

Upper Green River –Utah #14060005

8-Digit Hydrologic Unit Profile

July 2007

This rapid assessment is designed to gather and display information specific to the eight digit hydrologic unit code (HUC # 14060005) watershed area of the Upper Green River in Utah. This report will highlight the natural and social resources present in the watershed, and detail some concerns. This assessment can 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.

Introduction

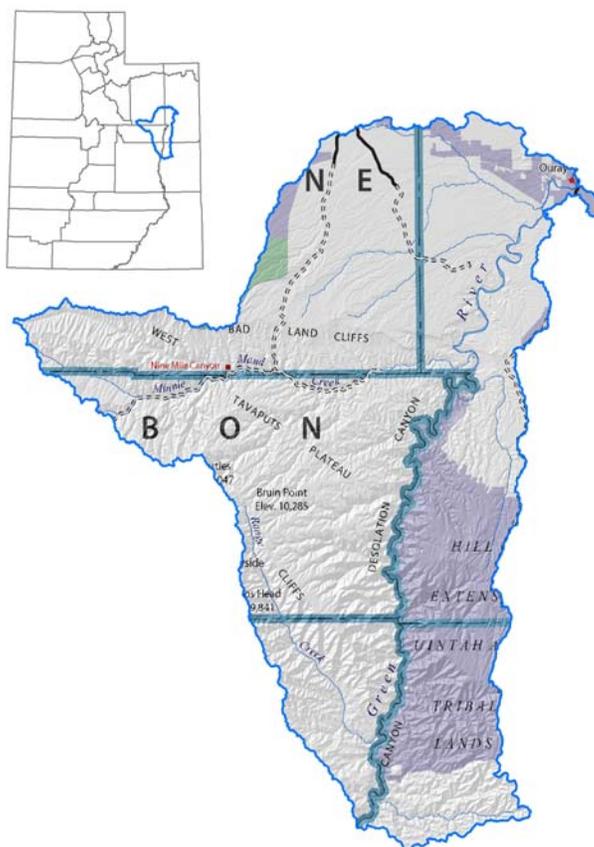
The Upper Green River 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 1,240,424 acres within five different counties (Carbon, Duchesne, Uintah, Emery and Grand). Based on the land cover GAP data about 84 percent of the subbasin is rangeland, 10 percent is hayland and pastureland, and the remainder includes mostly forestland, agriculture/grassland and riparian areas.

Major resource concerns include salinity, concentrated flow over rangelands, streambank, and irrigation-induced erosion; invasive and noxious weeds; insufficient water to meet livestock, wildlife, and irrigation needs; impaired water quality; and loss of wildlife habitat. High costs, unreliable markets, and inadequate incentives limit conservation adoption among the farmers and ranchers in the Upper Green River sub-basin.

There are approximately 357 farm operations in the subbasin. Most operators are high school educated, aware of local resource concerns, and good stewards of the natural resources. Unfortunately, the perceived expense and risk of implementing conservation limit its adoption. Most conservation work is tied to improving irrigation water delivery and application.

Uintah and Ouray Tribal lands make up 22.5 percent of the basin. American Indian & Alaskan Natives is the largest demographic group at about 31 percent. Potential conservation work on tribal lands is limited due to the rugged, remote landscape but there is potential for range/livestock water development related conservation work.

There are about 648 beginning farmers and 317 limited resource producers within the basin.



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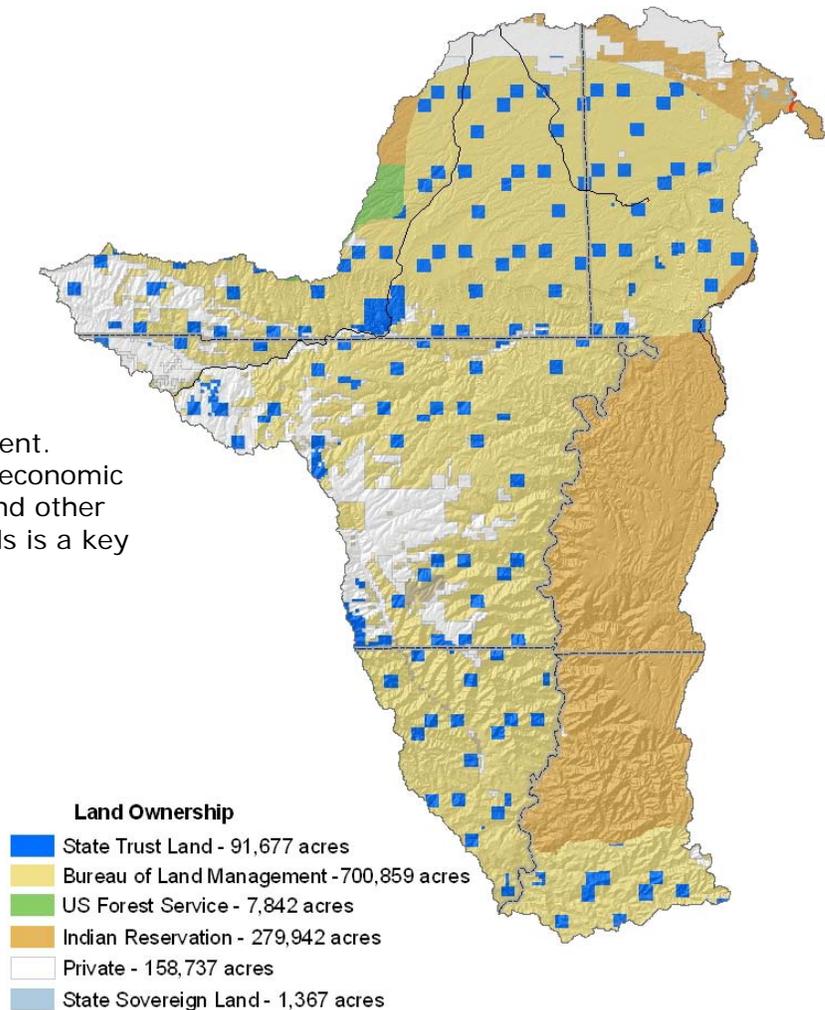
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Land Ownership

The Bureau of Land Management (BLM) manages 700,859 acres (56%) of the basin. There are 279,942 acres (22.5%) of Tribal lands and 158,737 acres (12.7%) of private land. Most of the private lands lie within Carbon and Duchesne Counties.

Public lands within the basin are currently experiencing a heavy demand for oil and gas development. This development dominates the economic horizon for this basin. Hunting and other forms of recreation on public lands is a key activity in the area.



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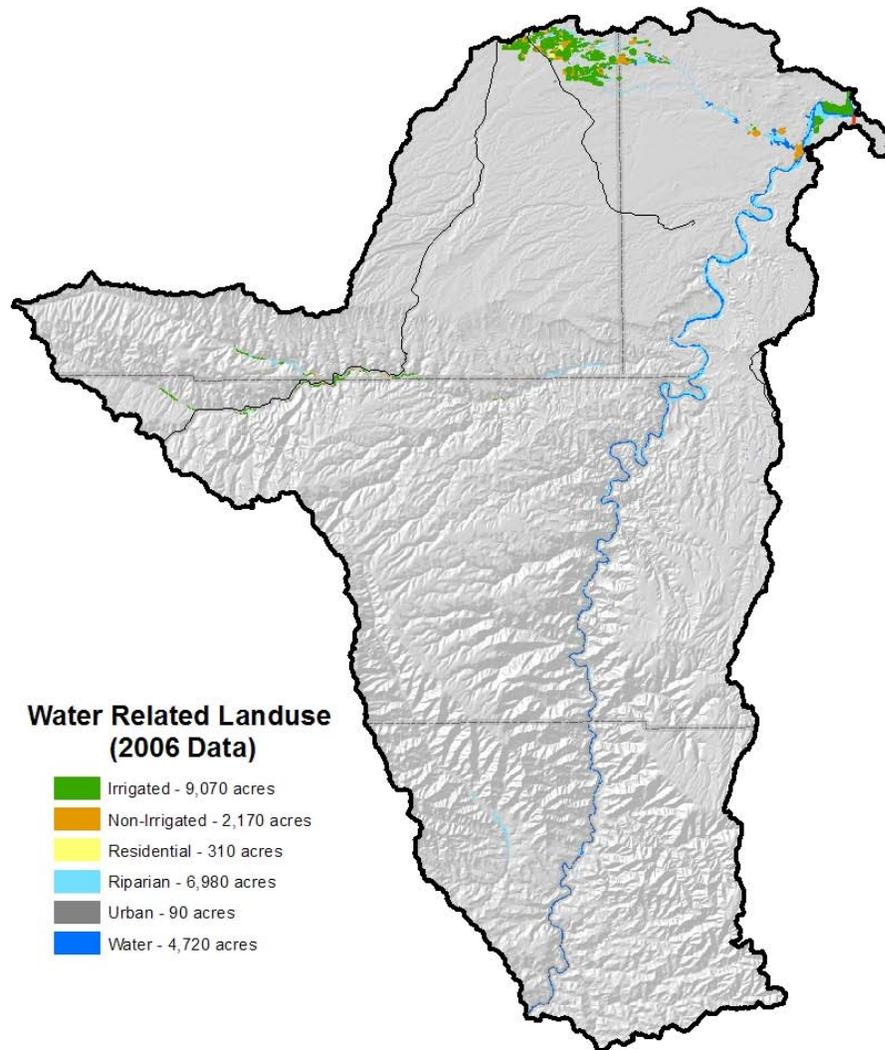
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Physical Description

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Water Related Landuse

Almost all of the irrigated land is located in the northern part of the basin where extensive irrigation pipeline work has been completed as part of the Colorado Salinity Control Project. Other irrigated lands are located in Carbon County in some of the valley areas.



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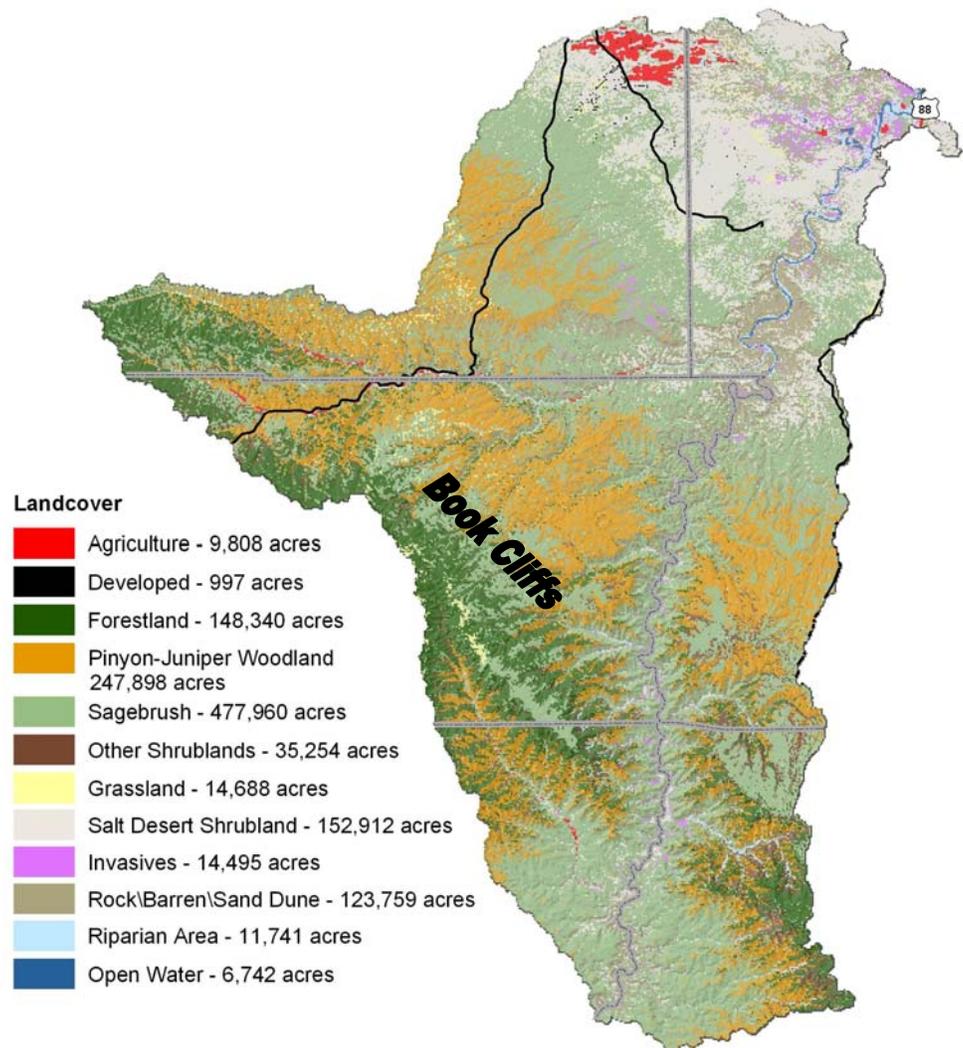
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Landcover

Rangeland on public land dominates this basin. There are significant and well known wildlife resources throughout the Book Cliffs area of the basin. Most of the basin is composed of Pinyon-Juniper woodlands, sagebrush, salt desert shrubland and rock areas (85%).

The Green River dissects the basin and is used extensively for fishing and rafting.



Common Resource Area Map

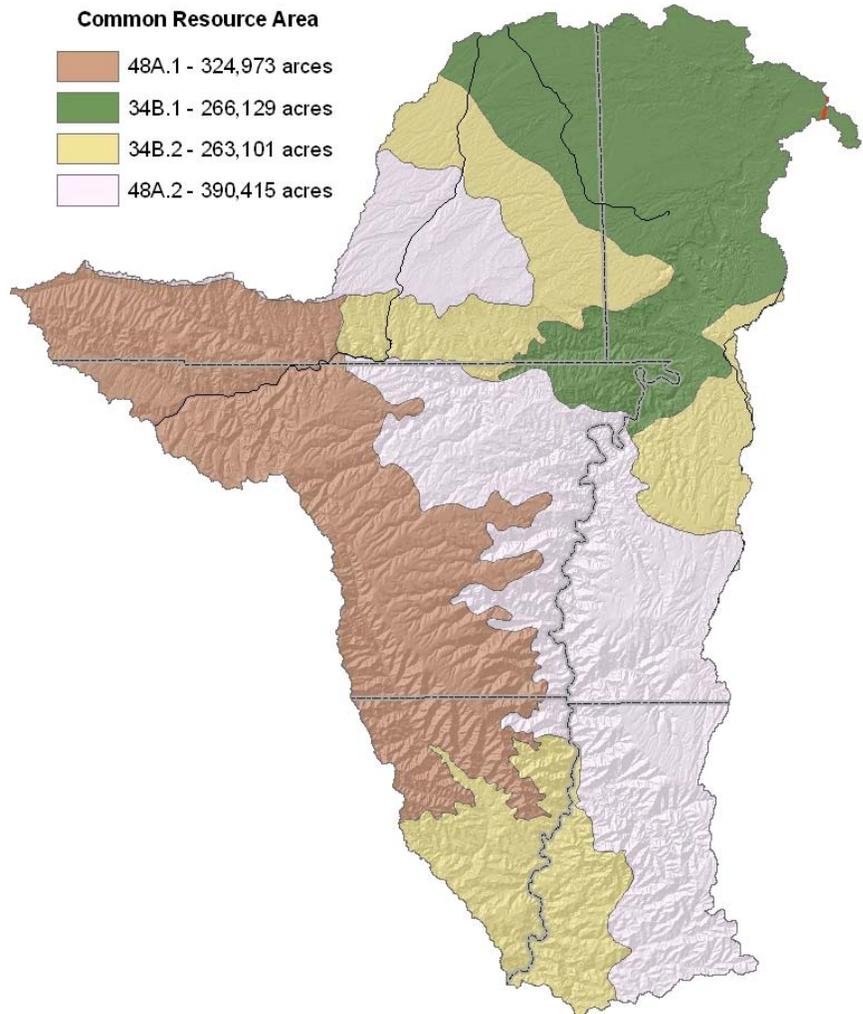
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34B.1 - Cool Central Desertic Basins and Plateaus--Green River Basin.

This unit is in the cool semiarid basins, plateaus, and low mountains that are west of the Continental Divide in MLRA 34A. Soils have an aridic moisture regime and frigid temperature regime. Vegetation is sagebrush or shadscale and bunchgrasses. Major use is range. Precipitation ranges from 7 to 14 inches. Elevations range from about 4,000 to 7,000 feet.

Common Resource Area

	48A.1 - 324,973 acres
	34B.1 - 266,129 acres
	34B.2 - 263,101 acres
	48A.2 - 390,415 acres



34B.2 - Warm Central Desertic Basins and Plateaus - Uncompahgre and Grand Valleys

This area is in the broad valleys of the Uncompahgre and Colorado Rivers. It includes a sizeable area of irrigated cropland, vineyards, and orchards. The temperature regime is mesic and the moisture regime is aridic (typic aridic subclass). Natural vegetation is typically shadscale, Gardner saltbush, and mat saltbush. Frost free periods are long, in some places more than 180 days

48A.1 – Southern Rocky Mountains - High Mountains and Valleys

This area is best characterized by steep, high mountain ranges and associated mountain valleys. The temperature regimes are mostly frigid and cryic; moisture regimes are mainly ustic and udic. Vegetation is sagebrush-grass at low elevations, and with increasing elevation ranges from coniferous forest to alpine tundra. Elevations range from 6,500 to 14,400 feet.

48A.2 – Southern Rocky Mountains - Semiarid High Plateaus, Utah and Colorado

This area is a dissected high plateau. The temperature regime is frigid or cryic, and the moisture regime is ustic. Characteristic native vegetation is sagebrush, aspen, and Rocky Mountain Douglas fir. Elevations range from 5,000 to 9,500 feet.

Land Capability Map

Land capability classification is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over a long period. Land capability classification is subdivided into capability class and capability subclass nationally.

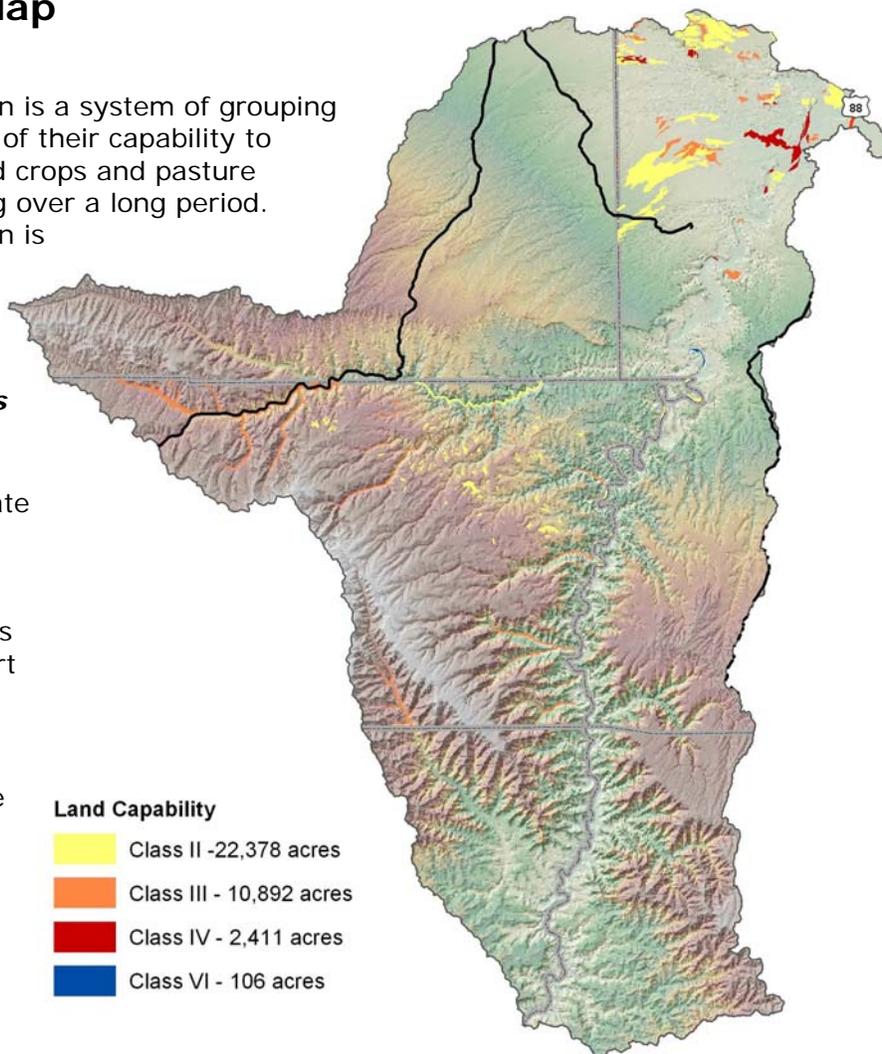
Capability Classes in this HUC:

Class II soils have moderate limitations that reduce the choice of plants or require moderate conservation practices. Most of this class is found in the northern part of the watershed and in small zones of the valleys.

Class III soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.

Class IV soils have very severe limitations that restrict the choice of plants or require very careful management, or both.

Class VI soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.



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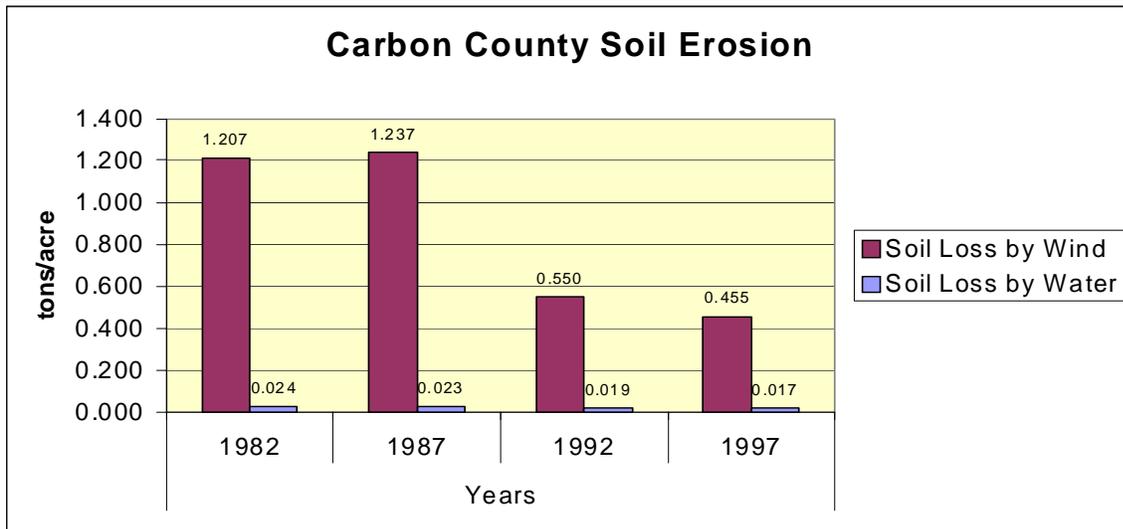
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Resource Concerns - Soils

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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	x	x	x	x	x	x	x	x	x	x
	Wind															
	Ephemeral Gully	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Classic Gully	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Streambank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Shoreline	x	x	x												
	Irrigation-induced				x	x	x				x					x
	Mass Movement															
Soil Condition	Road, roadsides and Construction Sites															
	Organic Matter Depletion	x	x													
	Rangeland Site Stability				x	x										
	Compaction															
	Subsidence															
	Contaminants: Salts and Other Chemicals	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Contaminants: Animal Waste and Other OrganicsN															
	Contaminants: Animal Waste and Other OrganicsP															
	Contaminants: Animal Waste and Other OrganicsK															
	Contaminants : Commercial FertilizerN															
	Contaminants : Commercial FertilizerP															
	Contaminants : Commercial FertilizerK															
	Contaminants: Residual Pesticides															
Damage from Sediment Deposition																



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- ❖ Sheet and rill erosion by water on the subbasin (*used Carbon-Duchesne County*) croplands and pasturelands have been reduced by .79 tons of soil per acre from 1982 to 1997.
- ❖ NRI estimates indicate 1,400 acres of the sub basin agricultural lands still had water erosion rates above a sustainable level in 1997.
- ❖ 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.
- ❖ Through NRCS programs many farmers and ranchers have applied conservation practices to reduce the effects of erosion by water. As a result, erosion rates on croplands and pasturelands fell from 0.024 to 0.017 tons/acre/year from 1987 to 1997.

Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.

Subwatershed Info within the1406005 HUC

Sub-Watersheds in HUC 14060005	Total Acres	BLM Acres in Price BLM Field Office
Argyle Creek	49,528	232
Minnie Maude	62,813	14,358
Nine Mile	122,214	42,298
Flat Canyon Creek	29,401	13,780
Rock Creek	34,937	19,762
Upper Range Creek	43,687	25,242
Stone Cabin Draw	11,867	7,704
Dry Canyon	25,912	18,388
Cottonwood Canyon	20,509	14,677
Lower Range Creek	49,770	42,341
Jack Creek	31,014	26,430
Green River Sub 1	16,369	15,716
Green River Sub 2	12,726	12,655
Green River Sub 3	11,867	10,948
Green River Sub 4	20,563	16,880
Green River Sub 5	4,592	4,464
Green River Sub 6	20,470	19,027
Green River Sub 7	17,402	16,126

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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															
	Excessive Seepage															
	Excessive Runoff, Flooding, or Ponding	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Excessive Subsurface Water															
	Drifted Snow															
	Inadequate Outlets															
	Inefficient Water Use on Irrigated Land	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Inefficient Water Use on Non-irrigated Land															
	Reduced Capacity of Conveyances by Sediment Deposition	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Reduced Storage of Water Bodies by Sediment Accumulation					X	X		X					X	X	X
	Aquifer Overdraft															
Insufficient Flows in Watercourses																
Water Quality, Groundwater	Harmful Levels of Pesticides in Groundwater															
	Excessive Nutrients and Organics in Groundwater															
	Excessive Salinity in Groundwater	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Harmful Levels of Heavy Metals in Groundwater															
	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															
	Excessive Suspended Sediment and Turbidity in Surface Water															
	Excessive Salinity in Surface Water	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Water Quality – Colorado River Excessive Salinity	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Harmful Levels of Heavy Metals in Surface Water															
	Harmful Temperatures of Surface Water															
	Harmful Levels of Pathogens in Surface Water															
Harmful Levels of Petroleum in Surface Water																

	Irrigation Efficiency:	<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	65%	25%	10%
	Pastureland	65%	30%	5%

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Watersheds & Total Maximum Daily Load (TMDL)

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
Price River, San Rafael River	Under Way	Price-San Rafael Rivers Unit FEIS	Completed
DEQ TMDL's		NRCS Comprehensive Nutrient Management Plans	
Name	Status	Number	Status
		2	Planned Implemented

Impaired Water Bodies - #14060005

Waterbody Name	Map of Listed Water	Location	Cyles Listed
DUCHESNE RIVER-1	MAP 303(d)	DUCHESNE RIVER AND TRIBUTARIES FROM CONFLUENCE W/ GREEN RIVER TO RANDLETT	2004, 2002, 2000, 1998
NINEMILE CREEK	MAP 303(d)	NINE MILE CREEK AND TRIBUTARIES FROM CONFLUENCE W/ GREEN RIVER TO HEADWATERS	2004, 2002, 2000, 1998
PARIETTE DRAW CREEK	MAP 303(d)	PARIETTE DRAW CREEK AND TRIBUTARIES FROM CONFLUENCE W/ GREEN RIVER TO HEADWATERS	2004, 2002, 2000, 1998
WILLOW CREEK	MAP 303(d)	WILLOW CREEK AND TRIBUTARIES FROM CONFLUENCE W/ GREEN RIVER TO MEADOW CREEK CONFLUENCE (EXCLUDING HILL CREEK)	2004, 2002, 2000, 1998

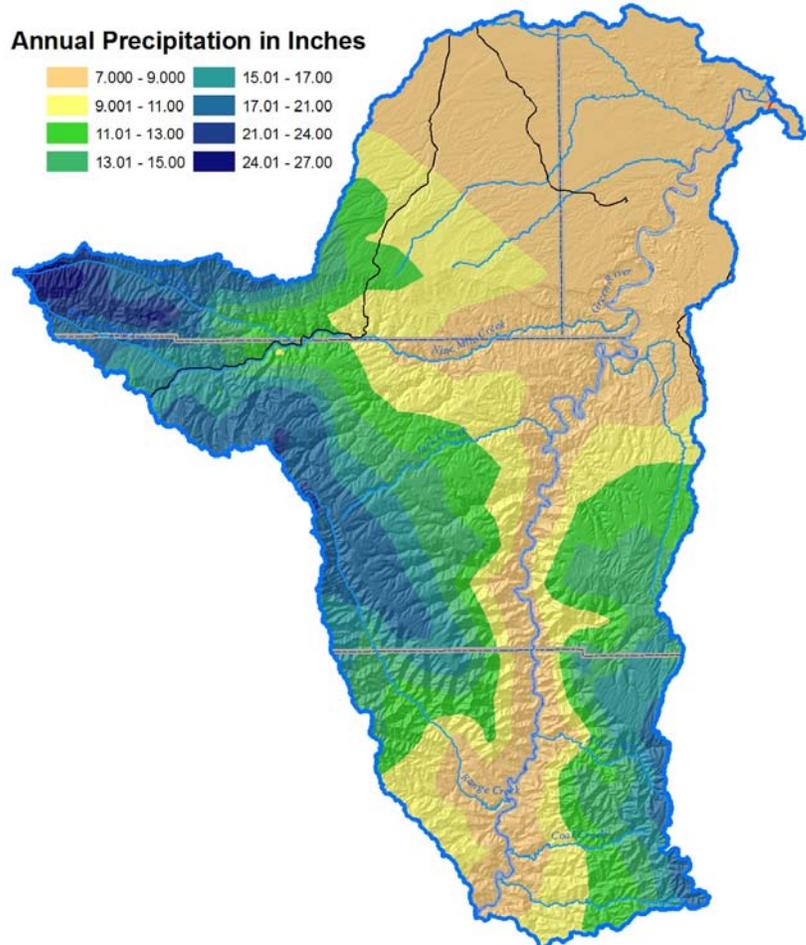
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Precipitation

The agricultural lands are located mainly within the 7 to 9 inch annual precipitation zone. The bulk of the moisture comes as summer convective storms during August through October with an average snowfall of around 15 inches near Ouray, Utah.



AFO/CAFO

Animal Feeding Operations (AFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Sheep	Horses
No. of Farms	6	14	4	7	8	11
No. of Animals						

Potential Confined Animal Feeding Operations (PCAFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Sheep	Horses
No. of Farms	2	7	0	0	0	1
No. of Animals						

Confined Animal Feeding Operations - Utah CAFO Permit					
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Sheep
No. of Permitted Farms	0	0	0	0	0
No. of Permitted Animals					

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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)															
	Particulate matter less than 2.5 micrometers in diameter (PM 2.5)															
	Excessive Ozone															
	Excessive Greenhouse Gas: CO2 (carbon dioxide)										X				X	
	Excessive Greenhouse Gas: N2O (nitrous oxide)															
	Excessive Greenhouse Gas: CH4 (methane)										X				X	
	Ammonia (NH3)															
	Chemical Drift															
	Objectionable Odors										X				X	
	Reduced Visibility								X	X			X		X	X
	Undesirable Air Movement															
Adverse Air Temperature																
Plant Suitability	Plants not adapted or suited		X	X			X	X								
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															
	Threatened or Endangered Plant Species: Declining Species, Species of Concern															
	Noxious and Invasive Plants						X		X							
	Forage Quality and Palatability				X	X	X									
Plant Condition – Wildfire Hazard				X	X			X								
Fish and Wildlife	Inadequate Food															
	Inadequate Cover/Shelter								X							
	Inadequate Water				X	X										
	Inadequate Space															
	Habitat Fragmentation				X	X										
	Imbalance Among and Within Populations															
Threatened and Endangered Species: Species Listed or Proposed for Listing under the Endangered Species Act																
Domestic Animals	Inadequate Quantities and Quality of Feed and Forage				X	X										
	Inadequate Shelter															
	Inadequate Stock Water				X	X										
	Stress and Mortality															

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Resource Concerns - Continued

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Pasture/Hay

- Better irrigation water management is practiced in areas used for alfalfa than in areas of pasture.
- In some areas of pasture, a lack of proper grazing management has lead to its poor condition.
- Areas of pasture commonly are adjacent to streams, which can contribute to streambank erosion and sedimentation as a result of loss of riparian vegetation.

Grain and Row Crops

- Prime Farmland if irrigated = 23,700 acres
- Most grain is produced in rotation with other crops (corn, alfalfa, etc.)
- Irrigation-induced erosion may occur on fields used for crops
- Surface-irrigated areas of grain are also prone to irrigation-induced erosion.
- Surface irrigation of crops generates tailwater returns to area streams and drains that are high in salts and sediment.

Confined Animal Feeding Operations (CAFOs)

- Livestock manure, pathogens, and odors are continuing issues for CAFOs.
- Winter feeding of cow-calf herds can generate erosion and contribute to poor water quality.

Rangeland

- Rangeland can become infested with noxious weeds, annual grasses, and shrubs due to inadequate forage and grazing management.
- Loss of riparian vegetation contributes to the warming and nutrient-loading of streams.

Riparian

- 14060005 (Lower Green – Desolation Canyon) Coal Creek, Green River, Rattlesnake
- Info below from: <http://www.blm.gov/rmp/ut/moab/MoabAMS8-30-06/Chapter11Riparian.pdf>
- Proper Functioning Condition (PFC) = 1,134 acres = 61%,
- Functioning At Risk (FAR) = 678 acres = 37%
- Non-Functioning (NF) = 44 acres = 2%
- Total Riparian –drainages listed above = 1,856 acres - total of 11,741 in the HUC
- Using FAR % above for average in HUC = 4,344 acres Functioning At Risk

Archaeological Resources

- Significant sites in the Range Creek drainage which have been described as the most significant cultural resource value discovered in 50 years in Utah – land was private but has since been turned over to the federal government – research in the area has been on-going since about 2004
- Total watershed is rich in archaeological artifacts – critical to check before any restoration efforts

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)

*Additional noxious
weeds declared
(Carbon County-
2003) : Russian
olive*

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Weeds - continued

- Medusahead (*Taeniatherum caput-medusae*)
- Musk thistle (*Carduus nutans*)
- Perennial pepperweed (*Lepidium latifolium*)
- Perennial sorghum (*Sorghum halepense* L & *Sorghum almum*)
- 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*)

Wildlife

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:	Black-footed Ferret (extirpated)	Mammal	Grassland	High Desert Scrub
	Bonytail Chub	Fish	Water - Lotic	
	Colorado Pikeminnow	Fish	Water - Lotic	
	Humpback Chub	Fish	Water - Lotic	
	Razorback Sucker	Fish	Water - Lotic	
Threatened:	Mexican Spotted Owl	Bird	Cliff	Lowland Riparian
	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
	Bluehead Sucker	Fish	Water - Lotic	Mountain Riparian
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Roundtail Chub	Fish	Water - Lotic	
	Flannelmouth Sucker	Fish	Water - Lotic	
Species of Concern:	Burrowing Owl	Bird	High Desert Scrub	Grassland
	Ferruginous Hawk	Bird	Pinyon-Juniper	Shrubsteppe
	Greater Sage-grouse	Bird	Shrubsteppe	
	Kit Fox	Mammal	High Desert Scrub	
	Long-billed Curlew	Bird	Grassland	Agriculture
	Smooth Greensnake	Reptile	Mountain Riparian	Wet Meadow
	Townsend's Big-eared Bat	Mammal	Pinyon-Juniper	Mountain Shrub
	Western Red Bat	Mammal	Lowland Riparian	
	Western Toad	Amphibian	Wetland	Mountain Riparian
	White-tailed Prairie-dog	Mammal	Grassland	High Desert Scrub

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

Records of occurrence - Federally Listed Plants in the basin: clay reed-mustard, Graham's beardtongue, pariette cactus, shrubby reed-mustard, and Uinta Basin hookless cactus (DWR letter, September 19, 2006).

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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															
	Urban Encroachment on Agricultural Land	X	X	X												
	Marketing of Resource Products															
	Innovation Needs															
	Non-Traditional Land Uses															
	Population Demographics, Changes and Trends															
	Special Considerations for Land Mangement (High State and Federal Percentage)															
	Active Resource Groups (CRMs, etc)															
	Full Time vs Part Time Agricultural Communities	X	X	X												
	Size of Operating Units															
	Land Removed from Production through Easements															
	Land Removed from Production through USDA Programs															
Other	Cost of Living increase - due to oil industry boom															

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Census and Social Data

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Number of Farms: **357**

Number of Operators:

- Full-Time Operators: **27**
- Part-Time Operators: **48**
- Beginning Farmers: **648**
- Potential Limited Resource: **317**

Native American is the dominate race (>50%); median age is 26; females outnumber males by about 2 percent; tendency to undereducated; approximately 20% speak language other than English in the home.

Demographics for HUC #14060005:

Male	564
Female	588
White	352
Black or African American	1
American Indian or Alaskan Native	733
Asian	1
Hawaiian or Pacific Islander	0
Other	9
Two or more races	56
Hispanic Origin	47
Education @ or above HS level	385
Language other than English	217

Estimated Level of Willingness and Ability to Participate in Conservation¹⁶: **Moderate**

Most of the operators in this HUC (watershed) are educated, somewhat aware of local resource concerns, and somewhat likely to have some knowledge of conservation; adopted some irrigation-related conservation practices relating to salinity control; and understand the economic and environmental benefits of conservation. Most recommended conservation practices can be implemented incrementally and are compatible with local management systems and equipment.

Additional financial incentives or other risk-reducing incentives may increase the adoption of conservation in the subbasin.

Outreach to the Uintah & Ouray Tribal community is needed to inform potential participants about NRCS programs and the benefits of conservation on Tribal lands. May be potential

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Evaluation of Social Capital⁴⁷: Moderate

Social capital and the ability of the community to solve problems and support conservation are estimated to be low to moderate. Recent trends indicate that the population of the subbasin is increasing slightly. The primary occupation of new landowners commonly is non-agricultural and not resource based. People moving to the area commonly do so for the rural, high-quality lifestyle and relatively inexpensive housing and property. However, due to the recent increase in Oil & Gas drilling in the Uintah Basin, the cost of living in the area has steadily increased the last 2 years. Newcomers to the area tend to look at the natural resources as recreational opportunities, not as a means for making a living. In part, this has resulted in community interest shifting from agricultural and natural resource concerns to issues related to improving schools, transportation, health services, and so on.

There is potential to expand technical assistance to the Hill Creek Extension – Uintah & Ouray Tribal Lands which comprise about 280,000 acres within the basin. Conservation practice needs on Tribal lands include grazing management, water facilities, wildlife habitat management and invasive plant species.

Public Survey/Questionnaire Results: Concerns

As of June 15, 2005

- Soil Erosion
- Brush Control
- Noxious Weeds & Trees
- Water Quality
- Salt Control
- Watershed Protection Development
- Water Quantity (irrigation efficiency)
- Streambank Restoration
- Sage Grouse Habitat
- Improve Ag Marketing
- Storm Runoff (Erosion)
- Economic Development
- Additional Water Storage – Lower Basin
- Urban Influence in Rural Areas
- Ag Protection Areas
- Oil & Gas Development

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Progress/Status (NRCS-PRS Data)

Practices	Applied			Planned			
	Year	2004	2005	2006	2004	2005	2006
Brush Management (314) (ac)		350					
Conservation Completion Incentive First Year (CCIA) (no)							1
Fence (382) (ft)					1000		23351
Irrigation System, Sprinkler (442) (ac)			789	243	4	1355	33
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (430DD) (ft)			1100	22189	4644	28186	8960
Irrigation Water Management (449) (ac)				110	213	2005	252
Nutrient Management (590) (ac)		120			920		
Pasture and Hay Planting (512) (ac)				146			146
Pest Management (595) (ac)				35	900		
Pond (378) (no)					1		
Prescribed Grazing (528) (ac)							190
Pumping Plant (533) (no)					3		
Roof Runoff Structure (558) (no)					2		
Structure for Water Control (587) (no)					1		
TA Application (912) (no)						3	
TA Check-Out (913) (no)						3	
TA Design (911) (no)						3	
Tree/Shrub Establishment (612) (ac)					16		
Upland Wildlife Habitat Management (645) (ac)						26	
Waste Storage Facility (313) (no)		1			4		
	Year	2001	2002	2003			
Total Comprehensive Nutrient Management Plans (Numbers)		0		1			
Erosion Reduction Applied (Acres)		2500	3000				
Inventory & Evaluations			22	8			
Total Irrigation Water Management (Acres)			196				
Pest Management Systems Applied (595A) (Acres)			3000				
Prescribed Grazing Applied (528A) (Acres)		2500	4500				
Total Salinity/Alkalinity Control (Acres)			196	40			
Total Wildlife Habitat (Acres)			3500				

- ❖ Progress over the last 5 years has been focused on:
 - ~ Irrigation conveyance pipeline installation in areas of crop production → 2,776 acres of IWM reported
 - ~ Some nutrient and pest management.
 - ~ Prescribed grazing on grazing lands.
 - ~ Wildlife habitat management,
- ❖ Most hay producers practice a moderate degree of irrigation water management, but adequate grazing and water management commonly is lacking on pastures.
- ❖ Most livestock operations are at the progressive level. Focus has been on meeting State CAFO regulations. High capital cost and knowledge of the required /most helpful practices has hindered conservation adoption to attain the RMS level.

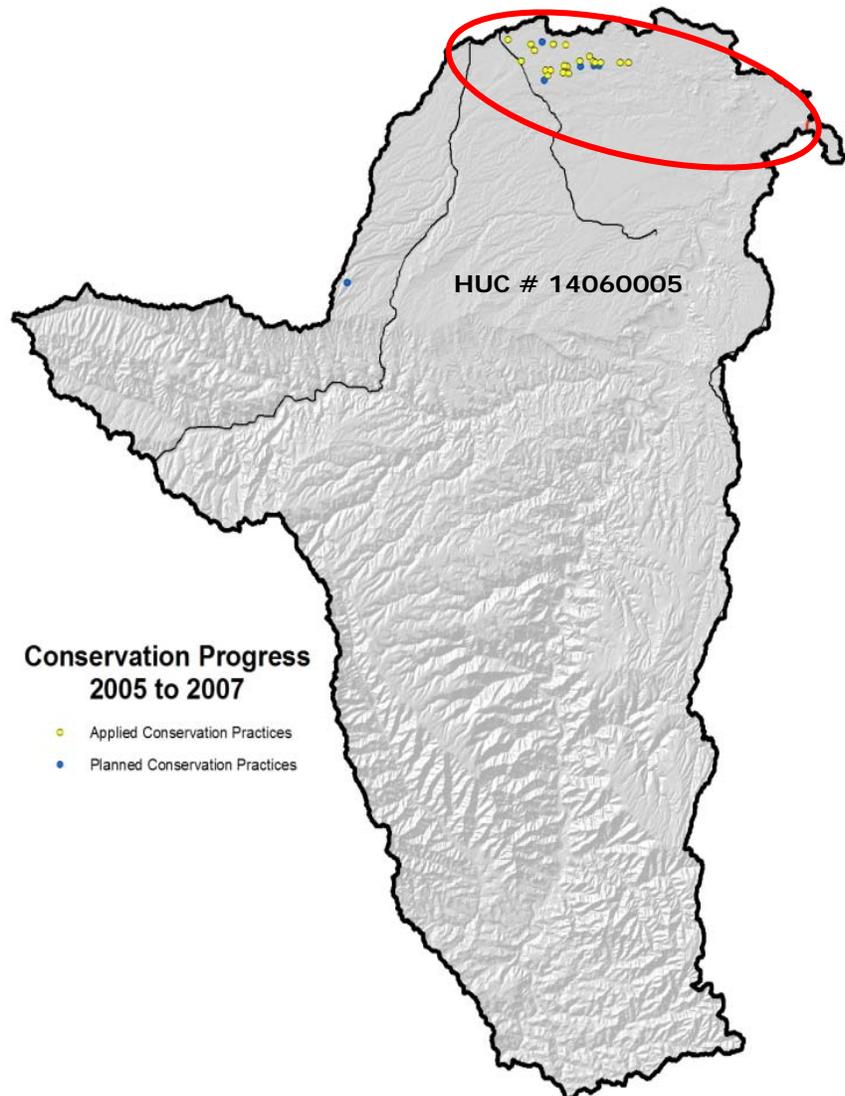
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Conservation Progress Map (2005-2007 only)

Most of the conservation work applied to date is related to the implementation of irrigation systems in the northern end of the basin.



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Footnotes/Bibliography

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

1. 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 all 2003 agricultural areas of the state of Utah. Compiled from initial USGS 7.5 minute Digital Raster Graphic waterbodies, 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 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 State maps/tabular sources
9. Stream length data calculated using ArcMap and 100k stream data from AGRC and 303d waters from the Utah Department of Environmental Quality.
10. Watershed information from NRCS
11. 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

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12. 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/>).
13. County population data from the U.S. Census Bureau, Utah Quick Facts, <http://quickfacts.census.gov/qfd/states/49000.html>
14. Farm information obtained from the National Agricultural Statistics Service, 2002 Census of Agriculture. <http://www.nass.usda.gov/census/census02/volume1/index2.htm>
15. NPS Watershed Management Plan- State of Utah
http://www.waterquality.utah.gov/documents/NPS_Mgmt_Plan_2001.pdf
16. Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, Guide for Estimating Participation in Conservation, 2004. Four categories of indicators were evaluated: Personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.
17. Social capital is an indicator of the community's ability and willingness to work together to solve problems. A high amount of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. A low amount of social capital typically results in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation is based on NRCS Technical Report Release 4.1, March, 2002: Adding Up Social Capital: An Investment in Communities. Local conservationists provided information to measure social capital. Scores range from 0 to 76.

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Assessment Matrix – Estimates *(subject to change with further evaluation)*

WATERSHED NAME & CODE		UPPER GREEN - UTAH - 14060005			LANDUSE ACRES	9,808			
LANDUSE TYPE		CROPLAND			TYPICAL UNIT SIZE ACRES	80			
ASSESSMENT INFORMATION					ACCUMULATED PARTICIPATION	392			
Conservation Systems by Treatment Level	Benchmark Conditions	Future Conditions			RESOURCE CONCERNS				
	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Water Quantity - Inefficient Water Use on Irrigated Land	Water Quality - Excessive Salinity in Surface Water	Plant Condition - Productivity, Health and Vigor	Fish and Wildlife - Inadequate Cover/Shelter	
Baseline					System Rating ->	4	2	1	0
Fence (ft.) 382	24,520	7,356	0	7,356	0	1	1	1	
Irrigation System, Sprinkler (ac.) 442	1,962	588	0	588	4	0	0	0	
Irrigation Water Conveyance, Pipeline (ft.) 430	24,520	7,356	0	7,356	5	3	2	0	
Pond (no.) 378	7	2	0	2	0	0	0	0	
Structure for Water Control (no.) 587	7	2	0	2	3	2	0	-1	
Total Acreage at Baseline		1,962	588	0	588				
Progressive					System Rating ->	5	3	4	1
Fence (ft.) 382	42,910	36,167	0	36,167	0	1	1	1	
Irrigation System, Sprinkler (ac.) 442	6,866	5,787	0	5,787	4	0	0	0	
Irrigation Water Conveyance, Pipeline (ft.) 430	42,910	36,167	0	36,167	5	3	2	0	
Irrigation Water Management (ac.) 449	2,060	1,442	294	1,736	5	3	3	0	
Pasture & Hayland Planting (ac.) 512	6,866	4,806	981	5,787	2	1	5	2	
Pond (no.) 378	26	22	0	22	0	0	0	0	
Structure for Water Control (no.) 587	26	22	0	22	3	2	0	-1	
Total Acreage at Progressive Level		6,866	4,806	981	5,787				
RMS					System Rating ->	5	3	5	4
Fence (ft.) 382	12,260	30,037	12,873	42,910	0	1	1	1	
Irrigation System, Sprinkler (ac.) 442	981	3,433	0	3,433	4	0	0	0	
Irrigation Water Conveyance, Pipeline (ft.) 430	12,260	30,037	12,873	42,910	5	3	2	0	
Irrigation Water Management (ac.) 449	981	1,599	1,834	3,433	5	3	3	0	
Nutrient Management (ac.) 530	981	981	2,452	3,433	1	1	5	1	
Pasture & Hayland Planting (ac.) 512	981	3,040	392	3,433	2	1	5	2	
Pest Management (ac.) 535	981	981	2,452	3,433	1	0	3	0	
Pond (no.) 378	4	13	0	13	0	0	0	0	
Prescribed Grazing (ac.) 528	981	981	2,452	3,433	1	0	5	2	
Structure for Water Control (no.) 587	4	13	0	13	3	2	0	-1	
Tree/Shrub Establishment (ac.) 612	98	98	245	343	0	1	4	3	
Upland Wildlife Habitat Management (ac.) 645	981	981	2,452	3,433	0	0	4	5	
Total Acreage at RMS Level		981	981	2,452	3,433				

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WATERSHED NAME & CODE		UPPER GREEN - UTAH - 14060005				LANDUSE ACRES		3,808	
LANDUSE TYPE		CROPLAND				TYPICAL UNIT SIZE ACRES		80	
CONSERVATION COST TABLE		FUTURE				CALCULATED PARTICIPATION		33%	
Conservation Systems by Treatment Level	New Treatment Units	FEDERAL			Total Present Value Cost	PRIVATE			
		Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%		Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost	
Progressive									
Fence (ft.) 382	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Irrigation System, Sprinkler (ac.) 442	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Irrigation Water Conveyance, Pipeline (ft.) 430	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Irrigation Water Management (ac.) 443	294	\$0	\$17,654	\$3,531	\$19,261	\$0	\$5,885	\$9,059	\$0
Pasture & Hayland Planting (ac.) 512	981	\$44,136	\$0	\$8,827	\$52,963	\$44,136	\$883	\$47,854	\$0
Pond (no.) 378	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Structure for Water Control (no.) 587	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal	981	\$44,136	\$17,654	\$12,358	\$72,224	\$44,136	\$6,768	\$56,913	
RMS									
Fence (ft.) 382	12,873	\$16,091	\$0	\$3,218	\$19,310	\$16,091	\$644	\$18,803	\$0
Irrigation System, Sprinkler (ac.) 442	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Irrigation Water Conveyance, Pipeline (ft.) 430	12,873	\$25,746	\$0	\$5,149	\$30,895	\$25,746	\$1,030	\$30,084	\$0
Irrigation Water Management (ac.) 443	1,834	\$0	\$110,046	\$22,009	\$120,060	\$0	\$36,682	\$56,466	\$0
Nutrient Management (ac.) 590	2,452	\$0	\$110,340	\$22,068	\$120,381	\$0	\$36,780	\$56,617	\$0
Pasture & Hayland Planting (ac.) 512	392	\$17,654	\$0	\$3,531	\$21,185	\$17,654	\$353	\$19,142	\$0
Pest Management (ac.) 595	2,452	\$0	\$147,120	\$29,424	\$160,509	\$0	\$49,040	\$75,490	\$0
Pond (no.) 378	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Prescribed Grazing (ac.) 528	2,452	\$8,582	\$0	\$1,716	\$10,298	\$8,582	\$0	\$8,582	\$0
Structure for Water Control (no.) 587	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tree/Shrub Establishment (ac.) 612	245	\$82,755	\$0	\$0	\$82,755	\$82,755	\$1,655	\$89,727	\$0
Upland Wildlife Habitat Management (ac.) 645	2,452	\$0	\$73,560	\$0	\$73,560	\$0	\$24,520	\$37,745	\$0
Subtotal	2,452	\$150,829	\$441,066	\$118,379	\$662,199	\$150,829	\$150,704	\$392,656	
Grand Total	3,433	\$194,965	\$458,720	\$130,737	\$734,423	\$194,965	\$157,471	\$449,569	

Category	Baseline	Progressive	RMS
Current	20%	70%	10%
Future	6%	53%	35%

Chart Refers To		
Landuse Type	CROPLAND	
Calculated Participation Rate	33%	
Average PY Costs per Ac		
System	Federal	Private
Prog	\$73.64	\$58.03
RMS	\$270.06	\$160.14

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WATERSHED NAME & CODE	Upper Green- 14060005				LANDUSE ACRES	1,000,000		
LANDUSE TYPE	Grazed Range				TYPICAL UNIT SIZE ACRES	5,000		
ASSESSMENT INFORMATION	<i>(Subject to Change)</i>				CULATED PARTICIPATION	41%		
Conservation Systems by Treatment Level	Current Conditions	Future Conditions			RESOURCE CONCERNS			
	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Plant Condition – Productivity, Health and Vigor	Plant Condition – Noxious and Invasive Plants	Domestic Animals – Inadequate Quantities and Quality of Feed and Forage	Domestic Animals – Inadequate Stock Water
Baseline	System Rating ->				2	3	3	1
Fence (ft.) 382	280,000	140,000	0	140,000	0	0	0	0
Pest Management (ac.) 595	70,000	35,000	0	35,000	3	5	4	0
Pond (no.) 378	350	175	0	175	0	0	0	0
Watering Facility (no.) 614	0	0	0	0	2	0	3	3
Total Acreage at Baseline	700,000	350,000	0	350,000				
Progressive	System Rating ->				4	4	4	4
Animal Trails and Walkways (ac.) 575	12,000	3,600	11,200	20,800	1	0	0	0
Fence (ft.) 382	180,000	256,000	56,000	312,000	0	0	0	0
Pest Management (ac.) 595	75,000	88,000	42,000	130,000	3	5	4	0
Pipeline (ft.) 516	90,000	72,000	84,000	156,000	0	0	0	0
Pond (no.) 378	150	260	0	260	0	0	0	0
Prescribed Grazing (ac.) 528	150,000	120,000	140,000	260,000	5	4	5	0
Stream Crossing (no.) 578	0	0	0	0	0	0	3	5
Watering Facility (no.) 614	120	36	112	208	2	0	3	3
Total Acreage at Progressive Level	300,000	240,000	280,000	520,000				
RMS	System Rating ->				5	5	5	4
Animal Trails and Walkways (ac.) 575	0	2,400	2,800	5,200	1	0	0	0
Critical Area Planting (ac.) 342	0	0	65	65	5	4	0	0
Fence (ft.) 382	0	64,000	66,000	130,000	0	0	0	0
Pest Management (ac.) 595	0	22,000	17,000	39,000	3	5	4	0
Pipeline (ft.) 516	0	18,000	60,000	78,000	0	0	0	0
Pond (no.) 378	0	65	0	65	0	0	0	0
Prescribed Grazing (ac.) 528	0	30,000	1,270,000	1,300,000	5	4	5	0
Riparian Forest Buffer (ac.) 391	0	0	65	65	4	2	4	0
Spring Development (no.) 574	0	0	13	13	0	0	3	0
Stream Crossing (no.) 578	0	0	13	13	0	0	3	5
Upland Wildlife Habitat Management (ac.) 645	0	0	13,000	13,000	4	4	2	3
Use Exclusion (ac.) 472	0	0	13,000	13,000	3	1	2	0
Water Well (no.) 642	0	0	26	26	1	0	2	0
Watering Facility (no.) 614	0	24	54	78	2	0	3	3
Total Acreage at RMS Level	0	0	130,000	130,000				

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WATERSHED NAME & CODE		Upper Green - 14060005				LANDUSE ACRES		1,000,000	
LANDUSE TYPE		Grazed Range				TYPICAL UNIT SIZE ACRES		5,000	
CONSERVATION COST TABLE						CALCULATED PARTICIPATION		41%	
Conservation Systems by Treatment Level	FUTURE	FEDERAL			Total Present Value Cost	PRIVATE			
	New Treatment	Installation Cost 50%	Management Cost 100%	Technical Assistance 20%		Installation Cost 50%	Management Cost 100%	Total Present Value Cost	
Progressive									
Animal Trails and Walkways (ac.) 575	11,200	\$84,000	\$0	\$16,800	\$100,800	\$84,000	\$3,360	\$38,154	
Fence (ft.) 382	56,000	\$98,000	\$0	\$19,600	\$117,600	\$98,000	\$3,920	\$114,512	
Pest Management (ac.) 595	42,000	\$0	\$2,520,000	\$504,000	\$2,749,330	\$0	\$840,000	\$1,293,056	
Pipeline (ft.) 516	84,000	\$121,800	\$0	\$24,360	\$146,160	\$121,800	\$4,872	\$142,323	
Pond (no.) 378	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Prescribed Grazing (ac.) 528	140,000	\$70,000	\$0	\$14,000	\$84,000	\$70,000	\$0	\$70,000	
Stream Crossing (no.) 578	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Watering Facility (no.) 614	112	\$56,000	\$0	\$0	\$67,200	\$56,000	\$3,360	\$70,154	
Subtotal	280,000	\$429,800	\$2,520,000	\$589,960	\$3,265,090	\$429,800	\$855,512	\$1,788,198	
RMS									
Animal Trails and Walkways (ac.) 575	2,800	\$21,000	\$0	\$4,200	\$25,200	\$21,000	\$840	\$24,538	
Critical Area Planting (ac.) 342	65	\$13,000	\$0	\$2,600	\$15,600	\$13,000	\$1,300	\$18,476	
Fence (ft.) 382	66,000	\$115,500	\$0	\$23,100	\$138,600	\$115,500	\$4,620	\$134,361	
Pest Management (ac.) 595	17,000	\$0	\$1,020,000	\$204,000	\$1,112,824	\$0	\$340,000	\$523,380	
Pipeline (ft.) 516	60,000	\$87,000	\$0	\$17,400	\$104,400	\$87,000	\$3,480	\$101,659	
Pond (no.) 378	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Prescribed Grazing (ac.) 528	1,270,000	\$635,000	\$0	\$127,000	\$762,000	\$635,000	\$0	\$635,000	
Riparian Forest Buffer (ac.) 331	65	\$40,950	\$0	\$8,190	\$49,140	\$40,950	\$2,457	\$51,300	
Spring Development (no.) 574	13	\$19,500	\$0	\$3,900	\$23,400	\$19,500	\$390	\$21,143	
Stream Crossing (no.) 578	13	\$32,500	\$0	\$6,500	\$39,000	\$32,500	\$650	\$35,238	
Upland Wildlife Habitat Management (ac.) 645	13,000	\$0	\$54,600	\$0	\$54,600	\$0	\$18,200	\$28,016	
Use Exclusion (ac.) 472	13,000	\$6,500	\$0	\$1,800	\$7,800	\$6,500	\$390	\$8,143	
Water Well (no.) 642	26	\$74,230	\$0	\$0	\$89,076	\$74,230	\$1,485	\$80,484	
Watering Facility (no.) 614	54	\$27,000	\$0	\$0	\$32,400	\$27,000	\$1,620	\$33,824	
Subtotal	130,000	\$1,072,180	\$1,074,600	\$429,356	\$2,459,099	\$1,072,180	\$375,432	\$1,696,162	
Grand Total	410,000	\$1,501,980	\$3,594,600	\$1,019,316	\$5,724,099	\$1,501,980	\$1,230,944	\$3,484,359	

Resource Status Cumulative Conservation Application on Private Lands

Category	Baseline (%)	Progressive (%)	RMS (%)
Current	70%	30%	0%
Future	35%	52%	13%

Chart Refers To		
Landuse Type	Grazed Range	
Calculated Participation Rate	41%	
Average PY Costs per Ac		
System	Federal	Private
Prog	\$11.66	\$6.39
RMS	\$18.32	\$13.05