physical characteristics that make it prone to water erosion. If it is not properly managed, it is susceptible to excessive erosion rates when under agricultural productions. Soil loss for HEL soils is determined according to the Universal Soil Loss Equation (16). Generally, soils in Land Capability classes 3 and 4 and 6-8 are considered highly erodible (see page 12).

Approximately 16% of the watershed is considered highly erodible land. The map to the right shows the areas susceptible to water HEL, most of which is concentrated in the river valleys. Of the land that is considered highly erodible by water, approximately 104,500 acres are in row crop agriculture (calculated using land use data from page 4).



Highly Erodible Land Based on Water (10)

	Acres	% Area
Highly erodible land	145,906	15.6
Potentially highly erodible land	11,228	1.2
Not highly erodible land	765,889	82.1
No Data	9,448	1.0



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Subsurface Drainage

Subsurface drainage is commonly installed in soils that are poorly drained to increase agricultural production. The use of artificial drainage lowers the water table making what would be a wetland or wet meadow area, dryer, more productive farm land.

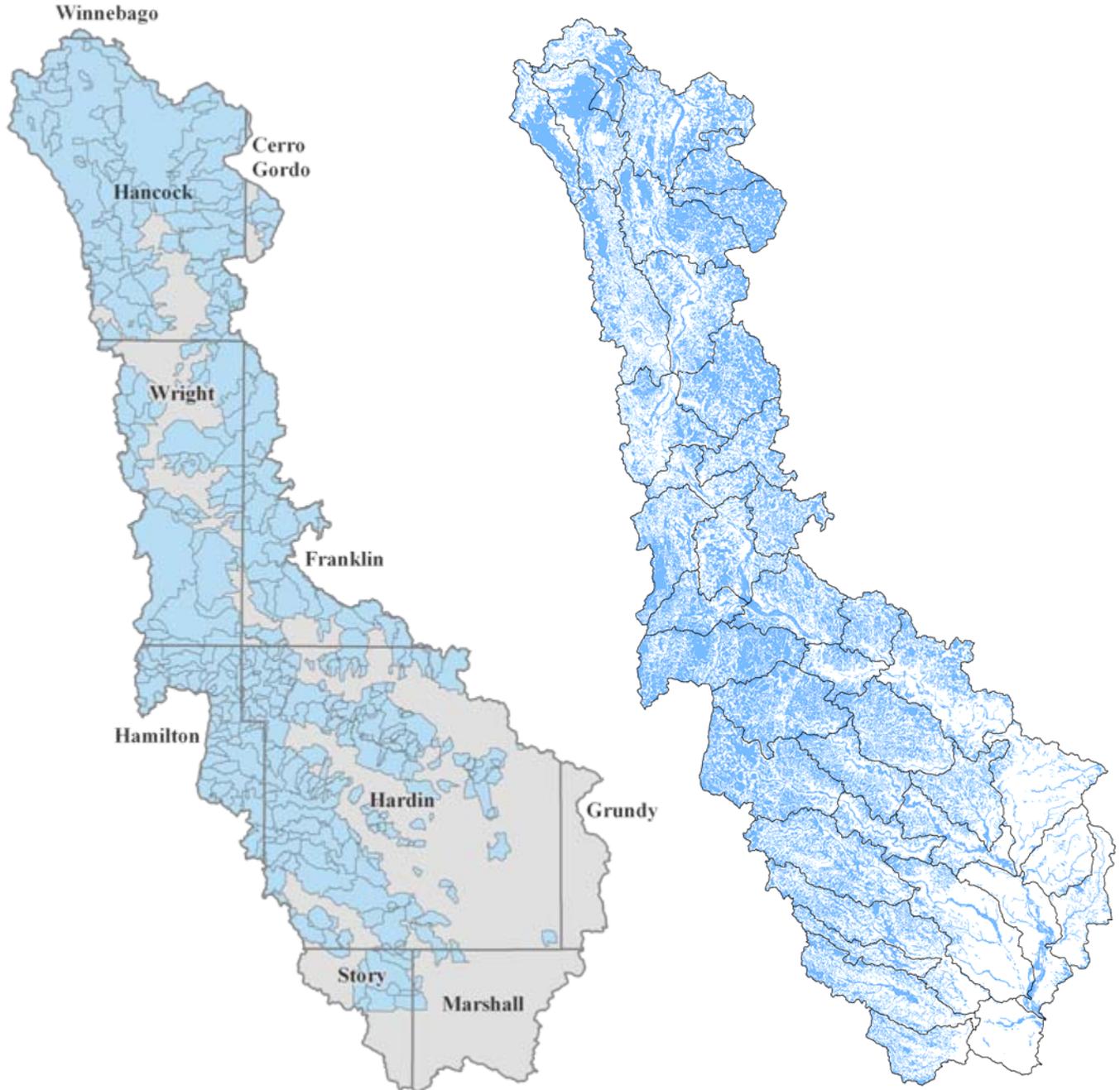
One of the challenges with using an artificially drained system is the maintenance of water quality before it reaches the stream. Fertilized fields lose excess nitrate-nitrogen (NO₃) into the drain that directly enters neighboring streams. If these areas were not artificially drained NO₃ and other nutrients could be reduced by other conservation systems such as streamside buffers and/or wetlands before entering the stream.

Literature suggests that drainage tiles were first installed in the 1880's in Iowa (17). Not long after the installation of the tiles, drainage districts were being formed to legally secure the outlets (17). Now these districts are comprised of elected Drainage District Trustees that are legally authorized and expected to assure the drains are maintained, and do not affect neighboring lands.

On the next page the map on the left indicates the drainage districts (19) and the map right depicts the likely extent of tile-drained soils in the Iowa River, Upper, Watershed. Since actual locations of agricultural drainage is not available, using soil characteristic criteria established by Dr. Dan Jaynes, USDA ARS National Soil Tilth Laboratory, gives us an idea of where subsurface drainage would likely be necessary for crop production (18). The specific criteria are slope (high value) less than or equal to 2%, either poor or very poor drainage, and soils with a very slow infiltration rate when thoroughly wet (hydrological soil group D). Approximately 43% of the watershed potential has subsurface drainage according to Jaynes criteria, using the SSURGO soils dataset (10).

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Drainage Districts (19)

-  Drainage Districts
-  County Boundaries

Potential Subsurface Drainage Locations (10,18)

-  Potential Drainage Tile Locations
-  Huc 12 Watersheds

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Physical Description

Surface Waters Assessment

The upper portion of the Iowa River and its tributaries are important recreationally and biologically. Boating, paddle sports, hunting and fishing are common activities on the Iowa River. The Iowa River Greenbelt, which is a 42-mile corridor along the river that extends from Alden to Union, Iowa, provides recreational opportunities, scenic views and diverse wildlife habitat. The watershed as a whole has a diversity of fish and mussel species, some of which are state and federally listed (*see page 27*).

The stream flow and stream data is acquired by the USGS at several locations throughout Iowa. In the upper portion of the Iowa River Watershed there are six gages and the two in the table below are the central and southern most gaging stations (20). Further summary information is available at the USGS National Water Information Systems website (20).

		Total Avg. Yield*	Acre-Feet	
Stream Flow Data	USGS 05449500 Iowa River near Rowan, IA (20)	Total Avg. Yield*	196,759	
		May-Sept. Avg. Yield	63,008	
	USGS 05451210 South Fork Iowa River NE of Providence, IA (20)	Total Avg. Yield*	82,515	
		May-Sept. Avg. Yield	47,071	
				Cubic Feet/Second
	USGS 05449500 Iowa River near Rowan, IA (20)	Total Avg. Yield*	271.6	
May-Sept. Avg. Yield		208.1		
USGS 05451210 South Fork Iowa River NE of Providence, IA (20)	Total Avg. Yield*	113.9		
	May-Sept. Avg. Yield	155.9		
		Miles	Percent	
Stream Data	Total-Miles - Major (100K Hydro GIS Layer) (21)	1,286.2	100.0	
	303d/TMDL Listed Streams (DEQ) (22)	33.2	2.6	
	Protected Streams (3)	118	9.2	
			Number	Percent
	Number of Fish Species (1891-2001) (23)	67	100.0	
	Number of State and Federally Listed Fish Species (49) (<i>see pages 26-27 for further information</i>)	3	4.5	
	Number of State and Federally Listed Mussel Species (49) (<i>see pages 26-27 for further information</i>)	6	NA	

* Total Average Yield dates are 10/01/2005 - 09/30/2006

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Surface Waters Assessment *con't*

Land use has a major impact on the quality of streams. In the table below a 180-ft buffer on either side of the stream was used to calculate land use directly next to the stream. One hundred and eighty feet was selected as an example because 180-ft is the maximum distance for NRCS practice standard 391, riparian forest buffer.

		Acres	Percent
Land Cover/Use (1, 21) <i>Based on a 180-foot buffer on both sides of all streams in the 100K hydro GIS layer.</i>	Forest	7,506.3	13.0
	Row Crops	24,283.6	42.1
	Grassland/Alfalfa	15,541.2	26.9
	CRP	1,669.5	2.9
	Grazed Grassland	4,384.0	7.6
	Developed	1,698.0	2.9
	Water/Wetland	2,530.8	4.4
	Other	61.2	0.1
	Total Acres of 180-foot Stream Buffers	57,674.5	100.0

Physical Description and Resource Priorities/Capabilities

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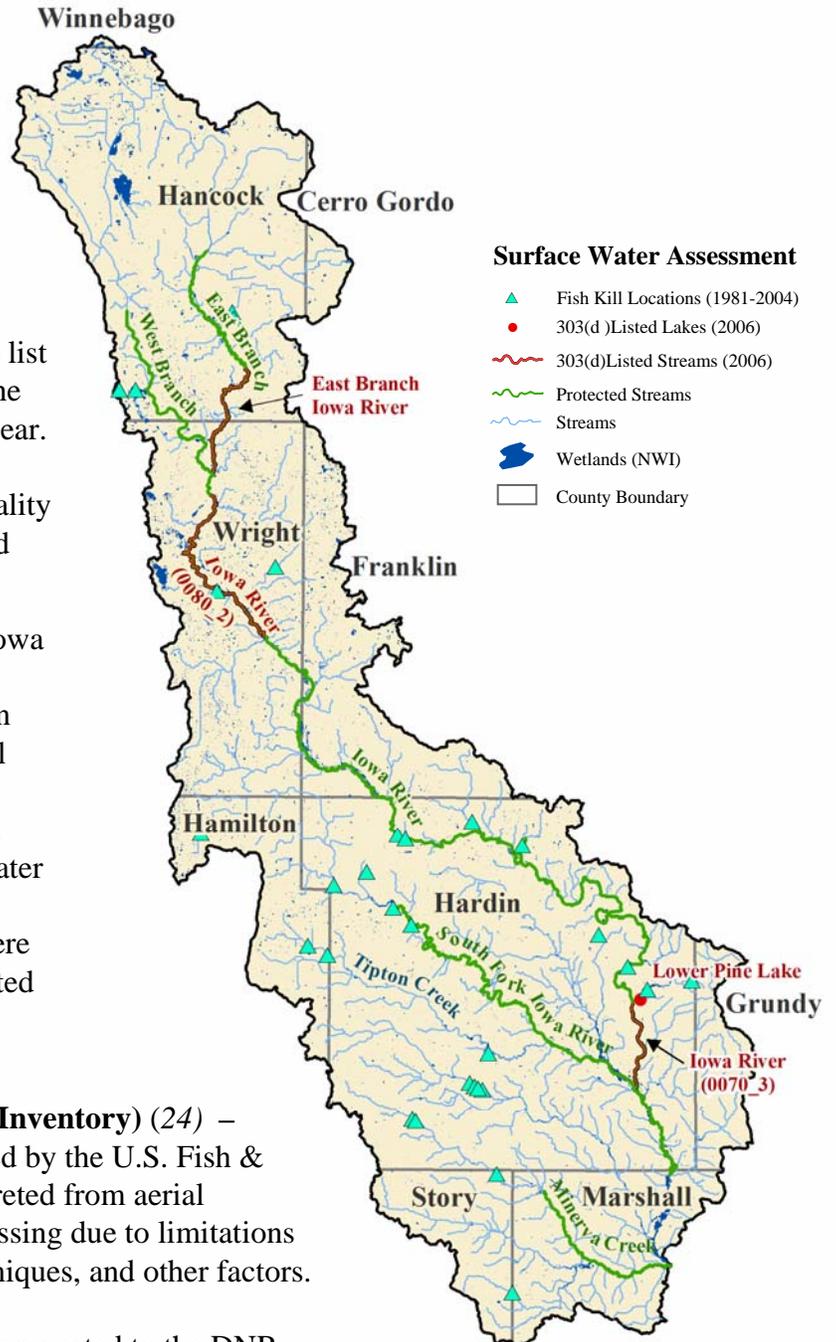
Surface Waters Assessment *con't*

303(d) listed streams / lakes (22) (2006) –Streams listed as impaired due to pollutants entering surface waters that have not been treated sufficiently to meet water quality standards. Section 303(d) of the Clean Water Act establishes that states are to list impaired waters (303(d)) and submit the list to the EPA every even numbered year. Iowa DNR is responsible for placing waterbodies that do not meet water quality standards on the 303(d) list of impaired waters.

Protected Streams (3) - Streams in Iowa that have been designated as being protected from channel straightening in Chapter 72 of the Iowa Code. Channel changes are not allowed for protected streams because of current or potential detrimental affects on wildlife, fish, water quality, recreation, soil erosion, public health, or other landowner rights. There are approximately 118 miles of Protected Streams in the Iowa River, Upper, Watershed (3).

Wetlands (NWI - National Wetland Inventory) (24) – Records of wetland locations developed by the U.S. Fish & Wildlife Service. Wetlands are interpreted from aerial photography, so some wetlands are missing due to limitations of scale, photo quality, inventory techniques, and other factors.

Fish Kills (63) – Locations of fish kills reported to the DNR. The causes of the kills vary from animal waste, columnaris, low dissolved oxygen, pesticides, bacteria, fertilizer, industrial chemicals, unknown causes, winter kill, and other unknown natural causes. There has been an estimated 314,000 fish killed at eighteen of the sites between 1981 and 2004. Fourteen of the sites do not have fish kill numbers reported due to unreliable data.



Resource Priorities/Capabilities

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Surface Waters Assessment

2006 Water Quality Concerns - 303d List and TMDL Parameters						
Impaired Streams (303d) (22,25)						
Segment	Water Body	Miles	Use Impaired	Cause	Class	Use Class
IA 02-IOW-0070_3	Iowa River	6.54	Primary Contact	Indicator Bacteria	5a	A1, B(WW), HQR
IA 02-IOW-0080_2	Iowa River	16.11	Primary Contact	Indicator Bacteria	5a	A1, B(WW)
IA 02-IOW-0380_1	East Branch Iowa River	10.51	Aquatic Life	Biological	5b	B(LR)
Impaired Lakes (303d) (22, 25)						
Segment	Water Body	Acres	Use Impaired	Cause	Class	Use Class
IA 02-IOW-0330-L_0	Lower Pine Lake	50	Primary Contact	Indicator Bacteria	5a	A1, B(WW)

See Appendix A (page 52) for definitions

Waterbodies requiring a TMDL

Indicator bacteria and biological causes are the two types of water quality impairments requiring a TMDL in the Iowa River, Upper, Watershed. The minimum criteria for Indicator bacteria (*E. Coli*) in primary contact waters (class A1) are a geometric mean of at least ten samples that must not exceed 126 organisms/100 ml of water (27). Also no more than 10% of these samples should exceed 235 organisms/100 ml of water (27). At lake beaches a geometric mean of five samples over a 30-day period must not exceed 126 organisms/100 ml of water, and 10% must not exceed 235 organisms/100 ml of water (27). Criteria for class A1 waters applies for the recreational season, March 15 – November 15 (27). The other cause for impairment in the watershed is due to biological causes. A biological impairment is based on the results of biological monitoring or a fish kill where the cause/source has not yet been identified (27).

Two segments of the Iowa River listed on the impaired waters list require a TMDL due to indicator bacteria. All samples for these three segments were collected during the recreational seasons of 2002-2004. The indicator bacteria in the Iowa River for segment 0070, located in Hardin County, (see map on previous page) had a geometric mean of 97 organisms/100ml from 24 samples collected, which exceeds the 126 organisms/100ml criterion (26). The single-sample maximum (> 10%) was exceeded with 21% of the samples containing levels of E.coli greater than 235 organisms/100ml (26). This segment of the Iowa River is therefore is partially supported for primary contact recreation (26).

The other segment (0080) listed as partially supporting primary contact recreation is located in Wright County (see map on previous page.) The geometric mean was 111organisms/100ml which is below the Class A waters criterion for indicator bacteria (26). Again, 21% of the samples exceeded 235 organisms/100ml also not passing the single-sample maximum (26). This segment is therefore also assessed as partially supported for primary contact recreation.

Resource Priorities/Capabilities

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Surface Waters Assessment

Waterbodies requiring a TMDL *con't*

The East Branch of the Iowa River is partially supported for aquatic life potentially due to organic enrichment (27). This river segment requires a TMDL based on the findings of a 2000 IDNR/UHL stream biocriteria project (27). The results of the assessment were a Fish Index of Biotic Integrity (FIBI) scores of 39 (Fair)*; 29 (Fair) and a Benthic Macroinvertebrate Index of Biotic Integrity (BMIBI) scores of 45 (Fair)*; 32 (Fair) (26). The reason this portion of the river was assessed as partially supporting was based on comparing FIBI and BMIBI scores with stream ecoregion reference sites (biological impairment criteria (BIC)) from previous 305b reports (26). The non-riffle FIBI BIC for this ecoregion is 32 and the BMIBI reference BIC is 62 (26). The reference sites are from 1994-2004 (26).

At Lower Pine Lake Beach, the levels of indicator bacteria were monitored once a week during the primary contact recreation season in 2002, 2003, and 2004 (26). The results indicated that two of the 25 thirty-day geometric means were greater than 126 organisms/100m (26). These results qualify this lake as impaired and therefore does not support Class A waters. In addition, this lake was flagged as impaired due to high levels of algal and non-algal turbidity, during a statewide lake survey (26).

As of April 2008, Lower Pine Lake, is scheduled for a TMDL in 2010.

* The assessment looks at 12 metrics for BMIBI and 12 metrics for FIBI that are summed together to get a number between 0 (poor) and 100 (excellent).



Resource Priorities/Capabilities

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Water Erosion (Sheet and Rill)

Water (sheet and rill) erosion from cropland accounts for nearly 90% of Iowa's soil erosion (28). In Iowa, there has been a steady decline in sheet and rill erosion from 1982 to 1997 but on average soil erosion remains above sustainable levels (28,30,31). In order to maintain high levels of soil productivity soil erosion should not exceed the "T" value established for a particular soil mapping unit. In Iowa, "T" ranges from 2-5 tons/acre/year. However, sediment losses well below "T" may still be detrimental to stream water quality and aquatic integrity.

National Resources Inventory (NRI)

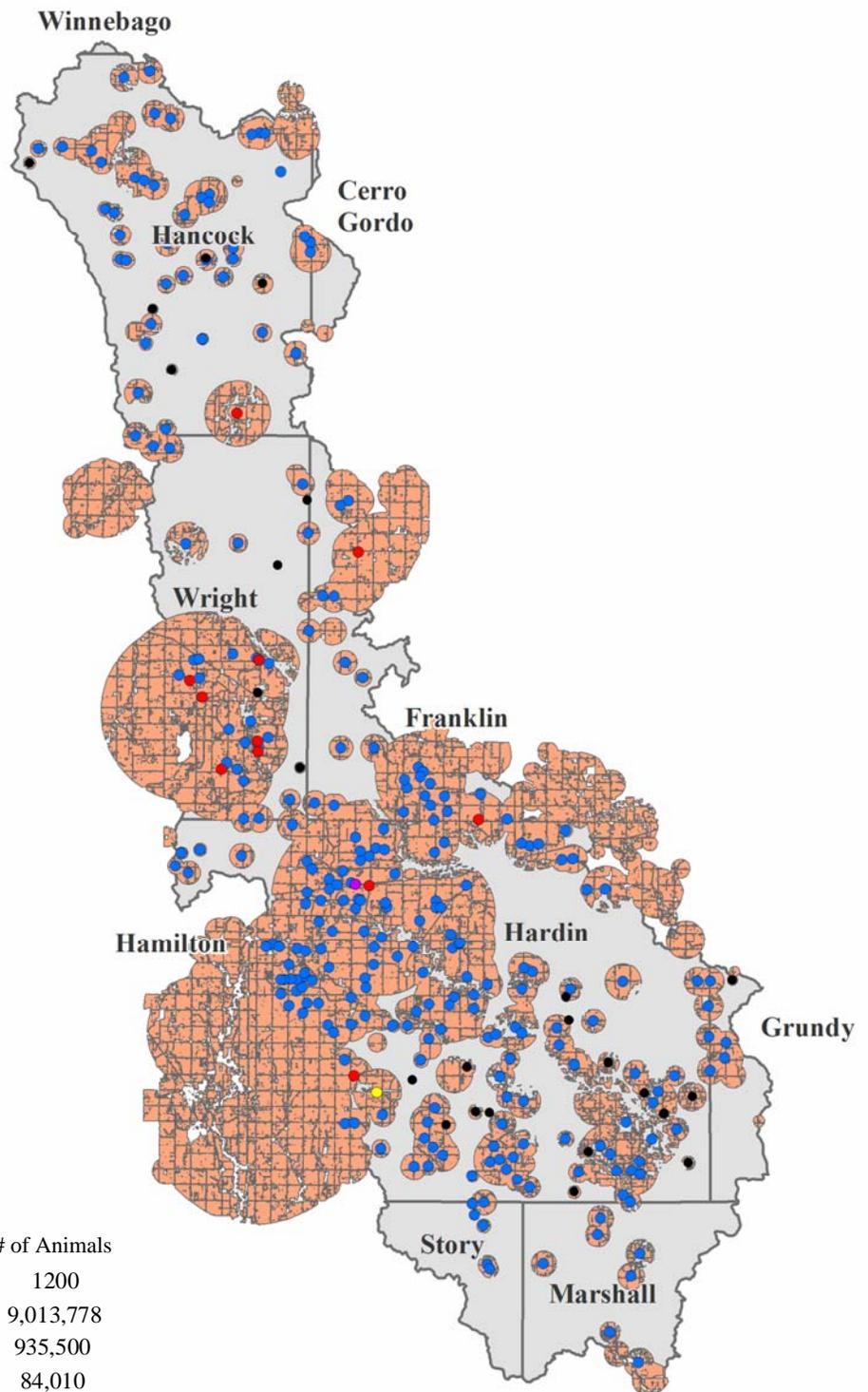
In the Iowa River, Upper, Watershed, overall soil loss (tons/year) due to water erosion, decreased approximately 13,800 acres from 1982 to 1997 according to the NRI data (29). In 1982 the Iowa River, Upper, Watershed had a soil loss of approximately 5 tons/acre/year, attributed to water erosion, with 93% from cultivated cropland (29). In 1997 soil loss decreased to 3.4 tons/acre/year with 85% from cultivated cropland (29).

Resource Priorities/Capabilities

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In Iowa, manure from livestock is commonly spread on cropland as fertilizer (32). Potential challenges with using manure as a fertilizer is bacteria and nutrients from the manure delivered to the stream via surface runoff or subsurface drainage networks (32). This is also a potential problem from cattle feedlots and pastures. Additionally grazing along the stream can have detrimental effects on stream bank stability when cattle have direct access to the stream.(2).

There are approximately 308 animal feeding operations (AFO) in the Iowa River, Upper, Watershed (see table below) (2). The map to the right shows how much nitrogen from manure would be spread on the row crop land surrounding the AFO if it was applied at the agronomic rate of 160 lb N/ac for a two year crop rotation (64).



Estimated Manure Application Zones (160 lb N/ac) (64)

- Manure Receiving Areas
- County Boundaries

Animal Feeding Operations (AFO) (2)	# of Farms	# of Animals
● Cattle	2	1200
● Chickens	11	9,013,778
● Hogs	269	935,500
● Turkeys	2	84,010
● Unknown	24	NA

Resource Priorities/Capabilities

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Facilities/Sites Subject to Environmental Regulation

Solid Waste Permit Facilities include (33):

- Municipal and industrial waste landfills
- Transfer stations
- Compost facilities and some recycling centers
- Land application, land farming and beneficial reuse
- Appliance demanufacturing
- Cathode ray tube device collection and recycling

Underground Storage Tanks (36):

- Storage of substances, primarily petroleum products

National Pollutant Discharge Elimination System

(NPDES) (40): - Regulates the discharge of Wastewater into surface waters

Resource Conservation and Recovery Act

(RCRA) (40):– Management of hazardous waste in treatment, storage or disposal units

Toxic Release Inventory System (TRIS) (40):–

Data on manufacturing facilities that release toxic chemicals into the environment through the air, water, and land.

Non-National Priority Sites (37):– Hazardous waste sites

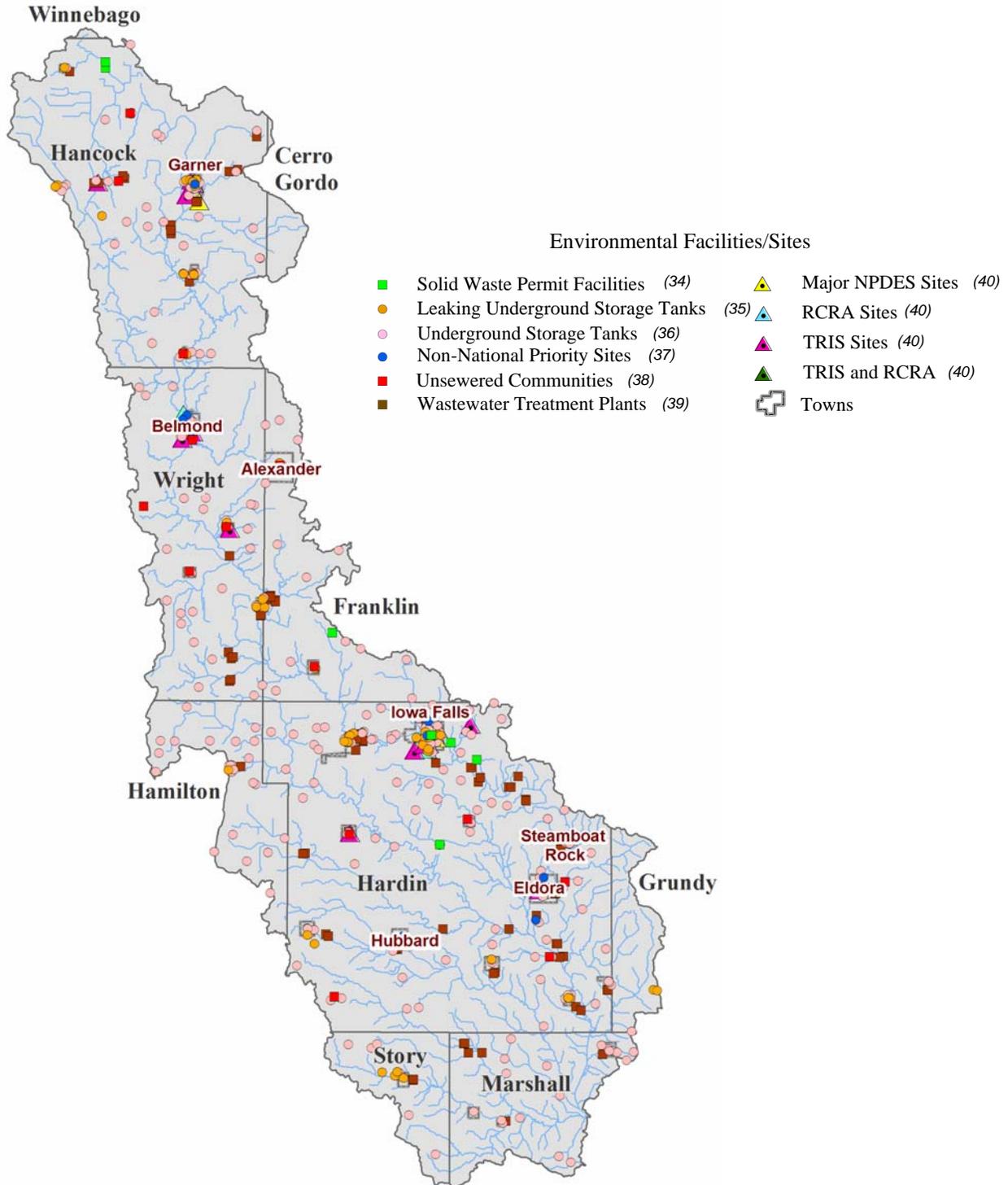
that did not make the final EPA National Priority List (NPL) (NPL- sites eligible for extensive, long-term clean-up actions under the Superfund program)

Unsewered Communities (38) – Small communities with aging septic systems or drain tile networks that discharge sewage directly into surface waters. There are 412 reported homes in need of septic systems that are in the watershed. Those counties include: Hardin County - 159 homes, Franklin County - 122 homes, and Hancock County 131. Wright county is estimated to have 167 homes without septic systems.

Resource Priorities/Capabilities

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Facilities/Sites Subject to Environmental Regulation *con't*

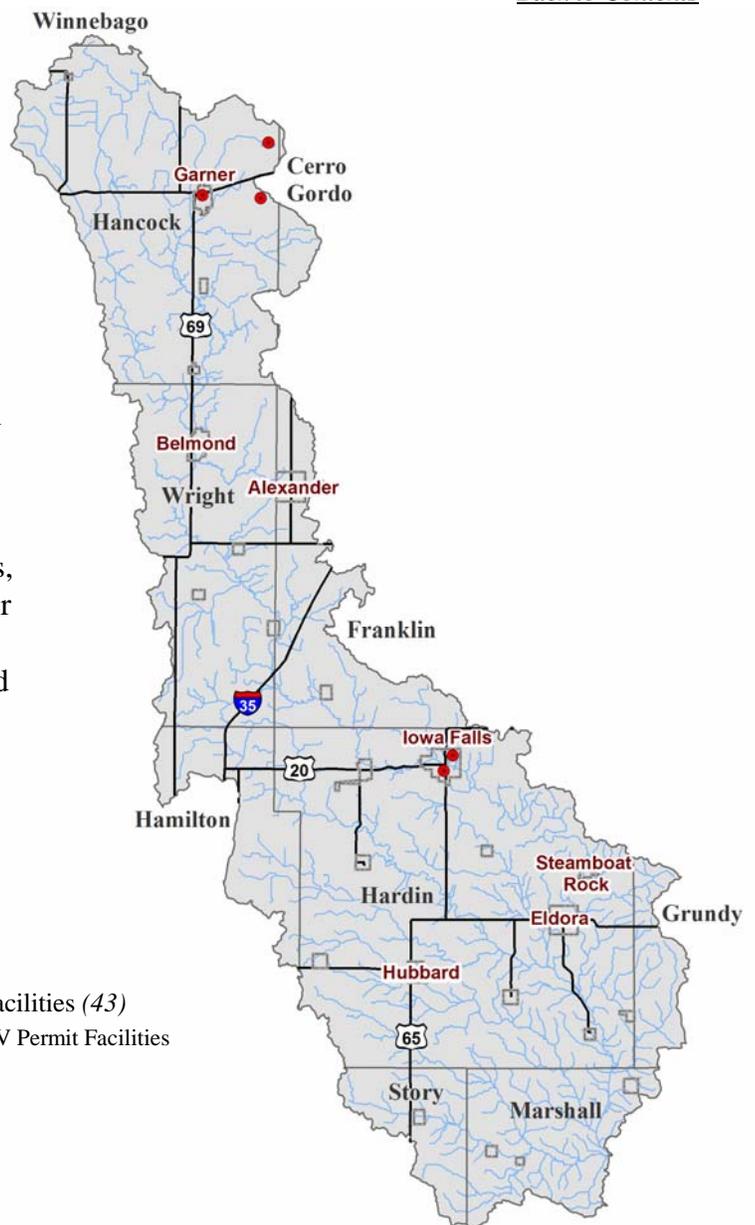


Resource Priorities/Capabilities

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Major Air Facilities

There are five Title V air permit facilities and five construction permit facilities in the Iowa River, Upper, Watershed. Title V air permits, of the Clean Air Act, are required from all major sources and some minor sources of air pollution (41). The permit requires facilities to meet emission limits, in addition to monitoring, record keeping, and reporting in order to maintain permit compliance (41). Construction permits monitor all processes that emit contaminants, such as dust, fumes and/or vapors into the air (42). All of the facilities with Title V air permits in the Iowa River, Upper, Watershed also have construction permits (43).



- Major Air Facilities (43)
- Air Title V Permit Facilities
 - Towns

Biofuel Plants

In the state of Iowa, as of May 2007, there were approximately 60 operating or proposed biofuel plants (44). At the time of the report there were two ethanol plants in the Iowa River, Upper, Watershed located in Iowa Falls, IA called Hawkeye Renewables and Pine Lake Corn Processors, LLC in Steamboat Rock, IA (44). There was also one biodiesel plant in Iowa Falls, IA called Cargill. The feedstock that Hawkeye Renewables and Pine Lake Corn Processors are using is corn, and the current capacity is 105 and 20 million gallons/year, respectively (44). The feedstock at Cargill is soybean oil and the current capacity is 35.5 million gallons/year (44). It is estimated that 2-4 gallons of water is required for every gallon of biofuel produced. This means, for example, that Hawkeye Renewables would use 210 million gallons of water per year, using the multiplier of 2 gallons of water/gallon of ethanol.

Resource Priorities/Capabilities

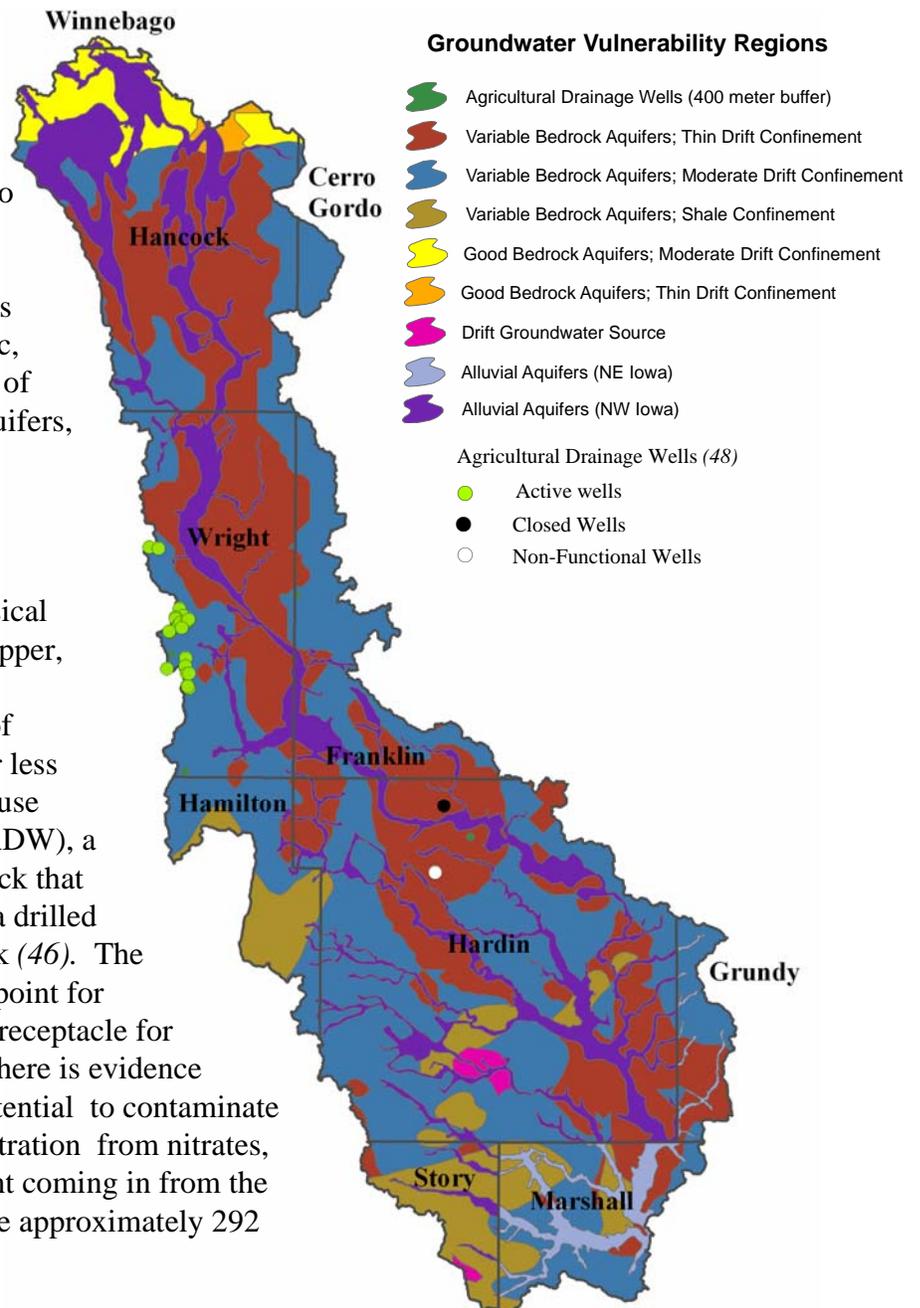
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Ground Water

The groundwater vulnerability regions are areas with similar hydrogeologic characteristics and are therefore areas thought to have similar potentials for groundwater and/or well Contamination (45). The regions were mapped looking at geologic, soil, bedrock aquifers, thickness of Quaternary deposits, alluvial aquifers, sinkholes, and agricultural drainage wells (45).

Challenges

As mentioned earlier in the physical description of the Iowa River, Upper, Watershed, a common source of agricultural drainage is the use of artificial drainage tiles. Another less common type of drainage is the use of agricultural drainage wells (ADW), a chamber installed into the bedrock that funnels drainage water through a drilled shaft into the underlying bedrock (46). The chamber portion is a discharge point for drainage tiles as well as being a receptacle for surface water runoff (46, 47). There is evidence that these ADW's have great potential to contaminate groundwater since there is no filtration from nitrates, pesticides, bacteria, and sediment coming in from the drainage tiles (46, 47). There are approximately 292 ADW's in Iowa.





Resource Priorities/Capabilities

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Fish and Wildlife

The primary sources of information on fish and wildlife in the Iowa River, Upper, Watershed to date are the Iowa DNR's Natural Inventory database (49) and the Iowa DNR's biological assessment of streams and rivers (50). The Iowa DNR Natural Areas Inventory is a database of state and federal listed species and their distributions in Iowa by county (49). The IDNR's biological assessment of streams and rivers involves the sampling of fish and benthic macroinvertebrates in order to assess the stream or river's biotic integrity (50). Another assessment that just started recently by IDNR is the Multiple Species Inventory and Monitoring Program (MSIM) (51). It is a standardized assessment/survey intended to provide a basic inventory of all wildlife using a randomized sampling design (51). Currently this program has only covered seven counties, so is not included in this assessment, but could be a useful dataset for future watershed planning.

The Iowa DNR biological assessment categorizes stream health by using a fish index of biotic integrity (FIBI) and benthic macroinvertebrate index of biotic integrity (BMIBI). The assessment looks at 12 metrics that are summed together to get a number between 0 (poor) and 100 (excellent) (50).

Fish Index of Biotic Integrity (FIBI) - See Table, Appendix A (page 53)

The average score for the FIBI in the watershed, for all years (1995–2005), was 57.13 or a fair rating, out of 10 sites sampled (this includes counting sites sampled multiple years) (52). The most recent year sampled, 2005, the Iowa River near Eldora was sampled twice with both samples having a good rating, and the East Branch of the Iowa River near Belmond having a fair rating with a score of 30 (52). There were no sites with a poor rating (52). The lowest scoring site was on the East Branch of the Iowa River near Goodell with a score of 29 in 2000. Six sites were categorized as good and one site was considered excellent when sampled (52). There are three fish listed as threatened on the state list that potentially reside in the Iowa River, Upper, Watershed (see next page) (49).

Benthic Macroinvertebrate Index of Biotic Integrity (BMIBI) - See Table, Appendix A (page 53)

The benthic macroinvertebrates assemblage status is good, with a rating of 64, based on the sites that were sampled (52). This is a mean score based on 9 sites, as one sites did not have a score. There were no sites with a poor rating (52). The lowest scoring site was on the East Branch of the Iowa River near Goodell, the same site with the lowest FIBI, with a score of 32. Six sites were considered good condition and one site was considered excellent (52).

Currently there is little information available on the wildlife of the Iowa River, Upper, Watershed, other than what is available in the Natural Areas Inventory database (see next five pages). As more counties are completed in the Multiple Species Inventory and Monitoring Program (MSIM) this could be a source for wildlife status and distributions throughout the watershed. There is some information available on River Otters on the Iowa DNR website at

<http://www.iowadnr.com/wildlife/files/otter.html>. River otters were released in the Iowa River Watershed between 2000 and 2002 (53). In 2000-2001 11 otters of unknown sex were released in the Iowa River near Steamboat Rock, IA and in 2001-2002 three more otters of

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Fish and Wildlife *con't*

unknown sex were again released into the Iowa River near Steamboat Rock (53). Little information is published on the current population, other than the fact they seem to be breeding in most counties throughout Iowa (53).

Federal and State Listed Species (49)

S = Species of Concern – species which problems of status or distribution are suspected but not documented, thus are not protected by law.

T = Threatened – species that are likely to become endangered if factors affecting its vulnerability are not reversed.

E = Endangered – is any fish, plant, or wildlife species that is protected by law because it is in danger of extinction through part of its range.

Federal and State Listed Species (49)													
	Name		Status		County								
	Common	Scientific	State	Federal	Hamilton	Cerro Gordo	Hancock	Franklin	Wright	Hardin	Grundy	Marshall	Story
Reptiles & Amphibians	Wood Turtle	Clemmys insculpta	E					x					
	Blanding's Turtle	Emydoidea blandingii	T		x		x		x				x
	Smooth Green Snake	Liochlorophis vernalis	S						x				x
Fish	Blacknose Shiner	Notropis heterolepis	T						x				x
	Orangethroat Darter	Etheostoma spectabile	T										x
	Topeka Shiner	Notropis topeka	T	E	x	x	x		x			x	
Freshwater Mussels	Creeper	Strophitus undulatus	T		x	x			x		x		
	Creek Heelsplitter	Lasmigona compressa	T				x						
	Cylindrical Papershell	Anodontoidea ferussacianus	T		x	x			x				
	Ellipse	Venustaconcha ellipsiformis	T				x						
	Round Pigtoe	Pleurobema sintoxia	E		x				x		x		
	Yellow Sandshell	Lampsilis teres	E				x						
Birds	Black Tern	Chlidonias niger	S					x					
	Northern Harrier	Circus cyaneus	E				x						
	Red-shouldered Hawk	Buteo lineatus	E									x	

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Federal and State Listed Species *con't*

Federal and State Listed Species (49) <i>con't</i>													
	Name		Status		County								
	Common	Scientific	State	Federal	Hamilton	Cerro Gordo	Hancock	Franklin	Wright	Hardin	Grundy	Marshall	Story
Insects	Acadian Hairstreak	Satyrrium acadicum	S			x			x				
	Arogos Skipper	Atrytone arogos	S			x							
	Baltimore	Euphydryas phaeton	T			x							
	Broad-winged Skipper	Poanes viator	S			x							
	Dion Skipper	Euphyes dion	S			x							
	Powesheik Skipperling	Oarisma powesheik	T			x	x						
	Purplish Copper	Lycæna helloides	S										x
	Regal Fritillary	Speyeria idalia	S			x							x
	Wild Indigo Dusky Wing	Erynnis baptisiae	S										x
	Zabulon Skipper	Poanes zabulon	S										x
	Zebra Swallowtail	Eurytides marcellus	S										x
	Mammals	Spotted Skunk	Spilogale putorius	E			x						
Southern Bog Lemming		Synatomys cooperi	T										x
Southern Red-backed Vole		Clethrionomys gapperi	E					x					
Plants	Arrow Grass	Triglochin maritimum	T			x							x
	Slender Arrow Grass	Triglochin palustris	T			x							
	Blue Giant Hyssop	Agastache foeniculum	E										x
	Bog Willow	Salix pedicellaris	T			x	x	x					
	Sage Willow	Salix candida	S			x							
	Low Nut Rush	Scleria verticillata	T								x		
	Beakrush	Rhynchospora capillacea	T			x							
	Bog Bedstraw	Galium labradoricum	E			x							
	Buckbean	Menyanthes trifoliata	T			x			x				

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Federal and State Listed Species *con't*

Federal and State Listed Species (49) <i>con't</i>													
	Name		Status		County								
	Common	Scientific	State	Federal	Hamilton	Cerro Gordo	Hancock	Franklin	Wright	Hardin	Grundy	Marshall	Story
Plants	Earleaf Foxglove	<i>Tomanthera auriculata</i>	S			x		x	x				x
	Green Adder's Mouth	<i>Malaxis unifolia</i>	S										x
	Hill's Thistle	<i>Cirsium hillii</i>	S						x			x	x
	Nodding Thistle	<i>Cirsium undulatum</i>	S										x
	Alkali Muhly	<i>Muhlenbergia asperifolia</i>	S										x
	Silver Buffalo-berry	<i>Sheperdia argentea</i>	T										x
	Pretty Dodder	<i>Cuscuta indecora</i>	S										x
	Fragrant False Indigo	<i>Amorpha nana</i>	T			x							
	Lesser Bladderwort	<i>Utricularia minor</i>	S			x	x						
	Muskroot	<i>Adoxa moschatellina</i>	S							x			
	Prairie Bush Clover	<i>Lespedeza leptostachya</i>	T	T		x							x
	Silver Bladderpod	<i>Lesquerella ludoviana</i>	S							x			
	Nothern Black Currant	<i>Ribes hudsonianum</i>	T							x			
	Roundleaf Sundew	<i>Drosera rotundifolia</i>	E					x					
	Rush Aster	<i>Aster junciformis</i>	T				x	x					
	Swamp Thistle	<i>Cirsium muticum</i>	S				x	x					
	Water Shield	<i>Brasenia schreberi</i>	S		x			x					
	Prairie Moonwort	<i>Botrychium campestre</i>	S						x				
	Little Grape Fern	<i>Botrychium simplex</i>	T									x	
	Purple angelica	<i>Angelica atropurpurea</i>	S				x						
Woolly Milkweed	<i>Asclepias lanuginosa</i>	T							x				
Creeping Sedge	<i>Carex chordorrhiza</i>	E					x						

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Federal and State Listed Species *con't*

Federal and State Listed Species (49) <i>con't</i>													
	Name		Status		County								
	Common	Scientific	State	Federal	Hamilton	Cerro Gordo	Hancock	Franklin	Wright	Hardin	Grundy	Marshall	Story
Plants	Green's Rush	Juncus greenei	S				x						
	Large-leaf Pondweed	Potamogeton amplifolius	S				x						
	Meadow Bluegrass	Poa wolfii	S		x							x	x
	Meadow Spikemoss	Selaginella eclipses	E			x							
	Oval Ladies'-tresses	Spiranthes ovalis	T										x
	Northern Adder's-tongue	Ophioglossum pusillum	S									x	
	Philadelphia Panic Grass	Panicum philadelphicum	T					x					
	Crawe Sedge	Carex crawei	S				x		x				
	Richardson Sedge	Carex richardsonii	S				x		x				
	Field Sedge	Carex conoidea	S				x					x	
	Sedge	Carex cephalantha	S					x					
	Showy Lady's Slipper	Cypripedium reginae	T			x							x
	Slender Cotton Grass	Eriophorum gracile	T					x					
	Slender Ladies'-tresses	Spiranthes lacera	T						x				
	Small White Lady's Slipper	Cypripedium candidum	S			x	x		x		x		x
	Small Fringed Gentian	Gentianopsis procera	S				x					x	
	Tall Cotton Grass	Eriophorum angustifolium	S			x	x		x			x	
	Hooker's Orchid	Platanthera hookeri	T										
Western Prairie	Platanthera praeclara	T	T		x				x				x
Leafy Northern Green Orchid	Platanthera hyperborea	T				x							x

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Federal and State Listed Species *con't*

Federal and State Listed Species (49) <i>con't</i>													
	Name		Status		County								
	Common	Scientific	State	Federal	Hamilton	Cerro Gordo	Hancock	Franklin	Wright	Hardin	Grundy	Marshall	Story
Plants	Marginal Shield Fern	Dryopteris marginalis	T							x			
	Yellow Monkey Flower	Mimulus glabratus	T					x					
	Brook Lobelia	Lobelia kalmii	S			x							
	Oak Fern	Gymnocarpium dryopteris	T				x			x			
	Valerian	Valeriana edulis	S			x							

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SWAPA + H

SWAPA + H stands for soils, water, air, plants, animals + humans. SWAPA + H is used in watershed and ecosystem planning to identify natural systems and how they relate to social/economic conditions. The table below lists the resource priorities/capabilities of stakeholders and landowners, which were then ranked from 1 (poor) to 5 (excellent) on how each land use, listed at the top, affects that concern.

SWAPA + H* Priorities/Concerns	Specific Resource Priorities/Concerns	Row Crops	Livestock Operations	CRP/Grass Filterstrip	Pasture/Grazed Timber/Grassland	Forest/Timber	Hayfield	Farmsteads	Urban	Rural Residential Development
Soil	Erosion Runoff	X	X		X					X
	Gullies	X	X		X	X	X		X	X
	Stream Bank Erosion	X		X	X			X	X	X
	Channel Instability	X	X	X	X					X
	Tillage	X								
	land use changes/ethanol demands	X		X						
	Soil Quality - Impacts	X								
	Nutrient Management	X	X						X	
Water Quantity	Water use by industry								X	
	First flush after rain events								X	
	Hydrologic Alteration	X								
	Flooding Problems									
	water management	X	X		X	X				
Surface Water Quality	water clarity for sport fish spawn			X	X	X	X			
	Failing septic systems							X		X
	Aquatic Integrity (flow, habitat)	X	X	X	X	X	X	X	X	X
	Sedimentation	X	X	X	X					
	Phosphorus	X	X	X	X			X		X
	Nitrogen	X	X	X	X					
	Fertilizer inputs	X								
	Wastewater discharge/sewer/industry								X	
	pesticides	X								
	Bacteria		X					X	X	X
garbage/debris							X	X	X	
Ground Water Quality	Nitrate	X								
	Arsenic - Well Water									
	Linked depression system									

Resource Priorities/Capabilities

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SWAPA + H *con't*

SWAPA + H* Priorities/Concerns <i>con't</i>	Specific Resource Priorities/Concerns	Row Crops	Livestock Operations	CRP/Grass Filterstrip	Pasture/Grazed Timber/Grassland	Forest/Timber	Hayfield	Farmsteads	Urban	Rural Residential Development
Air Quality	Odor--Nuisance		X					X		
	Road Dust	X							X	
Plants	biofuels/cash crops	X								
	Lack of Native Plant Habitat	X	X		X	X	X		X	X
	lack of diversity	X		X		X				
	plant health and vigor	X								
	loss of tree cover	X								
Animal	Wildlife Habitat (food, cover, shelter) decline in/no projects for therefore good species drop, bad increase	X		X	X	X	X	X	X	X
	indicator species	X			X				X	
	impacts of plant genetics on wildlife	X								
	deer impacts	X				X		X	X	
	reduced grazing				X					
	livestock contracts		X							
	animal wastes--inputs		X							
Human	Development pressure									X
	Recreation down	X	X	X	X	X	X		X	
	Market Trends/absentee landlords	X		X						
	Low community well being/quality of Life							X	X	
	High capital/ financial costs	X								
	Outreach on Nutrient Management		X							
	Lack of Technical Assistance	X	X							
	High land values resulting in less protected land	X		X						

Resource Priorities/Capabilities

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SWAPA + H *con't*

Row Crops

Surface water quality is a concern in areas of row crop agriculture, which is the primary land use in the Iowa River, Upper, Watershed. Soil erosion is a challenge in fields using conventional tillage practices especially in fields planted right to the stream bank. Under these conditions sheet and rill erosion can carry sediment and nutrients easily to the stream channel. No till and minimum mulch till practices leave residues on the field that protect the soil from raindrop impact and slows sheet and rill erosion. However, even under these conditions surface runoff can concentrate and move directly to the channel unless it is intercepted by a perennial plant cover in the form of a riparian forest buffer or a grass filter. The buffer system not only slows concentrated flow, but also protects streambanks from erosion and provides benefits such as temperature control and carbon inputs to the stream ecosystem.

Another challenge in row crop agriculture is hydrologic alteration created by ditching or subsurface drainage. Subsurface drainage provides a direct route for nutrients, particularly nitrate-N (NO_3), and pesticides to enter surface waters and ditches provide a shorter distance for these pollutants to reach the stream. Excess nutrients in the stream can lead to eutrophication, lowering the amount of dissolved oxygen, affecting the aquatic integrity. There are also some subsurface drainage outlets that empty into agricultural drainage wells, which is a concern for groundwater quality. Subsurface drainage also has the potential to affect stream discharge and its timing. Water enters the subsurface drainage rather than further percolating through the soil or being slowed by vegetation before reaching the stream. The result is more water reaching the stream at a faster rate, creating the potential for stream bank erosion.

Human economics related to row crop agriculture are also a concern in the watershed. Row crop agriculture is associated with high levels of capital investment and financial expenditures and operate in relatively volatile economic conditions in terms of the value of the outputs and cost of the inputs. Many best management practices associated with row crop agriculture also may come with high capital requirements. There are federal and state programs available to reduce some of these capital costs.

Animal Feeding Operations

The primary natural Resource Priorities/Capabilities associated with livestock operations are water and air pollution. There is a zero tons/yr discharge allowance for livestock operations by state law by size. The concern is manure application and spills (32). Excess phosphorus, nitrogen, and bacteria are carried to the stream by runoff and through subsurface drainage. Excess nutrients in the stream can lead to eutrophication, lowering the amount of dissolved oxygen, affecting the aquatic integrity. Air quality (specifically odor, particulates, ammonia) associated with AFOs are also a concern, although there is limited data available. There are 281 animal feeding operations in the Iowa River, Upper, Watershed, which could potentially be contributing to air quality issues.

Resource Priorities/Capabilities

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SWAPA + H *con't*

Animal Feeding Operations *con't*

Potential air quality issues associated with livestock operations include: effects on human and animal health, impacts on property values, increased risk of nuisance litigation, and NO_x pollution (54).

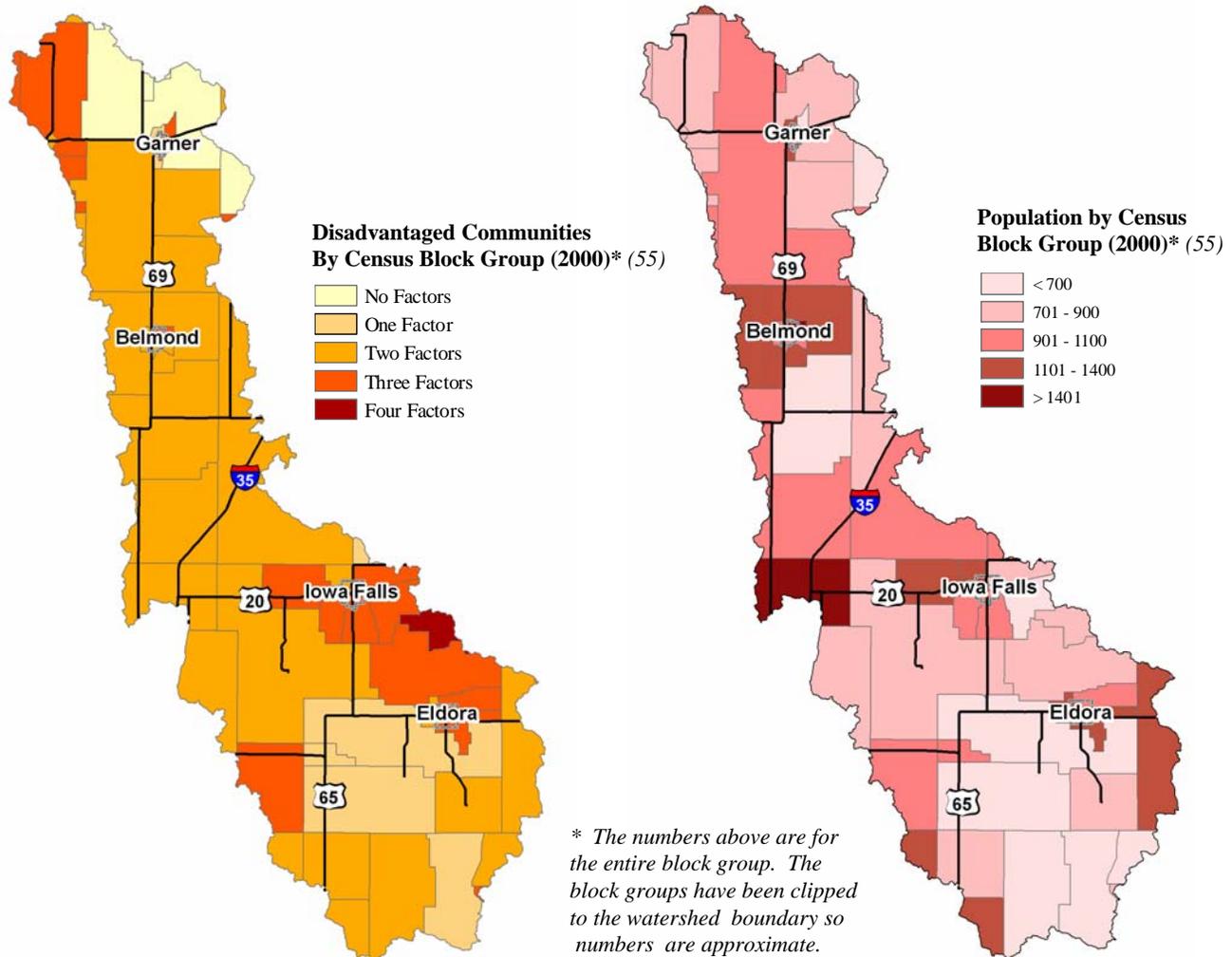
Human economics are also a concern in the watershed. Livestock production is associated with high levels of capital investment and financial expenditures and often require high labor inputs and operate in relatively volatile economic conditions in terms of the value of the outputs and cost of the inputs. Many best management practices associated with livestock production and manure management also may come with high capital requirements.

Pasture/Grazed Timber/Grassland

Grazing management is a concern along streams, in the Iowa River, Upper, Watershed. According to the 2002 land use, approximately 8% of the riparian area is grazed (*see page 16*). Grazing along the stream can have detrimental effects on stream bank stability when cattle have direct access to the stream. Another concern is soil erosion by water due to overgrazing leading to the compaction of the soil and a landscape denuded of vegetation, increasing the potential for excess nutrients and sediment reaching the stream. Also bacteria is a concern from cattle defecating into and near the stream. Management that restricts cattle from having free access along riparian corridors would be beneficial to stream quality.

U.S. Census Bureau Demographic Data

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Census

A disadvantaged community for the purposes of the map on the left includes per capita income, median housing value, percent unemployed, and percent below poverty. Each block group received a factor of one if it was below (per capital income and median housing value) or above (percent unemployed and number of individuals with income below poverty) the statewide average. The statewide averages in 2000 are as follows: per capita income - \$19,065, median housing value - \$80,141, percent unemployed – 2.8%, and percent below poverty – 9.3%. These were then added together for each block group and reported in the above map. For example those with a factor of four fit all four criteria.

The map on the right is total population by census block group and reports the total population residing in that block group. The estimated total population* of the Iowa River, Upper, Watershed in 2000 was 53,501.

NRCS Social Survey

Estimated Level of Willingness and Ability to Participate in Conservation (64) : 41%

- **Timing - Low**

There is a need for significant adjustments in technical assistance, financial assistance, and a dedicated marketing effort to achieve a successful participation rate in a reasonable amount of time.

- **Management: Low**

Management skills and a combination of educational assistance and technical assistance needs to be significantly increased to achieve a successful participation rate.

- **Technical Assistance: Low**

The technical delivery system needs major modifications.

- **Information/Education Assistance: Low**

The existing information/education deliver system needs major modifications.

- **Financial Assistance: Medium**

The existing financial incentives need to be expanded or increased to improve the participation rate and accelerate participation.

NASS Farm Census Data

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2002 Agricultural Census Data (56)		Cerro Gordo	Franklin	Grundy	Hamilton	Hancock	Hardin	Marshall	Story	Winnebago	Wright
	County (acres)	367,659	372,465	320,922	369,322	366,539	364,510	366,583	366,869	256,788	372,190
Farms	Farms (number)	795	825	724	797	827	829	848	977	631	752
	Land in farms (acres)	323,420	337,336	324,139	348,216	322,322	327,725	335,043	359,604	240,310	345,490
Cropland (Acres)	Total cropland (acres)	303,106	313,287	305,643	326,719	308,573	298,014	302,281	330,149	224,945	327,057
	Total cropland - Harvested cropland (acres)	291,508	302,363	295,797	313,870	298,798	286,019	279,661	310,483	212,573	316,591
Farms by Size (Acres)	1 to 9 acres	66	49	83	61	60	64	42	87	55	67
	10 to 49 acres	182	140	104	163	138	162	212	215	136	120
	50 to 179 acres	152	184	134	149	167	162	174	232	127	132
	180 to 499 acres	169	209	194	182	232	203	190	204	153	181
	500 to 999 acres	126	144	132	144	146	148	116	142	87	133
Market Value of Agricultural Products Sold (\$1,000)	All Agricultural Products	112,257	159,964	140,343	234,900	141,590	251,970	132,095	118,730	97,828	225,747
	Crops	83,706	82,721	92,431	87,729	80,160	81,102	85,597	92,488	54,922	87,751
	Livestock, poultry, and their products	28,551	77,243	47,912	147,171	61,429	170,868	46,498	26,243	42,906	137,996
Government Payments	Government payments (farms)	577	599	501	606	610	595	592	631	485	581
	Government payments (\$1,000)	5,483	5,171	5,451	4,837	5,067	5,438	5,757	5,577	4,546	5,048
Principal Operator (Number)	Primary occupation - Farming	607	623	539	602	654	576	576	627	381	548
	Primary occupation - Other (not farming)	188	202	185	195	173	253	272	350	250	204
	Days worked off farm	459	418	386	428	430	485	399	534	395	418
	Days worked off farm - Any - 200 days or more	319	267	212	291	256	328	269	397	277	251
Inventory of Livestock and Poultry (Number)	Cattle and calves - Milk cows	391	262	630	0	296	NA	NA	504	248	248
	Cattle and calves - Beef cows	2,694	3,932	3,557	0	2,331	NA	NA	4,101	1,311	1,497
	Cattle and calves	10,975	16,629	21,386	5,593	9,669	19,839	19,576	16,040	6,473	4,855
	Hogs and pigs	322,247	332,987	158,378	467,250	200,651	887,938	132,689	78,623	105,868	322,024
	Sheep and lambs	1,137	1,594	2,190	890	2,339	1,167	3,135	4,813	644	1,555
	Layers 20 weeks old and older	NA	NA	398	0	0	NA	251	1,910	NA	NA
Selected Crops Harvested (Acres)	Corn for grain	154,939	157,137	149,650	164,589	156,396	154,606	138,383	163,078	114,913	161,449
	Corn for silage or greenchop	739	1,632	1,351	754	932	818	1,603	808	776	216
	Oats for grain	920	1,199	451	483	575	418	737	593	784	246
	Soybeans for beans	482	137,877	141,506	144,979	137,638	124,764	132,204	140,082	93,780	152,937
	Forage - land used for all hay and all haylage, grass silage, land greenchop	3,685	4,883	3,403	2,719	3,724	5,598	7,605	6,447	2,386	1,969
	Vegetables harvested for sale	362	NA	5	26	0	NA	87	83	240	240



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Watershed Projects, Plans, Studies, and Assessments		
Organizations	Projects	Status
IOWATER Watershed Monitoring Group	Wright County Water Quality Education Program*	Ongoing
EPA Citizen-based Watershed Groups	Wright County Adult Water Quality Project	Ongoing
	Wright County Water Monitoring (School)*	Ongoing
NRCS/Water Protection Fund (IDALS-DSC)	South Fork Iowa River Watershed Demonstation Project	Ongoing
Watershed Alliance/Council	Beeds Lake	Ongoing
	Iowa Association of County Conservation Boards	Ongoing
Iowa Department of Agriculture and Land Stewardship (IDALS-DSC)	East Fork of the Iowa River Development Grant	Ongoing
* - These are the same progams under two different organizations		

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PRMS Data	Planned FY05	Applied FY05	Planned FY06	Applied FY06	Planned FY07	Applied FY07
Total Conservation Systems (ac) (57)	33,241	25,492	37,589	26,230	30,740	24,913
Conservation Practices (58)						
Access Road (560) (ft)			3,666			
Animal Mortality Facility (316) (no)			8			
Animal Trails and Walkways (575) (ft)			1,500	1,500		
Brush Management (314) (ac)	120	34	12,443	7,549	157	47
Composting Facility (317) (no)			21	5	1	
Comprehensive Nutrient Management Plan (100) (no)	4	1	419	155	5	
Conservation Completion Incentive First Year (CCIA) (no)			706	61		
Conservation Completion Incentive Second Year (CCIB) (no)			111			
Conservation Cover (327) (ac)	3,062	2,143	224,711	105,785	1,958	1,625
Conservation Crop Rotation (328) (ac)	21,199	17,107	806,003	605,404	15,956	12,338
Constructed Wetland (656) (ac)	11		7	7		
Contour Buffer Strips (332) (ac)			4,547	3,348	19	15
Contour Farming (330) (ac)	1,408	1,754	279,731	208,007	430	379
Cover Crop (340) (ac)			5,577	1,846		
Critical Area Planting (342) (ac)	128	4	3,384	1,575	2	3
Cross Slope Farming (733) (ac)			457	233		
Dam (402) (ac-ft)			6	62		
Dam, Diversion (348) (no)			2	2		
Deep Tillage (324) (ac)			64			
Dike (356) (ft)	600	600	31,504	24,923	1,622	1,650
Diversion (362) (ft)			5,584	6,944		
Early Successional Habitat Development/Management (647) (ac)	483	244	246,445	35,603	5,127	37
Enhancement - Air Resource Management (EAM) (ac)			811			
Enhancement - Energy Management (EEM) (ac)			11,416	11,083		
Enhancement - Grazing Management (EGM) (ac)			1,360	298		
Enhancement - Habitat Management (EHM) (ac)			368	118		
Enhancement - Nutrient Management (ENM) (ac)			14,506	4,583		
Enhancement - Pest Management (EPM) (ac)			11,536	4,425		
Enhancement - Soil Management (ESM) (ac)			11,733	10,692		
Existing Practice Payment (EPP) (ac)			865	1,432		

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Conservation Practices <i>con't</i>	Planned FY05	Applied FY05	Planned FY06	Applied FY06	Planned FY07	Applied FY07
Fence (382) (ft)	27,245	20,015	2,393,168	1,083,622	19,615	42,676
Field Border (386) (ft)	50		5,315,919	2,861,188	6,893	48,432
Filter Strip (393) (ac)	480	425	16,201	13,160	342	238
Firebreak (394) (ft)	16,418	23,966	643,023	449,320	1,650	6,300
Forage Harvest Management (511) (ac)	50	40	9,902	6,246		
Forest Stand Improvement (666) (ac)	114	27	5,714	2,444	732	39
Fuel Break (383) (ac)			13			
Grade Stabilization Structure (410) (no)	4		690	468	8	2
Grass Buffer Strip (741) (ac)				3		
Grassed Waterway (412) (ac)	109	78	37,157	18,241	96	27
Heavy Use Area Protection (561) (ac)	5	7	1,735	797	3	4
Hedgerow Planting (422) (ft)	1,400	1,400	702			
Herbaceous Wind Barriers (603) (ft)			2			
Irrigation System, Sprinkler (442) (ac)			5,082	5,994		
Irrigation Water Management (449) (ac)			797			
Manure Transfer (634) (no)			6	1		
Mulching (484) (ac)			1	0		
Nutrient Management (590) (ac)	26,149	5,680	519,071	204,116	22,108	10,254
Pasture and Hay Planting (512) (ac)	409	291	48,025	28,765	138	347
Pest Management (595) (ac)	17,950	2,444	396,541	133,295	22,011	7,231
Pipeline (516) (ft)	5,040		424,278	154,536	400	3,415
Planned Grazing System (762) (ac)	119					
Pond (378) (no)			415	190	1	
Prescribed Burning (338) (ac)	525	65	31,834	6,626	166	17
Prescribed Grazing (528) (ac)	839	839	67,195	36,589	252	647
Pumping Plant (533) (no)			36	10		
Range Planting (550) (ac)				43		
Residue and Tillage Management, Mulch Till (345) (ac)	21,686	13,823	588,005	445,591	16,884	12,221
Residue and Tillage Management, No-Till/Strip Till/Direct Seed (329) (ac)	4,226	2,161	364,862	274,863	2,989	2,566
Residue and Tillage Management, Ridge Till (346) (ac)	679	536	5,105	3,987	0	0
Residue Management, Seasonal (344) (ac)	1,773	2,556	15,289	9,704	122	
Restoration and Management of Rare and Declining Habitats (643) (ac)			3,260	1,871	12	12
Riparian Forest Buffer (391) (ac)	8	24	1,857	1,587	6	4
Riparian Herbaceous Cover (390) (ac)			726	496		
Roof Runoff Structure (558) (no)			6			
Sediment Basin (350) (no)			83	71		

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Conservation Practices <i>con't</i>	Planned FY05	Applied FY05	Planned FY06	Applied FY06	Planned FY07	Applied FY07
Shallow Water Development and Management (646) (ac)			860	631		
Spring Development (574) (no)			18	8		
Stewardship Payment (SP) (ac)			888	1,441		
Stream Crossing (578) (no)			5	2		
Stream Habitat Improvement and Management (395) (ac)			48	23		
Streambank and Shoreline Protection (580) (ft)			24,028	18,517		
Stripcropping (585) (ac)			2,387	1,334		
Structure for Water Control (587) (no)			15	8		
Subsurface Drain (606) (ft)	5,501	5,825	916,201	702,423		9,990
Surface Drainage, Field Ditch (607) (ft)				2,950		
TA Application (912) (no)			519	324		
TA Check-Out (913) (no)			364	324		
TA Design (911) (no)			526	328	1	1
TA Planning (910) (no)			156	2		
Terrace (600) (ft)	3,169	15,025	6,460,644	4,920,326		1,225
Tree/Shrub Establishment (612) (ac)	13	18	5,026	3,345	28	14
Tree/Shrub Pruning (660) (ac)			55	245		
Tree/Shrub Site Preparation (490) (ac)	66		267	101		
Underground Outlet (620) (ft)	300		1,219,280	712,704	300	280
Upland Wildlife Habitat Management (645) (ac)	2,751	1,745	275,244	134,391	4,065	1,587
Use Exclusion (472) (ac)	2,490	2,029	193,448	96,080	1,804	1,608
Vertical Drain (630) (no)			161	105		
Waste Storage Facility (313) (no)	8	3	257	135	5	5
Waste Utilization (633) (ac)			4,060	1,465	2	
Water and Sediment Control Basin (638) (no)	8		2,330	1,122	1	
Water Well (642) (no)	2	1	41	18		
Watering Facility (614) (no)	18	2	878	336	2	8
Wetland Creation (658) (ac)			250	320		
Wetland Enhancement (659) (ac)	49	59	613	747	3	3
Wetland Restoration (657) (ac)	787	598	15,419	14,972	248	490
Wetland Wildlife Habitat Management (644) (ac)	795	650	17,216	14,385	350	360
Wildlife Watering Facility (648) (no)			2	2		
Windbreak/Shelterbelt Establishment (380) (ft)	25,529	16,899	450,658	360,902	11,170	6,855
Windbreak/Shelterbelt Renovation (650) (ft)	1,860		27,534	5,622		

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Farm Bill Program Acres, Funding, and Contracts										
	Program	Acres in the Watershed								
2007*	CRP	27,232								
	WRP	2,516								
	Program	Cerro Gordo	Grundy	Franklin	Hamilton	Hancock	Hardin	Marshall	Story	Wright
2006	Acres									
	EQIP	2,382	1,848	1,471	4,175	1,923	2,869	858	2,992	2,778
	WHIP	0	1	0	30	0	4	0	0	16
	WRP	386	0	38	0	0	0	0	0	0
	Funding									
	EQIP	\$65,265	\$194,072	\$142,449	\$273,300	\$117,749	\$231,693	\$127,684	\$115,731	\$159,696
	WHIP	\$0	\$540	\$0	\$6,480	\$0	\$2,400	\$0	\$0	\$3,916
	WRP	\$1,009,045	\$0	\$33,752	\$0	\$0	\$0	\$0	\$0	\$0
	Contracts									
	EQIP	22	12	10	18	18	14	6	28	19
WHIP	1	0	0	1	0	2	0	0	1	
WRP	1	0	1	0	0	0	0	0	0	
2004	Acres									
	CSP	0	0	0	0	0	0	0	0	0
	GRP	0	0	0	0	0	0	0	0	0
	WRP	315.3	0	0	0	110	0	0	0	73
	Funding									
	CSP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	GRP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	WRP	\$944,115	\$0	\$0	\$0	\$312,620	\$0	\$0	\$0	\$192,913
	Contracts									
	CSP	0	0	0	0	0	0	0	0	0
GRP	0	0	0	0	0	0	0	0	0	
WRP	2	0	0	0	1	0	0	0	1	
2003	Acres									
	EQIP	NA	NA	NA	NA	NA	NA	NA	NA	NA
	WHIP	NA	NA	NA	NA	NA	NA	NA	NA	NA
	GRP	0	0	67	0	0	0	0	0	0
	WRP	1,318	0	0	0	211	175	0	0	0
	Funding									
	EQIP	\$93,704	\$145,192	\$99,145	\$91,670	\$31,739	\$112,416	\$84,501	\$91,623	\$112,833
	WHIP	\$0	\$15,615	\$0	\$0	\$20,027	\$0	\$0	\$0	\$0
	GRP			\$33,165	\$0	\$0				\$0
	WRP	\$3,719,650	\$0	\$0	\$0	\$425,140	\$475,251	\$0	\$0	\$0
Contracts										
EQIP	NA	NA	NA	NA	NA	NA	NA	NA	NA	
WHIP	0	0	0	0	1	0	0	0	0	
GRP	0	0	1	0	0	0	0	0	0	
WRP	4	0	0	0	3	1	0	0	0	

* The 2007 acres listed are for land units currently enrolled in the program through September 30, 2007, so there are multiple years included in the totals.

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Summary of Farm Service Agency Practices (Acres) for all Active CRP Contracts, 1992-2008 (61)										
Practice	Code	Cerro Gordo	Franklin	Grundy	Hamilton	Hancock	Hardin	Marshall	Story	Wright
Introduced Grasses	CP1	306.5	352.3	24.9	9.7	165.0	566.3	1,368.7	36.1	119.8
Native Grasses	CP2	600.5	582.1	24.1	151.1	177.0	1,556.9	567.8	412.1	728.6
Tree Planting	CP3	0.5	4.8	0.0	0.0	0.8	3.7	0.0	1.5	1.9
Hardwood Tree Planting	CP3A	143.9	3.0	16.3	21.9	9.0	119.5	61.2	148.7	78.5
Wildlife Habitat Corridor (SU 10-12)	CP4A	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0
Wildlife Habitat Corridor (SU 10+)	CP4B	0.0	8.1	0.0	0.0	4.2	0.0	0.0	0.0	3.7
Wildlife Habitat (SU 10+)	CP4D	1,541.4	1,135.3	52.4	1,458.4	1,555.6	540.8	4,124.0	1,419.7	2,245.8
Field Windbreaks (SU 10+)	CP5A	397.8	45.5	239.1	0.7	12.2	39.1	7.4	49.1	26.5
Grass Waterways (SU 10+)	CP8A	195.8	538.8	404.6	210.4	115.1	377.4	735.9	159.9	181.4
Wildlife Water	CP9	45.4	704.9	40.6	22.4	27.3	163.9	290.8	237.8	190.9
Established Grass	CP10	1,302.6	497.4	9.5	35.8	484.1	472.3	864.7	443.9	490.6
Established Trees	CP11	37.3	34.8	0.0	19.0	21.2	70.6	44.6	26.7	27.7
Wildlife Food Plots	CP12	13.2	27.1	3.5	8.3	7.9	56.8	64.0	18.4	11.2
Contour Grass Strips	CP15A	18.9	218.7	16.0	14.7	19.9	9.4	324.9	18.2	26.8
Contour Grass Strips Terraces	CP15B	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shelterbelt Establishment (SU 10+)	CP16A	29.8	27.0	33.1	36.0	8.8	43.5	15.7	33.3	16.5
Living Snow Fences (SU 10+)	CP17A	2.3	12.8	9.9	1.5	0.0	14.9	7.3	13.1	2.7
Filter Strips	CP21	2,273.5	2,103.7	2,239.4	3,819.0	3,181.1	2,528.0	2,785.6	1,919.8	3,581.2
Riparian Buffers	CP22	213.0	325.9	715.1	112.0	52.1	254.1	65.7	479.8	141.0
Wetland Restoration	CP23	441.1	877.9	263.8	293.2	1,093.9	705.5	475.6	266.0	2,424.7
Wetland Rest. Non-Floodplain	CP23A	0.0	0.0	0.0	40.2	151.7	13.8	0.0	0.0	88.9
Rare and Declining Habitat	CP25	512.2	751.1	39.0	217.5	576.1	783.6	55.2	678.0	529.8
Farmable Wetland Pilot Wetland	CP27	333.6	662.0	8.5	1,295.4	839.8	284.7	35.1	234.8	1,359.5
Farmable Wetland Pilot Buffer	CP28	831.4	1,704.5	24.2	3,368.8	2,080.3	745.8	71.8	531.0	3,471.9
Marginal Pastureland Wildlife Habitat	CP29	0.0	48.2	76.3	36.9	10.1	88.0	29.9	43.3	6.3
Marginal Pastureland Wetland Buffer	CP30	0.0	12.5	0.0	0.0	0.0	32.9	0.0	0.0	32.0
Bottomland Wetland Trees	CP31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7	0.0
Hardwood Trees Expir./Re-enroll	CP32	0.0	8.4	0.0	0.0	0.0	53.8	128.5	26.2	0.0
Upland Bird Habitat Buffers	CP33	119.3	15.7	18.4	537.5	558.3	15.4	0.0	170.0	198.3

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Appendix A

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Iowa River, Upper, Watershed		
USDA - NRCS Service Center Locations		
County	City	Phone Number
Winnebago	Thompson, IA	(641) 584-2211
Hancock	Garner, IA	(641) 923-2837
Cerro Gordo	Mason City, IA	(641) 424-4452
Wright	Clarion, IA	(515) 532-2165
Franklin	Hampton, IA	(641) 456-2157
Hamilton	Webster City, IA	(515) 832-2916
Hardin	Iowa Falls, IA	(641) 648-3463
Grundy	Grundy Center, IA	(319) 824-3634
Story	Nevada, IA	(515) 382-2217
Marshall	Marshalltown, IA	(641) 753-8677

Appendix A

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Water Quality Criteria (58)	
General Categories	
Category	Description
1	All designated uses are met
2	Some of the designated uses are met, but there are insufficient data to determine if the remaining designated uses are met.
3	Insufficient data to determine whether any designated uses are met.
4	Waterbody is impaired or threatened but a TMDL is not needed.
5	Waterbody is impaired or a threatened but a TMDL is needed.
Specific Categories	
Category	Description
1	All designated uses met
2a	Some designated uses met; insufficient data to determine whether other uses are met
2b	At least one designated use is met with at least one other use potentially impaired based on an "evaluated" assessment
3a	Insufficient data to determine whether any designated uses are met
3b	Insufficient data to determine whether any designated uses are met but at least one use is potentially impaired based on "evaluated" assessment
4a	All TMDLs need to result in attainment of all applicable water quality standards have been approved or established by EPA
4b	Other required control measures are expected to result in the attainment of water quality standards in a reasonable period of time
4c	The impairment or threat is not caused by a pollutant
4d	Waterbody assessed as "impaired" due to a fish kill where enforcement action was taken to address the source of the kill: no TMDL required
5a	Waterbody is impaired or threatened and a TMDL is needed
5b	Impairment is based on results of biological monitoring or a fish kill investigation where specific causes and/or sources of the impairment have not yet been identified
Use Class	
Class	Description
A1	Primary human contact recreation
A2	Secondary human contact recreational use
A3	Children's recreational use
B(WW)	Significant resource warm water aquatic life
B(LR)	Limited resource warm water aquatic life
B(CW)	Cold water aquatic life
B(LW)	Aquatic life of lakes and wetlands
C	Source of water supply



Appendix A

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Upper Iowa River Watershed IDNR Biological Assessment (1995-2005) (52)				
Stream Name	Nearest Landmark	Sample Date	FIBI	BMIBI
South Fork Iowa River	Logsdon Co Park- Iowa Falls	07/19/95	77	66
South Fork Iowa River	Logsdon Co Park- Iowa Falls	08/02/99	72	81
Tipton Creek	Buckeye/Radcliffe	08/03/99	51	62
Tipton Creek	New Providence/Hubbard	08/03/99	68	78
East Branch Iowa River	Goodell	10/17/00	29	32
East Branch Iowa River	Belmond	10/18/00	39	45
South Fork Iowa River	Buckeye - Remap #79	08/19/03	73	73
Iowa River	Eldora - REMAP #162	08/16/05	63	68
East Branch Iowa River	Belmond	08/25/05	30	NA
Iowa River	Eldora - REMAP #162	10/11/05	71	71

Current Conditions for Row Crop

Current Conditions for Row Crop																				
Row Crop			Quantity		Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
BM1	Soil Erosion - Sheet and Rill																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	634,849	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Contour Buffer Strips	332	ac	3,363	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Contour Farming	330	ac	210,130	\$10.00	0%	2	2	1	1	0	0	1	1	-	-	-	-	-	X
	Cover Crop	340	ac	1,846	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Critical Area Planting	342	ac	1,582	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Diversion	362	ft	6,944	\$1.13	2%	2	2	1	1	0	0	2	0	-	-	-	-	-	X
	Field Border	386	ft	2,909,620	\$0.35	1%	2	2	0	2	2	0	5	1	-	-	X	-	-	X
	Residue Management, No-Till/Strip Till	329	ac	279,590	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Residue Management, Mulch Till	345	ac	471,635	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
	Terrace	600	ft	4,936,576	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	712,984	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
BM2	Soil Erosion - Ephemeral Gully																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	634,849	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Contour Buffer Strips	332	ac	3,363	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Contour Farming	330	ac	210,130	\$10.00	0%	2	2	1	1	0	0	1	1	-	-	-	-	-	X
	Cover Crop	340	ac	1,846	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Critical Area Planting	342	ac	1,582	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Diversion	362	ft	6,944	\$1.13	2%	2	2	1	1	0	0	2	0	-	-	-	-	-	X
	Field Border	386	ft	2,909,620	\$0.35	1%	2	2	0	2	2	0	5	1	-	-	X	-	-	X
	Grade Stabilization Structure	410	no	470	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Grassed Waterway	412	ac	18,346	\$2,500.00	2%	3	-1	3	2	1	1	4	1	-	-	X	-	-	
	Residue Management, No-Till/Strip Till	329	ac	279,590	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Residue Management, Mulch Till	345	ac	471,635	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
	Terrace	600	ft	4,936,576	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	712,984	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
BM3	Soil Erosion - Classic Gully																			
	Critical Area Planting	342	ac	1,582	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Grade Stabilization Structure	410	no	470	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Grassed Waterway	412	ac	18,346	\$2,500.00	2%	3	-1	3	2	1	1	4	1	-	-	X	-	-	
	Pond	378	no	190	\$16,000.00	1%	1	2	1	1	3	5	2	0	-	-	-	-	-	
	Terrace	600	ft	4,936,576	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X

Current Conditions for Row Crop

Row Crop		Quantity			Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
	Underground Outlet	620	ft	712,984	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
	Water and Sediment Control Basin	638	no	1,122	\$3,250.00	3%	3	3	1	1	0	1	0	0	-	-	-	-	-	
BM4	Soil Erosion - Streambank																			
	Critical Area Planting	342	ac	1,582	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Grade Stabilization Structure	410	no	470	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	In-Channel Structures																			
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	18,517	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
BM5	Soil Condition - Organic Matter Depletion																			
	Conservation Crop Rotation	328	ac	634,849	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Cover Crop	340	ac	1,846	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Nutrient Management	590	ac	220,050	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Residue Management, No-Till/Strip Till	329	ac	279,590	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Residue Management, Mulch Till	345	ac	471,635	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
BM6	Water Quantity - Excessive Runoff, Flooding, or Ponding																			
	Contour Buffer Strips	332	ac	3,363	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Dam, Diversion	348	no	2	\$1,000.00	3%	0	0	2	-2	-2	4	0	0	-	-	-	-	-	
	Pond	378	no	190	\$16,000.00	1%	1	2	1	1	3	5	2	0	-	-	-	-	-	
	Structure for Water Control	587	no	8	\$1,000.00	1%	3	2	2	1	0	1	0	0	-	-	-	-	-	
	Subsurface Drain	606	ft	718,238	\$1.20	3%	2	1	2	1	0	4	3	0	-	-	X	-	-	
	Terrace	600	ft	4,936,576	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	712,984	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
	Water and Sediment Control Basin	638	no	1,122	\$3,250.00	3%	3	3	1	1	0	1	0	0	-	-	-	-	-	
	Wetland Enhancement	659	ac	809	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	
	Wetland Restoration	657	ac	16,060	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
BM7	Water Quantity - Excessive Subsurface Water																			
	Controlled Drainage																			
	Structure for Water Control	587	no	8	\$1,000.00	1%	3	2	2	1	0	1	0	0	-	-	-	-	-	
	Subsurface Drain	606	ft	718,238	\$1.20	3%	2	1	2	1	0	4	3	0	-	-	X	-	-	
	Wetland Enhancement	659	ac	809	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	
	Wetland Restoration	657	ac	16,060	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	

Current Conditions for Row Crop

Row Crop		Quantity		Costs		Effects								Implementation						
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quality	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
BM8	Water Quality - Excessive Nutrients in Groundwater																			
	Conservation Crop Rotation	328	ac	634,849	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Cover Crop	340	ac	1,846	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Nutrient Management	590	ac	220,050	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
BM9	Water Quality - Excessive Nutrients in Surface Waters																			
	Biofilters																			
	Conservation Crop Rotation	328	ac	634,849	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Controlled Drainage																			
	Cover Crop	340	ac	1,846	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Nutrient Management	590	ac	220,050	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Wetland Restoration	657	ac	16,060	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
BM10	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	634,849	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Contour Buffer Strips	332	ac	3,363	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Contour Farming	330	ac	210,130	\$10.00	0%	2	2	1	1	0	0	1	1	-	-	-	-	-	X
	Cover Crop	340	ac	1,846	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Critical Area Planting	342	ac	1,582	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Diversion	362	ft	6,944	\$1.13	2%	2	2	1	1	0	0	2	0	-	-	-	-	-	X
	Field Border	386	ft	2,909,620	\$0.35	1%	2	2	0	2	2	0	5	1	-	-	X	-	-	X
	Grade Stabilization Structure	410	no	470	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Grassed Waterway	412	ac	18,346	\$2,500.00	2%	3	-1	3	2	1	1	4	1	-	-	X	-	-	
	Nutrient Management	590	ac	220,050	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Residue Management, Mulch Till	345	ac	471,635	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
	Residue Management, No-Till/Strip Till	329	ac	279,590	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	18,517	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Terrace	600	ft	4,936,576	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	712,984	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
	Water and Sediment Control Basin	638	no	1,122	\$3,250.00	3%	3	3	1	1	0	1	0	0	-	-	-	-	-	
BM11	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X

Current Conditions for Row Crop

Row Crop		Quantity		Costs		Effects								Implementation						
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	18,517	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
BM12	Plant Condition - Threatened or Endangered Plant Species																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Upland Wildlife Habitat Management	645	ac	137,723	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
BM13	Plant Condition - Productivity, Health, and Vigor																			
	Brush Management	314	ac	7,630	\$87.50	1%	2	1	1	0	3	2	4	-2	X	-	-	-	-	
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	634,849	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Nutrient Management	590	ac	220,050	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Pest Management	595	ac	142,970	\$4.00	0%	3	2	1	4	3	4	4	3	X	-	X	X	-	
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Windbreak/Shelterbelt Renovation	650	ft	5,622	\$1.70	3%	3	2	1	3	4	4	5	3	-	-	-	-	-	X
	Windbreak/Shelterbelt Establishment	380	ft	384,656	\$350.00	1%	3	2	1	2	4	4	5	3	-	-	X	-	-	X
BM14	Fish and Wildlife - Inadequate Food																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	634,849	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Cover Crop	340	ac	1,846	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Early Successional Habitat	647	ac	35,884	\$5.23	1%	2	0	0	-2	4	1	4	0	-	-	X	-	-	
	Pond	378	no	190	\$16,000.00	1%	1	2	1	1	3	5	2	0	-	-	-	-	-	
	Residue Management, Mulch Till	345	ac	471,635	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
	Residue Management, No-Till/Strip Till	329	ac	279,590	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Upland Wildlife Habitat Management	645	ac	137,723	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
	Wetland Creation	658	ac	320	\$675.00	1%	3	1	1	2	4	2	4	1	-	-	-	-	-	
	Wetland Enhancement	659	ac	809	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	
	Wetland Restoration	657	ac	16,060	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
BM15	Fish and Wildlife - Inadequate Shelter																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X

Current Conditions for Row Crop

Current Conditions for Row Crop																				
Row Crop			Quantity		Costs		Effects							Implementation						
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
	Contour Buffer Strips	332	ac	3,363	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Cover Crop	340	ac	1,846	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	-
	Early Successional Habitat	647	ac	35,884	\$5.23	1%	2	0	0	-2	4	1	4	0	-	-	X	-	-	-
	Field Border	386	ft	2,909,620	\$0.35	1%	2	2	0	2	2	0	5	1	-	-	X	-	-	X
	Hedgerow Planting	422	ft	1,400	\$1.00	5%	3	1	2	1	3	1	4	2	-	-	-	-	-	-
	Residue Management, Mulch Till	345	ac	471,635	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	-
	Residue Management, No-Till/Strip Till	329	ac	279,590	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Upland Wildlife Habitat Management	645	ac	137,723	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	-
	Wetland Creation	658	ac	320	\$675.00	1%	3	1	1	2	4	2	4	1	-	-	-	-	-	-
	Wetland Enhancement	659	ac	809	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	-
	Wetland Restoration	657	ac	16,060	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	-
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	-
	Windbreak/Shelterbelt Establishment	380	ft	384,656	\$350.00	1%	3	2	1	2	4	4	5	3	-	-	X	-	-	X
	Windbreak/Shelterbelt Renovation	650	ft	5,622	\$1.70	3%	3	2	1	3	4	4	5	3	-	-	-	-	-	X
BM16	Fish and Wildlife - Threatened and Endangered Species																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Early Successional Habitat	647	ac	35,884	\$5.23	1%	2	0	0	-2	4	1	4	0	-	-	X	-	-	-
	Hedgerow Planting	422	ft	1,400	\$1.00	5%	3	1	2	1	3	1	4	2	-	-	-	-	-	-
	Upland Wildlife Habitat Management	645	ac	137,723	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	-
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	-

Future Conditions for Row Crop																			
Row Crop			Units	Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQUIP	WHIP	CRP	WRP	GLC	IFIP
RMS1	Soil Erosion - Sheet and Rill																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Contour Buffer Strips	332	ac	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Contour Farming	330	ac	\$10.00	0%	2	2	1	1	0	0	1	1	-	-	-	-	-	X
	Cover Crop	340	ac	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Critical Area Planting	342	ac	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Diversion	362	ft	\$1.13	2%	2	2	1	1	0	0	2	0	-	-	-	-	-	X
	Field Border	386	ft	\$0.35	1%	2	2	0	2	2	0	5	1	-	-	X	-	-	X
	Residue Management, No-Till/Strip Till	329	ac	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Residue Management, Mulch Till	345	ac	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
	Terrace	600	ft	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
RMS2	Soil Erosion - Ephemeral Gully																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Contour Buffer Strips	332	ac	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Contour Farming	330	ac	\$10.00	0%	2	2	1	1	0	0	1	1	-	-	-	-	-	X
	Cover Crop	340	ac	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Critical Area Planting	342	ac	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Diversion	362	ft	\$1.13	2%	2	2	1	1	0	0	2	0	-	-	-	-	-	X
	Field Border	386	ft	\$0.35	1%	2	2	0	2	2	0	5	1	-	-	X	-	-	X
	Grade Stabilization Structure	410	no	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Grassed Waterway	412	ac	\$2,500.00	2%	3	-1	3	2	1	1	4	1	-	-	X	-	-	
	Residue Management, No-Till/Strip Till	329	ac	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Residue Management, Mulch Till	345	ac	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
	Terrace	600	ft	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
RMS3	Soil Erosion - Classic Gully																		
	Critical Area Planting	342	ac	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Diversion	362	ft	\$1.13	2%	2	2	1	1	0	0	2	0	-	-	-	-	-	X
	Grade Stabilization Structure	410	no	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Grassed Waterway	412	ac	\$2,500.00	2%	3	-1	3	2	1	1	4	1	-	-	X	-	-	
	Pond	378	no	\$16,000.00	1%	1	2	1	1	3	5	2	0	-	-	-	-	-	
	Terrace	600	ft	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	

Future Conditions for Row Crop																			
Row Crop			Units	Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQUIP	WHIP	CRP	WRP	GLC	IFIP
	Water and Sediment Control Basin	638	no	\$3,250.00	3%	3	3	1	1	0	1	0	0	-	-	-	-	-	
RMS4	Soil Erosion - Streambank																		
	Critical Area Planting	342	ac	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Filter Strip	393	ac	\$2,000.00	2%	2	2	3	2	2	1	5	1	-	-	X	-	-	X
	Grade Stabilization Structure	410	no	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	In-Channel Structures																		
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
RMS5	Soil Condition - Organic Matter Depletion																		
	Conservation Crop Rotation	328	ac	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Cover Crop	340	ac	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Nutrient Management	590	ac	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Residue Management, No-Till/Strip Till	329	ac	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Residue Management, Mulch Till	345	ac	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
RMS6	Water Quantity - Excessive Runoff, Flooding, or Ponding																		
	Contour Buffer Strips	332	ac	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Dam, Diversion	348	no	\$1,000.00	3%	0	0	2	-2	-2	4	0	0	-	-	-	-	-	
	Pond	378	no	\$16,000.00	1%	1	2	1	1	3	5	2	0	-	-	-	-	-	
	Structure for Water Control	587	no	\$1,000.00	1%	3	2	2	1	0	1	0	0	-	-	-	-	-	
	Subsurface Drain	606	ft	\$1.20	3%	2	1	2	1	0	4	3	0	-	-	X	-	-	
	Terrace	600	ft	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
	Water and Sediment Control Basin	638	no	\$3,250.00	3%	3	3	1	1	0	1	0	0	-	-	-	-	-	
	Wetland Enhancement	659	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	
	Wetland Restoration	657	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
RMS7	Water Quantity - Excessive Subsurface Water																		
	Controlled Drainage																		
	Structure for Water Control	587	no	\$1,000.00	1%	3	2	2	1	0	1	0	0	-	-	-	-	-	
	Subsurface Drain	606	ft	\$1.20	3%	2	1	2	1	0	4	3	0	-	-	X	-	-	
	Wetland Enhancement	659	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	
	Wetland Restoration	657	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
RMS8	Water Quality - Excessive Nutrients in Groundwater																		

Future Conditions for Row Crop																			
Row Crop			Units	Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQUIP	WHIP	CRP	WRP	GLC	IFIP
	Conservation Crop Rotation	328	ac	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Cover Crop	340	ac	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Nutrient Management	590	ac	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
RMS9	Water Quality - Excessive Nutrients in Surface Waters																		
	Biofilters																		
	Conservation Crop Rotation	328	ac	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Controlled Drainage																		
	Cover Crop	340	ac	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Nutrient Management	590	ac	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Wetland Restoration	657	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
RMS10	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Contour Buffer Strips	332	ac	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Contour Farming	330	ac	\$10.00	0%	2	2	1	1	0	0	1	1	-	-	-	-	-	X
	Cover Crop	340	ac	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Critical Area Planting	342	ac	\$137.50	3%	4	3	4	2	2	1	5	2	X	-	X	-	-	X
	Diversion	362	ft	\$1.13	2%	2	2	1	1	0	0	2	0	-	-	-	-	-	X
	Field Border	386	ft	\$0.35	1%	2	2	0	2	2	0	5	1	-	-	X	-	-	X
	Filter Strip	393	ac	\$2,000.00	2%	2	2	3	2	2	1	5	1	-	-	X	-	-	X
	Grade Stabilization Structure	410	no	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Grassed Waterway	412	ac	\$2,500.00	2%	3	-1	3	2	1	1	4	1	-	-	X	-	-	
	Nutrient Management	590	ac	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Residue Management, Mulch Till	345	ac	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
	Residue Management, No-Till/Strip Till	329	ac	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Terrace	600	ft	\$1.50	0%	1	1	1	1	1	0	2	0	X	-	-	-	-	X
	Underground Outlet	620	ft	\$0.93	3%	3	2	3	1	0	0	0	0	-	-	-	-	-	
	Water and Sediment Control Basin	638	no	\$3,250.00	3%	3	3	1	1	0	1	0	0	-	-	-	-	-	
RMS11	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	In-Channel Structures																		
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	

Future Conditions for Row Crop																			
Row Crop			Units	Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
	Streambank and Shoreline Protection	580	ft	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
RMS12	Plant Condition - Threatened or Endangered Plant Species																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Upland Wildlife Habitat Management	645	ac	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
RMS13	Plant Condition - Productivity, Health, and Vigor																		
	Brush Management	314	ac	\$87.50	1%	2	1	1	0	3	2	4	-2	X	-	-	-	-	
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Field Windbreak	392			1%														
	Filter Strip	393	ac	\$2,000.00	2%	2	2	3	2	2	1	5	1	-	-	X	-	-	X
	Nutrient Management	590	ac	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Pest Management	595	ac	\$4.00	0%	3	2	1	4	3	4	4	3	X	-	X	X	-	
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Windbreak/Shelterbelt Renovation	650	ft	\$1.70	3%	3	2	1	3	4	4	5	3	-	-	-	-	-	X
	Windbreak/Shelterbelt Establishment	380	ft	\$350.00	1%	3	2	1	2	4	4	5	3	-	-	X	-	-	X
RMS14	Fish and Wildlife - Inadequate Food																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Conservation Crop Rotation	328	ac	\$50.00	0%	2	4	2	2	2	3	4	2	X	-	-	-	-	
	Cover Crop	340	ac	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	
	Early Successional Habitat	647	ac	\$5.23	1%	2	0	0	-2	4	1	4	0	-	-	X	-	-	
	Field Windbreak	392			1%														
	Pond	378	no	\$16,000.00	1%	1	2	1	1	3	5	2	0	-	-	-	-	-	
	Grasses and Legumes in Rotation	411			1%														
	Residue Management, Mulch Till	345	ac	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	
	Residue Management, No-Till/Strip Till	329	ac	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Upland Wildlife Habitat Management	645	ac	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
	Wetland Creation	658	ac	\$675.00	1%	3	1	1	2	4	2	4	1	-	-	-	-	-	
	Wetland Enhancement	659	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	
	Wetland Restoration	657	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
RMS15	Fish and Wildlife - Inadequate Shelter																		

Future Conditions for Row Crop																			
Row Crop			Units	Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Contour Buffer Strips	332	ac	\$40.00	2%	2	2	1	1	2	1	4	1	-	-	X	-	-	X
	Cover Crop	340	ac	\$31.50	1%	2	2	2	2	2	3	3	2	-	-	-	-	-	-
	Early Successional Habitat	647	ac	\$5.23	1%	2	0	0	-2	4	1	4	0	-	-	X	-	-	-
	Field Border	386	ft	\$0.35	1%	2	2	0	2	2	0	5	1	-	-	X	-	-	X
	Hedgerow Planting	422	ft	\$1.00	5%	3	1	2	1	3	1	4	2	-	-	-	-	-	-
	Residue Management, Mulch Till	345	ac	\$33.00	0%	3	0	0	0	0	0	0	0	X	-	-	-	-	-
	Residue Management, No-Till/Strip Till	329	ac	\$14.00	0%	4	0	0	0	0	0	0	0	X	-	-	-	-	X
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Upland Wildlife Habitat Management	645	ac	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	-
	Wetland Creation	658	ac	\$675.00	1%	3	1	1	2	4	2	4	1	-	-	-	-	-	-
	Wetland Enhancement	659	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	-
	Wetland Restoration	657	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	-
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	-
	Windbreak/Shelterbelt Establishment	380	ft	\$350.00	1%	3	2	1	2	4	4	5	3	-	-	X	-	-	X
	Windbreak/Shelterbelt Renovation	650	ft	\$1.70	3%	3	2	1	3	4	4	5	3	-	-	-	-	-	X
RMS16	Fish and Wildlife - Threatened and Endangered Species																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Early Successional Habitat	647	ac	\$5.23	1%	2	0	0	-2	4	1	4	0	-	-	X	-	-	-
	Hedgerow Planting	422	ft	\$1.00	5%	3	1	2	1	3	1	4	2	-	-	-	-	-	-
	Upland Wildlife Habitat Management	645	ac	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	-
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	-
	Air Quality - Road Dust																		
	Dust Control Products																		
	Use Exclusion																		

Current Conditions for Livestock Operations																				
Livestock Operations			Quantity		Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quality	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
BM1	Water Quality - Excessive Nutrients in Surface Waters																			
	Composting Facility	317	no	5	\$12,500.00	2%	0	2	0	2	0	0	1	1	-	-	-	-	-	
	Nutrient Management	590	ac	220,050	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Waste Storage Facility	313	no	143	\$55,000.00	2%	0	2	0	2	0	0	2	-1	X	-	-	-	-	
	Waste Utilization	633	ac	1,465	\$83.00	1%	2	2	2	2	0	4	3	1	-	-	-	-	-	
BM2	Water Quality - Harmful Levels of Pathogens in Surface Water																			
	Composting Facility	317	no	5	\$12,500.00	2%	0	2	0	2	0	0	1	1	-	-	-	-	-	
	Nutrient Management	590	ac	220,050	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Waste Storage Facility	313	no	143	\$55,000.00	2%	0	2	0	2	0	0	2	-1	X	-	-	-	-	
	Waste Utilization	633	ac	1,465	\$83.00	1%	2	2	2	2	0	4	3	1	-	-	-	-	-	
BM3	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	In-Channel Structures																			
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	18,517	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
BM4	Air Quality - Objectionable Odors																			
	Composting Facility	317	no	5	\$12,500.00	2%	0	2	0	2	0	0	1	1	-	-	-	-	-	
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Windbreak/Shelterbelt Establishment	380	ft	384,656	\$350.00	1%	3	2	1	2	4	4	5	3	-	-	X	-	-	X
	Windbreak/Shelterbelt Renovation	650	ft	5,622	\$1.70	3%	3	2	1	3	4	4	5	3	-	-	-	-	-	X
	Waste Storage Facility	313	no	143	\$55,000.00	2%	0	2	0	2	0	0	2	-1	X	-	-	-	-	
	Waste Utilization	633	ac	1,465	\$83.00	1%	2	2	2	2	0	4	3	1	-	-	-	-	-	
BM5	Air Quality - Ammonia																			
	Composting Facility	317	no	5	\$12,500.00	2%	0	2	0	2	0	0	1	1	-	-	-	-	-	
	Waste Storage Facility	313	no	143	\$55,000.00	2%	0	2	0	2	0	0	2	-1	X	-	-	-	-	
	Waste Utilization	633	ac	1,465	\$83.00	1%	2	2	2	2	0	4	3	1	-	-	-	-	-	

Future Conditions for Livestock Operations																			
Livestock Operations			Units	Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
RMS1	Water Quality - Excessive Nutrients in Surface Waters																		
	Composting Facility	317	no	\$12,500.00	2%	0	2	0	2	0	0	1	1	-	-	-	-	-	
	Nutrient Management	590	ac	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Waste Storage Facility	313	no	\$55,000.00	2%	0	2	0	2	0	0	2	-1	X	-	-	-	-	
	Waste Treatment Lagoon	359			2%														
	Waste Utilization	633	ac	\$83.00	1%	2	2	2	2	0	4	3	1	-	-	-	-	-	
RMS2	Water Quality - Harmful Levels of Pathogens in Surface Water																		
	Composting Facility	317	no	\$12,500.00	2%	0	2	0	2	0	0	1	1	-	-	-	-	-	
	Nutrient Management	590	ac	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Waste Storage Facility	313	no	\$55,000.00	2%	0	2	0	2	0	0	2	-1	X	-	-	-	-	
	Waste Treatment Lagoon	359			2%														
	Waste Utilization	633	ac	\$83.00	1%	2	2	2	2	0	4	3	1	-	-	-	-	-	
RMS3	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	In-Channel Structures																		
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
RMS4	Air Quality - Objectionable Odors																		
	Composting Facility	317	no	\$12,500.00	2%	0	2	0	2	0	0	1	1	-	-	-	-	-	
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Windbreak/Shelterbelt Establishment	380	ft	\$350.00	1%	3	2	1	2	4	4	5	3	-	-	X	-	-	X
	Windbreak/Shelterbelt Renovation	650	ft	\$1.70	3%	3	2	1	3	4	4	5	3	-	-	-	-	-	X
	Waste Storage Facility	313	no	\$55,000.00	2%	0	2	0	2	0	0	2	-1	X	-	-	-	-	
	Waste Treatment Lagoon	359			2%														
	Waste Utilization	633	ac	\$83.00	1%	2	2	2	2	0	4	3	1	-	-	-	-	-	
RMS5	Air Quality - Ammonia																		
	Composting Facility	317	no	\$12,500.00	2%	0	2	0	2	0	0	1	1	-	-	-	-	-	
	Waste Storage Facility	313	no	\$55,000.00	2%	0	2	0	2	0	0	2	-1	X	-	-	-	-	
	Waste Treatment Lagoon	359			2%														
	Waste Utilization	633	ac	\$83.00	1%	2	2	2	2	0	4	3	1	-	-	-	-	-	

Current Conditions for Pasture/Grazed Timber/Grassland																				
Pasture/Grazed Timber/Grassland			Quantity		Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
BM1	Soil Erosion - Sheet and Rill																			
	Forage Harvest Management	511	ac	6,286	\$75.00	0%	2	2	1	2	2	4	4	0	-	-	-	-	-	
	Pasture and Hayland Planting	512	ac	29,403	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Prescribed Grazing	528	ac	38,075	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
BM2	Soil Erosion - Ephemeral Gully																			
	Grade Stabilization Structure	410	no	470	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Pasture and Hayland Planting	512	ac	29,403	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Prescribed Grazing	528	ac	38,075	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
BM3	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters																			
	Fencing	382	ft	1,146,313	\$0.88	2%	0	0	0	0	-1	4	4	0	X	-	-	-	-	
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Grade Stabilization Structure	410	no	470	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Use Exclusion	472	ac	99,717	\$50.00	3%	2	2	2	1	3	4	4	2	X	-	X	X	-	
	Pasture and Hayland Planting	512	ac	29,403	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Streambank and Shoreline Protection	580	ft	18,517	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Prescribed Grazing	528	ac	38,075	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
BM4	Water Quality - Harmful Levels of Pathogens in Surface Water																			
	Fencing	382	ft	1,146,313	\$0.88	2%	0	0	0	0	-1	4	4	0	X	-	-	-	-	
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Use Exclusion	472	ac	99,717	\$50.00	3%	2	2	2	1	3	4	4	2	X	-	X	X	-	
	Streambank and Shoreline Protection	580	ft	18,517	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Prescribed Grazing	528	ac	38,075	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
BM5	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Fencing	382	ft	1,146,313	\$0.88	2%	0	0	0	0	-1	4	4	0	X	-	-	-	-	
	In-Channel Structures																			
	Prescribed Grazing	528	ac	38,075	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	18,517	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Use Exclusion	472	ac	99,717	\$50.00	3%	2	2	2	1	3	4	4	2	X	-	X	X	-	
BM6	Plant Condition - Threatened or Endangered Plant Species																			

Current Conditions for Pasture/Grazed Timber/Grassland																				
Pasture/Grazed Timber/Grassland			Quantity		Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Fencing	382	ft	1,146,313	\$0.88	2%	0	0	0	0	-1	4	4	0	X	-	-	-	-	-
	Prescribed Grazing	528	ac	38,075	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	-
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	-
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Upland Wildlife Habitat Management	645	ac	137,723	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	-
	Use Exclusion	472	ac	99,717	\$50.00	3%	2	2	2	1	3	4	4	2	X	-	X	X	-	-
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	-
BM7	Plant Condition - Forage Quality and Palatability																			
	Brush Management	314	ac	7,630	\$87.50	1%	2	1	1	0	3	2	4	-2	X	-	-	-	-	-
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Forage Harvest Management	511	ac	6,286	\$75.00	0%	2	2	1	2	2	4	4	0	-	-	-	-	-	-
	Nutrient Management	590	ac	220,050	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	-
	Pasture and Hayland Planting	512	ac	29,403	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Pest Management	595	ac	142,970	\$4.00	0%	3	2	1	4	3	4	4	3	X	-	X	X	-	-
	Prescribed Grazing	528	ac	38,075	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	-
	Riparian Forest Buffer	391	ac	1,615	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	-
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Windbreak/Shelterbelt Establishment	380	ft	384,656	\$350.00	1%	3	2	1	2	4	4	5	3	-	-	X	-	-	X
	Windbreak/Shelterbelt Renovation	650	ft	5,622	\$1.70	3%	3	2	1	3	4	4	5	3	-	-	-	-	-	X
BM8	Fish and Wildlife - Plant Community Fragmentation																			
	Conservation Cover	327	ac	109,553	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Early Successional Habitat	647	ac	35,884	\$5.23	1%	2	0	0	-2	4	1	4	0	-	-	X	-	-	-
	Forage Harvest Management	511	ac	6,286	\$75.00	0%	2	2	1	2	2	4	4	0	-	-	-	-	-	-
	Hedgerow Planting	422	ft	1,400	\$1.00	5%	3	1	2	1	3	1	4	2	-	-	-	-	-	-
	Pasture and Hayland Planting	512	ac	29,403	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Prescribed Burning	338	ac	6,708	\$25.00	1%	2	1	1	1	3	2	5	0	-	-	X	-	-	-
	Prescribed Grazing	528	ac	38,075	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	-
	Tree/Shrub Establishment	612	ac	3,377	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Upland Wildlife Habitat Management	645	ac	137,723	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	-
	Wetland Creation	658	ac	320	\$675.00	1%	3	1	1	2	4	2	4	1	-	-	-	-	-	-
	Wetland Enhancement	659	ac	809	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	-
	Wetland Restoration	657	ac	16,060	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	-

Current Conditions for Pasture/Grazed Timber/Grassland																				
Pasture/Grazed Timber/Grassland			Quantity		Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Quantity (Total 2005-2007)	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
	Wetland Wildlife Habitat Management	644	ac	15,395	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	

Future Conditions for Pasture/Grazed Timber/Grassland																			
Pasture/Grazed Timber/Grassland			Units	Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQIP	WHIP	CRP	WRP	GLC	IFIP
RMS1	Soil Erosion - Sheet and Rill																		
	Forage Harvest Management	511	ac	\$75.00	0%	2	2	1	2	2	4	4	0	-	-	-	-	-	
	Pasture and Hayland Planting	512	ac	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Prescribed Grazing	528	ac	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
RMS2	Soil Erosion - Ephemeral Gully																		
	Grade Stabilization Structure	410	no	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Pasture and Hayland Planting	512	ac	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Prescribed Grazing	528	ac	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
RMS3	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters																		
	Fencing	382	ft	\$0.88	2%	0	0	0	0	-1	4	4	0	X	-	-	-	-	
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Grade Stabilization Structure	410	no	\$10,000.00	1%	1	0	1	2	2	0	0	0	X	-	-	-	-	X
	Use Exclusion	472	ac	\$50.00	3%	2	2	2	1	3	4	4	2	X	-	X	X	-	
	Pasture and Hayland Planting	512	ac	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Streambank and Shoreline Protection	580	ft	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Prescribed Grazing	528	ac	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
RMS4	Water Quality - Harmful Levels of Pathogens in Surface Water																		
	Fencing	382	ft	\$0.88	2%	0	0	0	0	-1	4	4	0	X	-	-	-	-	
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Use Exclusion	472	ac	\$50.00	3%	2	2	2	1	3	4	4	2	X	-	X	X	-	
	Streambank and Shoreline Protection	580	ft	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Prescribed Grazing	528	ac	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
RMS5	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Fencing	382	ft	\$0.88	2%	0	0	0	0	-1	4	4	0	X	-	-	-	-	
	In-Channel Structures																		
	Prescribed Grazing	528	ac	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Streambank and Shoreline Protection	580	ft	\$20.00	10%	4	2	3	2	2	1	4	3	-	-	-	-	-	
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Use Exclusion	472	ac	\$50.00	3%	2	2	2	1	3	4	4	2	X	-	X	X	-	
RMS6	Plant Condition - Threatened or Endangered Plant Species																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X

Future Conditions for Pasture/Grazed Timber/Grassland																			
Pasture/Grazed Timber/Grassland			Units	Costs		Effects								Implementation					
Mgmt System	Practice Name	Code	Units	Unit Cost	Op. & Maint. Cost	Soil Erosion	Soil Condition	Water Quantity	Water Quality	Fish and Wildlife	Domestic Animals	Plant Condition	Air Quality	EQUIP	WHIP	CRP	WRP	GLC	IFIP
	Fencing	382	ft	\$0.88	2%	0	0	0	0	-1	4	4	0	X	-	-	-	-	
	Prescribed Grazing	528	ac	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Upland Wildlife Habitat Management	645	ac	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	
	Use Exclusion	472	ac	\$50.00	3%	2	2	2	1	3	4	4	2	X	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	
RMS7	Plant Condition - Forage Quality and Palatability																		
	Brush Management	314	ac	\$87.50	1%	2	1	1	0	3	2	4	-2	X	-	-	-	-	
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Field Windbreak	392			1%														
	Forage Harvest Management	511	ac	\$75.00	0%	2	2	1	2	2	4	4	0	-	-	-	-	-	
	Nutrient Management	590	ac	\$10.00	0%	2	2	0	2	1	3	3	2	X	-	X	X	-	
	Pasture and Hayland Planting	512	ac	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Pest Management	595	ac	\$4.00	0%	3	2	1	4	3	4	4	3	X	-	X	X	-	
	Prescribed Grazing	528	ac	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
	Riparian Forest Buffer	391	ac	\$317.00	1%	2	3	3	3	4	4	4	2	-	-	X	-	-	
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Windbreak/Shelterbelt Establishment	380	ft	\$350.00	1%	3	2	1	2	4	4	5	3	-	-	X	-	-	X
	Windbreak/Shelterbelt Renovation	650	ft	\$1.70	3%	3	2	1	3	4	4	5	3	-	-	-	-	-	X
RMS8	Fish and Wildlife - Plant Community Fragmentation																		
	Conservation Cover	327	ac	\$95.00	3%	2	2	2	2	2	0	4	2	X	-	X	X	-	X
	Early Successional Habitat	647	ac	\$5.23	1%	2	0	0	-2	4	1	4	0	-	-	X	-	-	
	Forage Harvest Management	511	ac	\$75.00	0%	2	2	1	2	2	4	4	0	-	-	-	-	-	
	Hedgerow Planting	422	ft	\$1.00	5%	3	1	2	1	3	1	4	2	-	-	-	-	-	
	Pasture and Hayland Planting	512	ac	\$64.50	1%	3	4	1	2	2	4	5	1	X	-	-	-	X	X
	Prescribed Burning	338	ac	\$25.00	1%	2	1	1	1	3	2	5	0	-	-	X	-	-	
	Prescribed Grazing	528	ac	\$75.00	0%	3	3	1	2	3	4	4	2	X	-	-	-	-	
	Tree/Shrub Establishment	612	ac	\$285.00	0%	3	2	2	2	4	3	5	3	-	-	X	X	-	X
	Upland Wildlife Habitat Management	645	ac	\$150.00	0%	2	0	0	2	5	2	4	2	-	-	X	X	-	
	Wetland Creation	658	ac	\$675.00	1%	3	1	1	2	4	2	4	1	-	-	-	-	-	
	Wetland Enhancement	659	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	-	-	
	Wetland Restoration	657	ac	\$675.00	1%	3	1	3	2	4	2	4	1	-	-	X	X	-	
	Wetland Wildlife Habitat Management	644	ac	\$7.00	1%	3	0	3	2	4	2	4	1	-	-	X	X	-	

Iowa River, Upper, Assessment Matrix Summary

Iowa, Upper		BM																														
		1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Current Conditions	Practice Name	Acres	Soil Erosion - Sheet and Rill	Soil Erosion - Ephemeral Gully	Soil Erosion - Classic Gully	Soil Erosion - Streambank	Soil Condition - Organic Matter Depletion	Water Quality - Excessive Runoff, Flooding, or Ponding	Water Quality - Excessive Subsurface Water	Water Quality - Excessive Nutrients in Groundwater	Water Quality - Excessive Nutrients in Surface Waters	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Plant Condition - Threatened or Endangered Plant Species	Plant Condition - Productivity, Health, and Vigor	Fish and Wildlife - Inadequate Food	Fish and Wildlife - Inadequate Shelter	Fish and Wildlife - Threatened and Endangered Species	Soil Erosion - Sheet and Rill	Soil Erosion - Ephemeral Gully	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters	Water Quality - Harmful Levels of Pathogens in Surface Water	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Plant Condition - Threatened or Endangered Plant Species	Plant Condition - Forage Quality and Palatability	Fish and Wildlife - Plant Community Fragmentation	Water Quality - Excessive Nutrients in Surface Waters	Water Quality - Harmful Levels of Pathogens in Surface Water	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Air Quality - Objectectionable Odors	Air Quality - Ammonia	
Practice Code	Practice Name																															
313	Waste Storage Facility																														X	X
314	Brush Management														X										X							
317	Composting Facility																															
327	Conservation Cover		X	X								X	X	X	X	X	X															
328	Conservation Crop Rotation		X	X			X			X	X	X			X	X																
329	Residue Management, No-Till/Strip Till		X	X			X					X				X	X															
345	Residue Management, Mulch Till		X	X			X					X				X	X															
330	Contour Farming		X	X								X																				
332	Contour Buffer Strips		X	X				X				X					X															
338	Prescribed Burning																															X
340	Cover Crop		X	X			X			X	X	X			X	X																
342	Critical Area Planting		X	X	X	X						X																				
348	Dam, Diversion							X																								
362	Diversion		X	X								X																				
378	Pond					X									X																	
380	Windbreak/Shelterbelt Establishment														X	X																X
382	Fencing																				X	X	X	X								
386	Field Border		X	X							X					X						X	X									
391	Riparian Forest Buffer					X						X			X						X	X	X	X	X							X
393	Filter Strip										X																					
410	Grade Stabilization Structure			X	X	X					X										X	X										
412	Grassed Waterway			X	X						X																					
422	Hedgerow Planting															X	X															
472	Use Exclusion																				X	X										
511	Forage Harvest Management																									X	X					
512	Pasture and Hayland Planting																		X	X						X	X					
517	Forage Harvest Management																		X													
528	Prescribed Grazing																	X	X	X	X	X	X	X	X	X						
580	Streambank and Shoreline Protection					X						X	X								X	X	X									X

Iowa River, Upper, Assessment Matrix Summary

Iowa, Upper		BM																																	
		1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30					
Current Conditions	Practice Name	Acres	Soil Erosion - Sheet and Rill	Soil Erosion - Ephemeral Gully	Soil Erosion - Classic Gully	Soil Erosion - Streambank	Soil Condition - Organic Matter Depletion	Water Quantity - Excessive Runoff, Flooding, or Ponding	Water Quantity - Excessive Subsurface Water	Water Quality - Excessive Nutrients in Groundwater	Water Quality - Excessive Nutrients in Surface Waters	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Plant Condition - Threatened or Endangered Plant Species	Plant Condition - Productivity, Health, and Vigor	Fish and Wildlife - Inadequate Food	Fish and Wildlife - Inadequate Shelter	Fish and Wildlife - Threatened and Endangered Species	Soil Erosion - Sheet and Rill	Soil Erosion - Ephemeral Gully	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters	Water Quality - Harmful Levels of Pathogens in Surface Water	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Plant Condition - Threatened or Endangered Plant Species	Plant Condition - Forage Quality and Palatability	Fish and Wildlife - Plant Community Fragmentation	Water Quality - Excessive Nutrients in Surface Waters	Water Quality - Harmful Levels of Pathogens in Surface Water	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Air Quality - Objectronable Odors	Air Quality - Ammonia				
Practice Code	Practice Name																																		
587	Structure for Water Control						X	X																											
590	Nutrient Management					X			X	X	X				X										X		X	X							
595	Pest Management														X										X										
600	Terrace		X	X	X		X				X																								
606	Subsurface Drain Tree/Shrub Establishment						X	X																											
612	Underground Outlet		X	X	X		X				X				X		X						X	X	X	X				X	X				
633	Waste Utilization																										X	X				X	X		
638	Water and Sediment Control Basin				X		X				X																								
644	Wetland Wildlife Habitat Management						X	X					X	X		X	X	X						X		X									
645	Upland Wildlife Habitat Management													X		X	X	X						X		X									
650	Windbreak/Shelterbelt Renovation														X		X								X							X			
657	Wetland Restoration						X	X		X						X	X																		
658	Wetland Creation															X	X										X								
659	Wetland Enhancement						X	X								X	X										X								
	Biofilters										X																								
	Early Successional Habitat															X	X	X								X									
	Controlled Drainage							X		X																									
	In-Channel Structures				X																												X		

Iowa River, Upper, Assessment Matrix Summary

Iowa, Upper		RMS																														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Future Conditions	Practice Name	Soil Erosion - Sheet and Rill	Soil Erosion - Ephemeral Gully	Soil Erosion - Classic Gully	Soil Erosion - Streambank	Soil Condition - Organic Matter Depletion	Water Quality - Excessive Runoff, Flooding, or Ponding	Water Quantity - Excessive Subsurface Water	Water Quality - Excessive Nutrients in Groundwater	Water Quality - Excessive Nutrients in Surface Waters	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Air Quality - Road Dust	Plant Condition - Threatened or Endangered Plant Species	Plant Condition - Productivity, Health, and Vigor	Fish and Wildlife - Inadequate Food	Fish and Wildlife - Inadequate Shelter	Fish and Wildlife - Threatened and Endangered Species	Soil Erosion - Sheet and Rill	Soil Erosion - Ephemeral Gully	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters	Water Quality - Harmful Levels of Pathogens in Surface Water	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Plant Condition - Threatened or Endangered Plant Species	Plant Condition - Forage Quality and Palatability	Fish and Wildlife - Plant Community Fragmentation	Water Quality - Excessive Nutrients in Surface Waters	Water Quality - Harmful Levels of Pathogens in Surface Water	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Air Quality - Objectionable Odors	Air Quality - Ammonia	
Practice Code	Practice Name																															
313	Waste Storage Facility																														X	X
314	Brush Management													X												X						
317	Composting Facility																															
327	Conservation Cover	X	X								X	X	X	X	X	X	X									X	X	X	X			X
328	Conservation Crop Rotation	X	X			X			X	X	X				X	X																
329	Residue Management, No-Till/Strip Till	X	X			X					X					X	X															
345	Residue Management, Mulch Till	X	X			X					X					X	X															
330	Contour Farming	X	X								X																					
332	Contour Buffer Strips	X	X				X				X						X															
338	Prescribed Burning																											X				
340	Cover Crop	X	X			X			X	X	X				X	X																
342	Critical Area Planting	X	X	X	X						X																					
348	Dam, Diversion						X																									
359	Waste Treatment Lagoon																														X	X
362	Diversion	X	X	X							X																					
378	Pond			X			X								X																	
380	Windbreak/Shelterbelt Establishment													X		X									X							X
382	Fencing																					X	X	X	X							
386	Field Border	X	X								X					X																
391	Riparian Forest Buffer				X					X	X			X							X	X	X	X	X					X		
392	Field Windbreak													X	X											X						
393	Filter Strip				X					X				X																		
410	Grade Stabilization Structure		X	X	X					X										X	X											
411	Grasses and Legumes in Rotation														X																	
412	Grassed Waterway		X	X						X																						
422	Hedgerow Planting															X	X										X					
472	Use Exclusion																				X	X	X	X								
512	Pasture and Hayland Planting																		X	X	X					X	X					
517	Forage Harvest Management																		X							X	X					
528	Prescribed Grazing																		X	X	X	X	X	X	X	X	X					

Iowa River, Upper, Assessment Matrix Summary

Iowa, Upper		RMS																														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Future Conditions	Practice Name	Soil Erosion - Sheet and Rill	Soil Erosion - Ephemeral Gully	Soil Erosion - Classic Gully	Soil Erosion - Streambank	Soil Condition - Organic Matter Depletion	Water Quantity - Excessive Runoff, Flooding, or Ponding	Water Quantity - Excessive Subsurface Water	Water Quality - Excessive Nutrients in Groundwater	Water Quality - Excessive Nutrients in Surface Waters	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Air Quality - Road Dust	Plant Condition - Threatened or Endangered Plant Species	Plant Condition - Productivity, Health, and Vigor	Fish and Wildlife - Inadequate Food	Fish and Wildlife - Inadequate Shelter	Fish and Wildlife - Threatened and Endangered Species	Soil Erosion - Sheet and Rill	Soil Erosion - Ephemeral Gully	Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters	Water Quality - Harmful Levels of Pathogens in Surface Water	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Plant Condition - Threatened or Endangered Plant Species	Plant Condition - Forage Quality and Palatability	Fish and Wildlife - Plant Community Fragmentation	Water Quality - Excessive Nutrients in Surface Waters	Water Quality - Harmful Levels of Pathogens in Surface Water	Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration	Air Quality - Objectionable Odors	Air Quality - Ammonia	
Practice Code	Practice Name																															
580	Streambank and Shoreline Protection Structure for Water Control				X					X	X										X	X	X							X		
587	Nutrient Management					X	X		X	X	X				X										X		X	X				
590	Pest Management														X										X		X	X				
595	Terrace	X	X	X		X				X																						
600	Subsurface Drain					X	X																									
606	Tree/Shrub Establishment														X		X													X	X	
612	Underground Outlet	X	X	X		X				X																						
620	Waste Utilization																											X	X		X	X
633	Water and Sediment Control Basin			X		X				X																						
638	Wetland Wildlife Habitat Management					X	X			X			X	X	X									X		X						
644	Upland Wildlife Habitat Management												X		X	X	X							X		X						
645	Windbreak/Shelterbelt Renovation													X		X									X						X	
650	Wetland Restoration					X	X			X						X	X										X					
657	Wetland Creation															X	X										X					
658	Wetland Enhancement					X	X									X	X									X						
659	Biofilters									X																						
	Controlled Drainage						X		X																							
	Dust Control Products												X																			
	Early Successional Habitat														X	X	X										X					
	In-Channel Structures				X							X																		X		
	Use Exclusion											X																				