

This resource assessment is designed to gather and display information specific to Iron County, Utah. This report will highlight the natural and social resources present in the county, detail specific concerns, and be used to aid in resource planning and target conservation assistance needs. This document is dynamic and will be updated as additional information is available through a multi-agency partnership effort. The general observations and summaries are listed first, followed by the specific resource inventories.

Contents

[Observations and Summary](#)

[Land Use](#)

[Resource Concerns - Soils](#)

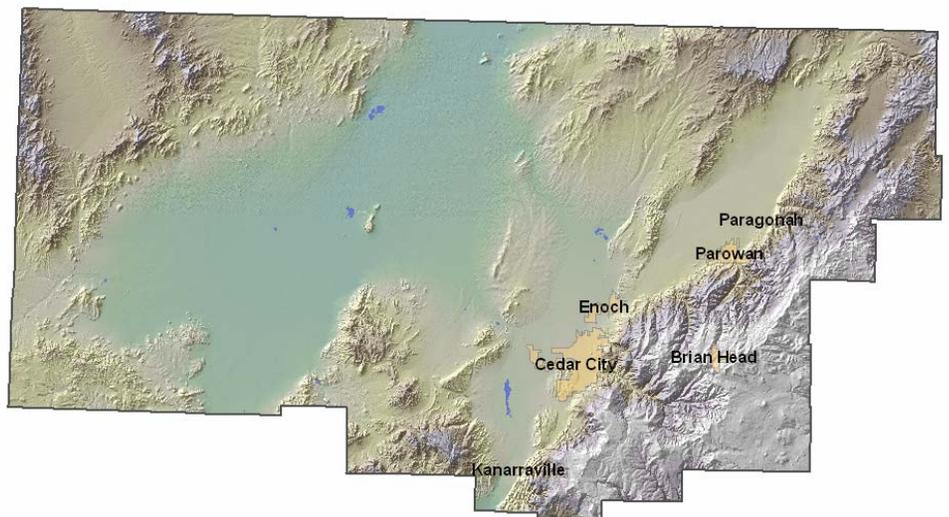
[Resource Concerns - Water](#)

[Resource Concerns - Air, Plants, Animals](#)

[Resource Concerns - Social and Economic](#)

[Survey Results](#)

[Footnotes/Bibliography](#)



Introduction

Iron County is comprised of approximately 2,110,720 acres and is in the Southwestern corner of Utah. Seventy Seven percent of the county is public land or urban lands. Most Federal Public Land is administered by the United States Forest Service (USFS) and Bureau of Land Management (BLM). Much of the State Land is administered by the School and Institutional Trust Lands Administration (SITLA) and Utah Division of Wildlife Resources (DWR).

Major land uses in the county include range, alfalfa and grass hay, corn and small grain crops, hog production facilities, forest production, and industrial and urban areas, Recreational uses are also common activities both on private and public lands. Elevation and Land Cover are diverse within the county.

Physical Description

Elevation and Land Cover are diverse within the county. Elevations range from over 11,000 feet in the

Equal Opportunity Providers and Employers.



Markagunt Plateau found on the Eastern side of the county down to 5,000 feet in the Escalante Desert. The county is surrounded by four mountain ranges which drain into the Escalante Desert. Due to the variability of Elevation, Precipitation, Land Cover and Land Uses are also quit variable.

The higher elevations support Sub Alpine Meadows, Conifer and Aspen Forests. These areas receive from 25 to 40 inches of precipitation annually. Middle elevations support Mixed Forest Communities, Mountain Shrub Lands and Pinion/Juniper forests. Precipitation in the Mixed Forest Communities ranges from 15 to 25 inches. Lower elevations support Semi-Desert and Salt Desert Rangelands and receive 8 to 15 inches of precipitation. It is in this lower elevation where cropland and irrigated pastures are found. Irrigated lands utilize water from mountain stream runoff or from underground aquifers.

General Land Use Observations

- Poor grazing management practices have reduced range and pasture productivity as well as creating other natural resource problems.
- Noxious weeds and invasive plants are an ever increasing problem.
- Water availability and efficient use of water is a concern. Aquifer levels in the Escalante Desert Area have steadily decreased in the last 50 years.
- Urban build up is a concern in the Cedar City area.
- The small, part-time and hobby farms are increasing in number and may require different types of assistance.

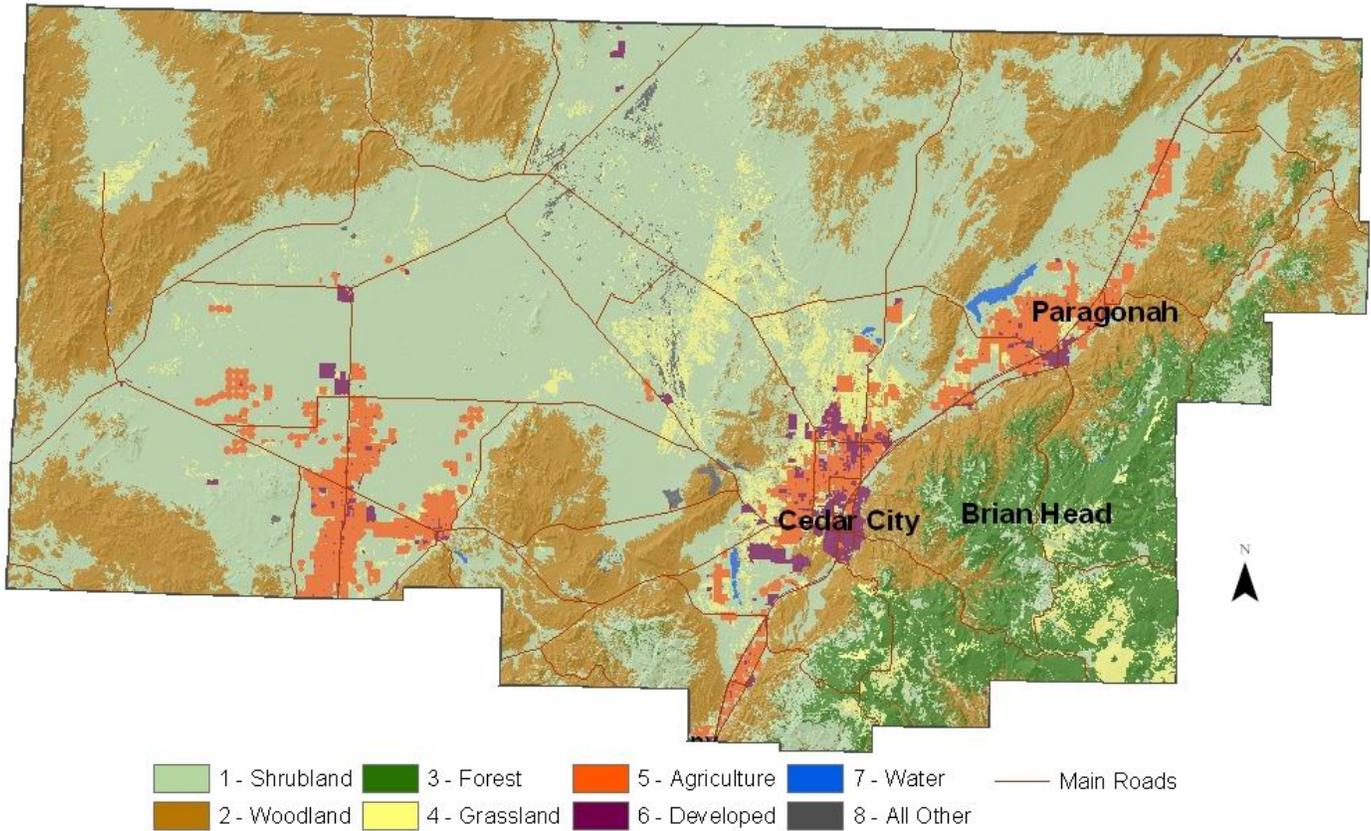
Resource Assessment Summary

Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Soil	High	Wind Erosion on Soil is a concern for much of the lower elevations of the Escalante Desert and Buckhorn Flat areas of the county. Winds are constant and strong in many of the valley locations. High wind conditions coupled with soils that are susceptible to wind erosion makes this a constant concern for human health and safety as well as health to livestock, crops and environmental stability of the area. Soil Erosion from Water is much less a concern generally within the watershed, but in specific locations and under certain conditions water induced soil erosion is a concern. Coal Creek near Cedar City, Parowan Creek near Parowan, as well as Shoal Creek near Enterprise are areas that have recently experienced stream bank and other water induced soil erosion problems.

Resource Assessment Summary Continued

Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Water Quantity	High	In the Agricultural area where deep wells supply water to fields the aquifer has been documented as reseeding for many consecutive years. Many operators have to deepen wells and increase pump size to obtain access to the available well water. This condition has decreased the economic viability of these farming and ranching operations. The use of larger engines and motors to drive the increased size in pumps has increased energy consumption and decreased air quality. In other areas of the county where surface water is utilized the concern for water quantity is related to the availability of water. Climatic conditions, water is in excess during wet cycles while in short supply in others.
Water Quality Ground Water	High	The concerns for water quality are generally tied to surface water conditions and sediment loads explained in the Soil Erosion from Water category listed above.
Water Quality Surface Water	High	The concerns for water quality are generally tied to surface water conditions and sediment loads explained in the Soil Erosion from Water category listed above.
Air Quality	Medium	Air Quality concerns is related to the description of Soil Erosion due to Wind and Water Quantity sections as listed above.
Plant Suitability	High	The major concern in this category relates to the evasion of unwanted and unproductive plant species on rangelands and fields. Pinion/Juniper encroachments, as well as evasion of Cheatgrass and other noxious weeds have decreased productivity of many rangelands and cropland.
Plant Condition	Medium	General range health is a concern within the county. Some plant communities are old and decadent, with low diversity and low productivity.
Fish and Wildlife	High	Concerns in this category are related to regulations and restrictions that are brought upon producers by the Endangered Species Act. Other concerns are related to Big Game habitats and populations.
Domestic Animals	Low	
Social and Economic	Medium	Encroachment from urban development is a concern. The farming areas around the community of Cedar City have begun to be converted to housing and business developments. The ability to maintain a way of life has been a great concern in the area. There are many pressures and influences that are making it hard to maintain some types of traditional lifestyles.

Land Cover



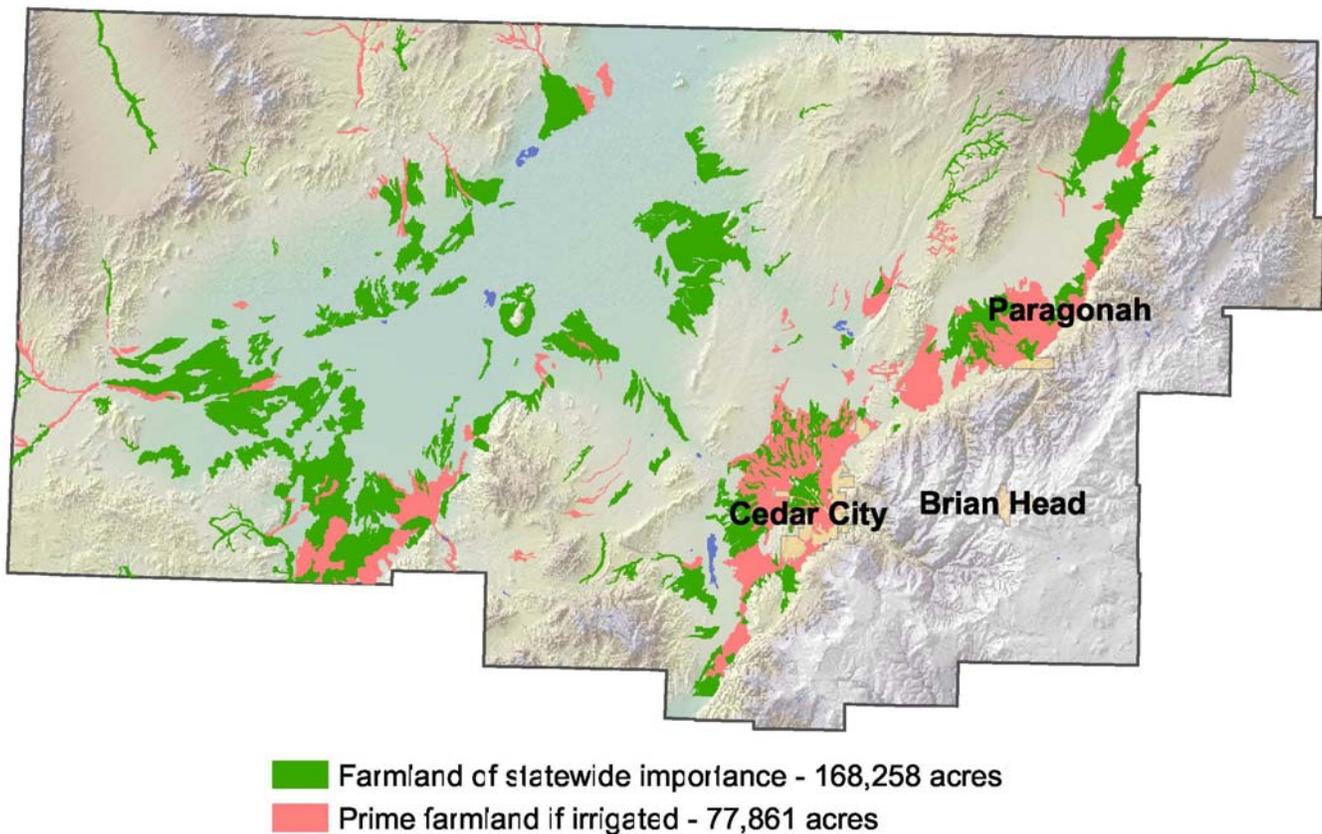
Land Cover/Land Use		
	Acres	%
Forest	907,610	43%
Grass/Pasture/Haylands/Cropland	75,000	4%
Shrub/Rangelands	1,064,773	50%
Water/Wetlands	21,107	1%
Developed/Urban	42,214	2%
Iron County Totals *b	2,110,704	100%

**a: Estimate from Farm Service Agency records and include CRP/CREP. *b: Totals may not add due to rounding and small unknown acreages.*

Special Considerations for Iron County:

- Recreational use of private and federal lands is very high and results in its own resource concerns.
- Grass/Pasture/Hay includes approximately:
 - 3100 acres of pasture
 - 71,900 acres of Hayland/Cropland
- Most crop rotations consist of Alfalfa Hay followed by Corn and Small Grains.
- Shrub/rangelands consist of oak savannahs and Pinion/Juniper areas.
- Seventy seven percent of the county consists of public and urban land.

Prime & Unique Farm Land



Prime farmland

Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion.

Unique farmland

Land other than prime farmland that is used for the production of specific high-value food and fiber crops...such as, citrus, tree nuts, olives, cranberries, fruits, and vegetables.

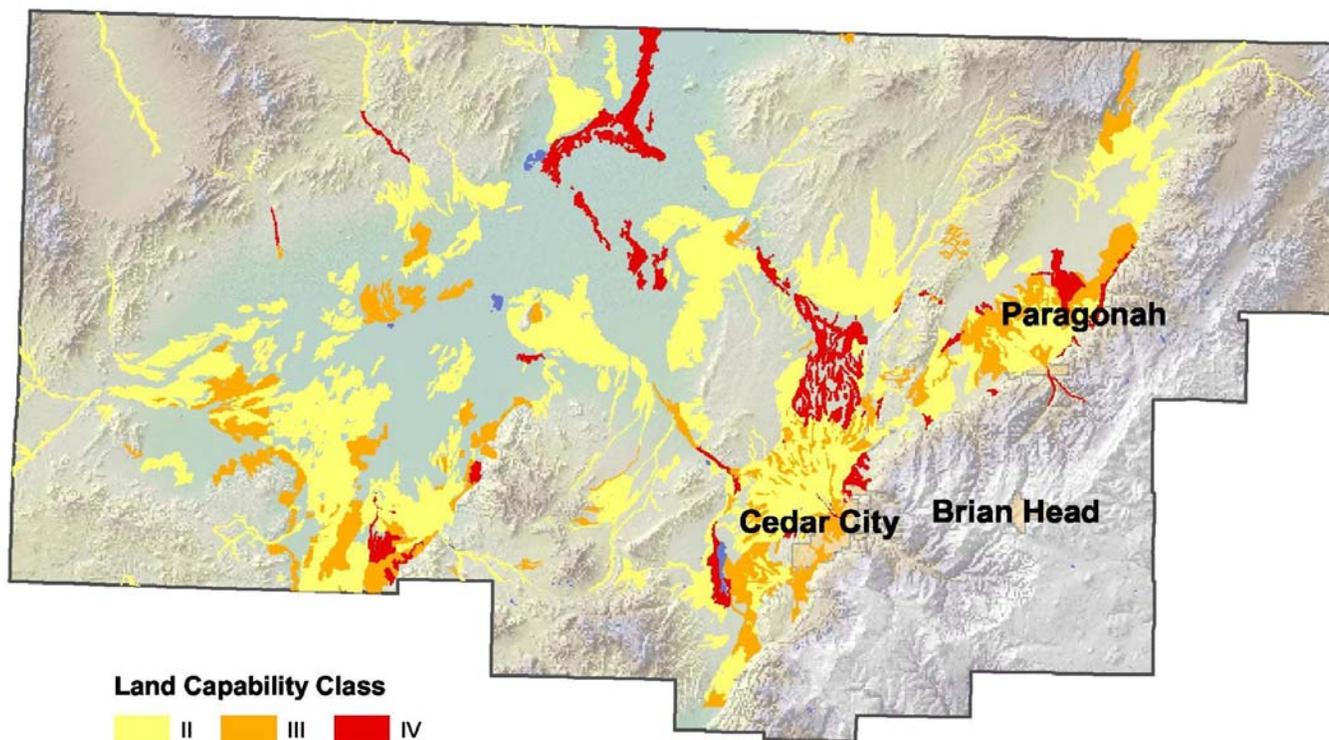
Additional farmland of statewide or local importance

Land identified by state or local agencies for agricultural use, but not of national significance.

Resource Concerns – SOILS

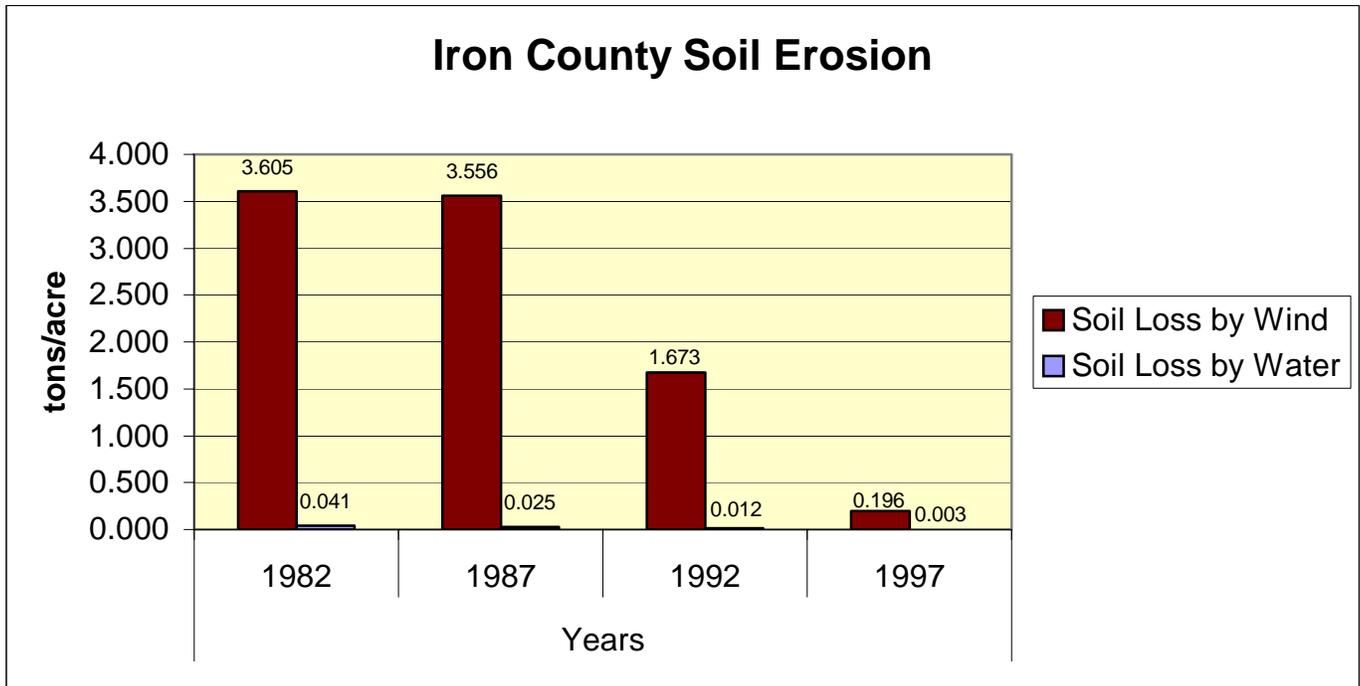
Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Soil Erosion	Sheet and Rill	x	x		x	x			x							
	Wind	x	x		x				x			x				x
	Ephemeral Gully	x														
	Classic Gully	x			x	x	x			x						x
	Streambank				x	x	x		x	x			x			x
	Shoreline															
	Irrigation-induced	x	x	x												
	Mass Movement									x			x			
	Road, roadsides and Construction Sites											x				
Soil Condition	Organic Matter Depletion	x	x													
	Rangeland Site Stability			x	x	x	x	x	x	x						
	Compaction	x	x	x												
	Subsidence															
	Contaminants: Salts and Other Chemicals															x
	Contaminants: Animal Waste and Other OrganicsN															
	Contaminants: Animal Waste and Other OrganicsP	x	x	x											x	
	Contaminants: Animal Waste and Other OrganicsK															
	Contaminants : Commercial FertilizerN															
	Contaminants : Commercial FertilizerP	x	x	x											x	
	Contaminants : Commercial FertilizerK															
	Contaminants: Residual Pesticides															
	Damage from Sediment Deposition			x	x		x	x	x			x	x	x	x	x

Land Capability Class on Cropland and Pastureland



		Acres	Percentage
Land Capability Class (Irrigated Cropland & Pastureland Only)	I - slight limitations	0	0%
	II - moderate limitations	244,606	68%
	III - severe limitations	76,662	21%
	IV - very severe limitations	36,059	10%
	V - no erosion hazard, but other limitations	0	0%
	VI - severe limitations, unsuited for cultivation, limited to pasture, range, forest	0	0%
	VII - very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	0	0%
	VIII - misc areas have limitations, limited to recreation, wildlife, and water supply	0	0%

Soil Erosion

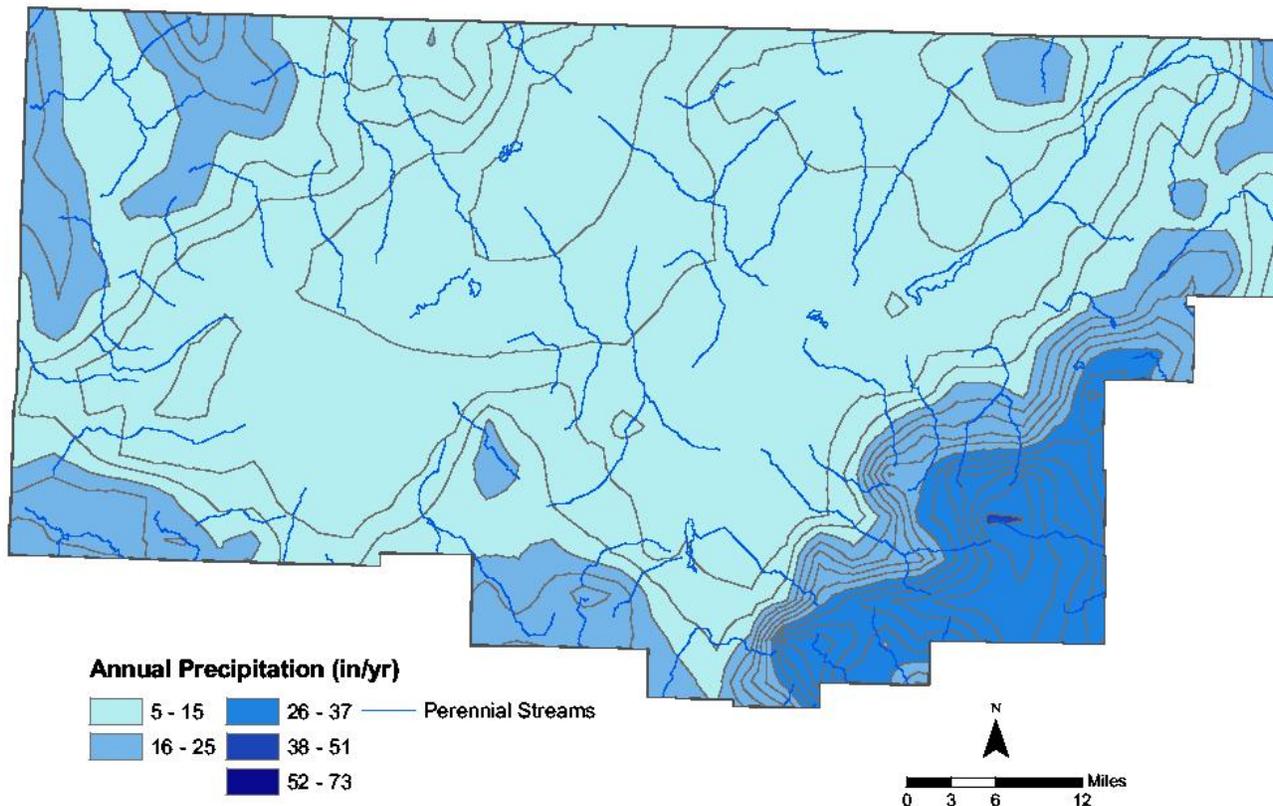


- ❖ Controlling erosion not only sustains the long-term productivity of the land, but also affects the amount of soil, pesticides, fertilizer, and other substances that move into the nation's waters.

Resource Concerns – WATER

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Water Quantity	Water Quantity – Rangeland Hydrologic Cycle			X	X	X	X	X	X	X						X
	Excessive Seepage															
	Excessive Runoff, Flooding, or Ponding				X	X		X							X	X
	Excessive Subsurface Water															
	Drifted Snow															
	Inadequate Outlets											X				
	Inefficient Water Use on Irrigated Land	X	X	X												
	Inefficient Water Use on Non-irrigated Land															
	Reduced Capacity of Conveyances by Sediment Deposition				X	X	X	X		X				X		
	Reduced Storage of Water Bodies by Sediment Accumulation															
	Aquifer Overdraft	X	X	X												
	Insufficient Flows in Watercourses	X	X	X	X	X	X	X	X	X	X		X	X	X	
Water Quality, Groundwater	Harmful Levels of Pesticides in Groundwater															
	Excessive Nutrients and Organics in Groundwater															
	Excessive Salinity in Groundwater															
	Harmful Levels of Heavy Metals in Groundwater															X
	Harmful Levels of Pathogens in Groundwater															
	Harmful Levels of Petroleum in Groundwater															
Water Quality, Surface	Harmful Levels of Pesticides in Surface Water															
	Excessive Nutrients and Organics in Surface Water	X	X	X			X									
	Excessive Suspended Sediment and Turbidity in Surface Water									X			X			X
	Excessive Salinity in Surface Water															
	Water Quality – Colorado River Excessive Salinity															
	Harmful Levels of Heavy Metals in Surface Water															
	Harmful Temperatures of Surface Water									X			X			X
	Harmful Levels of Pathogens in Surface Water															
Harmful Levels of Petroleum in Surface Water																

Precipitation and Streams



		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights	Surface	30,000	
	Well	45,000	
	Total Irrigated Adjudicated Water Rights	75,000	0.00
Stream Flow Data	USGS 10242000 Coal Creek at Cedar City	April-July Yield	19,300
		MILES	PERCENT
Stream Data	Total Miles - Major (100K Hydro GIS Layer)		n/a
	303d (DEQ Water Quality Limited Streams)		#DIV/0!

		Irrigation Efficiency:		
		<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	5%	35%	60%
	Pastureland	20%	80%	0%

Watersheds & Total Maximum Daily Load (TMDL)

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
Green Lakes	Closed Out. Turned over to Cedar City Corp.	Coal Creek Congressional Earmark	In Planning
DEQ TMDL's		NRCS Comprehensive Nutrient Management Plans	
Name	Status	Number	Status

AFO/CAFO

Animal Feeding Operations (AFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Sheep	Other
No. of Farms		20			12	12
No. of Animals						

Potential Confined Animal Feeding Operations (PCAFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Farms		1				2
No. of Animals						

Confined Animal Feeding Operations - Utah CAFO Permit					
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Other
No. of Permitted Farms	2				
No. of Permitted Animals					

Resource Concerns – AIR, PLANTS, ANIMALS

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area	
Air Quality	Particulate matter less than 10 micrometers in diameter (PM 10)											X			X		
	Particulate matter less than 2.5 micrometers in diameter (PM 2.5)											X			X		
	Excessive Ozone																
	Excessive Greenhouse Gas: CO2 (carbon dioxide)																
	Excessive Greenhouse Gas: N2O (nitrous oxide)																
	Excessive Greenhouse Gas: CH4 (methane)																
	Ammonia (NH3)										X						
	Chemical Drift											X					
	Objectionable Odors										X						
	Reduced Visibility	X	X													X	
	Undesirable Air Movement																
	Adverse Air Temperature																
Plant Suitability	Plants not adapted or suited																
Plant Condition	Plant Condition – Productivity, Health and Vigor																
	Threatened or Endangered Plant Species: Plant Species Listed or Proposed for Listing under the Endangered Species Act				X	X	X	X								X	
	Threatened or Endangered Plant Species: Declining Species, Species of Concern				X	X	X	X								X	
	Noxious and Invasive Plants	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Forage Quality and Palatability				X	X	X	X									
Plant Condition – Wildfire Hazard				X	X	X	X					X			X		
Fish and Wildlife	Inadequate Food				X	X	X	X	X	X							
	Inadequate Cover/Shelter	X	X	X													
	Inadequate Water				X	X	X	X									
	Inadequate Space																
	Habitat Fragmentation				X	X	X	X									
	Imbalance Among and Within Populations																
	Threatened and Endangered Species: Species Listed or Proposed for Listing under the Endangered Species Act	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Domestic Animals	Inadequate Quantities and Quality of Feed and Forage				X	X	X	X									
	Inadequate Shelter																
	Inadequate Stock Water				X	X	X	X									
	Stress and Mortality																

Noxious Weeds

Utah Noxious Weed List

The following weeds are officially designated and published as noxious for the State of Utah, as per the authority vested in the Commissioner of Agriculture under Section 4-17-3, Utah Noxious Weed Act:

- Bermudagrass** (*cynodon dactylon*)
- Canada thistle (*cirsium arvense*)
- Diffuse knapweed (*centaurea diffusa*)
- Dyers woad (*isatis tinctoria* L)
- Field bindweed (Wild Morning Glory) (*convolvulus arvensis*)
- Hoary cress (*cardaria drabe*)
- Johnsongrass (*sorghum halepense*)
- Leafy spurge (*euphorbia esula*)
- Medusahead (*taeniatherum caput-medusae*)
- Musk thistle (*carduus mutans*)
- Perennial pepperweed (*lepidium latifolium*)
- Perennial sorghum (*sorghum halepense* L & *sorghum alnum*)
- Purple loosestrife (*lythrum salicaria* L.)
- Quackgrass (*agropyron repens*)
- Russian knapweed (*centaurea repens*)
- Scotch thistle (*onopordum acanthium*)
- Spotted knapweed (*centaurea maculosa*)
- Squarrose knapweed (*centaurea squarrosa*)
- Yellow starthistle (*centaurea solstitialis*)

Additional noxious weeds declared by Iron County (2003): Poison Western Whorled Milkweed

Wildlife Species of Greatest Conservation Concern

The Utah Comprehensive Wildlife Conservation Strategy (CWCS) prioritizes native animal species according to conservation need. At-risk and declining species in need of conservation were identified by examining species biology and life history, populations, distribution, and threats. The following table lists species of greatest conservation concern in the county.

AT-RISK SPECIES				
	Common Name	Group	Primary Habitat	Secondary Habitat
FEDERALLY-LISTED				
Endangered:	California Condor (experimental)	Bird	Cliff	
	Southwestern Willow Flycatcher	Bird	Lowland Riparian	Mountain Riparian
Threatened:	Mexican Spotted Owl	Bird	Cliff	Lowland Riparian
	Utah Prairie-dog	Mammal	Grassland	Agriculture
	Bald Eagle	Bird	Lowland Riparian	Agriculture
Candidate:	Yellow-billed Cuckoo	Bird	Lowland Riparian	Agriculture
Proposed:	(None)			
STATE SENSITIVE				
Conservation Agreement Species:	Northern Goshawk	Bird	Mixed Conifer	Aspen
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Least Chub	Fish	Water - Lentic	Wetland
Species of Concern:	Arizona Toad	Amphibian	Lowland Riparian	Wetland
	Black Swift	Bird	Lowland Riparian	Cliff
	Brian Head Mountainsnail	Mollusk	Mountain Shrub	Rock
	Burrowing Owl	Bird	High Desert Scrub	Grassland
	Common Chuckwalla	Reptile	High Desert Scrub	Low Desert Scrub
	Dark Kangaroo Mouse	Mammal	High Desert Scrub	Shrubsteppe
	Ferruginous Hawk	Bird	Pinyon-Juniper	Shrubsteppe
	Fringed Myotis	Mammal	Northern Oak	Pinyon-Juniper
	Greater Sage-grouse	Bird	Shrubsteppe	
	Kit Fox	Mammal	High Desert Scrub	
	Lewis's Woodpecker	Bird	Ponderosa Pine	Lowland Riparian
	Long-billed Curlew	Bird	Grassland	Agriculture
	Pygmy Rabbit	Mammal	Shrubsteppe	
	Short-eared Owl	Bird	Wetland	Grassland
	Spotted Bat	Mammal	Low Desert Scrub	Cliff
	Three-toed Woodpecker	Bird	Sub-Alpine Conifer	Lodgepole Pine
Townsend's Big-eared Bat	Mammal	Pinyon-Juniper	Mountain Shrub	

*Definitions of habitat categories can be found in the Utah Comprehensive Wildlife Conservation Strategy.

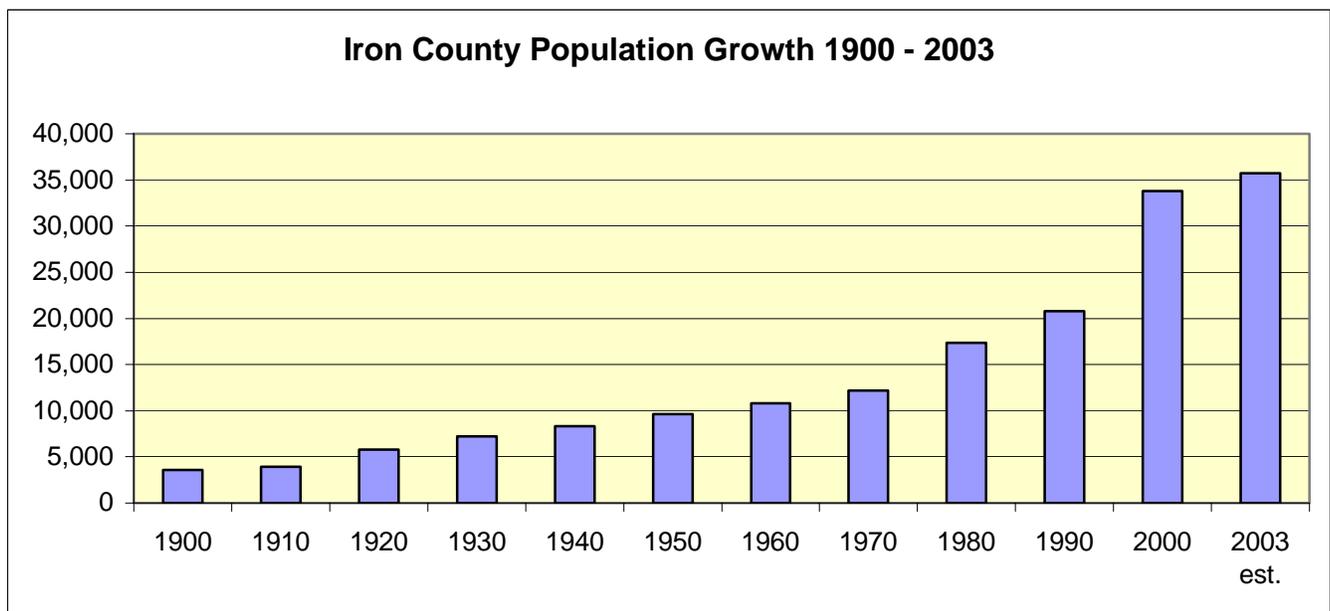
The Utah CWCS also prioritizes habitat categories based on several criteria important to the species of greatest conservation need. The top ten key habitats state-wide are (in order of priority):

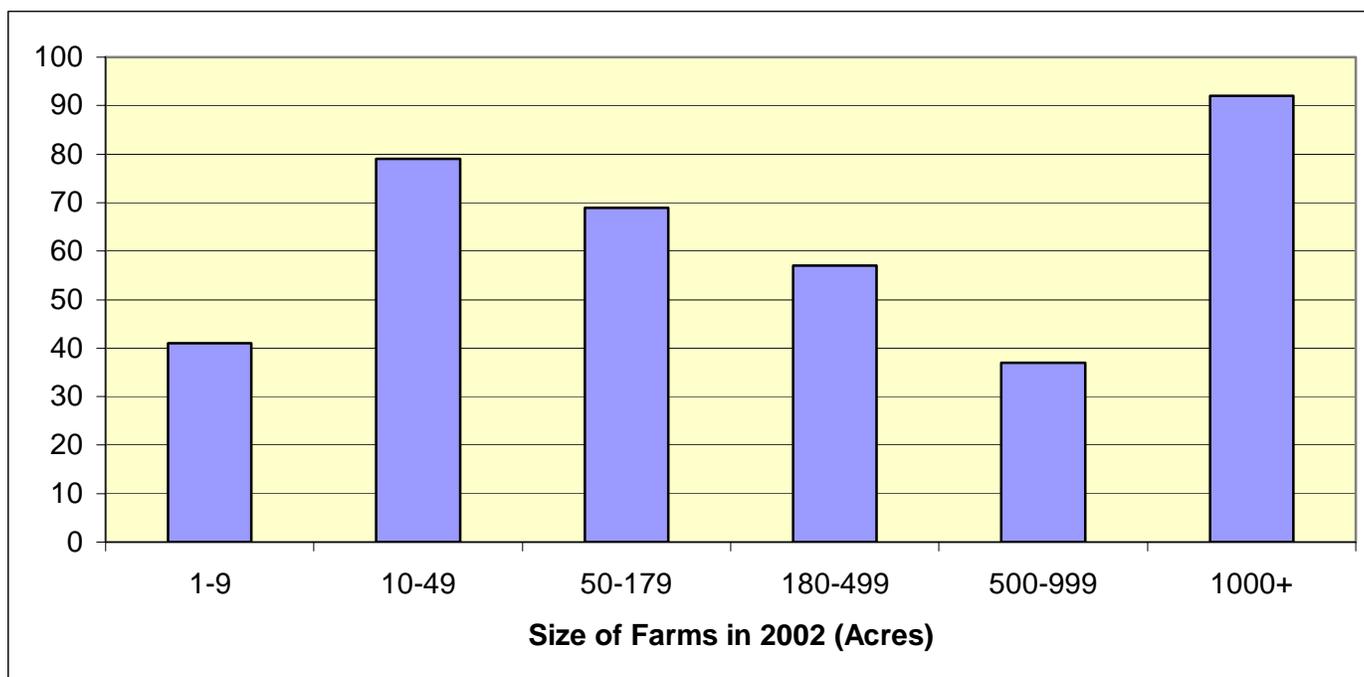
- 1) **Lowland Riparian** (riparian areas <5,500 ft elevation; principal vegetation: Fremont cottonwood and willow)
- 2) **Wetland** (marsh <5,500 ft elevation; principal vegetation: cattail, bulrush, and sedge)
- 3) **Mountain Riparian** (riparian areas >5,500 ft elevation; principal vegetation: narrowleaf cottonwood, willow, alder, birch and dogwood)
- 4) **Shrubsteppe** (shrubland at 2,500 - 11,500 ft elevation; principal vegetation: sagebrush and perennial grasses)
- 5) **Mountain Shrub** (deciduous shrubland at 3,300 - 9,800 ft elevation; principal vegetation: mountain mahogany, cliff rose, bitterbrush, serviceberry, etc.)
- 6) **Water - Lotic** (open water; streams and rivers)
- 7) **Wet Meadow** (water saturated meadows at 3,300 - 9,800 ft elevation; principal vegetation: sedges, rushes, grasses and forbs)
- 8) **Grassland** (perennial and annual grasslands or herbaceous dry meadows at 2,200 - 9,000 ft elevation)
- 9) **Water - Lentic** (open water; lakes and reservoirs)
- 10) **Aspen** (deciduous aspen forest at 5,600 - 10,500 ft elevation)

Resource Concerns – SOCIAL AND ECONOMIC

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area	
Social and Economic	Non-Traditional Landowners and Tenants	X	X	X			X			X							
	Urban Encroachment on Agricultural Land	X	X	X	X		X			X		X	X				
	Marketing of Resource Products																
	Innovation Needs									X							
	Non-Traditional Land Uses	X	X	X	X					X							
	Population Demographics, Changes and Trends	X	X	X	X			X				X	X				
	Special Considerations for Land Mangement (High State and Federal Percentage)				X	X	X			X			X			X	
	Active Resource Groups (CRMs, etc)																
	Full Time vs Part Time Agricultural Communities	X	X	X	X	X	X	X	X								
	Size of Operating Units	X	X	X				X									
	Land Removed from Production through Easments																
	Land Removed from Production through USDA Programs																
Other																	

Census and Social Data





Number of Farms:

Number of Operators:

- Full-Time Operators: 156
- Part-Time Operators: 219

Public Survey/Questionnaire Results:

**Iron County
Resource Assessment Survey Project
July 20, 2005
Enterprise & Iron Soil Conservation District**

The E&I Soil Conservation District received 73 resource assessment surveys from citizens/stakeholders in Iron County from;

1. E&I SCD Resource Assessment Public Meeting
2. E&I SCD Conservation Tree Program
3. Color Country RC&D Meeting

Top Five Concerns that should be addressed immediately:

- | | |
|--|-----|
| 1. Adequate Water Supply for Desired Uses | 59% |
| 2. Ground Water Quality & Quantity | 58% |
| 3. Storm Water Runoff & Flooding | 53% |
| 4. Soil Loss/Erosion on Land/Stream Channels | 49% |
| 5. Loss of Open Space or Agricultural Lands | 43% |

Top Five Concerns that should be addressed in the future:

- | | |
|--|-----|
| 1. Air Quality, Including dust, Pollutants | 41% |
| 2. Soil Condition Due to Compaction or Other Changes | 37% |
| 2. Urban/Suburban Growth | 37% |
| 2. Recreational Opportunities | 37% |
| 3. Adequate Marketing for Ag Products | 36% |
| 3. Adequate Support of Historic/Prehistoric Resources | 36% |
| 3. Adequate Energy Sources Available | 36% |
| 4. Plant Health, Production, and Adequate Quantities | 34% |
| 5. Presence of Invasive Plants Including Noxious Weeds | 33% |
| 5. Adequate Food, Water and Cover for Wildlife | 33% |

Iron County Survey Demographics:

Gender – 65 Responses

Male - 55%

Female – 45%

Age – 62 Responses

18-24 – 2%

25-38 – 13%

39- 50 – 24%

51-65 – 42%

65+ - 19%

Race/Ethnicity – 51 Responses

European/Caucasian – 55%

Native American – 6%

Other – 37%

Hispanic – 2%

13 Responses

Ag Producers - 70%

Non-Ag Producers – 30%

Footnotes / Bibliography

1. Location and land ownership maps made using GIS shapefiles from the Automated Geographical Reference Center (AGRC), a Utah State Division of Information Technology. Website: <http://agrc.utah.gov/>
2. Land Use/Land Cover layer developed by the Utah Department of Water Resources. A polygon coverage containing water-related land-use for is used on all 2003 agricultural areas of the state of Utah. Compiled from initial USGS 7.5 minute Digital Raster Graphic water bodies, individual farming fields and associated areas are digitized from Digital Orthophotos, then surveyed for their land use, crop type, irrigation method, and associated attributes.
3. Prime and Unique farmlands derived from SURGO Soils Survey UT607 and Soil Data Viewer. Definitions of Prime and Unique farmlands from U.S. Geological Survey, http://water.usgs.gov/eap/env_guide/farmland.html#HDR5
4. Land Capability Classes derived from SURGO Soils Survey UT607 and Soil Data Viewer.
5. Tons of Soil Loss by Water Erosion data gathered from National Resource Inventory (NRI) data. Estimates from the 1997 NRI Database (revised December 2000) replace all previous reports and estimates. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is due to changes in statistical estimation protocols, and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>
6. Precipitation data was developed by the Oregon Climate Service at Oregon State University using average monthly or annual precipitation from 1960 to 1990. Publication date: 1998. Data was downloaded from the Resource Data Gateway, <http://dgateway-wb01.lighthouse.itc.nrcs.usda.gov/lighthouse>
7. Irrigated Adjudicated Water Rights obtained from the Utah Division of Water Rights.
8. Stream Flow data from NRCS Snow Survey Stream flow forecast data.
10. Stream length data calculated using ArcMap and 100k stream data from AGRC and 303d waters from the Utah Department of Environmental Quality.
11. Watershed information from NRCS data.
12. The 2003 noxious weed list was obtained from the State of Utah Department of Food and Agriculture. For more information contact Steve Burningham, 801-538-7181 or visit their website at http://ag.utah.gov/plantind/noxious_weeds.html
13. Wildlife information derived from the Utah Division of Wildlife Resources' Comprehensive Wildlife Conservation Strategy (CWCS) (<http://wildlife.utah.gov/cwcs/>) and from the Utah Conservation Data Center (<http://dwrcdc.nr.utah.gov/ucdc/>).

14. County population data from the U.S. Census Bureau, Utah Quick Facts, <http://www.fedstats.gov/qf/states/49/49053.html>

15. Farm information obtained from the National Agricultural Statistics Service, 2002 Census of Agriculture. <http://www.nass.usda.gov/census/census02/volume1/index2.htm>