

# TOOELE COUNTY RESOURCE ASSESSMENT

2013

*Conserving Natural Resources For Our Future*



 Grantsville and Shambip Conservation Districts

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# Executive Summary



**Grantsville Conservation District:** Neil Johnson, Vic Warr, Bruce Clegg, Charley Warr, and Todd Arbon (Not Pictured)

**Shambip Conservation District:** Darrell Johnson, Kyle Russell, Scott Pebrson, Chad Hunt, Janet Larson, and Paula Lee (Clerk)

## Why a Resource Assessment?

The Grantsville and Shambip Conservation Districts have developed this resource assessment with the goal that conservation efforts in the county address the most important local resource needs. This report identifies natural and social resources present in Tooele County and details specific areas of concern. Local, state, and regional entities can use this assessment to develop county resource management plans or to target conservation assistance needs.

We recognize that all who could have provided information may not have had the opportunity. This document is dynamic and will be updated as additional information is available.

Your comments are requested.

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## Natural Resource Priorities and Concerns

The Grantsville and Shambip Conservation Districts have identified five natural resource priority concerns:

1. **Noxious and Invasive Weeds**
2. **Water Quantity**
3. **Rangeland Health**
4. **Recreational Impacts to Public & Private Land**
5. **Agriculture Land Preservation**

## General Resource Observations

Natural and social resources are categorized as soil, water, air, plants, animals, and humans (SWAPA + H). This assessment describes the general condition of these resources within Tooele County. As opportunities become available to address these issues, and as circumstances change, their emphasis should be elevated accordingly.

**Soil:** Prime Farmland and Farmland of Statewide Importance

**Water:** Water Supply and Irrigation Water

**Air and Climate:** Overview

**Plants:** Crops and Rangeland

**Animals:** Livestock, Endangered and At-Risk Species and Game

**Humans:** Population, Labor Market, Economy and Recreation

*Conservation districts provide the local leadership and education to connect private property owners with state and federal assistance to improve, protect, and sustain Utah's soil, water, and related natural resources.*

# Introduction

## The Conservation Movement

The Dust Bowl of the 1930s brought the beginning of the national programs for conserving soil and water resources in the United States. On April 27, 1935, Congress declared soil erosion “*a national menace*” and established the Soil Erosion Service. Since then, the agency was changed to the Natural Resource Conservation Service (NRCS). In May of 1936, farmers were allowed to setup districts to direct soil conservation practices. Today, Utah has 38 Conservation Districts (CD).

## Conservation Progress

Both Grantsville and Shambip Conservation Districts are units of state government, created under Utah State Law in 1938, to administer and promote conservation activities in Tooele County. Since their creation, large strides have been made toward increasing and sustaining natural resources in Tooele County. The conservation districts, in cooperation with the NRCS, Utah Association of Conservation Districts, Utah Department of Agriculture and Food, U.S. Farm Services Administration, Utah State University Extension Service, local Indian tribes, and other federal, state, and local agencies, provide guidance to county land managers in identifying and solving specific conservation problems. A five member board of supervisors directs and adapts these activities to meet local needs.

## Resource Assessment Outreach

The Grantsville and Shambip Conservation Districts invited stakeholders, including government officials and conservation and natural resource-oriented partners, to meetings to learn how they viewed the county’s natural resources and what conservation issues were most pressing. Those who could not attend were invited to provide input via email, attend a Grantsville or Shambip Conservation District meeting, or talk directly with a board member.

Local resource professionals were consulted for priority natural resource concerns addressed in this assessment. Furthermore, a review committee was formed to critique each priority resource concern. This committee consisted of resource professionals, elected officials, and stakeholders who volunteered to take part in the assessment.



Photo Courtesy of NRCS

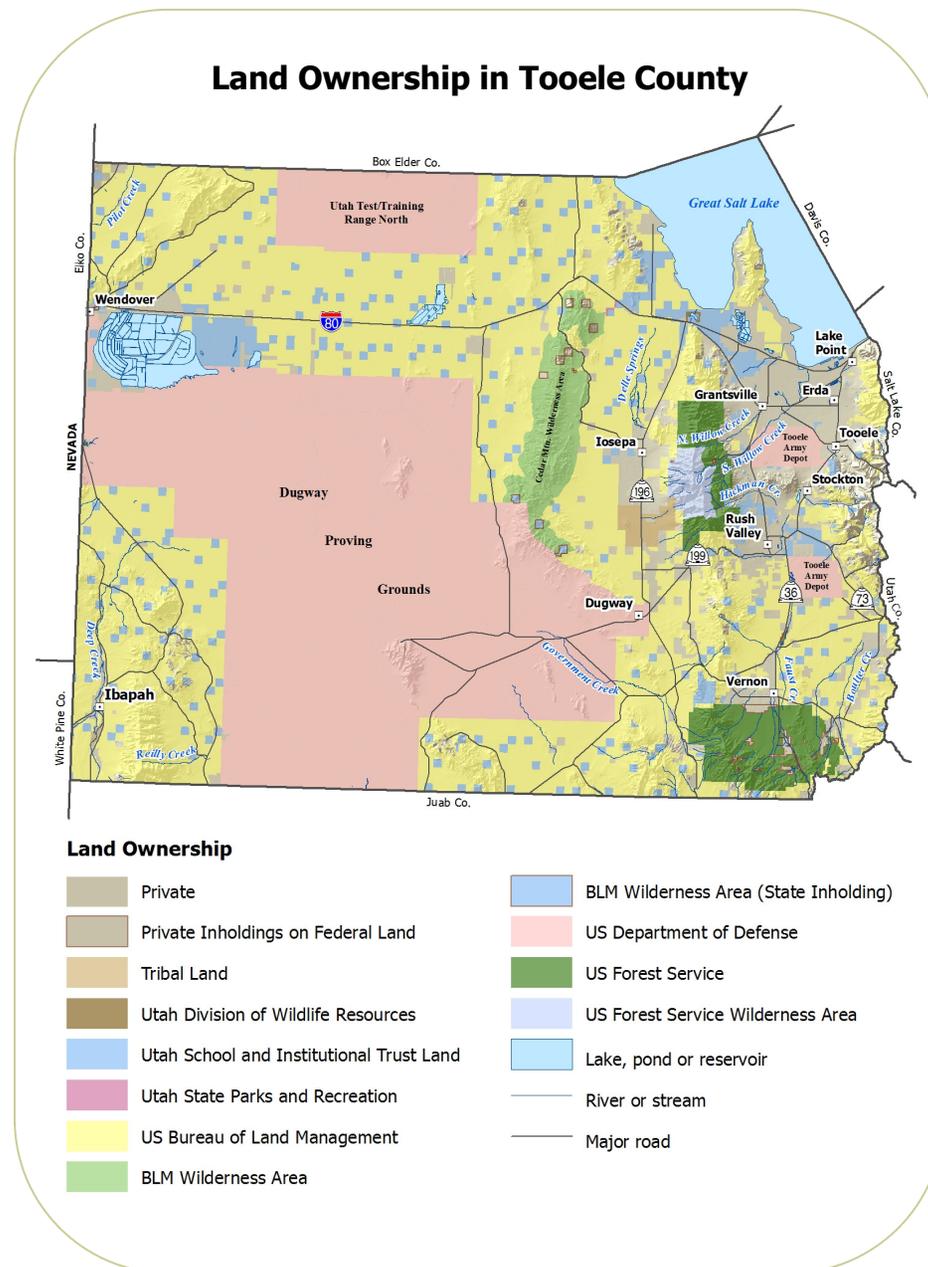
*A great “roller” moves across the land during the Dust Bowl.*



Photo Courtesy of Grantsville CD

*Prosperous land in Tooele County.*

# Tooele County Overview



Tooele County covers 7,287 square miles, stretching west from the Great Salt Lake to the Utah/Nevada state line. It was one of Utah's original six counties created in 1850 and since has had several boundary changes. At the time of the 2010 census, the population was 58,218.

The current boundaries of Tooele County encompass classic basin and range terrain, with vast expanses of the Great Salt Lake Desert interrupted by north to south running mountain ranges. On the eastern border are the Oquirrh Mountains, and along the western border are the Deep Creeks, with the Onaqui and Stansbury Mountains in between. Elevations range from 4,200 feet above sea level at the edge of the Great Salt Lake to over 11,031 feet above sea level at Deseret Peak in the Stansbury Mountains.

Originally valued by the pioneers for livestock grazing, Tooele County later attracted settlers for farming and mining. By the end of World War II, the county had become an important site for military installations, with the federal government reserving large areas for defense purposes, military training grounds, and the storage and disposal of weapons, including the Tooele Army Depot, Dugway Proving Grounds, and the now closed Wendover Air Force Base.

Two Goshute Tribes have reservations in Tooele County. The reservations cross county lines and much of the Confederate Tribe of Goshute Indian's 112,870 acres and the Skull Valley Tribe of Goshute Indian's 18,000 acres are located in Tooele County.

While the demand for natural resources within the county, including timber, grazing lands, mineral deposits, and water, continues to increase, the efforts to preserve and protect these valuable resources also intensifies.

*Tooele County boasts vast, wide open spaces for agricultural and recreational activities.*



Photo Courtesy of Tophera



Photo Courtesy of USU Extension



Photo Courtesy of Tophera

# Natural Resource Priorities and Concerns

## NOXIOUS & INVASIVE WEEDS

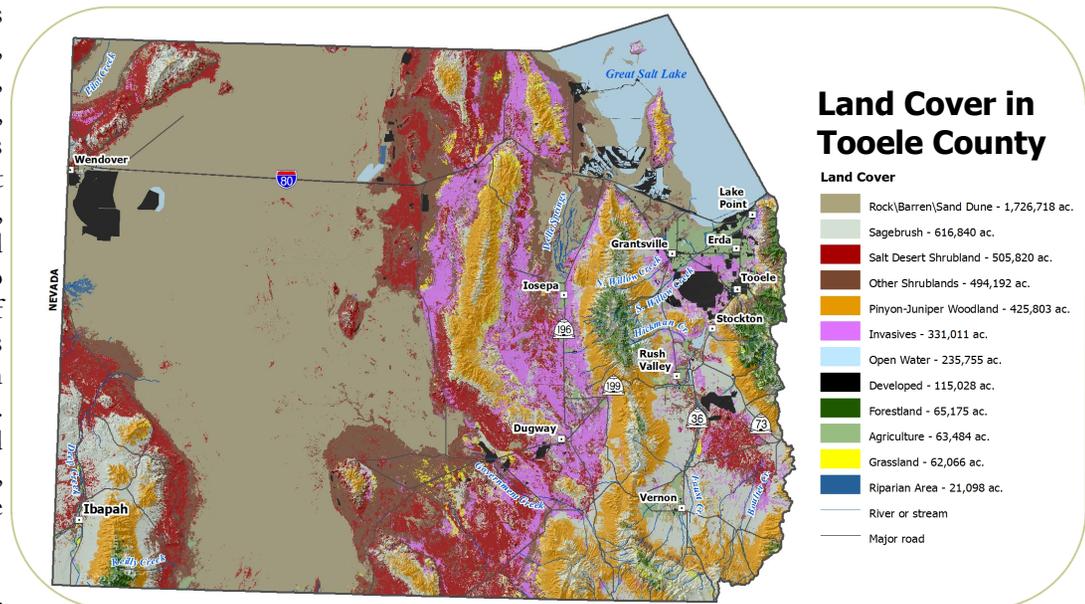
Noxious and invasive weeds have quickly become one of the greatest obstacles to maintaining Utah's healthy lands. The widespread reach of such weeds is problematic as they affect all types of land in Utah, including agricultural lands, forests, nature preserves, stream banks, private land, and parks, among others.

At a state level, the Utah Noxious Weed Act defines a noxious weed as "...any plant the commissioner (of Agriculture) determines to be especially injurious to public health, crops, livestock, land, or other property." Each year, hundreds of thousands of dollars and many hours of manual labor are spent to manage and prevent the spread of noxious weeds. Control is vital to preserving healthy habitats for livestock, wildlife, and native plant communities. If not maintained, noxious weeds can quickly dominate a landscape, causing reduced forage for animals, reduced soil health, and increased fire risk, as a result of destroyed native ecosystems.

Within Tooele County, noxious weed infestations tend to be mostly concentrated near roads, rail, recreational trails, and grazing areas. Currently, 27 weeds are listed on the state noxious weed list, and Tooele County has added jointed goat grass to the county list. Two of the most prominent weeds are white top, also known as hoary cress, and Scotch thistle. Due to the widespread infestation, managing and controlling these two weeds accounts for approximately two-thirds of the county's annual weed budget. Russian olive is taking over wetland areas and is a large concern because of the damage it does to wetland quality. Although not as prevalent as white top and Scotch thistle, small patches of leafy spurge, spotted knapweed, Russian knapweed, and diffuse knapweed are also located throughout the county.

Recently, clusters of musk thistle, dyer's woad, and Myrtle spurge have set down roots. These

new, relatively small infestations are currently the top priority for the county's weed department. Each year, outbreaks of such weeds will be treated and monitored until they are under control. Preventing small outbreaks of new weeds will continue to be the county's highest priority. Addressing the problem before a larger outbreak occurs will save the county significant time and financial resources. In order to prevent such outbreaks, education programs and annual weed mapping are utilized to help the county identify and monitor noxious weeds. The Tooele County Weed Board has mapped all roads in the county for noxious weeds and will continue to make annual updates. While all roads have been mapped, many areas in the county have not yet been included. In order to verify the maps are accurate and up-to-date, additional mapping on private land is a priority. GPS units, as well as workshops to assist private landowners with mapping their acreages, have been, and will continue to be, available for use.



## Tooele County Weed Control Efforts

The **Tooele County Weed Board** targets grazing and crop land greater in size than one acre. Along with spray treatments, the program includes reseeding land previously treated, as well as biological methods of control. Weed infestation trends are continuously mapped and monitored using GPS and GIS technology, along with before and after photographs. Spray equipment and free herbicide are available for landowners to treat areas affected with noxious weeds. Additionally, annual weed control and weed sprayer calibration workshops are part of the program.

The **Squarrose Cooperative Weed Management Area**, covering Utah, Juab and Tooele counties, brings people and agencies together to work collectively on weed issues. In addition to coordinating efforts in the removal and restoration of severely infested areas of knapweed, they also hold workshops and educational programs. The CWMA is actively involved in mapping and tracking invasive weeds throughout the tri-county area.

The **Tooele County Weed Department** is responsible for enforcing noxious weed control on private and public property and controlling noxious weed infestations on all county-owned property and right-of-ways, as well as contracting with local governmental entities to fulfill responsibilities in complying with Utah Noxious Weed Law.

The **Utah State Extension** works closely with everyone, from homeowners with weed issues to large rangeland managers, by helping them develop an integrated approach to weed management.

## Weeds of Top Concern in Tooele County



White Top



Scotch Thistle



Houndstongue



Leafy Spurge

## State of 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*)
- Black henbane (*Hyoscyamus niger*)
- Broad-leaved peppergrass (*Lepidium latifolium*)
- Canada thistle (*Cirsium arvense Scop.*)
- Dalmation toadflax (*Linaria dalmatica Mill.*)
- Diffuse knapweed (*Centaurea diffusa Lam.*)
- Dyers woad (*Isatis tinctoria*)
- Field bindweed (*Convolvulus spp.*)
- Hoary cress (*Cardaria spp.*)
- Houndstongue (*Cynoglossum officinale*)
- Johnsongrass (*Sorghum halepense Pers.*)
- Leafy spurge (*Euphorbia esula*)
- Medusahead (*Taeniatherum caput-medusae*)
- Musk thistle (*Carduus nutans*)
- Ox-eye daisy (*Chrysanthemum leucanthemum*)
- Poison hemlock (*Conium maculatum*)
- Purple loosestrife (*Lythrum salicaria*)
- Quackgrass (*Agropyron repens Beauv.*)
- Russian knapweed (*Centaurea repens*)
- Saltcedar (*Tamarix ramosissima Ledeb.*)
- Scotch thistle (*Onopordium acanthium*)
- Spotted knapweed (*Centaurea maculosa Lam.*)
- Squarrose knapweed (*Centaurea squarrosa Gugle.*)
- St. Johnswart (*Hypericum perforatum*)
- Sulfur cinquefoil (*Potentilla recta*)
- Yellow starthistle (*Centaurea solstitialis*)
- Yellow toadflax (*Linaria vulgaris Mill.*)

Additional weed added to Tooele County Noxious Weed List:

- Jointed goatgrass (*Aegilops cylindrical*)

# Natural Resource Priorities and Concerns

## WATER QUANTITY

### Ground Water

Ground water accounts for nearly all of the municipal, industrial, and agricultural water supply within Tooele County and is the sole source of drinking water for Tooele Valley. Ground water within the West Desert Basin generally moves from the mountains toward the central and northern areas of Tooele Valley. Steep hydraulic gradients exist at Tooele Army Depot and near Erda.

The estimated average annual ground water recharge within Tooele County is 82,000 acre-feet per year. While the primary source of recharge is precipitation in the mountains, other sources of recharge include irrigation water and streams. As previously stated, groundwater is an important resource to Tooele County as it is dependent on the water source for a number of applications.

### Surface Water

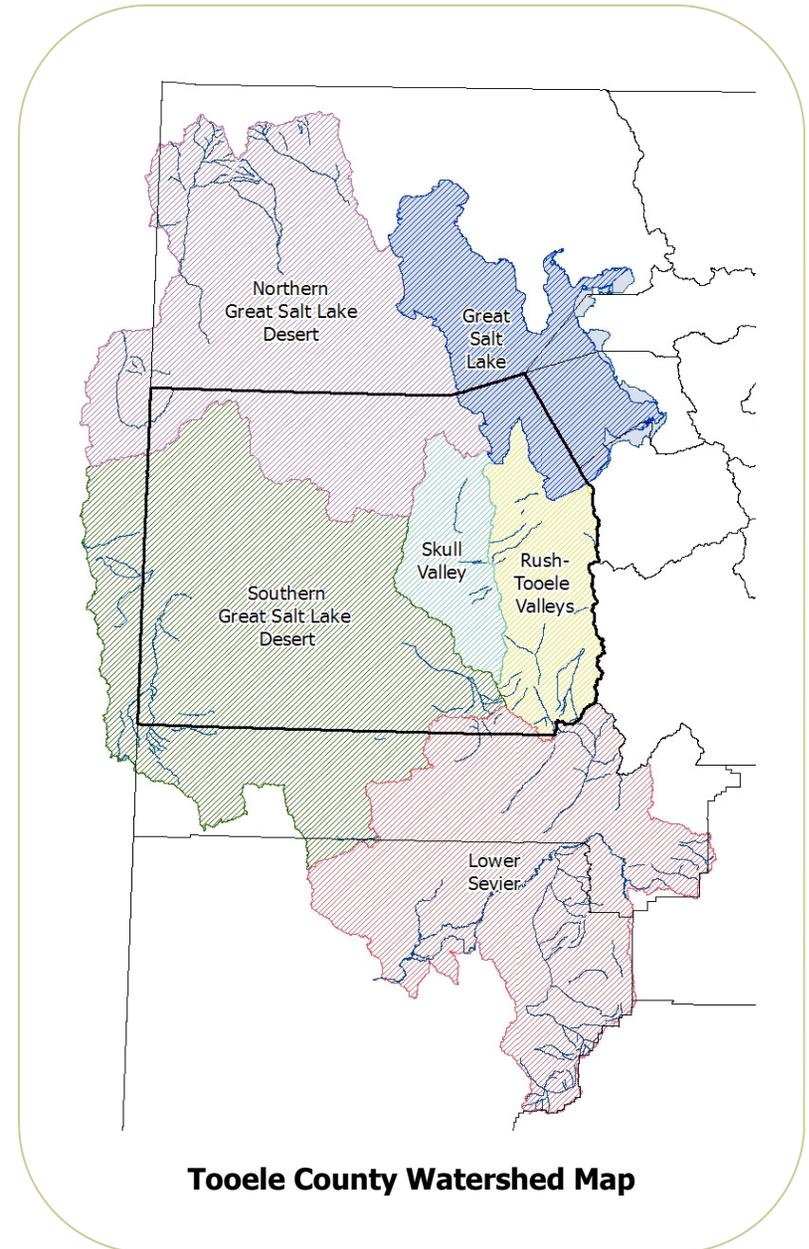
Three reservoirs provide secondary and agricultural water to Tooele County residents: Vernon Reservoir services Vernon, Settlement Canyon Reservoir services Tooele, and Grantsville Reservoir services Grantsville.

Irrigation water in the county is typically diverted from mountain streams at or above the mouth of the canyon. The water quality from these streams is generally high, with the exception of Deep Creek. The water quality of this stream is poor due to return flow from agricultural use, a byproduct of mismanagement.

Tooele County's stream channels below the points of diversion are often dewatered or can have a high salinity problem. Some riparian areas have been degraded, but man-caused water quality impacts within the basin are minimal.

### Tooele Valley

Tooele Valley is bounded by the crest of the Stansbury Mountains on the west, the Great Salt Lake on the north, the Tooele/Salt Lake County line on the east, and the drainage divide between Rush Valley and Tooele Valley to the south. This region contains about 113,000 acres of water.



Ground water recharge to the area originates primarily in the Oquirrh and Stansbury mountains. A small amount of subsurface flow from Rush Valley is also believed to provide recharge to the ground water in Tooele Valley. Average annual recharge and discharge estimates indicate that the two are approximately equal, each totaling approximately 60,000 acre-feet annually.

A review of ground water rights for this area indicates that potential withdrawals under perfected water rights and approved applications to appropriate water total about 62,000 acre-feet per year. However, actual annual withdrawals from wells are estimated at about 30,000 acre-feet. The discrepancy between these numbers could be due to several factors, including the fact that not all water rights are being used to their fullest possible extent every year and actual irrigation diversions may be less than the 4.0 acre-feet per acre used in estimating potential withdrawals for irrigation water rights.

### Rush Valley

Rush Valley is bounded by the Sheeprock Mountains in the south, Tintic Mountains to the southeast, Oquirrh Mountains to the east, South Mountain to the north, Stansbury Mountains to the northwest, and Onaqui Mountains to the west. This diverse assemblage of mountain ranges produces runoff, but the valley is so wide and dry that streams disappear shortly after they enter the valley.

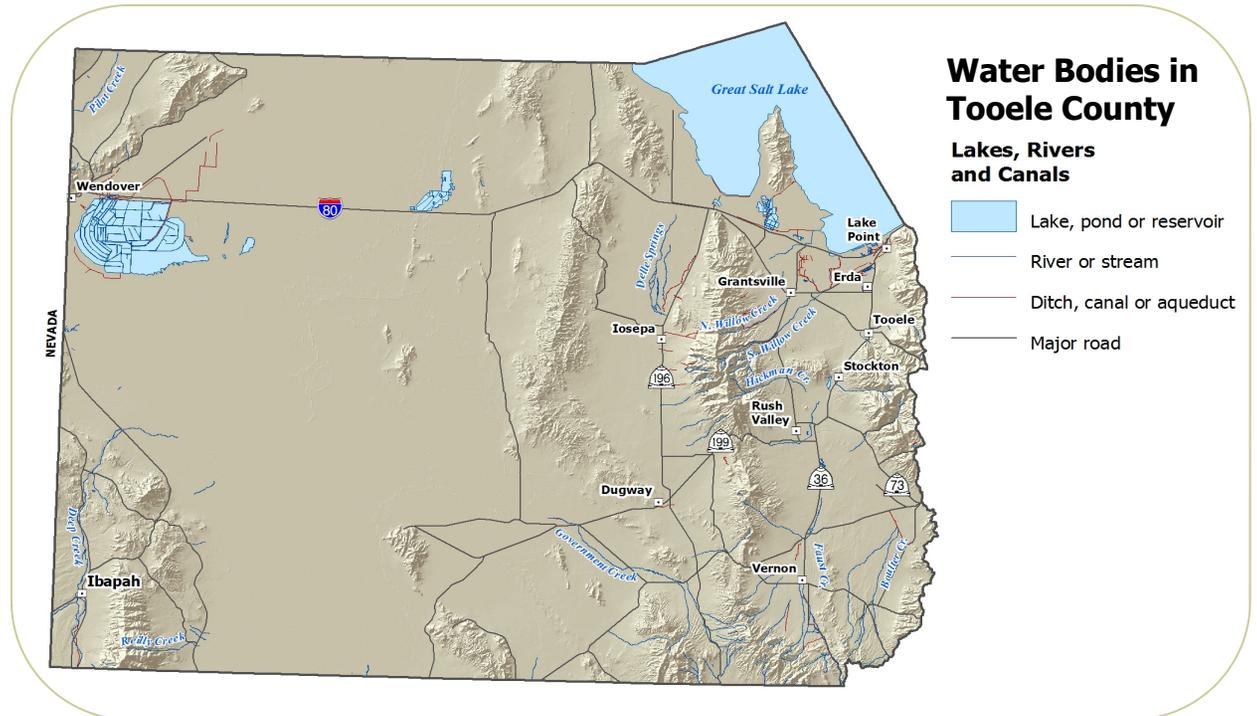
As the Salt Lake metropolitan area continues to expand, Tooele Valley to the north of Rush Valley and Cedar Valley to the southeast are experiencing rapid suburban growth. Both of these valleys are within the Great Basin, have limited water resources, and are closed to new water appropriations. The three valleys are linked hydrologically with ground water flowing from Rush Valley's higher elevation into both Tooele and Cedar valleys.

The Rush Valley Water Conservancy District was established on January 31, 1984, to provide water and related services to the unincorporated area of Tooele County, known as Rush Valley. It includes the cities and towns of

Stockton, Ophir, Rush Valley, and Vernon. The Tooele County Commission appoints the district's directors pursuant to Section 17A-2-1409 U.C.A. 1953, as amended.

### West Desert Basin

Salinity is a major issue in the West Desert Basin. Saline water is unusable for numerous applications, including agriculture. Users in this area often have to import water, via truck or pipe, from the surrounding areas. Additionally, the area is experiencing rapid suburban development, and therefore, new municipal water sources will be developed, adding new stresses to the ground water system.



# Natural Resource Priorities and Concerns

## RANGELAND HEALTH

Captain Howard Stansbury described Tooele Valley, Utah in 1849 by saying, “Grass is very abundant and numerous springs are found on both sides of the valley.” Another early resident of Tooele County, Philip De LaMare, recounted, “As a boy he remembered a valley full of high, waving grass ... and it was not uncommon for stockmen to be unable to find their animals because of being lost in this high grass which spread over the valley.”

### Range Condition

Rangelands make up approximately 75 percent of Tooele County and are vital to the County’s economy. Precipitation ranges from four inches in the West Desert to above 20 inches in the surrounding mountains within Tooele Valley. As a result of low precipitation and salty soils, the lower to mid-elevation rangelands are subject to invasive and noxious weed infestation, especially cheatgrass. Range condition inventories throughout Tooele County suggest that rangelands are producing approximately 50 percent of their potential. Rangeland health inventories conducted in Tooele County propose that main resource concerns consist of degradation and removal of native plant species, introduction of invasive, non-native species, weed infestation, juniper encroachment, a decrease in overall annual plant production, sheet and rill erosion, and rangeland site stability.

### Conservation District Land

Grantsville and Shambip conservation districts both own land in Tooele County. Grantsville CD’s approximate 11,000 acres spans the semi-desert Tooele Valley floor to the upland foothills along the Stansbury Mountains. This land is grazed by domestic livestock and wildlife and is valued by recreationists for its multiple use opportunities. It undergoes ongoing improvements including range plantings and reseedings, brush treatments, installing watering facilities to promote livestock distribution, and cross fencing. Shambip CD maintains approximately 700 acres within their CD boundary that are leased for grazing, and similar improvements are also ongoing.

### Public Land & Management

Ranching is the most common agricultural based activity in Tooele County. The traditional method of cattle and sheep production is for a private rancher to possess permits to graze animals on upland ranges administered by the Bureau of Land Management (BLM), the U.S. Forest Service (USFS), Utah School and Institutional Trust Lands Administration (SITLA), and/or private land during the winter months. Livestock producers are facing pressure from environmental groups, federal agency land managers, and other public land users and groups who are working to restrict, and in some cases eliminate, grazing on public lands. The threat of appeals and related litigation has prevented enacting government agency land management plans. Delays of implementing such plans has the potential to reduce the number of livestock allowed and/or restricting the time livestock are permitted to graze.

### Riparian Condition

Livestock’s unrestricted access to stream banks impacts riparian corridors and is a source of sediment and manure. Manure entering into streams and water bodies accounts for increases in phosphorus and nitrogen. Sediment and loss of vegetation along streams significantly impacts fish populations. Poor grazing management has significantly impacted water quality and has led to, among other issues, the widening of stream channels, loss of streamside vegetation, and erosion of stream banks.

*Conservation districts partner with agencies such as the Utah Grazing Improvement Program (GIP) and the Natural Resources Conservation Service (NRCS) use programs available to landowners, producers, organizations, and other agencies to help improve the resource conditions found on rangelands.*

## Wildlife Populations

Tooele County has a large amount of rangeland that historically supported wildlife populations. As rangeland is encroached upon by developers, the carrying capacity of the land is reduced, forcing wildlife into lower elevations to find food. Currently, the elk and horse populations are growing, causing the deer population to diminish. Wildlife is an agricultural concern in lower elevations, as the animals eat crops and feed for livestock found on farms and ranches. Not only does the wildlife cost agricultural producers significant amounts of money in damaged crops and extra feed, but they also promote the spread of noxious weeds, exacerbating the weed problem discussed on page 4.

## Wild and Feral Horses

There are between 60 and 70 wild/feral horses in Ibapah and approximately 600 throughout Tooele County. In addition to the Ibapah populations, these horse populations are also located in Dugway and Skull Valley. These horses are protected and unmanaged on federal lands but not on the sovereign lands of the reservations. The unmanaged horses degrade rangeland and undermine current management efforts. Currently, horses cannot be slaughtered in the United States but can be slaughtered in Mexico and Canada. If the harvest of horses were allowed, an economic opportunity may exist, but instead, the horses compete with big game and domestic livestock for forage and space, ultimately causing damages to rangelands.

### Example Range Habitat



Photos Courtesy of Matt Phillippi, NRCS

### Range Pests

#### Mormon Crickets



Credit: © Jacob Hamblin/Shutterstock.com

Mormon crickets and grasshoppers can be devastating to both range and cropland. Tooele has countless acres of rangeland that is prime habitat for many species of grasshoppers. If left unchecked, they may destroy rangeland and compete with livestock and wildlife for food. Crops such as alfalfa, corn, oats, wheat, rye, and barley can lose easily lose their value during an infestation. Populations in Tooele County are continuously monitored, and outbreaks are treated as effectively as possible.

#### Gophers, Voles and Other Burrowing Mammals



Photo courtesy Benjamin Hudson

These mammals are abundant in high elevations and on the north side of Tooele Valley. When their numbers are in excess they cause damage to the landscape. Burrowing can kill

root systems and lead to degraded range habitat. As their populations increase, their predator populations, such as fox, coyotes, and badgers increase, as well.

### Sensitive Species

#### Greater Sage-Grouse



Photo courtesy of Dan & Lin Dzurisin

The greater sage-grouse inhabits Tooele County's sagebrush plains, foothills, and mountain valleys. Sagebrush is the predominant plant of quality habitat. A good understory of grasses and forbs, and associated wet meadow areas, are essential for optimum habitat.

Greater sage-grouse are native to Utah and are listed as a sensitive species by the Utah Division of Wildlife Resources.

# Natural Resource Priorities and Concerns

## RECREATIONAL IMPACTS TO PUBLIC & PRIVATE LANDS

Tooele County has become well known for its exceptional recreational opportunities. The BLM, U.S. Forest Service, and state parks provide land for numerous activities.

Recreation is welcomed by the county for its boost to the tourism industry. However, increased recreation has proven to be an issue with federal and state land managers who have the job of delicately balancing recreational opportunity with the need to protect and manage natural resources.

Increased recreation has also proved to be a burden on private landowners, many of which have noted an increase in vandalism and trespassing on their lands. Local ranchers report increasing numbers of fence cuttings, sign damage, noxious weed introduction, unauthorized camping, animal poaching, and new undesignated trails on their lands. Trespassers who cut fences, including hunters, create unnecessary expenses for landowners.

Impacts to the county's natural resources are the most concerning side effect of increased recreation. Irresponsible OHV riders, as well as a general increase in ridership, has affected sensitive wildlife habitats, contributed to non-point source pollution, increased erosion, and assisted in the spread of noxious weeds. For this reason, there are designated wilderness (non-motorized) areas within Hickman, Ophir Mountains, and Deseret Peak.

In order to mitigate the problem, the Tooele County Trails Committee focuses on all users and works to provide signage on designated trails in an effort to keep people from trespassing and using undesignated trails. The goals of the committee include developing recreation resources by promoting recreational uses and profit from tourism business while also protecting natural resources for continued use and providing for a variety of uses.

### **The Tooele County Recreation Corridor**

*“The focus is educating people so they know where the legal routes are and then how to tread lightly and respect the privilege. The more riders can do to ride responsibly, the less closing of routes we do and less of our resources are required to manage the impacts of illegal riding or user-created trails.”*



Photo Courtesy of Tooele County Trails



Photo Courtesy of Tooele County Trails

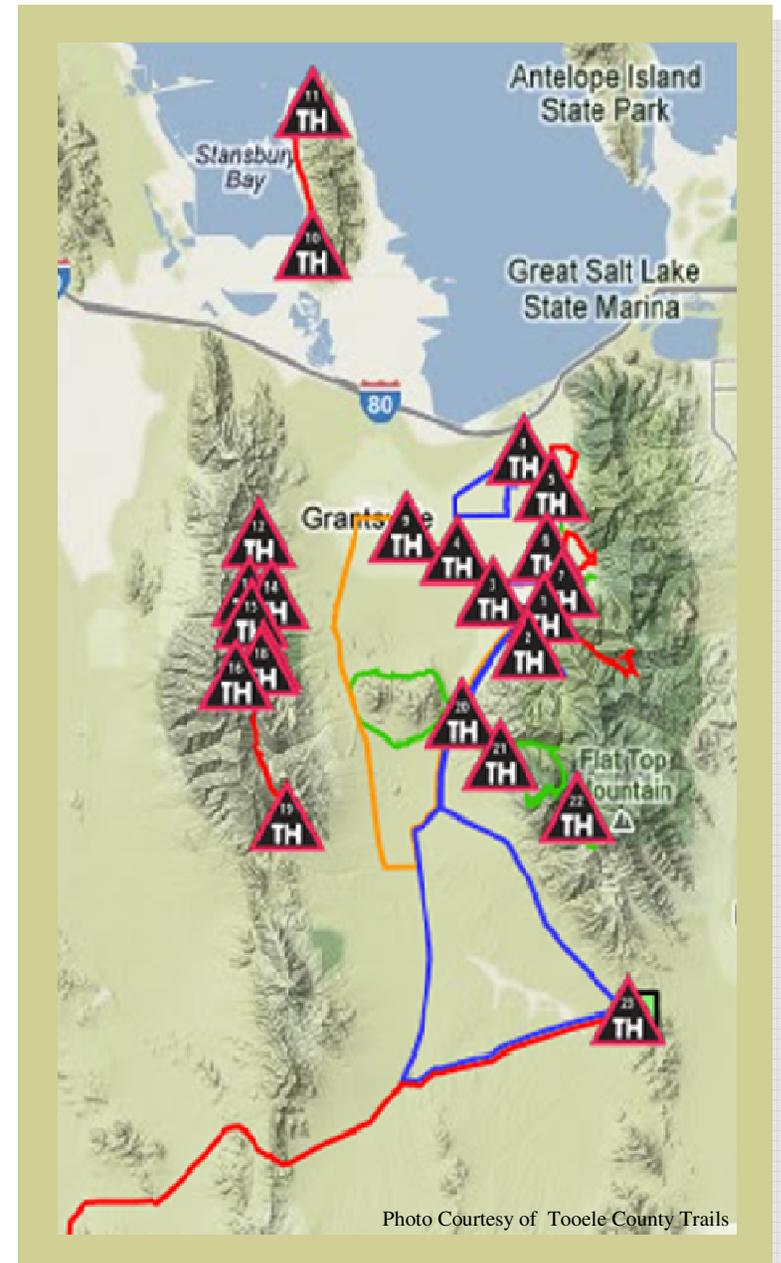


Photo Courtesy of Tooele County Trails

*The majority of people recreate with respect of the land they are using. A small number of people are causing the majority of the problems. The large impact of this small group could lead private landowners to close access to all recreation.*

### Trail Etiquette

- Because horses can be easily frightened, hikers, mountain bikers, and ATV riders must yield to horseback riders at all times. To properly yield for horseback riders on a narrow trail, stop and move downhill off the trail. A horse in panic will typically run uphill.
- ATV riders are required to yield to all uphill traffic—not just for horses. ATV riders that meet hikers and mountain bikers coming from the opposite direction must slow down, pull over, and yield the right-of-way. ATV riders that meet horseback riders coming from the opposite direction are required to stop, turn off their engines, remove their helmets to lessen the horse's anxiety, and not make any sudden movements.
- Mountain bikers are required to yield to all hikers and horseback riders and, except for ATV riders, yield to all uphill traffic. That means mountain bikers who are descending a trail must yield if they see a hiker, horseback rider, or another mountain biker coming up the trail. ATV riders climbing a trail are required to stop and yield to all descending hikers, mountain bikers, and horseback riders.
- Hikers descending a trail yield only to other hikers or horseback riders coming up the trail. When hiking in a group, yield to single or pair hikers. Also when hiking in a group, hike in a single file line.
- The bottom line: ATV riders yield to all hikers, bikers, and horses. Bikers yield to all hikers and horses. And hikers yield only for horses and hikers moving uphill.
- Always be friendly, courteous, and respectful to other trail users.
- Regardless of your mode of travel, don't hike or ride on muddy trails.
- Many trails on private land have livestock gates. Users are asked to always leave the gate as they found it. But when in doubt, close the gate.



# Natural Resource Priorities and Concerns

## AGRICULTURE LAND PRESERVATION

A longstanding, ongoing concern is the loss of agricultural lands, including prime farmland, as development is necessitated with ever rising populations to the Salt Lake metropolitan area. Rapid development sometimes overlooks potential mass movement or other geologic concerns. This growth continues to put demands on local water quantity, another concern for Tooele County.

Tooele County is a mostly rural area that is experiencing a rapid increase in residential development, resulting in less agricultural land. Agricultural land uses occur throughout the county. Small, isolated farms are located in the Ibapah-Gold Hill and I-80 planning areas. Greater concentrations of agricultural land uses occur in Skull, Rush, and Tooele valleys. Agricultural land use has historically played an important role in the economy and culture of the county and will continue to play a prominent role.

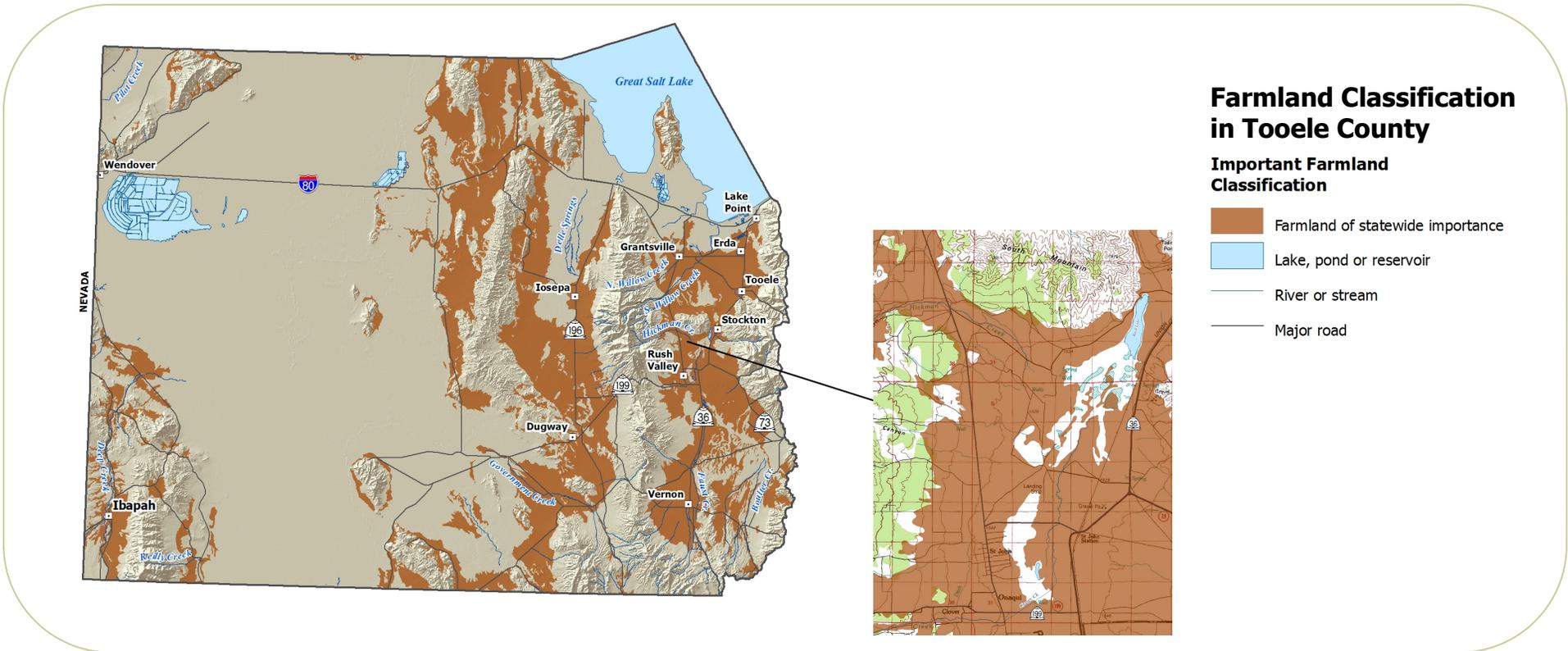
Water availability is the limiting factor for agriculture within the region, but water supplies are currently efficient in the county's agriculturally dense areas. In more remote areas, such as Ibapah, the smaller water resources are generally available for agriculture use. In the future, however, new growth and different land uses will compete for available water and lands. Despite the likely future transition in land use and water supply, the county should continue to support agriculture and protect prime agriculture lands as the county grows.

In addition to serving as a unique part of the local economy and culture, agricultural lands serve as ground water aquifer recharge zones – critical to continuing to meet the needs of a growing population. Agricultural protection areas (APA) are one tool for ensuring protection of aquifer recharge zones and the preservation of agriculture as a way of life in the county.

A Utah Department of Natural Resources study, *Wetlands in Tooele Valley, Utah - An Evaluation of Threats Posed by Ground-Water Development and Drought*, conducted by Neil Burk, Charles Bishop, and Mike Lowe, recommends placing restrictions on the areas of development, such as allowing development only in upland environments or placing a non-development buffer zone around wetland areas. Another option could be to restrict development to only the more beneficial land uses. Overall, agricultural land use is more beneficial to wetland health and functionality than industrial and urban land use. Allowing only land uses that have minimal impacts to wetlands, such as rotational grazing on irrigated pastures, low-density rural developments, and single-family residential developments with a half an acre of native vegetation between houses, would be the best approach for preserving Tooele Valley's wetlands.

*The Southern Nevada Water Authorities application for water rights on the western border of Tooele will directly impact water availability in Ibapah and the surrounding areas, if approved and implemented.*

	1925	1987	1997	2007
<b>Farms</b>	421	299	332	379
<b>Acres in Farms</b>	144,320	487,427	291,746	252,848
<b>Average Size of Farm (Acres)</b>	342.8	1,630	879	667



### Agriculture Sustainability Task Force

As agriculture in Utah continues to face increased pressure from urban development, changing demographics, economic pressures, and a myriad of other issues, it is increasingly important that policy makers and citizens understand the critical role that agriculture plays to Utah's security, economy, society, culture, and well-being. To better understand and address these concerns, Lieutenant Governor Greg Bell and Commissioner of Agriculture Leonard Blackham convened the Utah Agriculture Sustainability Task Force, comprised of state legislators, local government officials, conservation districts, agricultural producers, and other interested parties. During the discussion of key agricultural sectors, eight overarching issues emerged: 1) food security, 2) invasive species, 3) grazing management, 4) immigration, 5) urban agriculture, 6) agriculture promotion and profitability, 7) next generation farms, and 8) irrigation infrastructure. Find the full report at: <http://www.ag.utah.gov/divisions/conservation/documents/TaskForceSummaryNov162011.pdf>.

Farmers and ranchers are natural stewards of the land. Wise management of their lands protects critical watersheds, provides habitat for important wildlife, maintains clean water and air, and provides other benefits that save taxpayers the cost of cleaning water and air. Overall, this kind of management has the power to promote a better quality of life.

# General Resource Summary

## SOIL ▪ WATER ▪ AIR & CLIMATE ▪ PLANTS ▪ ANIMALS ▪ HUMANS

The NRCS conducts resource inventories to help resource managers make land use decisions. The inventories evaluate the soil, water, air, plants, animals, and humans. The Grantsville and Shambip conservation districts use these inventories to determine the priority concerns for this assessment in the previous pages and the long range planning process.

### Soil

There are 84 different soil types in Tooele County, 21 of which are designated prime, unique, and farmland of statewide importance. Salty soils, particularly the salt flats, have extremely high salt content, preventing any vegetative growth. The Tooele County general soils map can be found in Appendix A, on page 20.

Prime farmland is a national designation for land that has the best combination of physical and chemical soil characterizes for producing food, feed, fiber, forage, oil seed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor and without intolerable soil erosion.

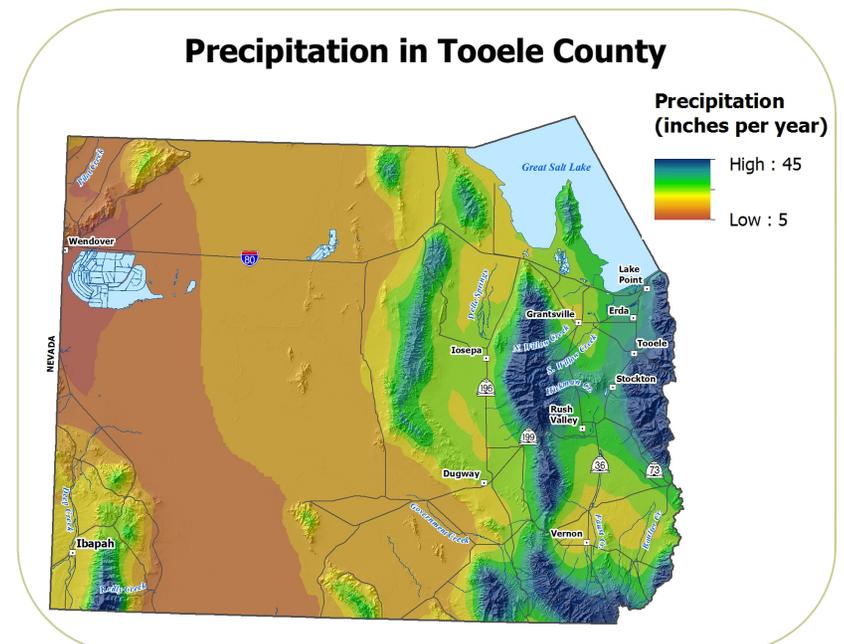
Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. Farmland of statewide importance is identified as important for agricultural use in the state but not of national significance. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and high yields of specific crops.

### Water

Tooele County crosses eight watersheds, including Utah Lake, Jordan, Rush-Tooele Valley, Skull Valley, Southern Great Salt Lake Desert, Northern Great Salt Lake Desert, Great Salt Lake, and Lower Sevier watersheds. Major water bodies in the county include Middle Canyon, Soldier, Opher, Vernon, Harker, Benion, Clover, North and South Willow, Settlement Canyon, Tooele, Deep Creeks, and Grantsville reservoirs.

Tooele County's communities compete amongst themselves for the scarce water resources in the different water basins. Water is piped form neighboring basins and this affects the water rights available to local basin residents. Water is also piped out of the county for use by Kennecott and others. Withdrawing from basins without return flow continues to threaten springs and groundwater recharge.

There are no flood plains identified in the county. Additionally, low average rainfall leaves crop production dependent almost



entirely on irrigation from fresh water sources. The ditches and piped water systems that run throughout the county form a supply network for agricultural, secondary, and municipal and industrial water distribution.

More information about water quantity, as well as the Tooele County Water bodies map, can be found on page 6.

## Air & Climate

Air quality is a significant concern to Tooele County residents. Contributing to air pollution in the county are two private hazardous waste incineration plants located in the west desert area and a mineral reclaiming plant located near west shore of the Great Salt Lake. The hazardous waste incinerators are permitted by the state of Utah, Division of Solid and Hazardous Waste and DEQ and are monitored to determine compliance within their permits. Each facility has air quality monitoring equipment installed and is regulated to determine pollutant emissions.

Magcorp, a mineral reclaiming industry located along the west shore of the Great Salt Lake, north of Grantsville, is the United States' largest emitter of chlorine and hydrogen chloride gas (HCl) into the atmosphere and has received considerable national exposure. Chlorine and HCl are byproducts of processing magnesium and other minerals. The current permit for Magcorp contains no limitations for the amount of such emissions. However, new regulations developed by DEQ have recently established a level of one percent of the threshold limit value (TLV) for non-carcinogens (for HCl the target is 75 ug/m<sup>3</sup>). Magcorp is reported to have significantly reduced the quantity of chlorine/HCl emitted during processing, but they are still viewed as the largest air pollutant point source in the county.

Tooele County's climate is categorized as semi-arid. Broad weather extremes can be experienced year-round. Daytime highs during summer can exceed 100°F, while temperatures during winter can drop below 0°F. Tooele County experiences an average of 11 inches of rainfall and 33 inches of snowfall per year. Powerful thunderstorms can also develop quickly during summer months, creating dangerous lightning and flashflood events.

### Ute Ladies'-tresses



Photo courtesy of [www.fs.fed.us](http://www.fs.fed.us)

## Plants

Pastureland in the county includes both irrigation and dry land pasture and is limited to the Ibapah area. Range makes up the majority of the agricultural land in the county.

Major forage crops include alfalfa hay and grass hay. Grain crops include barley, oats, and wheat. The most prevalent large-acre crop rotation is ten years in alfalfa, followed by two years in small grain before it is replanted with alfalfa. Producers typically get three cuttings of alfalfa per year. According to the Utah Agricultural Statistics, in 2012, Tooele County produced 33,000 tons of alfalfa hay, 21,000 bushels of barley, 21,000 head of cattle, and 800 sheep and lamb.

Additionally, there are culturally significant carrots in Ibapah that are damaged by elk and horse populations.

Noxious weeds continue to be a major resource concern that affect plants in Tooele County. One specific threatened plant species is the Ute ladies'-tresses (*Spiranthes diluvialis*). More information regarding noxious weeds can be found on page 4.

# General Resource Summary

## SOIL ▪ WATER ▪ AIR & CLIMATE ▪ PLANTS ▪ ANIMALS ▪ HUMANS

### Animals

Tooele County's landscape, including snow-capped mountains and sweeping deserts, provide an excellent habitat for a variety of wildlife. The county is home to elk, mule, deer, pronghorn antelope, bighorn sheep, cougar, bobcat, ducks, geese, chukars, pheasant, quail, forest grouse, dove, and rabbit. Each of these animals is hunted for recreation.

Settlement Canyon, Grantsville, and Vernon reservoirs are typically planted with several thousand trout each summer. With the Deseret Peak Wilderness Area and Stansbury Mountains to the west, Grantsville Reservoir is considered to be the most popular fishing spot in Tooele County. Bass can be found in Horseshoe Springs, Blue Lake, South Willow Canyon, and Clover Creek. The Bonytail (*Gila elegans*) is an endangered species. The Tooele County sensitive species list from the Utah Division of Wildlife Resources can be found in Appendix B on page 21.

The Fish Springs National Wildlife Refuge, with its five major warm springs that feed a 10,000-acre marsh system and host as many as 6,000 wintering birds, is one of the premier birding locations in the western United States. Owls, hawks, eagles, prairie falcons, ospreys, crows, ravens, flycatchers, thrushes, jays, bluebirds, and warblers can be spotted throughout the county.

Additionally, there is a buffalo heard on the Skull Valley Band of Goshutes' land.

### Humans

Tooele County is one of Utah's most uniquely beautiful places and features some of the most dramatic and diverse landforms on earth. There are 11,000-foot high peaks, an inland sea, verdant valleys, and a mysterious desert with a bizarre expanse of white salt. As Utah's second largest county, the state of New Jersey could just about fit inside its nearly 7,000 square miles. To go along with Tooele County's impressive size, the opportunities to explore—for adventure and recreation—are boundless. If you love to hike, ride a bike or horse, camp in the mountains, ride an OHV across a desert, or even scuba dive, Tooele County's "Visibility Endless" awaits you.

What also awaits you is Tooele County's compelling "Old West" history, like the Pony Express Trail, the Donner-Reed Party, and more. Known for remarkable 100-mile views, the county is also renowned for being the "Fastest Place on Earth," with land speed racing on the Bonneville Salt Flats and thrilling automotive and motorcycle racing at Miller Motorsports Park. All of this is less than 30 minutes west of Salt Lake City.

Year	Population	Housing Units	Farms
2000	40,735	13,812	380 (2002)
2010	58,218	19,683 (2011)	379 (2007)

Sources: [www.quickfacts.census.gov](http://www.quickfacts.census.gov) and [www.agcensus.usda.gov](http://www.agcensus.usda.gov)

### Bonytail



Major industries include extraction and agriculture. Major employers include Dugway, defense installations, local school districts, the federal government, Energy Solutions, and Staker Parsons. There is a small tax base because the military base and BLM take up most of the land where business and residents could add to income, if they were developed or even privately owned.

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#### 2. Water Quantity and Quality

1. Utah Geological Survey and Utah Division of Water Rights. (September 2010). *Rush Valley Hydrologic Assessment*. Retrieved from <http://ut.water.usgs.gov/projects/rush/>. [Accessed 10 February 2013].
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#### 4. Recreational Impacts to Public and Private Lands

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### General Resource Summary

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## Map Data Sources

**Land Ownership/Overview** - Land ownership status and areas of responsibility for the State of Utah. The Utah School and Institutional Trust Lands Administration (SITLA) and the Bureau of Land Management (BLM) revise this data regularly to reflect changes in ownership.

Available for download from the Utah Automated Geographic Reference Center at: <http://gis.utah.gov/data/sgid-cadastre/land-ownership/>.

**Watersheds** - A subset of the National Hydrography Dataset (NHD). The National Hydrography Dataset (NHD) is a comprehensive set of digital spatial data that contains information about naturally occurring and constructed bodies of water, paths through which water flows, and related entities. The NHD was developed by U.S. Geological Survey (USGS) in cooperation with U.S. Environmental Protection Agency, USDA Forest Service, and other Federal, State, and local partners.

Available for download from the USGS National Map website at: <http://nationalmap.gov/index.html>.

**Hydrography** - A subset of the National Hydrography Dataset (NHD). The National Hydrography Dataset (NHD) is a comprehensive set of digital spatial data that contains information about naturally occurring and constructed bodies of water, paths through which water flows, and related entities. The NHD was developed by U.S. Geological Survey (USGS) in cooperation with U.S. Environmental Protection Agency, USDA Forest Service, and other Federal, State, and local partners.

Available for download from the Utah Automated Geographic Reference Center at: <http://gis.utah.gov/data/water-data-services/lakes-rivers-dams/>.

**Important Farmland** - Prime, Statewide and Uniquely Important Farmland derived from the following SSURGO soil survey:

UT611 - Tooele Area, Utah - Tooele County and Parts of Box Elder, Davis and Juab Counties using Soil Data Viewer, a tool created by USDA Natural Resources Conservation Service as an extension to ArcMap that allows users to create soil-based thematic maps.

SSURGO Soil Surveys are available for download from the NRCS Soil Data Mart: <http://soildatamart.nrcs.usda.gov/>.

**Soils Detail Data** - Detailed soil properties derived from the following SSURGO soil survey: UT611 - Tooele Area, Utah - Tooele County and Parts of Box Elder, Davis and Juab Counties using Soil Data Viewer, a tool created by USDA Natural Resources Conservation Service as an extension to ArcMap that allows users to create soil-based thematic maps.

# References

SSURGO depicts information about the kinds and distribution of soils on the landscape. The soil map and data used in the SSURGO product were prepared by soil scientists as part of the National Cooperative Soil Survey.

SSURGO Soil Surveys are available for download from the NRCS Soil Data Mart:  
<http://soildatamart.nrcs.usda.gov/>.

**General Soils Data** – General soil properties derived from the following SSURGO soil survey: UT611 – Tooele Area, Utah – Tooele County and Parts of Box Elder, Davis and Juab Counties using Soil Data Viewer, a tool created by USDA Natural Resources Conservation Service as an extension to ArcMap that allows users to create soil-based thematic maps.

SSURGO Soil Surveys are available for download from the NRCS Soil Data Mart:  
<http://soildatamart.nrcs.usda.gov/>.

**Land Cover** – USGS National Gap Analysis Program. 2004. Provisional Digital Land Cover Map for the Southwestern United States. Version 1.0. Produced by RS/GIS Laboratory, College of Natural Resources, Utah State University. Published 9/15/2004. Multi-season satellite imagery from 1999 – 2001 were used in conjunction with digital elevation model derived datasets to model natural and semi-natural vegetation.

**Precipitation** – Produced by U.S. Department of Agriculture Natural Resources Conservation Service – National Cartography and Geospatial Center. This vector data set provides derived average annual precipitation according to a model using point precipitation and elevation data for the 30-year period of 1971 – 2000.

**Assessment Units (Impaired Waters)** – Produced by Utah Division of Water Quality, January 2010. This dataset represents water quality assessment units for the State of Utah, and shows the 2006 assessment category for meeting State of Utah water quality standards.

Available for download from the Utah Automated Geographic Reference Center at:  
<http://gis.utah.gov/sgid-vector-download/utah-sgid-vector-gis-data-layer-download-index?fc=DWQAssessmentUnits>.

**Roads** – This data set represents street centerline data for the State of Utah as compiled by the Utah Automated Geographic Reference Center from data contributed by local, county, state, federal and tribal governments.

Available for download from the Utah Automated Geographic Reference Center at:  
<http://gis.utah.gov/data/sgid-transportation/roads-system/>.

**County Boundaries** – This data set represents county boundaries in Utah at 1:24,000 scale. Last updated July 2012.

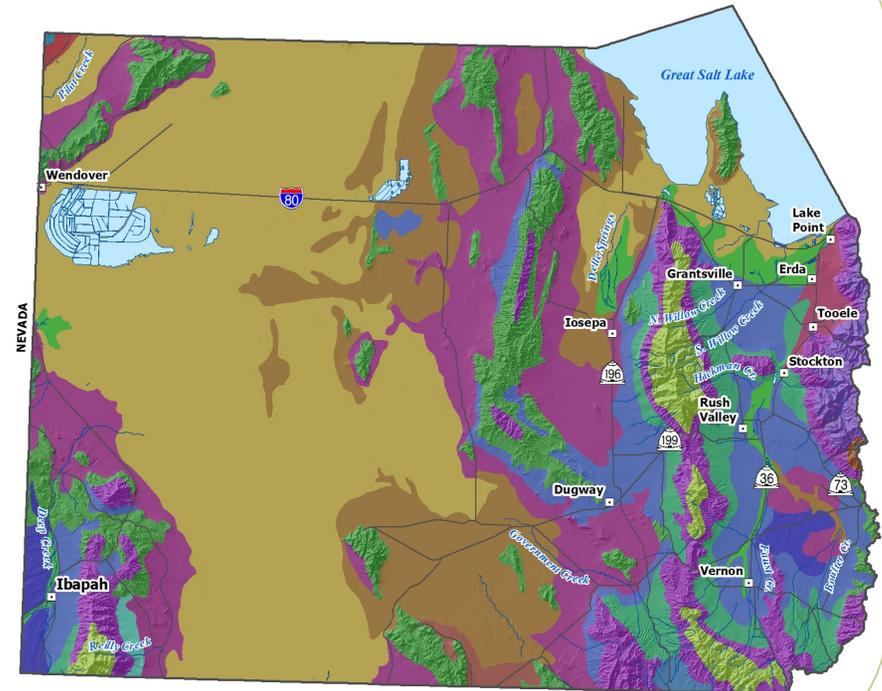
Available for download from the Utah Automated Geographic Reference Center at:  
<http://gis.utah.gov/data/boundaries/citycountystate/>.

# Appendix A

## Tooele County General Soils Map

### General Soils

- Zadvar-Sanpete-Breko
- Rock outcrop-Podmor family-Logring-Kyler-Flygare family-Eaglepass
- Tosser-Sitar-Hiko Peak-Bezzant
- Rock outcrop-Rexmont-Clavicon
- Tooele-Timpie-Cliffdown
- Yenrab-Skumpah-Dynal
- Kapod-Donnardo-Borvant-Abela
- Taylorsflat-Medburn-Hiko Peak-Berent
- Skumpah-Saltair-Logan-Kanosh-Bramwell
- Timpanogos-Parleys-Bluffdale-Bingham
- Wallsburg-Rock outcrop-Harkers-Broad-Agassiz
- Skumpah-Saltair-Playas-Dynal
- Swingler family-Penoyer family-Mazuma family-Goshute family
- Sanpete family-Dera family
- Shabliss-Red Butte-Hiko Peak
- Rock outcrop-Hiko Peak-Cliffdown-Checkett family-Amtoft
- Reywat family-Lodar family-Kyler-Eaglepass
- Rock outcrop-Mower-Lundy-Lizzant-Hamtah-Agassiz



The Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation's counties and anticipates having 100 percent in the near future. Find the WSS online at: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

# Appendix B

## Tooele County Sensitive Species List from the Utah Division of Wildlife Resources

Common Name	Scientific Name	State Status
AMERICAN WHITE PELICAN	PELECANUS ERYTHORHYNCHOS	SPC
BALD EAGLE	HALIAEETUS LEUCOCEPHALUS	SPC
BOBOLINK	DOLICHONYX ORYZIVORUS	SPC
BONNEVILLE CUTTHROAT TROUT	ONCORHYNCHUS CLARKII UTAH	CS
BONYTAIL	GILA ELEGANS	S-ESA
BURROWING OWL	ATHENE CUNICULARIA	SPC
CALIFORNIA FLOATER	ANODONTA CALIFORNIENSIS	SPC
COLUMBIA SPOTTED FROG	RANA LUTEIVENTRIS	CS
DARK KANGAROO MOUSE	MICRODIPODOPS MEGACEPHALUS	SPC
EUREKA MOUNTAINSNAIL	OREOHELIX EUREKENSIS	SPC
FERRUGINOUS HAWK	BUTEO REGALIS	SPC
GRASSHOPPER SPARROW	AMMODRAMUS SAVANNARUM	SPC
GREATER SAGE-GROUSE	CENTROCERCUS UROPHASIANUS	S-ESA
KIT FOX	VULPES MACROTIS	SPC
LEAST CHUB	IOTICHTHYS PHLEGETHONTIS	S-ESA, CS
LEWIS'S WOODPECKER	MELANERPES LEWIS	SPC
LONG-BILLED CURLEW	NUMENIUS AMERICANUS	SPC
LYRATE MOUNTAINSNAIL	OREOHELIX HAYDENI	SPC
NORTHERN GOSHAWK	ACCIPITER GENTILIS	CS
NORTHWEST BONNEVILLE PYRG	PYRGULOPSIS VARIEGATA	SPC
PREBLE'S SHREW	SOREX PREBLEI	SPC
PYGMY RABBIT	BRACHYLAGUS IDAHOENSIS	SPC
SHORT-EARED OWL	ASIO FLAMMEUS	SPC
SOUTHERN BONNEVILLE SPRINGSNAIL	PYRGULOPSIS TRANSVERSA	SPC
SOUTHERN TIGHTCOIL	OGARIDISCUS SUBRUPICOLA	SPC
TOWNSEND'S BIG-EARED BAT	CORYNORHINUS TOWNSENDII	SPC
UTAH PHYSA	PHYSELLA UTAHENSIS	SPC

### Symbol Definition

S-ESA: Federally-listed or candidate species under the Endangered Species Act

SPC: Wildlife species of concern

CS: Species receiving special management