

Lower Sevier River – 16030005

8-Digit Hydrologic Unit Profile

September 2006

This resource assessment is designed to gather and display information specific to this HUC (watershed). This assessment will highlight the natural and social resources present in the watershed, 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 some selected resource inventories.

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Introduction

The Lower Sevier 8-Digit Hydrologic Unit Code (HUC) area is comprised of 2,620,563 acres predominantly in Juab & Millard Counties. () percent of the basin is rangeland, () percent is hayland and pastureland, and the remainder includes some forestland and areas used for grain crops. There are four permitted Confined Animal Feeding Operations (CAFOs) and about 2,000 permitted animals in the basin. Major resource concerns include, invasive and noxious weeds; insufficient surface & ground 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 basin.

The Fillmore and Nephi NRCS Service Centers, and the Millard, Juab and Delta Soil Conservation Districts, provide much of the conservation assistance in this area.

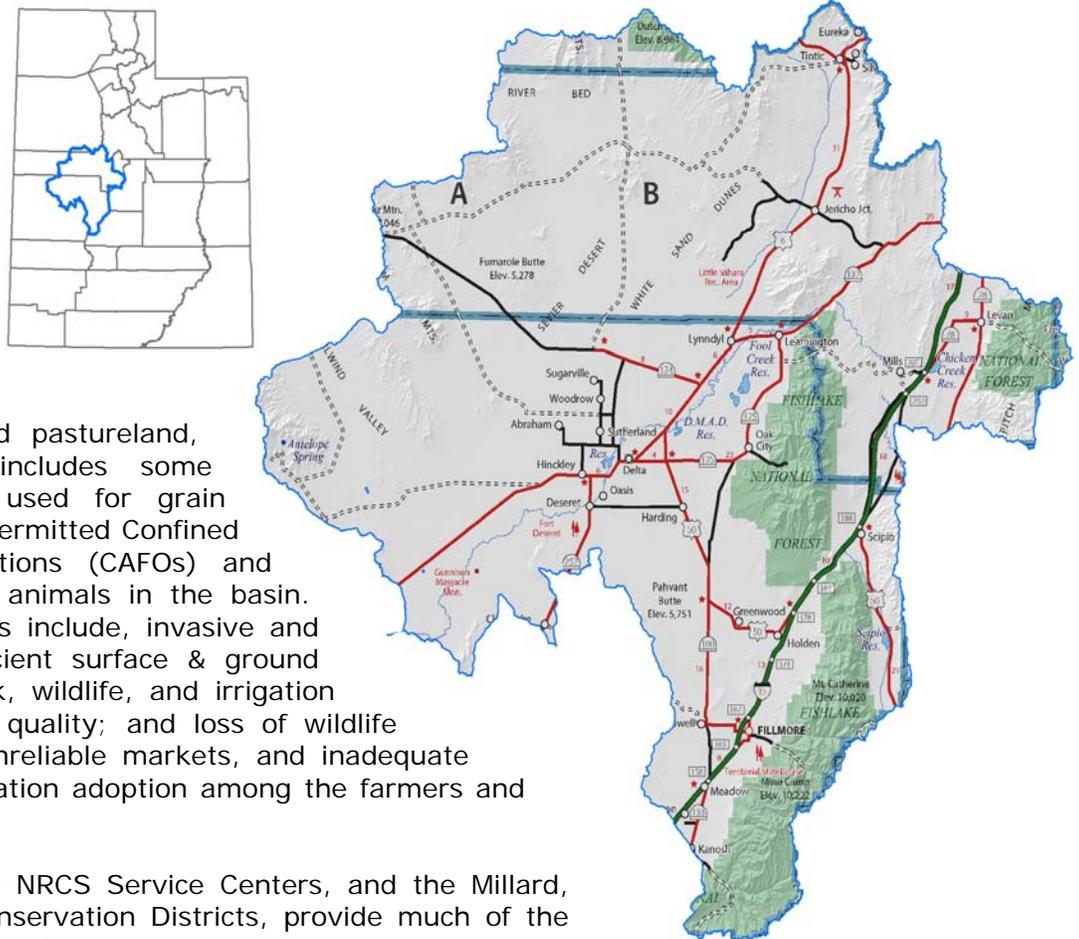


Figure 1

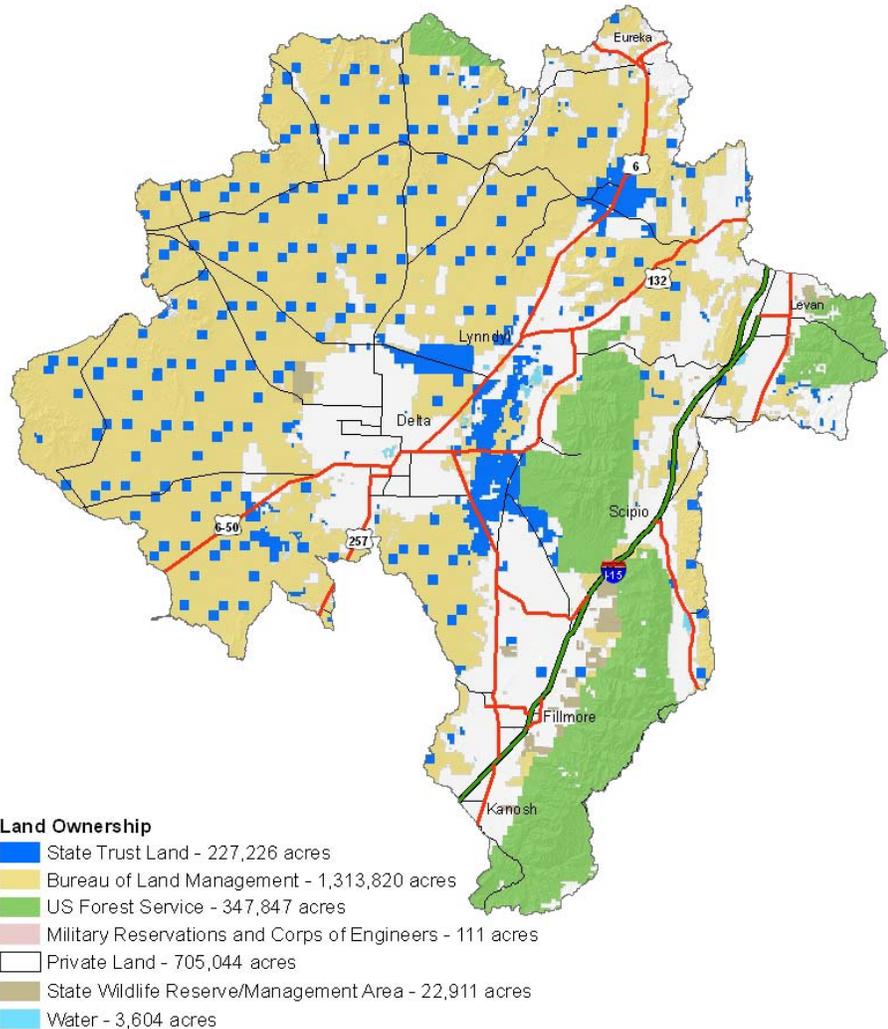
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The basin is bordered on the east by the Pahvant and Oak Creek Mountains. These small mountain ranges are a western edge of the Rockies that reaches to 10,000 ft in elevation overlooking the Great Basin valleys and mountains to the west.

The Sevier River essentially terminates within the HUC near agricultural lands surrounding the community of Delta. Located in the high desert of the Great Basin, availability of water sets the geography of community settlement and growth.

The economy has a strong agricultural base. This basin contains the highest alfalfa hay producing area in the state. It has the 3rd largest cattle inventory, (2nd for milk cows and 4th for beef). It's ranked 4th for all barley, 3rd for grain and silage corn. It ranks 4th in the state for all cash receipts from farming. This agriculture is primarily dependant on irrigation water supplied by the Sevier River, mountain streams and deep water aquifers. Livestock grazing of both public and private rangelands is an intrinsic part of the agricultural, social, and economic base. Power production and mining are also important industries in the basin with critical links to natural and social resources in the basin.



Land Ownership

The watershed covers 2,620,563 acres (4,094 sq. mi). The Bureau of Land Management (BLM) manages 1,313,820 acres. The US Forest Service manages 347,847 acres and a minor amount is managed through the military (111 acres). State managed lands cover 250,137 acres. There are approximately 705,044 acres of private lands of which 33,961 acres are developed.



Special Considerations within this watershed *(not all inclusive)*

- The Sevier River is one of the most used rivers in the United States. The Lower Sevier HUC is the bottom section of the Sevier River Basin and is used heavily for irrigated crop production. The Sevier River Water Users Association has implemented a "Virtual Watershed" monitoring system to manage their water resources. This site can be accessed at: <http://sevierriver.org/>
- **The Sevier River – Cox Decree:** In 1916, the Richlands Irrigation Company brought action against various Lower Basin interests to adjudicate its claimed rights. The cost of litigation associated with the dispute exceeded \$350,000. Because the costs of resolving the more than 750 remaining claims was likely to exceed the value of land and water, regional committees were formed to resolve these issues. Most of these committees adopted, by stipulation, the existing Higgins and Morse Decrees, and eventually succeeded in reaching a decision in the Richlands action, which is now known as the Cox Decree.
- The Cox Decree did not eliminate or even diminish water conflicts in the Basin. Even though it helped define individual rights in local areas, it was much less specific about the allocation of water rights over the length of the river. In addition, the Cox Decree is a legal document and not an operation plan. As a result, the river commissioners who began administering the river in 1934, under the direction of the State Engineer, had to interpret various provisions of the decree. The Cox Decree finalized in 1936 was the final determination of all the water rights. Although there have been modifications to this decree, it is still in use today.
- Enhanced management in the Sevier River is facilitated by (1) the concept of pro rata division introduced by the Higgins Decree of 1901, which ensures that all irrigation systems are in place to utilize water when water is plentiful; (2) the ability to treat water rights as personal property, i.e., water can be bought, sold, and used as collateral, just like land, homes and automobiles; and (3) the 1938 Agreement, which helped stabilize the water supply from year to year. As a result, the water supply is stable, and water can flow to the most beneficial use. During drought, only the most productive land is irrigated. The system also provides for long-term changes in water use, e.g., the acquisition of 45,000 acre-feet of water by a power company.
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- **Pahvant Interagency Fuels Reduction Project:** West side of the Pahvant Range, in the vicinity of Scipio, Holden, Fillmore and Meadow, Utah; seven treatment units, ranging from 490 to 4,929 acres in size. Hazardous fuels to be treated include sagebrush-grassland, pinyon-juniper, and Gambel oak to lessen the risk of uncharacteristically intense and severe wildfire, and secondary effects such as flooding, to communities and the environment while providing for firefighter safety
- **Great Basin Restoration Initiative:** The Great Basin Restoration Initiative (GBRI) originated in the wake of the disastrous fire season of 1999, in which 1.7 million acres of public land burned, mostly in Nevada. Of the 2,558,662 acres in this basin, 77 percent is within the boundary of the restoration initiative.
- The health of these lands is in jeopardy, attributable to (1) exotic annual grasses such as cheatgrass, which are flammable and have increased the incidence and spread of wildland fires, resulting in even more loss of native vegetation and habitat, and further increases of cheatgrass as time goes by, and (2) woodlands dominated by pinyon pine and/or juniper species, which have invaded what once was sagebrush-steppe and sagebrush, attributable to fire suppression, excessive livestock grazing pressure, and climate change, individually or in combination.
- The restoration effort is focused on the geographic area where Great Basin vegetation is present and where fuel loads of the native plant communities has been altered by cheatgrass, other flammable annual plants, and woody vegetation such as pinyon pine and juniper species.
- **Water Reuse:** Enterprise's wastewater treatment facility receives and treats roughly 0.11 million gallons per day through the use of two 10-acre aerated lagoons. At the present time, 100 percent of the effluent is evaporated. During wetter times, when evaporation rates cannot keep up with effluent flows, part of the water is drained to an adjacent 10-acre field, the site of a future third lagoon. Enterprise has not raised any crops there, but cattle have grazed the land. For several years,

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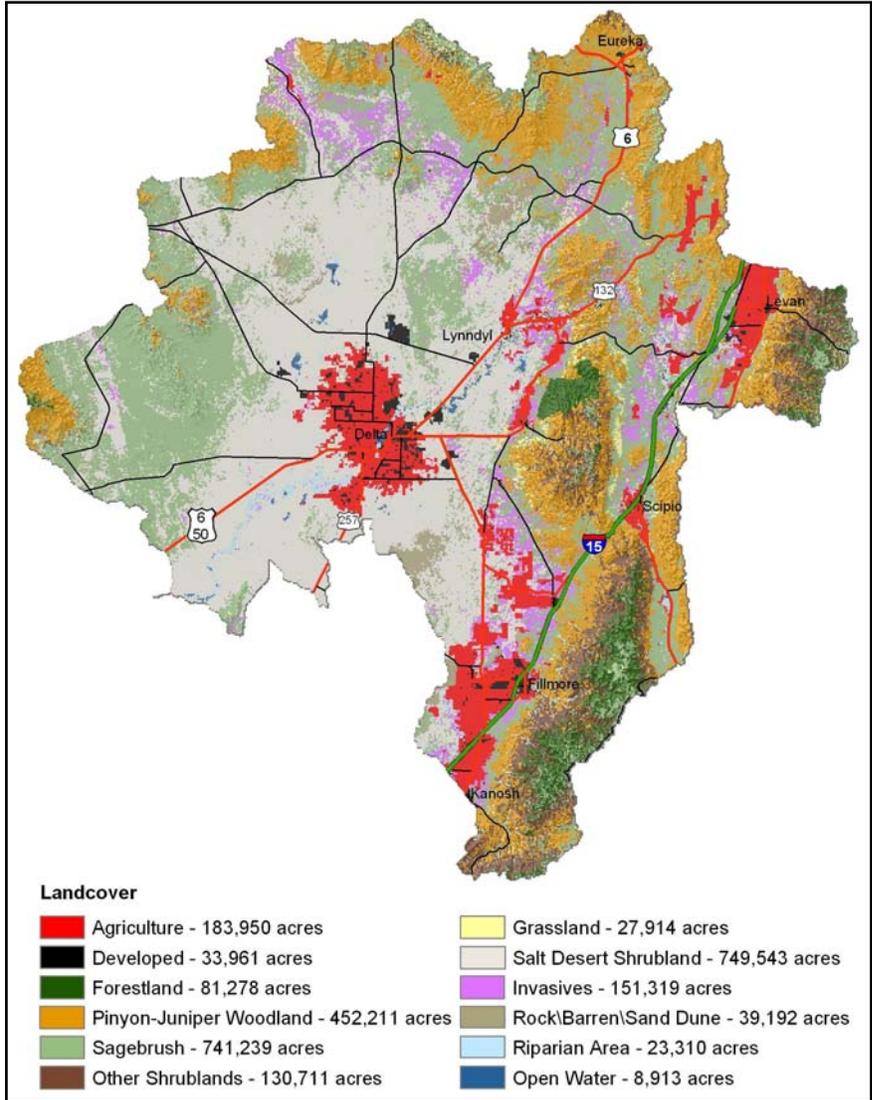
community leaders have discussed the possibility of using the effluent for irrigation, but haven't yet done so (Water Reuse in Utah, UDNR, Div of Water Resources, April 2005).

- Cedar City's regional wastewater treatment plant began operation in 1996 and currently treats about 2.1 mgd. The city's plant is a trickling filter treatment facility with a capacity of 4.4 mgd to meet anticipated future growth. When the land was purchased from a local rancher, an agreement was made that the rancher would receive a portion of the reclaimed water for a minimal fee to irrigate some land.
- **Sensitive Species within HUC #16030005:** Records of occurrence for the following sensitive species within a one-mile radius of the HUC boundary include: *American white pelican, bald eagle, bifid duct pyrg, big free-tailed bat, Bonneville cutthroat trout, burrowing owl, Eureka mountainsnail, ferruginous hawk, fringed myotis, grasshopper sparrow, greater sage-grouse, kit fox, least chub, Lewis's woodpecker, long-billed curlew, northern goshawk, short-eared owl, southern Bonneville springsnail, Townsend's big-eared bat, and western toad*. All of the aforementioned species are included on the *Utah Sensitive Species list (Ut-DWR, 9/19/2006)*.
- **County Planning & Zoning:** To promote smart growth, residents encourage residential development to occur within developed areas in order to stem sprawl. It is the County's (Millard) opinion that traditional Federal and State land uses, such as grazing, mining and mineral development are a higher priority than recreation. Over 87% of the land within Millard County is managed by federal or state agencies. Millard County does not define "multiple use" as allowing "all uses" in "all areas." The County encourages "responsible use". The County does not support land use designations, such as wilderness, that permanently designates an area for a particular use and restricts other viable and compatible options.
Source: <http://www.governor.state.ut.us/planning/usfs/4B%20County%20Profiles/4BMillardPlanning.pdf#search=%22millard%20county%20landuse%22>
- **Ground Water:** Ground water from wells is vital to the economy of the Sevier Desert. Springs and streams do not provide sufficient water to meet the agricultural and culinary needs of the area. Water quality is best in the lower artesian aquifer, and worst in the shallow unconfined aquifer near Sevier Lake and the principal aquifer near Kanosh. Increased salinity and nitrate contamination in the Sevier Desert are probably due to concentration of salts by evaporation, recycling of irrigation water, and recharge by poor-quality water (UGS, 1998).
- **Demographic - HUC #16030005:** Beginning Farmers = 200; Potential Limited Resource Farmers = 88. Population is mostly white (10,960); Black or African American = 14; American Indian or Alaskan Native = 156; Asian = 57; Hawaiian or Pacific Islander = 14; Other = 290; Hispanic Origin = 834. Median age = 32

Land Cover/Use

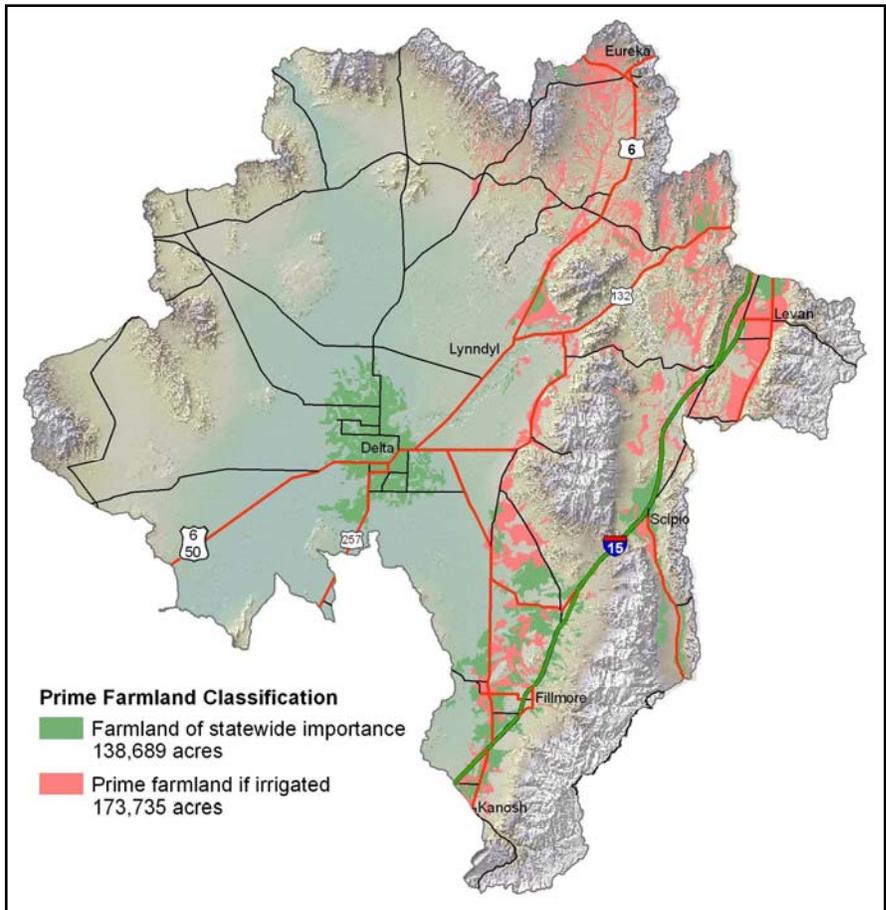
Areas used intensively for agriculture within the basin include about 183,950 acres mainly in the valley areas and where irrigation water is available. Grazed areas may include the forestland, pinyon-juniper woodland, sagebrush, other scrublands, grassland, salt desert shrubland, riparian areas and the invasive vegetation areas for a total of approximately 2,357,525 acres.

Areas consisting of invasive vegetation comprise about 151,319 acres in the basin. Pinyon-juniper woodlands (452,211 acres) are located mainly on the hill slope/mountain areas. The largest concentration of sagebrush is located in the western and northern portion of the basin comprising about 741,239 acres.



Prime Farmland

Prime farmland is 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.



Resource Assessment Summary

Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Soil	High	On farm ground and along streams and channels, HUC-wide.
Water Quantity	High	Adequate supply for irrigation and other desired uses, HUC-wide
Water Quality Ground Water	High	Concern for impurities that are found in some wells and for contamination from outside sources, HUC- wide.
Water Quality Surface Water	High	Available water clean enough for desired uses, Irrig. Availability, Water Rights/Adjudication issues High Importance, HUC-wide.
Air Quality	Medium	From blowing dust and odors, HUC- wide.
Plant Suitability	High	Concern for invasive species and noxious weeds, HUC-wide.
Plant Condition	Medium	Concern for plant health, production and adequate quantities, HUC-wide.
Fish and Wildlife	Medium/Low	Medium concern for adequate food, water and cover. Low concern for T&E HUC-wide. Growing concern for sage grouse issues
Domestic Animals	Medium	Medium concern for adequate food, water and cover, HUC-wide.
Social and Economic	High/Medium	High concern for loss of agriculture lands in Eastern Juab County. Medium concern for urban/suburban growth, HUC-wide.

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

Common Resource Areas

DESCRIPTIONS

28A.1 Great Salt Lake Area - Sagebrush Basins and Slopes

This unit consists of basins, fan piedmonts and low terraces that are often internally drained. Soil temperature regimes are mostly mesic, and soil moisture regimes are typically aridic bordering xeric with some xeric areas mainly in the urban and cropland zones along the western slopes and valleys of the Wasatch Mountains. Soils range from shallow to very deep. Lime- and silica-cemented hardpans are common on stable landscapes. Typical vegetation includes Wyoming big sagebrush, black sagebrush, winterfat, Indian ricegrass, with singleleaf pinyon and Utah juniper in some areas.

28A.3 Great Salt Lake Area - Shadscale-Dominated Saline Basins

This unit is dominated by low-lying basins and fan piedmonts. Soil temperature regime is mainly mesic, soil moisture regime is aridic. Playas are common. Common vegetation is black greasewood, shadscale, bud sagebrush, Indian ricegrass, alkali sacaton and inland saltgrass.

28A.4 Great Salt Lake Area - Mountains and High Fans

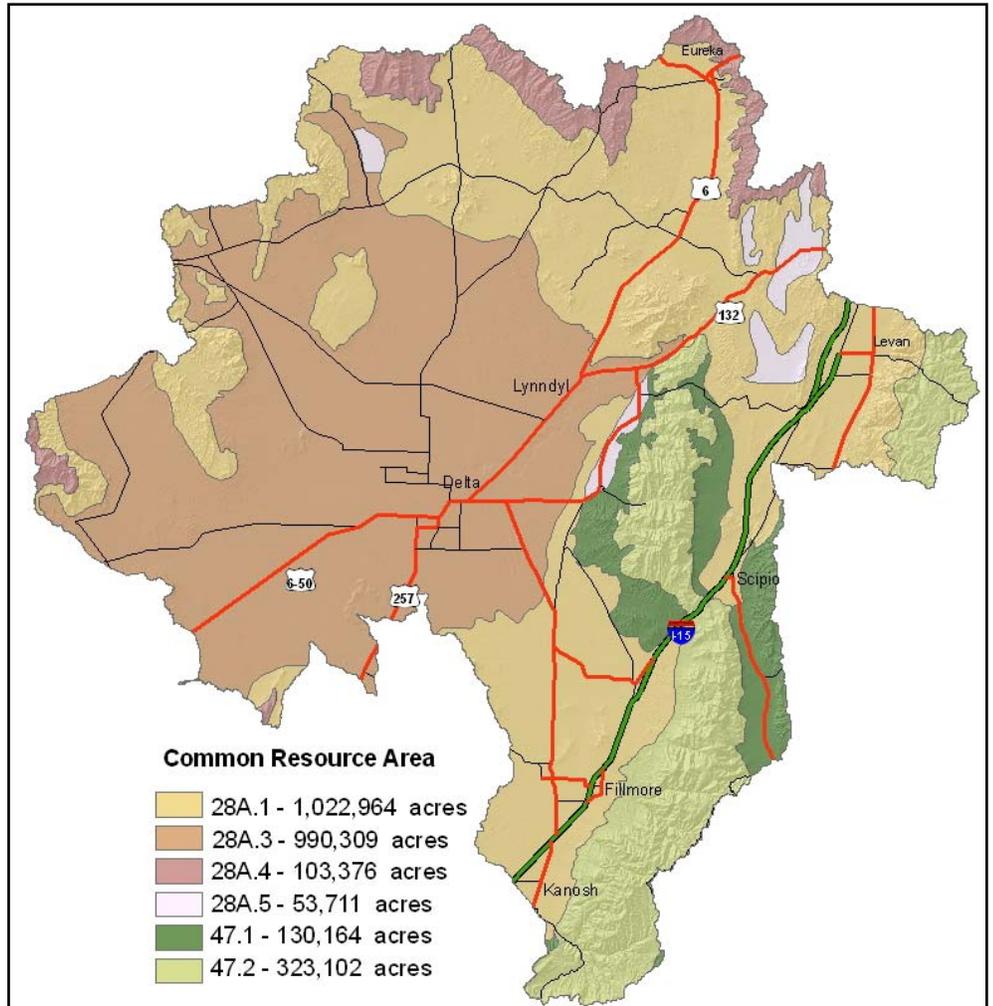
This unit is dominated by low mountains and hills, and includes high elevation fans and intermontane valleys. Soil temperature regimes are mostly mesic and frigid; soil moisture regimes are xeric and aridic bordering xeric. Vegetation is mostly juniper-pinyon woodland, with Wyoming big sagebrush, mountain big sagebrush, black sagebrush, muttongrass and bluebunch wheatgrass in the understory.

28A.5 Great Salt Lake Area - Northern Agricultural Valleys

This unit is on gently sloping hills and terraces and some valley basins. Mountain-fed perennial streams and canals supply water to pastureland, towns, and cropland growing hay and small grains. Soils are in a semiarid climate and are usually Xeralfs or Xerolls with a mesic temperature regime. Precipitation ranges from 9 to 16 inches.

47.1 Wasatch and Uinta Mountains - Low Mountains and Foothills; Utah, Wyoming, and Colorado

This unit is in the gently sloping to steep semiarid low mountains and hills in the Wasatch and Uinta Mountains. Soils have xeric or ustic moisture regimes with frigid or cryic temperature regimes.



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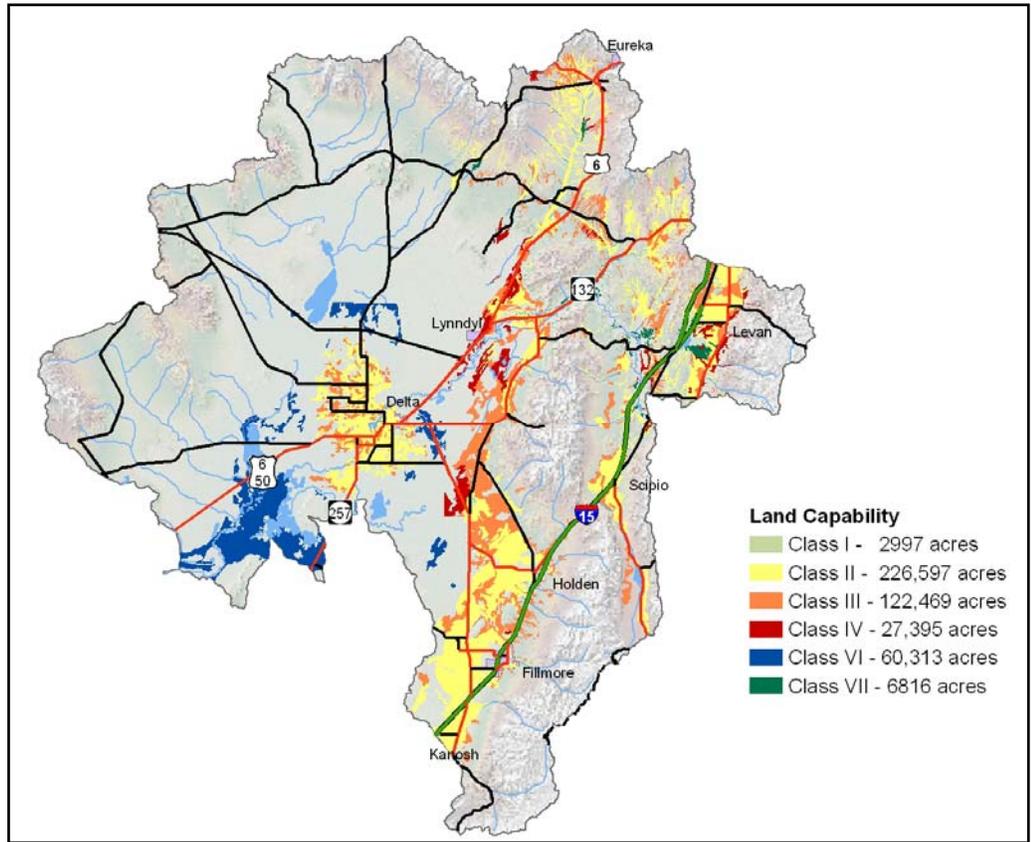
Precipitation ranges from 10 to about 18 inches. Elevations are about 5,000 to 8,000 feet. Range and cropland are the predominant land uses.

47.2 Wasatch and Uinta Mountains - High Mountains

This area is in the higher elevations of the Wasatch and Uinta Mountains. Precipitation ranges from 16 to about 30 inches. Elevations are usually more than 6,000 feet and range to more than 10,000 feet. The mountains are covered in a mixture of mountain big sagebrush, mountain brush, and coniferous forests; with alpine vegetation on the highest mountain summits.

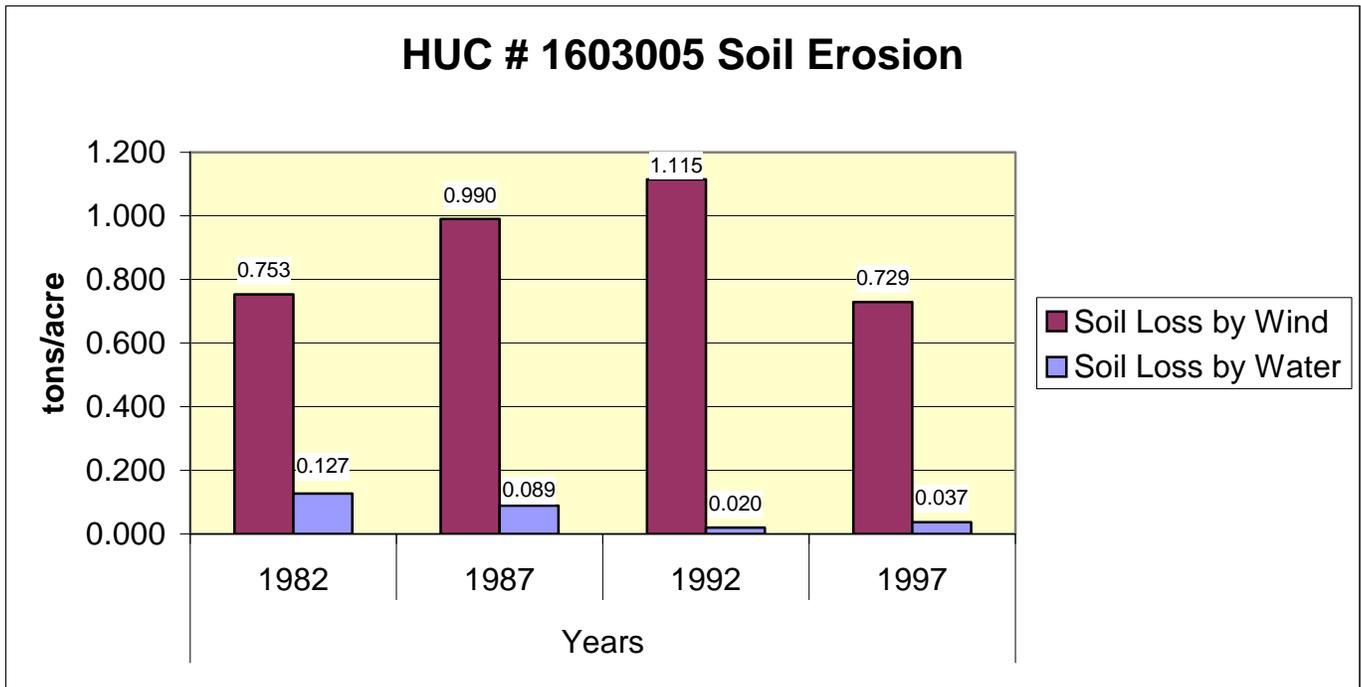
Land Capability Class

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



		Acres	Percentage
Land Capability Class	I - slight limitations	2,997	1 %
	II - moderate limitations	226597	51 %
	III - severe limitations	122469	27 %
	IV - very severe limitations	27395	6 %
	V - no erosion hazard, but other limitations	60,313	13%
	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	6,816	2 %
	VIII - misc areas have limitations, limited to recreation, wildlife, and water supply	0	0%

Soil Erosion

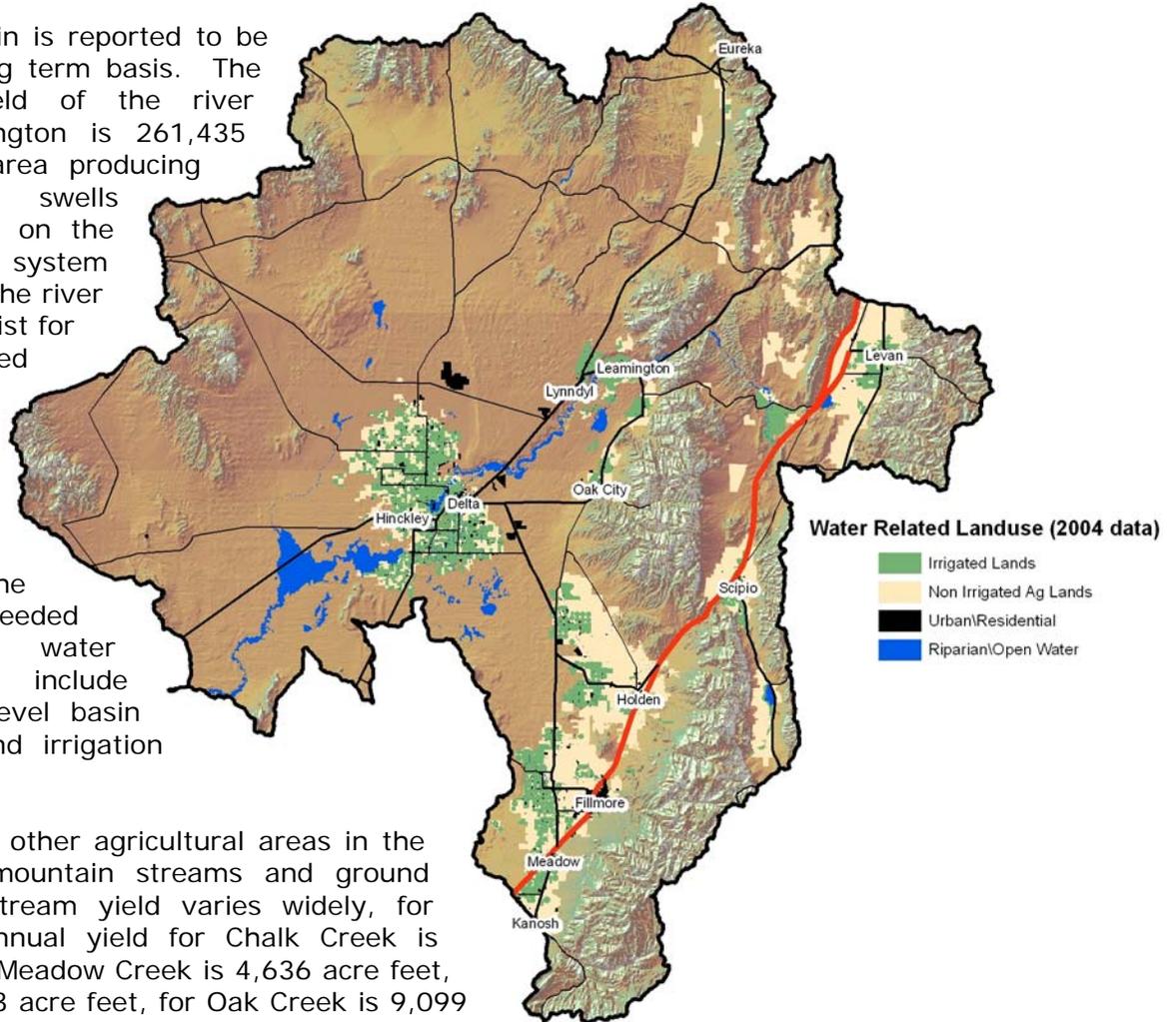


- ❖ Sheet and rill erosion by water on the croplands and pasturelands have been reduced by more than .4 tons per acre of soil per year from 1992 to 1997. While water losses have increased by .017 tons per acre according to statistics which do not make since because of the amount of acres that have gone from flood irrigation to sprinkler.
- ❖ 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 have been reduced significantly over the past 20 years.
- ❖ There will be continued opportunities through NRCS Farm Bill Programs and other state programs for technical and financial assistance to treat targeted agricultural lands.

Resource Concerns – WATER

Agricultural water supply for land surrounding communities of Delta, Deseret, Hinckley, Lynndyl, and Leamington primarily comes from the Sevier River and is supplemented somewhat by irrigation wells.

The Sevier River Basin is reported to be water short on a long term basis. The average annual yield of the river measured at Leamington is 261,435 acre feet. Land area producing crops shrinks and swells somewhat depending on the water supply in the system from year to year. The river is listed on the 303d list for water quality impaired streams based on total dissolved solids. Deep wells are utilized to increase flow for irrigation and to dilute salinity of the stream on an as-needed basis. Effective water conserving practices include graded boarder or level basin irrigation systems and irrigation canal lining.



The Water supply for other agricultural areas in the basin comes from mountain streams and ground water resources. Stream yield varies widely, for example: average annual yield for Chalk Creek is 21,970 acre feet, for Meadow Creek is 4,636 acre feet, for Corn Creek 1,1803 acre feet, for Oak Creek is 9,099 acre feet. There is no storage reservoirs built for any of these streams with the exception of Ivie creek which supplies lands surrounding the community of Scipio. Most irrigation systems using mountain streams are flood systems with poor irrigation efficiencies.

The ground water resources in the Pahvant valley is reportedly declining due to less than normal precipitation, extensive pumping and the elimination of recharge once supplied by the Central Utah Canal. The water quality is generally good with the exception of the area west of Kanosh. Most irrigation systems using ground water are sprinkler systems.

Most communities in the basin use deep wells or springs for culinary water supplies. The Intermountain Power Plant uses a significant amount of water from the Sevier River and leases water where excess is available.

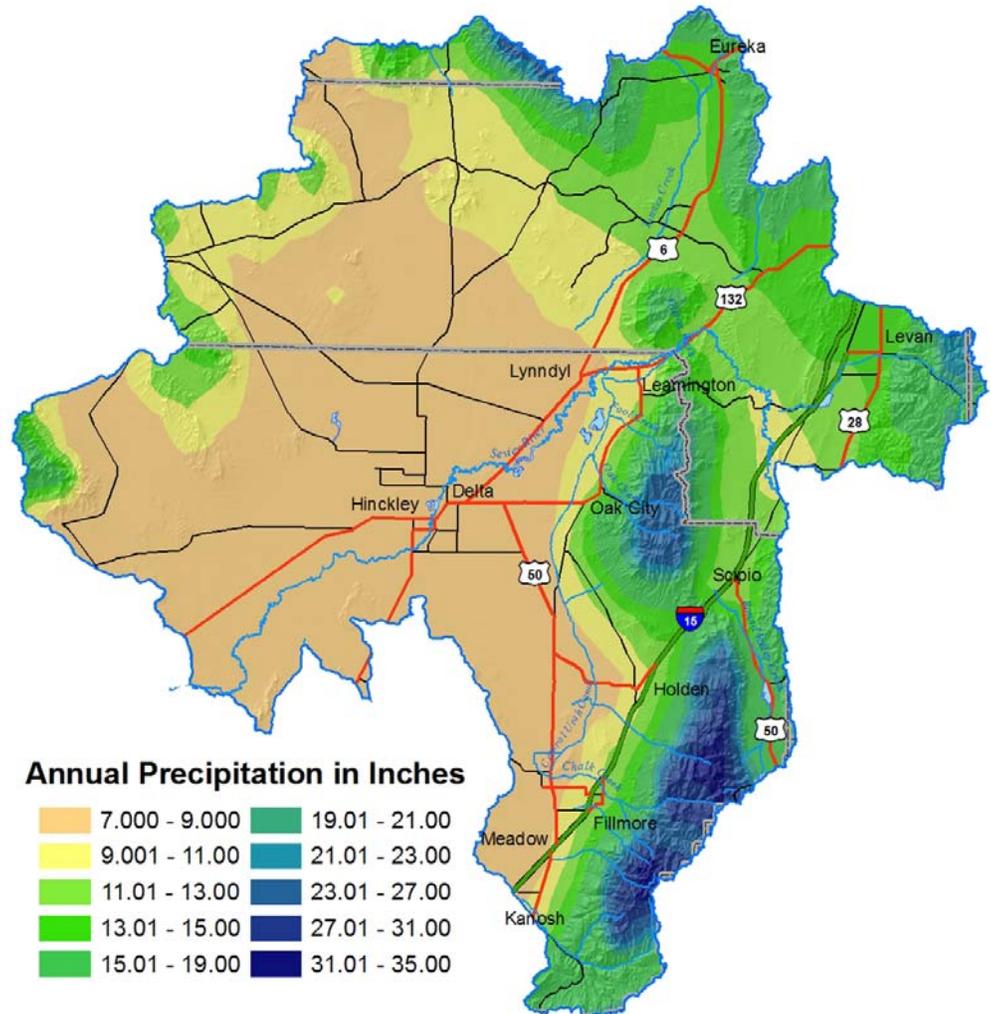
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Water Quantity	Water Quantity – Rangeland Hydrologic Cycle				X											
	Excessive Seepage			X												
	Excessive Runoff, Flooding, or Ponding	X	X													
	Excessive Subsurface Water															
	Drifted Snow															
	Inadequate Outlets															
	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	
	Reduced Storage of Water Bodies by Sediment Accumulation														X	
	Aquifer Overdraft															
Insufficient Flows in Watercourses																
Water Quality, Groundwater	Harmful Levels of Pesticides in Groundwater													X		
	Excessive Nutrients and Organics in Groundwater													X		
	Excessive Salinity in Groundwater															
	Harmful Levels of Heavy Metals in Groundwater														X	
	Harmful Levels of Pathogens in Groundwater														X	
	Harmful Levels of Petroleum in Groundwater															
Water Quality, Surface	Harmful Levels of Pesticides in Surface Water													X		
	Excessive Nutrients and Organics in Surface Water													X		
	Excessive Suspended Sediment and Turbidity in Surface Water	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															
	Harmful Levels of Pathogens in Surface Water															
Harmful Levels of Petroleum in Surface Water																

Precipitation and Streams

The bulk of the basin falls within the typical basin and range desert climate with average precipitation ranging from 7 to 9 inches per year.

Irrigators depend heavily on the snowpack accumulation in the mountain areas.



		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights	Surface		
	Well		
	Total Irrigated Adjudicated Water Rights	0.00	0.00
Stream Flow Data	USGS 14922834 Kay's Creek at Kaysville	Total Avg. Yield	24,889
		May-Sept Yield	9,975
		MILES	PERCENT
Stream Data	Total Miles - Major (100K Hydro GIS Layer)	3486.00	n/a
	303d (DEQ Water Quality Limited Streams)	284.00	8%

		Irrigation Efficiency:		
		<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	20%	40%	40%
	Pastureland	60%	30%	20%

Watersheds & Total Maximum Daily Load (TMDL)

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
0	0	Juab/Millard Co. Res Assessments	Complete-FY2005
DEQ TMDL's		NRCS Comprehensive Nutrient Management Plans	
Name	Status	Number	Status
Chicken Crk	0	0	0

List of Impaired Waters in HUC #1603005

Chicken Creek-2

Chicken Creek and tributaries from confluence w/Sevier River to Levan.....4.73 miles impaired

Sevier River-23

Sevier River from DMAD Reservoir upstream to U-132 crossing at the northern most point of the Sevier River (near Dog Valley Wash).....41.45 miles impaired

Sevier River-25

Sevier River from Gunnison bend Reservoir to DMAD Reservoir18.73 miles impaired

Sevier River-27

Sevier River from Crear Lake to Gunnison Bend Reservoir17.99 miles impaired

Sevier River-21

Sevier River from U-132 at the northern most point of the Sevier River (near Dog Valley Wash confluence) upstream to Yuba Dam.....33.38 miles impaired

Total Impaired: 116.28 stream miles

<u>State Source Name</u>	<u>Rivers, Streams, Creeks (Miles)</u>
AGRICULTURE	111.55
CROP PRODUCTION (CROP LAND OR DRY LAND)	93.56
HYDROMODIFICATION	116.28
IRRIGATED CROP PRODUCTION	93.56
LIVESTOCK (GRAZING OR FEEDING OPERATIONS)	41.45
NATURAL SOURCES	116.28

<u>State Cause Name</u>	<u>Rivers, Streams, Creeks (Miles)</u>
NUTRIENTS	93.56
OTHER HABITAT ALTERATIONS	93.56
PHOSPHORUS, ELEMENTAL	93.56
SALINITY	82.90
SEDIMENTATION/SILTATION	93.56

Source: http://iaspub.epa.gov/tmdl/w305b_report_v2.huc?p_huc=16030005&p_state=UT

AFO/CAFO

Animal Feeding Operations (AFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Farms		38				35
No. of Animals		40				38

Potential Confined Animal Feeding Operations (PCAFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Farms		1				
No. of Animals		700				

Confined Animal Feeding Operations - Utah CAFO Permit					
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Other
No. of Permitted Farms	1				
No. of Permitted Animals	800				

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CONSERVATION PROGRESS – STATUS HUC # 16030005

Performance Results (PRS) Data	FY01	FY02	FY03	FY04	FY05	Total
Total Conservation Systems Planned (Acres)	9,389	17,061	27,082	914	20,433	74,879
Total Conservation Systems Applied (Acres)	4,444	7,250	10,846	16,208	5,597	44,345
Conservation Treatment (Acres)						
Brush Management				200		200
Buffers	1,950					1,950
Conservation Crop Rotation						0
Conservation Cover					487	487
Comprehensive Nutrient Man Plans	12	2	5			19
Erosion Control	80	893				973
Fence					1,070	1,070
Forage Harvest Management					205	205
Irrigation Water Management	4,685	3,999	900		425	10,009
Irrigation System Sprinkler (ac)				211	491	702
Irrigation Pipeline –Plastic-Underground (ft)				580	43,352	43,932
Irrigation Ditch-Canal Lining-Concrete					11,683	11,683
Irrigation Water Conveyance – Gated Pipe					4,520	4,520
Nutrient Management	214	1,348	214		245	2,021
Pasture & Hay Planting				37		37
Pest Management	80	1,348	2,768	85		4,281
Pipeline(516) - ft				33,792		33,792
Prescribed Grazing (ac)	3,104	18,279	8,919	6,017		36,319
Structure for Water Control					3	3
Tree & Shrub Estab (ac)		1				1
Waste Storage Facility				1		1
Waste Management			1			1
Water Well					1	1
Wildlife Habitat (ac)	219	329	304	15		867
Wildlife Watering Facility (no)				3		3
Windbreak-Shelterbelt Estab (ft)					2,931	2,931

Based on information received from local conservationists in the watershed and NRCS Performance Results System Data. To be used only for general overview and is intended to reflect only general trends.

- ❖ Progress over the last 5 years has been focused on:
 - ~ Erosion control, irrigation water management and irrigation systems in areas of alfalfa and grain crops.
 - ~ Nutrient management.
 - ~ Prescribed grazing on grazing lands.
 - ~ Wildlife habitat management, including buffers, trees, and shrubs in riparian areas.
- ❖ Most alfalfa producers watch their water consumption closely with the help of watershed-wide monitoring system.
- ❖ Most hay producers practice good 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 has hindered conservation adoption to attain the RMS level.
- ❖ Future Farm Bill Opportunities: Potential for incentives to landowners for water quality credit trading, wind energy development incentives, animal waste/digester development for alternative energy development,

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)															
	Excessive Greenhouse Gas: N2O (nitrous oxide)															
	Excessive Greenhouse Gas: CH4 (methane)															
	Ammonia (NH3)															
	Chemical Drift		X	X	X	X							X			
	Objectionable Odors												X			
	Reduced Visibility												X			
	Undesirable Air Movement															
	Adverse Air Temperature															
Plant Suitability	Plants not adapted or suited															
Plant Condition	Plant Condition – Productivity, Health and Vigor				X											
	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	X	X											
	Forage Quality and Palatability				X	X										
	Plant Condition – Wildfire Hazard					X										
Fish and Wildlife	Inadequate Food															
	Inadequate Cover/Shelter															
	Inadequate Water															
	Inadequate Space															
	Habitat Fragmentation															
	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															

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 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*)

Additional noxious weeds declared within the watershed (2003): Blue Flowering Lettuce

Weed Day: In Millard County, Utah, the entire community focuses on a Weed Day. Once a year, 200 people from the Forest Service, Bureau of Land Management, Bureau of Indian Affairs, ranchers, farmers, Natural Resource Conservation Service, county commissioners, County Weed Board, Utah Department of Agriculture and State Extension Service, U.S. Agriculture Stabilization Service, the middle and high schools, Coca Cola, 4-H clubs, and boy scouts troupes turn out to control scotch thistle using mechanical and chemical methods. Extensive education efforts and partnerships have succeeded in controlling the thistle within a 15,000 acre area.

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Wildlife Species of Greatest Conservation Need

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 watershed.

AT-RISK SPECIES				
	Common Name	Group	Primary Habitat	Secondary Habitat
FEDERALLY-LISTED				
Endangered:	(None)			
Threatened:	Bald Eagle	Bird	Lowland Riparian	Agriculture
Candidate:	Yellow-billed Cuckoo	Bird	Lowland Riparian	Agriculture
Proposed:	(None)			
STATE SENSITIVE				
Conservation Agreement Species:	Columbia Spotted Frog	Amphibian	Wetland	Wet Meadow
	Northern Goshawk	Bird	Mixed Conifer	Aspen
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Least Chub	Fish	Water - Lentic	Wetland
Species of Concern:	American White Pelican	Bird	Water - Lentic	Wetland
	Bobolink	Bird	Wet Meadow	Agriculture
	Burrowing Owl	Bird	High Desert Scrub	Grassland
	California Floater	Mollusk	Water - Lotic	Water - Lentic
	Dark Kangaroo Mouse	Mammal	High Desert Scrub	Shrubsteppe
	Eureka Mountainsnail	Mollusk	Mountain Shrub	Rock
	Ferruginous Hawk	Bird	Pinyon-Juniper	Shrubsteppe
	Fringed Myotis	Mammal	Northern Oak	Pinyon-Juniper
	Greater Sage-grouse	Bird	Shrubsteppe	
	Kit Fox	Mammal	High Desert Scrub	
	Leatherside Chub	Fish	Water - Lotic	Mountain Riparian
	Lewis's Woodpecker	Bird	Ponderosa Pine	Lowland Riparian
	Long-billed Curlew	Bird	Grassland	Agriculture
	Pygmy Rabbit	Mammal	Shrubsteppe	
	Short-eared Owl	Bird	Wetland	Grassland
	Three-toed Woodpecker	Bird	Sub-Alpine Conifer	Lodgepole Pine
	Townsend's Big-eared Bat	Mammal	Pinyon-Juniper	Mountain Shrub
Utah Physa	Mollusk	Wetland		
Western Toad	Amphibian	Wetland	Mountain Riparian	

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

Source: http://www.wildlife.utah.gov/cwcs/utah_cwcs_strategy.pdf#search=%22utah%20comprehensive%20wildlife%20conservation%20strategy%22

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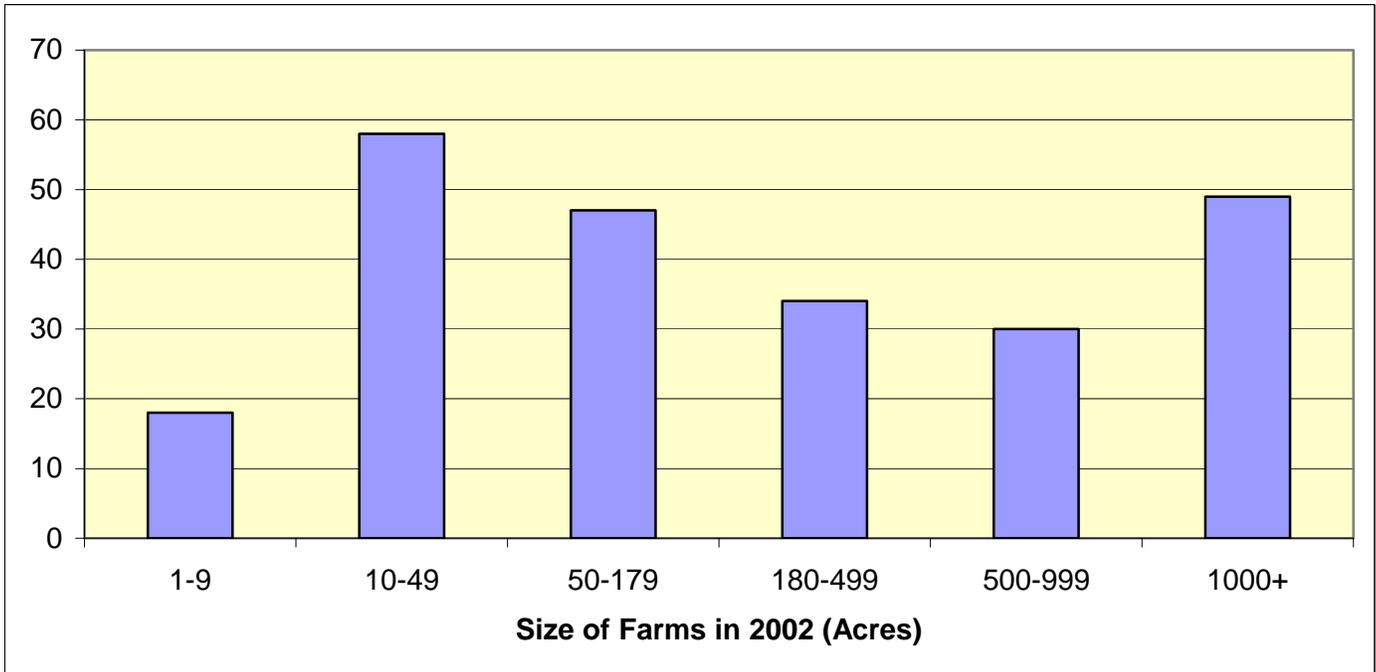
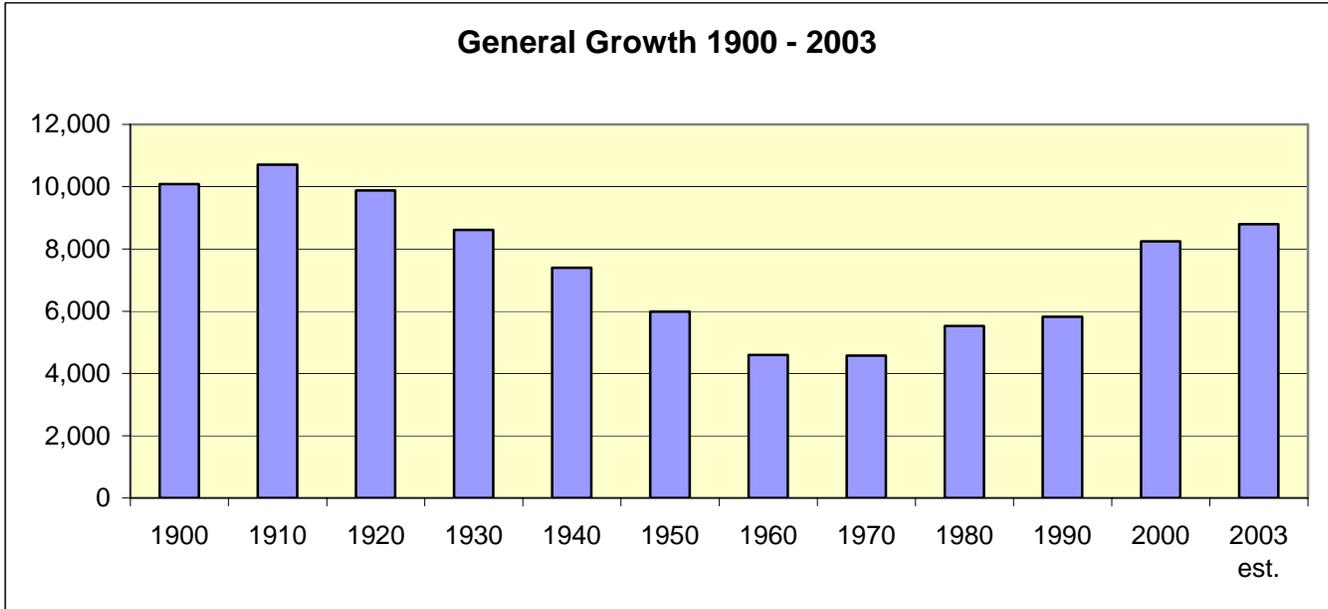
The Utah CWCS also prioritizes habitat categories based on several criteria important to the species of greatest conservation need. The top ten key habitats state-wide are (in order of priority):

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

Census and Social Data



Number of Farms: The number of farms in the watershed is 437 totaling 479,102 acres, making the average farm size about 1,096 acres. There are about 200 entities with a preliminary designation of "beginning farmer", and about 88 "potential limited resource farmers".

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Public Survey/Questionnaire Results:

#4 Zone Natural Resources Conservation Concerns Survey Results

(including mailed surveys & surveys in public meetings & outreach efforts)

Date: May & June 2005

County/Soil Conservation District: NO DEMOGRAPHICS REPORTED.

Total Number of Respondents:

SCORING:

32

3 = a concern that should be addressed immediately

2 = a concern that should be addressed in the future

1 = a minor concern

0 = not a concern

Topic of Concern	3	2	1	0
Soil loss or erosion on land or along stream channels	12	11	4	3
Soil condition due to compaction or other changes	4	7	13	4
Soil contamination due to salts, chemicals or other materials	5	11	8	5
Adequate water supply for desired uses	20	5	1	3
Available water is clean enough for desired uses	16	9	2	3
Ground water quality and quantity	16	7	4	2
Storm runoff or flooding	10	12	6	1
Air quality, including blowing dust, smells and other pollutants	7	11	10	1
Plant health, production and adequate quantities	5	15	5	4
Presence of invasive plants including noxious weeds	18	8	3	0
Wildfire hazard	13	8	5	2
Adequate food, water and cover available for livestock	11	13	4	1
Adequate food, water and cover available for wildlife	7	14	6	2
Wildlife species of special concern including threatened & endangered	4	10	13	2
Loss of open space or agricultural lands	14	9	4	2
Urban/suburban growth	6	13	3	7
Adequate energy sources available	13	12	2	2
Recreation opportunities	4	15	9	1
Adequate support of historic/prehistoric resources	5	11	9	4
Adequate marketing for agricultural products	16	6	5	2

Remarks: Top 5 concerns (Immediate, Future, Minor)

Immediate

1-Adequate water supply for desired uses
2-Presence of invasive plants including noxious weeds
3-Available water is clean enough for desired uses
Ground water quality and quantity
Adequate marketing for agricultural products
4-Loss of open space or agricultural lands
5-Wildfire hazard
Adequate energy sources available

Demographics

Gender:

# males	# females

Ethnicity/Race:

Future	Hispanic	Native American	Asian	Caucasian
1-Plant health, production and adequate quantities				
Recreation opportunities				
2-Adequate food, water and cover available for wildlife				

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3-Adequate food, water and cover available for livestock	African			
Urban/suburban growth	American	Other		
4-Storm runoff or flooding				
Adequate energy sources available				
5-Soil loss or erosion on land or along stream channels	Age:			
Soil contamination due to salts, chemicals or other materials	18-24	25-38	39-50	51-65
Air quality, including blowing dust, smells and other pollutants				
Adequate support of historic/prehistoric resources				
Minor	66+			
1-Soil condition due to compaction or other changes				
Wildlife species of special concern including threatened & endangered				
2-Air quality, including blowing dust, smells and other pollutants				
3-Recreation opportunities				
Adequate support of historic/prehistoric resources				
4-Soil contamination due to salts, chemicals or other materials				
5-Storm runoff or flooding				
Adequate food, water and cover available for wildlife				

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This assessment is intended to be used for planning purposes only.

Footnotes / Bibliography

1. General information about Juab County obtained from the official Juab County website:
<http://www.co.juab.ut.us>
2. Location and land ownership maps made using GIS shape files from the Automated Geographical Reference Center (AGRC), a Utah State Division of Information Technology. Website:
<http://agrc.utah.gov/>
3. 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 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.
4. 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
5. Land Capability Classes derived from SURGO Soils Survey UT607 and Soil Data Viewer.
6. 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 disc ordered in March 2000. For more information:
<http://www.nrcs.usda.gov/technical/NRI/>
7. 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>
8. Irrigated Adjudicated Water Rights obtained from the Utah Division of Water Rights.
9. Stream Flow data from Utah division of Water Rights.
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 Utah Division of Water Quality.
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/>).

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14. County population data from the U.S. Census Bureau, Utah Quick Facts,
<http://quickfacts.census.gov/qfd/states/49000.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>