DAVIS COUNTY

RESOURCE MANAGEMENT PLAN

Davis COUNTY

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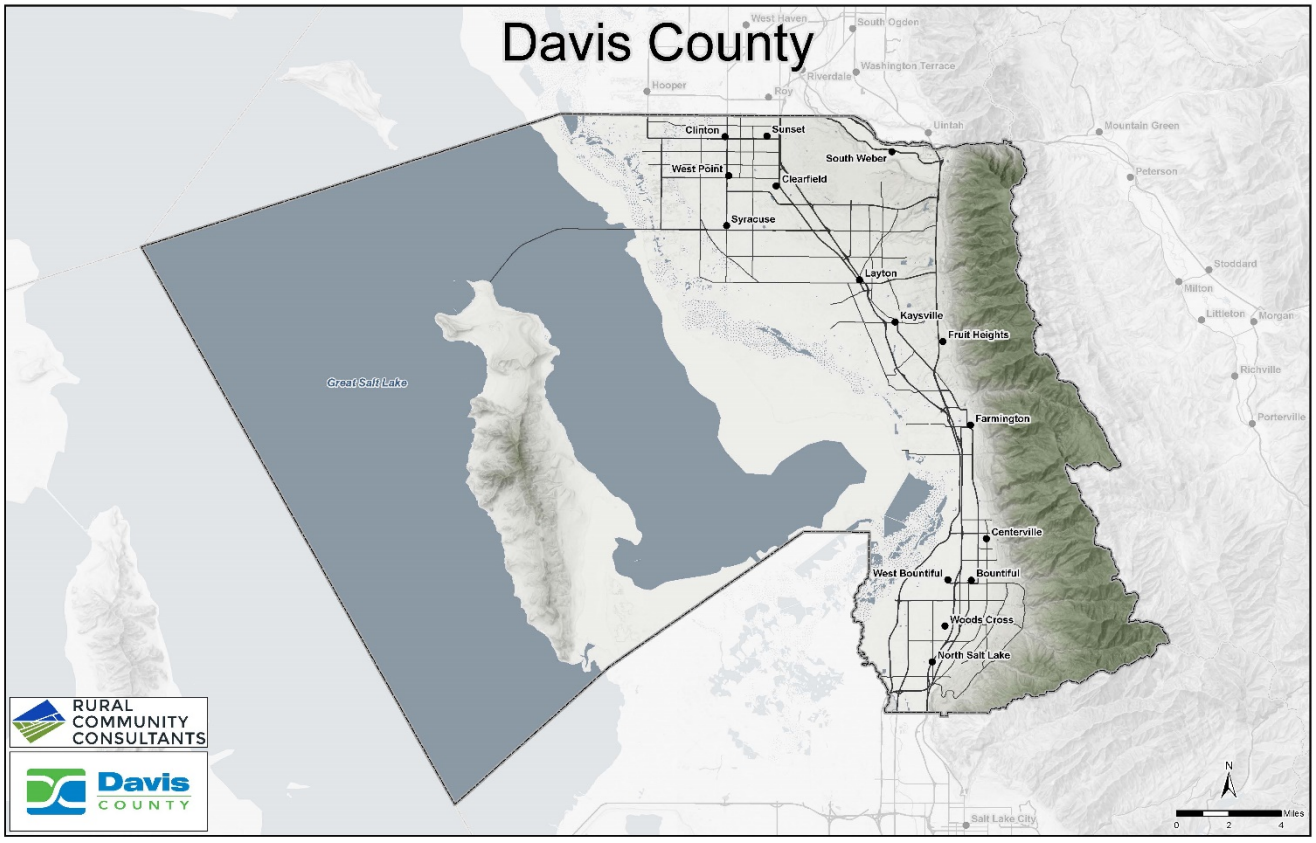
BACKGROUND

Purpose

Utah State Statute provides for the development of county-level plans under Title 17-27a-401. Components which are required to be addressed within these plans include: land use, transportation, environmental issues, public services and facilities, rehabilitation and redevelopment, economic concerns, recommendations for plan implementation, and "any other elements that the county considers appropriate".

In 2015, the Utah Legislature amended Title 17-27a-401 to also require that county general plans include a “resource management plan” to provide a basis for communicating and coordinating with the federal government on land and resource management issues.

Davis County will continue to encourage the responsible use and development of its natural resources and support associated industries and businesses. Decisions affecting public land resource use and development directly impact the County. In this regard, it is in the County's interest, and their expectation, that federal and state resource management planning efforts provide the County with every opportunity to proactively participate in all relevant public land and resource planning processes.



Development of This Plan

Davis County Commissioners placed a high priority on data quality and public involvement for the development of this plan. This was gathered through four different avenues:

- **Natural resource issue database**. Information on current local policy and on environmental conditions was gathered and compiled into a database. This information can be found online at (http://www.wfrc.org/new_wfrc/crmp/davis-county/).
- **Online public surveys**. A website was created for the initiative (http://DavisCountyPlan.org). It was advertised through the County's website, social media channels, and direct mail invitations to municipalities and other land management entities.
- **State Agency review**. As drafts were developed for each issue, they were reviewed and edited by state agency subject matter experts.
- **Public meetings**. The Planning Commission and County Commission held hearings and meetings that followed standard noticing protocol.

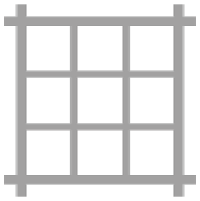
Plan Organization & Maintenance

In order to convey the County's desired future conditions, each resource discussed in this plan includes:

1. Issue definition
2. References to related resources
3. Findings of historic and current conditions
4. County objectives and policy for each resource/issue

For this document to function as a valuable decision-making tool, it should be reviewed and amended as necessary to address County issues and interests as they develop. It is anticipated that future County planning efforts will expand on the "values and objectives" identified in the County's General Plan. With respect to this purpose, County priorities and the issues facing the County will most likely change over time.

LAND USES



LAND USE

Definition

The designation, modification and management of land for agricultural, environmental, industrial, recreational, residential, or any other purposes.

Related Resources

Wilderness; Recreation and Tourism; Energy; Land Access; Wild and Scenic Rivers; Law Enforcement; Water Quality and Hydrology; Threatened, Endangered, and Sensitive Species; Cultural, Historical, Geological, and Paleontological

Findings

a. Overview

i. "Davis County has the smallest land area of all of Utah's 29 counties and yet due to its location in the heart of the Wasatch Front, it has the third largest county population. All of that population is sandwiched into the buildable area between the Wasatch Mountains and the Great Salt Lake Davis County acknowledges that the main purpose of municipalities is to provide urban services and a public voice in local affairs. The role of the County should be to coordinate and assist the municipalities in addressing issues of regional significance" (Davis County Government 2006).

ii. <u>Undeveloped Lands</u>

1. "In the past few years Davis County has shifted the responsibility of land-use planning in unincorporated areas to the adjoining incorporated municipalities because the County does not provide utilities in unincorporated areas. New developments must receive permission to connect to utilities provided by existing municipalities, who in turn require that those developments be annexed into the municipality and/or be consistent with their land-use policies before they permit the connections. As a result, the County acknowledges that the municipalities, through their regulation of utility connections and annexation policies, have de-facto jurisdiction over land-use planning decisions in the developable areas of the unincorporated County" (Davis County Government 2006).
2. The only other undeveloped land located within unincorporated Davis County is located in environmentally sensitive areas, such as the foothills and the shores of

the Great Salt Lake. The County does not consider these areas developable and is actively working to preserve them as permanent open space (Davis County Government 2006).

iii. Developed Land

1. There are several pockets of completely developed neighborhoods located within unincorporated Davis County. These areas are being annexed rapidly into the adjoining municipalities and the County does not foresee any redevelopment opportunities before total annexation occurs (Davis County Government 2006).

iv. Private Property

1. Most developable land in the county is privately owned. Zoning within the county is left up to local and municipal governments. Zoning districts, and the regulations established within the zoning districts, are authorized by Utah State Code 17-27a-505 and municipalities 10-9a-505.

v. Hillsides

1. The Wasatch Mountains are an amenity enjoyed by all of Davis County, not just those individuals who live near the hillside areas. Managing these areas for multiple land uses is important. To that end, the County has published a Hillside Master Plan to guide to lay out the priorities for this resource.
2. A survey completed in 2002 highlighted the public's desire for preserving open space and limiting development, to preserve viewsheds. "[M]ost people (92%) feel that it is important to preserve open space in the foothill areas of Davis County. A similar percentage of people (93%) think that it is important to have foothill parks such as Mueller Park, Kaysville Mountain Park, and Fernwood Park. Al 80%, there is nearly as strong sentiment that it is important to acquire more public open spaces in the foothill areas. (Dan Jones and Associates, Executive Summary, August 2002)" (Davis County Government 2003).

vi. Shorelands

1. The Davis County Shorelands Comprehensive Land Use Master Plan outlines the planning priorities for the lands along the Great Salt Lake. "This collaborative process included the nine Davis County municipalities which border the shoreline, Davis County, residents of the area, property owners, planners, conservation groups, regulatory agencies, and others to develop a publicly-supported plan that identifies areas for quality growth and preservation" (Davis County Government 2001).
2. The plan contains detailed maps that describe the desired conditions with regards to housing density, preserved agriculture, open spaces, preserves, trails, roads, etc.
3. For more information, see the Wetlands section of this RMP.

vii. Great Salt Lake (GSL)

1. The State owns and manages the bed of GSL pursuant to the Equal Footing Doctrine. The boundary line of the bed of GSL is the surveyed "meander line." The meander line follows no particular topographic contour or elevation, but is generally located between 4202- 4212 (above sea level) in most places around the lake. These lands within the meander line are referred to as "sovereign lands" (Great Salt Lake Planning Team 2000).

2. “In addition to the sovereign lands owned by the state, DNR has acquired lands in and around GSL including Antelope Island (DPR), wetlands and uplands associated with wildlife management areas and formerly private lands needed for the WDPP operation, all of which are managed for specific purposes” (Great Salt Lake Planning Team 2000).

3. “Most of the county-controlled land adjacent to the lake is zoned A-5 for agriculture and farm industry with a five-acre minimum lot size. The A-5 zone is intended to promote and preserve agricultural uses and to maintain greenbelt open spaces. Primary uses include single-family dwellings, farm industry and agriculture. Several conditional uses include stables and dog kennels” (Great Salt Lake Planning Team 2000).

viii. State Sovereign Lands

1. The State of Utah recognizes and declares that the beds of navigable waters within the state are owned by the state and are among the basic resources of the state, and that there exists, and has existed since statehood, a public trust over and upon the beds of these waters. It is also recognized that the public health, interest, safety and welfare require that all uses on, beneath or above the beds of navigable lakes and streams of the state be regulated, so that the protection of navigation, fish and wildlife habitat, aquatic beauty, public recreation and water quality will be given due consideration and balanced against the navigational or economic necessity or justification for, or benefit to be derived from, any proposed use.

2. The Equal Footing Doctrine serves as the basis for Utah’s claim to fee title ownership of sovereign lands (more widely known as submerged lands). The Equal Footing Doctrine is a principle of Constitutional law that requires that states admitted to the Union after 1789 be admitted as equals to the Original Thirteen Colonies in terms of power, rights, and sovereignty including sovereign rights over submerged lands. The Utah Enabling Act, enacted by the U.S. Congress on July 16, 1894, officially declared Utah as a state “to be admitted to the Union on an equal footing with the original States.”

3. The Utah State Legislature has designated the Division of Forestry, Fire & State Lands as the executive authority for the management of sovereign lands, and the state's mineral estates on lands other than school and institutional trust lands. Sovereign lands are defined by the Utah State Legislature as “those lands lying below the ordinary high water mark of navigable bodies of water at the date of statehood and owned by the state by virtue of its sovereignty” (Utah Lake Commission 2009).

ix. Utah Department of Natural Resources (DNR)

1. The DNR manages about 640,000 acres of land as state parks, such as Antelope Island, as well as Wildlife Reserves and Management Areas, and State Sovereign Lands (Great Salt Lake) under the Division of Forestry, Fire, and State Lands (FFSL). In general, state parks and wildlife areas are managed primarily for resource protection, while the State of Utah manages the Great Salt Lake under a multiple-use paradigm.

x. US Forest Service

1. The USFS manages land use decisions by developing forest plans under the National Forest Management Act of 1976. The most current guidance for

implementing the Act is the 2012 Planning Rule. The most recent planning document for this region is the Revised Forest Plan and Final Environmental Impact Statement for the Wasatch-Cache National Forest.

xi. Department of Defense

1. "Hill Air Force Base near Ogden, Utah is a typical large military community that is a work place for 22,000 military and civilian employees, is home to over 3,400 residents, and provides additional employment opportunities for the surrounding area through construction activities and contract services with local area businesses" (Adkins et al. 1997). The base serves critical national security interests and land use decisions are made internally, though usually after consulting appropriate local, state, and federal agencies (e.g., the Utah Division of Wildlife Resources and US Fish and Wildlife Service).

b. Economic Considerations

i. "Land use" is not a resource in the same sense as most other resources to be considered in county resource management plans. In this case, land use is the designated, preferred, or allowable uses of a given piece of land based on the planning preferences of the landowner or jurisdiction responsible for the land. The implementation and management of those uses, such as agriculture, wildlife, water quality, etc., are examined in the respective chapters of this document. Important public policy concerns are the costs of administering public lands and the revenues generated from public land uses. Economic cost-benefit analyses should be completed prior to considering shifts in land use.

ii. "Payments in Lieu of Taxes" (PILT) are Federal payments to local governments that help offset losses in property taxes due to non-taxable Federal lands within their boundaries. PILT payments help local governments carry out such vital services as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations. The payments are made annually for tax-exempt Federal lands" (U.S. Department of the Interior 2017).

iii. In FY 2014, Davis County received $113,737 in PILT payments. 70.2% of this was made available as unrestricted funds, and the rest was designated for improvement of schools and roads (Headwaters Economics 2016).

c. Custom + Culture

i. Before the first white settlers arrived in Davis County in the 1800's, native peoples used the land for hunting, gathering, and agriculture. The original white settlers farmed and ranched, bringing livestock to the valley for grazing. All of these land uses and more are part of the custom and culture of Davis County, even as the use of the land changes dramatically, to focus on urban development.

Relevant Existing Policies

d. **Davis County General Plan - Introduction (2006)**

i. Development and Urban Services

1. Davis County does not provide public utility services to unincorporated areas.

2. Davis County discourages the establishment or extension of special improvement districts and their utility lines for the primary purpose of opening areas for development.

3. Davis County encourages that municipalities annex areas of Unincorporated County where new and/or extended services are needed.

ii. Annexation

1. Davis County encourages the annexation of all development into nearby cities.

2. Davis County seeks to encourage such annexations in order to maximize urban services available to area residents.

iii. Val Verda

1. Davis County does not anticipate substantial improvements or upgrades in its ability to provide urban services in the Val Verda area. Therefore, as citizens of Val Verda seek improvements in urban services, they should petition for annexation into one of the adjacent communities. Davis County encourages the annexation of the remaining unincorporated areas near Adelaide Elementary School into Bountiful or North Salt Lake.

iv. Mutton Hollow

1. Davis County does not anticipate substantial improvements or upgrades in its ability to provide urban services in the Mutton Hollow area. Therefore, as citizens of Mutton Hollow seek improvements in urban services, they should petition for annexation into one of the adjacent communities. Davis County encourages the annexation of the remaining unincorporated areas surrounding Mutton Hollow Road into Layton or Kaysville.

v. Hooper

1. Davis County encourages the annexation of the remaining unincorporated areas of Hooper into the neighboring communities of Hooper City, West Point, and Clinton.

e. **Davis County Shorelands Comprehensive Land Use Master Plan**

i. Region 1: No development is desired west of the Legacy Parkway Corridor, except for a small portion of land on the Woods Cross 5th South interchange. This land does not appear to have any development limitation. It is recommended that some of the lands to the south of the interchange on the west side of The Legacy Parkway be used in some form of recreational use. The lands north of the interchange along the west side frontage road are generally unsuitable for development. The road is the only access for trucks traveling to the landfill.

ii. Region 2A: No development is desired west of the Legacy Parkway south of Centerville. In Centerville, from approximately Parrish Lane north to Glovers Lane in Farmington, the D&RG Rail Corridor becomes the western edge of development. Northward from Glovers Lane, the FEMA Flood Line becomes the western edge of development. Existing farmland that is located west of the no build line is an appropriate use for the area.

iii. Region 2B: There should be no development west of the FEMA Flood Line within the study area. Much of the land west of the proposed Legacy Highway in the most northern parts of this map is already preserved as open space as part of The Nature Conservancy's Management Area. Pockets of land west of the highway corridor are proposed as possible

sites for mitigating future phases of the Legacy Highway in the area. An agricultural buffer should be maintained between the FEMA Flood line and housing development. Higher density housing and commercial uses should only be allowed east of rural cluster housing.

iv. Region 3A: No development is allowed west of The FEMA Flood Line throughout this area. An agricultural buffer should be maintained between the FEMA Flood Line and housing. Much of the land surrounding the North Davis sewer treatment plant is already preserved as agricultural land by the sewer district. Only rural cluster housing should be planned to occur next to agricultural lands. Higher density housing and commercial zones should only be allowed east of this land use.

v. Region 3B: No development is desired west of the FEMA Flood Line. Current farming practices are an appropriate use for these lands. An agricultural buffer should be maintained between the FEMA Flood line and housing developments. Only conservation development housing should be allowed adjacent to the agricultural buffer. Higher density housing and commercial development should only be allowed east of conservation development housing.

f. **Comprehensive Hillside Master Plan**

i. Issue: Development and Preservation

ii. Goal: Prevent/limit additional development in the foothill areas

1. Policy: Do not extend/expand utility infrastructure into foothill areas
2. Policy: Establish programs to purchase or transfer development rights
3. Policy: Define areas that are appropriate/not appropriate for development Policy: Set standards for the amount of earth-movement/soil disruption permitted

iii. Goal: Protect viewsheds

1. Policy: Regulate development on ridgelines
2. Policy: Identify those areas that are aesthetically most important to protect

iv. Goal: Preserve Mueller Park, Kaysville Mountain Park, and Fernwood Park

1. Policy: Establish a tax to fund open space preservation, similar to Salt Lake County's ZAP (zoo/arts/park) tax
2. Policy: Establish long term maintenance plans and funding programs

v. Goal: Prevent/limit damage in the foothill areas

1. Policy: Set uniform, County-wide standards and fines
2. Policy: Improve coordination between Forest Service, County Deputies, and local Law Enforcement
3. Policy: Establish youth education programs
4. Policy: Close foothills to OHV use, except for specifically defined areas

vi. Issue: Public Uses, Environmental Concerns, and Infrastructure/Utility Costs

vii. Goal: Reasonably accommodate OHV users

1. Policy: Establish clearly defined areas for OHV use

2. Policy: Establish specific regulations, enforcement procedures, and mitigation policies/revenue sources

viii. Goal: Mitigate the effects of existing gravel pits

1. Policy: Review and modify, where necessary, hours of operation, haul routes, etc.
2. Policy: More closely monitor and enforce clean air/road/noise standards
3. Policy: Encourage existing operators to landscape and/or screen their operations as much as possible

ix. Goal: Discourage new gravel pits

1. Policy: Establish specific development and mitigation standards
2. Policy: Require extraordinary review and public involvement
3. Policy: Require bonding at the time of permit for the replacement of public infrastructure due to increased impacts
4. Policy: Require extended bonding (10 years) for rehabilitation
5. Policy: Do not allow haul routes through residential areas

x. Goal: Protect watershed areas

1. Policy: Watershed protection has top priority in the hillside areas of Davis County

xi. Goal: Establish service rates based on actual costs

1. Policy: Conduct studies to determine actual costs to provide services
2. Policy: Modify fee structures to reflect the actual costs to provide services

xii. Goal: Developers to pay actual infrastructure costs

1. Policy: Developers/property owners should pay directly for all new infrastructure (Water tanks, pump houses, etc.)
2. Policy: Extend bonding periods for infrastructure in hillside areas

xiii. Goal: Prevent isolated pockets of development

1. Policy: Do not allow development that is not immediately contiguous with existing development
2. Policy: Do not allow development that requires road connections on or through undeveloped, undevelopable, or conservation areas
3. Policy: Require that all developments have at least two outlets (i.e., no cul-de-sacs, no developments with one access)

xiv. <u>Issue: Bonneville Shoreline Trail</u>

xv. Goal: Improve recognition of the Bonneville Shoreline Trail

1. Policy: Provide more trail signs
2. Policy: Increase "brand recognition" and education efforts

xvi. Goal: Increase trailheads and public access points to the Bonneville Shoreline Trail

1. Policy: Require new developments to provide trail access
2. Policy: Revise park master plans to include trailheads and trail access

3. Policy: Extend the trail through the entire County.

g. **Great Salt Lake Comprehensive Management Plan**

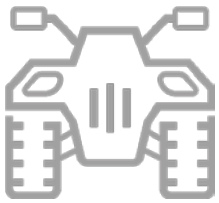
   i. *Please refer to the GSL CMP for specific information about the planned land uses agreed upon in the document.*

Davis County Objectives

1. Support utilizing public lands for multiple use, for the good of all the people. The County will vigorously pursue multiple use land policies on federal lands, where traditional and appropriate.
2. Preserve and manage the natural environment and open spaces in such a way as to enhance the peaceful living of the residents and the image of Davis County, and which promote a diversity in land use planning that is responsive to the economy and reflects/supports the residential needs of the County's citizens and business owners.

Davis County Policies

1. Ensure that no resource development activities take place on public lands within the County unless those activities are 100% bonded for estimated reclamation costs.
2. Encourage the management of public lands in a manner that protects the quality of scenic values. Recognize and manage visual resources for overall multiple use and recreational opportunities for visitors to public lands.



LAND ACCESS

Definition

Access to public and private lands.

Related Resources

Recreation and Tourism, Land Use, Livestock and Grazing, Energy, Law Enforcement, Fire Management

Findings

a. Overview

i. Land access refers to the ability to physically and legally access a given parcel of land, typically in the context of roads, right-of-ways (ROWs) and property inholdings. The term "access" also conveys administrative restrictions on the methods or timing of land access, as in non-motorized or seasonal. Finally, access can also refer to gaining access to lands via trails or other non-motorized methods.

ii. Northern Utah's land ownership pattern is complex and varied. Within Davis County, property is managed by many different state and federal agencies, not counting local governments. Different land ownership includes State sovereign land, State Parks and Recreation land, State wildlife reserves/management areas, US military, and US Forest Service land. This complexity results in a many cases in which land owned by one entity is surrounded by or accessible only by crossing land owned by another entity (Utah School and Institutional Trust Lands Administration 2017).

iii. County governments have a responsibility to facilitate land access regardless of land ownership. This is accomplished by acquiring and maintaining ROWs or easements across property. Counties acquire and enforce access by participating in planning processes of federal and state agencies and, if necessary, litigation.

iv. Wildlife impacts can increase with improved access. For example, the Antelope Island Resource Management Plan included the objective to: "Study the possible impacts on wildlife before opening the southern tip access road to hiking, biking and horseback riding as recommended in the 2004 Access Management Plan. Park biologists have suggested that these activities may cause wildlife, especially mule deer, to walk off the island (particularly at lower lake levels)".

b. <u>Private Property</u>

i. "The Davis County Public Works Department is a hard working service minded organization that keeps the roads in Unincorporated Davis County in excellent condition, partners with the Cities in Davis County to protect the Citizens from serious flooding, and keeps the weeds in our County under control" (Davis County Government 2015).

ii. State law enables the right of eminent domain for roadways for public vehicles but not for recreational uses (78B-6-501(3)(f).

c. <u>US Forest Service Roads (USFS)</u>

i. Right of ways on USFS lands are managed through the Forest Planning and National Environmental Policy Act (NEPA) processes. The Uinta- Wasatch-Cache National Forest established access goals for their management areas in 2003.

d. <u>State Lands</u>

i. Utah's Department of Natural Resources (DNR) manages about 640,000 acres of land as State Parks (Antelope Island), Wildlife Reserves and Management Areas, and State Sovereign Lands (Great Salt Lake) under Forestry, Fire, and State Lands. In general, state

parks and wildlife areas are managed primarily for resource protection, while the state manages the Great Salt Lake under a multiple-use paradigm. Regardless of overall objectives, the state manages ROWs within the areas through resource management plans (Utah State Parks 2009).

i. "Due to the efforts of several key legislators and Davis County, funding to repair the causeway was appropriated by the Utah Legislature in 1992. Davis County, through an agreement with the state, is responsible for maintaining the causeway, including the culverts. Antelope Island State Park collects an additional fee earmarked to help support causeway maintenance" (Utah State Parks 2009).

e. Trails

i. Creating and maintaining trails is a priority of Davis County because citizens have come to rely on them for health, recreation, and access to the outdoors. The Davis County Trails Master Plan was created with the goal of "providing a system of interconnecting and looping trails throughout the County. These trails will have different levels of development that lend themselves to users of all abilities and provide for a variety of experiences. Access to the County's most important open spaces, wildlife habitats and natural areas will be preserved. The trails will provide alternate transportation routes, some of which will be useful to bicycle commuters" (Davis County Government 2005)

i. "During the last decade or so trails have emerged as a highly desirable, many would even say necessary, part of the urban landscape. The county has identified important trails to develop and maintain access to natural spaces for the public:"

1. Denver & Rio Grande Western Rail Trail
2. Emigrant Trail:
3. Power Line Trail:
4. Legacy Parkway Trail:
5. Weber River Parkway:
6. Kays Creek Trail:
7. Davis & Weber Canal Trail:
8. Farmington Creek Trail
9. Farmington Bay Waterfowl Management Area
10. Jordan River Parkway Trail
11. Antelope Island Trails
12. Bonneville Shoreline Trail

Source: (Davis County Government 2005)

ii. These trails are more regional in nature and many of them are connectors from one major trail to another, or to a park, school or other destination (Davis County Government 2005).

f. Transportation Plan

i. Davis County published the Transportation Strategic Plan in 2004 as a supporting document of the General Plan, to prioritize the transportation needs for the communities in the county. "By the year 2030, the Governor's office of Planning and Budget predicts the population of Davis County to expand from its current population of 250,000 to

approximately 390,000, having an annual average increase of 5,000 people per year. This rapid increase in growth will continue to cause heavy burdens upon the County's and local community's infrastructure, especially the transportation system, to function at a high level of efficiency and to maintain its optimal condition" (Davis County Government 2004).

ii. The six critical transportation needs identified by the plan are:

1. South Legacy Parkway
2. Transit (Commuter rail, South Davis LRT/BRT, Regular/Express Bus Improvements, Park & Ride Expansions)
3. I-15 Expansion/Interchange Reconstruction
4. North Legacy Parkway
5. Highway 89 (I-15 to I-84)
6. East-West Routes

iii. Since the creation of the plan, some of these projects have been addressed. They remain important means of transportation access to and from the county.

g. Control & Influence

i. Gaining or maintaining access to lands is typically accomplished through right-of-way (ROW) acquisition. The process for obtaining a right-of-way is different for each land owner or management agency as each has unique administrative procedures and objectives.

ii. The County's role is to acquire ROWs or easements across property. The County may also acquire and enforce access by participating in planning processes of federal and state agencies and via litigation.

iii. The landowner or manager generally controls land access. Some outside entities may influence access of lands that they do not control.

h. Economic Considerations

iv. The economy of Davis County closely tied to accessing public lands for recreation. The active outdoor lifestyle available through this access is an important quality of life measure and a large factor in attracting new business to the County.

i. Custom + Culture

i. It is the custom and culture of Davis County to support and protect private property rights, and also supports access to public and private lands.

ii. The first roads created by Western settlers were made as a result of the westward expansion movement. "The California Trail diverged at Fort Hall in present-day Idaho and followed the Humboldt River toward Fort Sutter. It was an attempt to find alternate routes that brought California immigrants through what would a few years later become Utah's Davis County" (Leonard 1999).

iii. Creating a balance of interest and access has been a challenge throughout the county's history. "Along with policies for distributing land, the first settlers managed the access to and harvesting of timber in the canyons to serve community interests and allocated mill rights along the major canyon streams" (Leonard 1999).

Relevant Existing Policies

j. **Davis County Trails Master Plan**

i. Access to open spaces, wildlife habitats, and natural areas will be preserved

ii. Trails will have different levels of development and accessibility for users of all abilities.

k. **Great Salt Lake (GSL) Comprehensive Management Plan**

i. Promote the importance of access to GSL marinas from land and open water.

1. Coordinate with and support Utah Division of State Parks and Recreation (DSPR) to dredge channels, as needed, to provide passages for boats from existing marinas.

2. Coordinate with DSPR to sustain access to marinas from land and open water.

3. Together with DSPR, Division of Wildlife Resources (DWR), and local cities, counties, and marina users, identify marina access issues and concerns at a range of lake levels and support improvements for access.

ii. Protect GSL resources from adverse impacts resulting from transportation infrastructure.

1. Consider how proposed transportation projects would impact GSL resources through review of agency led analysis.

2. Coordinate with responsible agencies to determine the appropriate level of involvement in processes that consider future transportation projects.

3. Coordinate with the Division of Water Quality (DWQ) to address potential water quality impacts associated with runoff from transportation projects, which could affect the GSL ecosystem.

4. Coordinate with U.S. Army Corps of Engineers (USACE) and Union Pacific regarding a potential increase in boat access to the North Arm with the future modification of the Northern Railroad Causeway.

iii. Minimize damage to transportation infrastructure from GSL.

1. Coordinate with responsible agencies to determine the appropriate level of involvement in processes that consider impacts of future transportation projects.

2. Participate in transportation planning efforts with UDOT, Wasatch Front Regional Council, and the Bear River Association of Governments that promote safe and effective transportation routes that minimize impacts to GSL resources.

3. Encourage transportation and residential and commercial-related infrastructure development to occur above 4,217 feet (FEMA 100-year floodplain).

l. **Antelope Island Access Management Plan**

i. Improve public access on the Island.

ii. Clearly define general access in terms of hours of (park) operation.

iii. Continue to implement the 2004 Access Management Plan, concentrating on minimizing wildlife/visitor conflicts through trail and facility design, and visitor education.

iv. Study the possible impacts on wildlife before opening the southern tip access road to hiking, biking and horseback riding as recommended in the 2004 Access Management Plan. Park biologists have suggested that these activities may cause wildlife, especially mule deer, to walk off the island (particularly at lower lake levels).

v. The use of off-highway vehicles will be limited to park staff, cooperating researchers and others engaged in search and rescue actions, maintenance of trails and other facilities, wildlife and range management, public safety, natural and cultural resource research, and other park management related activities.

Davis County Objectives

1. The County supports public lands management by federal agencies which provide opportunities for a range of motorized recreation experiences on public lands while protecting resources and minimizing conflicts among various users.

Davis County Policies

1. Continue to improve all roads within the county system as resources are available.
2. The County supports the concept of any motorized vehicle being used only on designated roadways or routes in order to control erosion and other resource impacts.
3. Any fire, military, emergency, or law enforcement vehicle being used for emergency or administrative purposes is exempt from OHV decisions.

WILDERNESS

Definition

Wilderness areas are special places where the earth and interconnected communities of life have been left relatively undisturbed (Bureau of Land Management website). According to the Wilderness Act of 1964, federal lands must have specific characteristics to be considered by Congress for wilderness preservation:

i. They must be in a generally natural condition.

ii. They must have outstanding opportunities for solitude or a primitive and unconfined type of recreation.

iii. They must be at least 5,000 acres or large enough to preserve and use as wilderness.

iv. They may also contain ecological, geological, or other features of scientific, scenic, or historical value.

Related Resources

Recreation & Tourism, Land Use, Livestock & Grazing, Fire Management, Noxious Weeds, Water Quality & Hydrology, Forest Management.

Findings

a. Overview

i. Many people use "wilderness" to describe any remote, rugged and undeveloped land. The term wilderness is an administrative designation created under the Wilderness Act of 1964 applied to specific parcels of public lands with certain characteristics. Wilderness designation enables preservation and protection of "Federal lands retaining primeval character and influence" and as such severely limits consumptive, motorized, and mechanized uses.

ii. To qualify for wilderness designation, lands must be at least 5,000 acres of contiguous roadless area, primarily natural in character with human impacts substantially unnoticeable, provide opportunities for solitude, and after the first three criteria are met, may contain other supplemental values such as ecological, educational, geological, historical, scenic, or scientific values (Bureau of Land Management n.d.).

iii. Federal wilderness designation is a legislative action by Congress that typically follows a comprehensive National Environmental Policy Act (NEPA) planning process. Wilderness areas are designated and managed by federal entities.

iv. Davis County has no wilderness area or recommended wilderness study areas within its borders.

b. Economic Considerations

i. The economic effect of wilderness designation is the subject of ongoing debate. For example, when several proposals were made in the early 1990s to increase acres of wilderness in Utah, a 1992 Government Accountability Office (GAO) study investigated a claim that designating 3.2 million acres of land as wilderness in Utah would cost the state $9.2 billion annually in future earnings. The GAO study countered the claim made by a 1990 study that had cited adverse economic effects of wilderness designation in Utah. The debate over the economic impact of designating wilderness areas continues in Utah. A 2010 Utah State University report investigated contradictory claims about the economic impact of designating wilderness areas in Utah (Yonk et al. 2010).

ii. Economic considerations of wilderness designation should include:

1. Mineral and energy development potential
2. Logging and forest products
3. Grazing restrictions (grazing is allowed in wilderness areas but must meet wilderness guidelines)

4. Private and State land inholdings
5. Land transfers
6. Motorized recreational uses

iii. Wilderness designation on public lands has positive effects on:

1. Non-motorized recreation
2. Wildlife habitat
3. Drinking water source protection
4. Watershed protection

iv. "Only when large scale federal transfers accompany the designation of wilderness does it appear that wilderness designation has a meaningful impact on the economic conditions of an area" (Yonk et al. 2010).

v. Federal wilderness designation is a legislative action by Congress that typically follows a comprehensive National Environmental Policy Act (NEPA) planning process. In general terms, wilderness designation begins with the adoption of agency planning documents.

c. Custom + Culture

i. At this time, there are no wilderness designations in Davis County, and there is very little demand or need for wilderness restrictions. Therefore, it is a priority of Davis County to be an active participant regarding proposals of new wilderness.

Davis County Objectives

1. Existing wilderness is ecologically healthy and supports appropriate recreation.
2. Land that is not designated as wilderness by Congress is not managed like wilderness.

Davis County Policies

1. Special land use designations should only be used when they are consistent with surrounding management and contribute to the sound policy of multiple use, economic viability and community stability.
2. Support and encourage accurate, on-the-ground mapping of roads, fences, rangeland improvement and any other anthropogenic influence in lands under consideration for Lands with Wilderness Characteristics (LWCs) or Wilderness Study Area (WSA) designations.

FOREST MANAGEMENT

Definition

The actions for the regeneration, use, and conservation of forests.

Related Resources

Fire Management, Noxious Weeds, Wilderness, Wildlife, Water Quality and Hydrology, Livestock and Grazing, Recreation and Tourism, Agriculture

Findings

a. Overview

i. Utah forests are as diverse as the landscape itself. Over 15.1 million acres of forests are administered by federal, state, and local agencies. Another 3 million acres are privately owned (Utah Division of Forestry, Fire & State Lands 2014).

ii. Several factors have contributed to the decline in forest health including a decline in historic logging, grazing patterns, fire exclusion, and invasive or noxious weeds. Drought conditions can negatively affect forest health causing detrimental changes in vegetative conditions, especially if combined with these other management practices (Utah Division of Forestry, Fire & State Lands 2014).

iii. About 5.2 million acres, or 25 percent, of northern Utah is forested. Fifty-two percent of this forest area is capable of producing commercial wood products and is classified as timberland. Forty-eight percent is classified as woodland, primarily pinyon- juniper. The predominant forest types on the timberland are aspen, douglas-fir, lodgepole pine, and spruce-fir. The National Forest System manages 70 percent of the timberland; 23 percent is under private ownership, and 7 percent is under other public ownership (local, State, and other Federal). Thirteen percent of the timberland is withdrawn from commercial timber production and is in a reserved status. Most reserved timberland is found under National Forest System management. The total volume of growing stock on non-reserved timberland in northern Utah is 3.4 billion cubic feet. In order, Douglas-fir, lodgepole pine, aspen, Engelmann spruce, and subalpine fir species account for most of the volume. Net annual growth averages 38.6 million cubic feet after the impact of mortality, which averaged 47.9 million cubic feet annually (USFS 1997).

iv. Most forests in the county occur in the Wasatch Mountains, along the Eastern edge of the county. Other forest types in the county include:

1. Urban forests within cities
2. Oak-maple forests in low elevations
3. Pinyon-juniper forests low to mid-elevations
4. Douglas-fir forests in mid-elevations
5. Aspen forests in low to high elevations

Source: (McAvoy et al. 2012)

v. In 2010 (updated for 2016) the Utah Division of Forestry, Fire and State Lands developed the Utah Statewide Forest Resource Assessment. The assessment:

1. provides an analysis of the forest conditions and trends in the state;
2. addresses current state and national resource management priorities;
3. spatially delineates priority rural and urban forest landscape areas;
4. ensures that state and federal resources are being focused on important landscape areas with the greatest opportunity for shared management priorities and achieve meaningful outcomes (see the Utah's Forest Action Plan data for priority areas); and
5. enables the efficient, strategic and focused use of limited program resources.

vi. There are many established communities in this area with mature urban trees. In this case, tree management and preservation are major priorities. However, population growth has encouraged sprawl and new developments continue to emerge. In these areas, proper tree selection, tree planting and education are the primary focus. Many cities along the Wasatch Front have city foresters and access to resources, partners and budget dollars, making program efforts more effective and easier to implement (Utah Division of Forestry, Fire & State Lands 2016).

vii. The Forest Service administers lands within its jurisdiction including the Uinta-Wasatch-Cache National Forest. The Utah Division of Forestry, Fire, and State Lands manages state lands and forests in Utah, while Utah State University contributes forestry research and developing best practices for private landowners.

b. Economic Considerations

i. Visitors from around the world, together with Utah locals, enjoy Utah's renowned forests that span from Canyonlands to the alpine zone. While Utah is only 29% forested, these forests have high scenic, recreation, wildlife and other forest use values that make forest health very important (Utah Forest Health Highlights 2014).

ii. The market for forest products is very small in Utah, but it does exist. Forest products may be sold by board feet, by volume, or by piecemeal depending upon the product and the buyer. A professional forester can assist the seller in choosing the correct unit of measure and in determining value of the product. The non-extractive products and benefits that come from Utah's forests, such as recreation, water quality, wildlife habitat, and aesthetics are valuable. These contribute to the quality of life in Utah.

c. Custom + Culture

i. The management of forests within Davis County has been a priority since the Mormon pioneers settled the area. Early settlers considered trees to be community property, and the forests were managed to serve community interests. All saw mills were required to give

10% of their sawn lumber to the community leadership, who distributed the lumber to be used for construction of public buildings, given to the poor, and traded for goods. Eventually, timber used in the county was imported from elsewhere due to a waning timber supply (Leonard 1999).

ii. Applying effective forestry practices to the forests of Davis County became important as settlers brought thousands of grazing animals to the area. Overgrazing led to erosion that, "came in many forms and degrees. The most spectacular were the disastrous mud and rock floods pounding down into towns and settlements along the Wasatch Front (particularly in Davis County) and from the Wasatch Plateau into the towns of Ephraim and Manti." The Forest Service is charged with balancing the proper use of forests as "a source of water, wildlife habitat, livestock forage, scenery, open space, and many forms of recreation" (Van Hooser and Green 1983). County residents rely on proper forest management for many purposes.

iii. In more recent times, forest management has been instrumental in preserving numerous recreational opportunities throughout the year.

iv. Because of the abundance of recreation opportunities and the large urban population along the Wasatch Front, the Uinta-Wasatch-Cache National Forest is one of the most heavily visited in the entire National Forest System (USFS 2017).

Relevant Existing Policies

No Relevant Existing Policies were found regarding forest management in the Davis County General Plan or associated documents.

Davis County Objectives

1. Support agencies in providing woodland products on a sustainable basis consistent with maintaining ecosystem health and other resource management objectives to meet local needs where such use does not limit the accomplishment of goals for the management of other important resources.

Davis County Policies

1. Support federal agencies in vegetative management treatments in forested cover types that provide for a full range of seral stages, by forested cover type, which achieve a mosaic of habitat conditions and diversity. Each seral stage should contain a strong representation of early seral tree species. Recruitment and sustainability of early seral tree species in the landscape is needed to maintain ecosystem resilience to disturbance.
2. Coordinate with the USFS in order to facilitate the adoption of the County plan to the maximum extent allowable by law.
3. Encourage USDA Forest Service Uintah-Wasatch-Cache National Forest (USFS) to adequately update and identify the need for active forest vegetation management in Forest Plans.

4. Encourage USFS to prioritize and actively suppress noxious weeds which threaten forested Terrestrial Key Habitats. Davis County supports grazing as a strategy to reduce fuel loads within forested areas.
5. Honor the rights, privileges, interests and motivations of private landowners to manage their property within forested lands.

FIRE MANAGEMENT

Definition

The actions to contain, control, extinguish, use, prevent, or influence fire for the protection or enhancement of resources as it pertains to wildlands.

Related Resources

Recreation and Tourism, Land Use, Land Access, Energy, Law Enforcement, Air Quality, Floodplains and River Terraces, Water Quality and Hydrology, Wildlife, Noxious Weeds, Forest Management.

Findings

a. Overview

i. Wildfire is the most prevalent natural disturbance in the State of Utah and it affects biotic communities statewide. It is an integral component of our forest, range, and desert lands and affects thousands of acres on an annual basis.

ii. While primarily responsible for structure and accident response, city and town fire departments also provide wildland training and are often the first responders to fires at the wildland-urban interface within incorporated municipalities. These resources are often assigned to structure protection operations.

iii. In Davis County, urban expansion in the foothills presents a tremendous public safety challenge in these fire-prone ecosystems (Davis County Resource Assessment 2012).

iv. At lower elevations, a key management concern is the spread of non-native annual grasses that predominantly invades desert grassland, lowland sagebrush and Gambel oak habitat types. Cheatgrass has been blamed for much of the reduction of fire return intervals and the occurrence of larger fires (Utah State University 2009). See also Noxious Weeds briefing.

v. As described in the Antelope Island Resource Management Plan, noxious weeds support increased fire frequency on the island. Recommendations to achieve the desired future condition include: developing a fire management plan, monitoring vegetation, conducting prescribed burns, replacing weedy species with desirable perennials, and targeting burned areas for seeding projects (Utah State Parks 2009).

vi. Response to fire incidents, especially wildland fires, relies on proper oversight, guidance, and partnership among a variety of trained professional organizations. Establishing a fire management system is a critical step to the protection of both urban and rural communities. Fire management refers to the principles and actions to control, extinguish, use, or influence fire for the protection or enhancement of resources as it pertains to wildlands. It involves a multiple-objective approach strategy including ecosystem restoration, community preparedness, and wildfire response (U.S. Forest Service 2016).

vii. Response to a wildland fire can involve a basic monitoring status placed on a remote wilderness fire, or involve multiple agencies overseen by an incident-management team encompassing hundreds of firefighters to manage. Numerous personnel are trained to respond to wildfires throughout Utah and the services they provide are dependent upon the role of their organization as assigned during an incident. At a basic level, firefighting resources can be grouped into two broad categories: ground resources and air resources. Often times, both types of resources are dispatched to a fire.

viii. There are two main firefighting groups that fall within the "ground resources" category; they include handcrews and engines. Handcrews are specifically trained to fight wildfires. Wildland engines are specially equipped fire engines, often with all-terrain capabilities, to transport water to firelines. Both handcrews and engine crews are sponsored by federal land management agencies such as the Forest Service, BLM, National Park Service, US Fish and Wildlife Service, and the US Bureau of Indian Affairs. In addition to having access to federal crews, the State of Utah trains and provides both handcrews and engine crews.

ix. The Davis County Emergency Operations Plan (2014) describes the current configuration of emergency response stations. "There are 10 fire agencies in the county with a total of 16 fire stations. Stations staffed 24-hours are as follows: South Davis Metro Fire Agency - 5 stations, Kaysville Fire - 1 station, Layton Fire – 3 stations, Syracuse Fire – 1 station, Clinton Fire – 1 Station, and North Davis Fire District – 2 Stations. Farmington Fire staffs 1 station with 2 persons during the daytime. Sunset and South Weber Fire Departments personnel are all on call. Hill Air Force Fire Department staffs 1 station 24/7 for response on base" (Davis County Government 2014).

x. "The local fire departments with jurisdiction make primary response to Wildland fires in close proximity to city/forest service boundaries, with State and/or Forest Service personnel arriving second. This allows for the quickest response to such incidents" (Davis County Government 2014).

xi. In Utah, the state legislature tasked the Utah Division of Forestry, Fire, and State Lands to devise a comprehensive statewide wildland fire prevention, preparedness, and suppression policy, which is now known as SB-56, 2015. Under this plan, a master cooperative

wildland fire management and Stafford Act response agreement is signed each year between numerous federal land management agencies and the State of Utah for cooperation during wildland fire incidents that occur throughout the state (Utah Division of Forestry, Fire, & State Lands 2013).

b. Economic Considerations

i. Fire suppression is expensive to taxpayers. In the past 30 years money spent by federal agencies nationwide on firefighting has increased from $2.5 million in 1985 to well over $2 billion in 2015 (National Interagency Fire Center 2015). With climate change and expected increase in temperatures and drought periods, fires suppression costs are projected to rise. In Utah, fire suppression costs averaged $33.4 million per year during the 10-year period of 2003–2012 (University of Utah, Bureau of Economic and Business Research 2014). One area of major concern is the wildland-urban interface. As development in this interface continues, firefighting costs will increase (Utah Division of Forestry, Fire, & State Lands 2013).

ii. Wildfires come with serious costs; the cost of fire suppression is only a fraction of the true, total costs associated with a wildfire event. Some of the costs associated with wildfire suppression include the direct costs (resources lost and structures burned), rehabilitation costs (post-fire floods and land restoration), indirect costs (lost sales and county taxes), and additional costs (loss of life and damage to air quality). A synthesis of case studies reveals a range of total wildfire costs anywhere from 2- to 30-times greater than the reported suppression costs (Western Forestry Leadership Coalition 2009).

c. Custom + Culture

i. Firefighting and management is, and always has been, important to citizens in Davis County. Fire prevention, management, and mitigation is critical to protecting the health, safety, welfare of the County and its residents. As evidenced in historic stories and photos, people in Davis County have been training and preparing for structure and wildland fires for decades.

ii. “Fire was a constant threat to property and life in early Davis County. Sparks from fireplaces and their chimneys could destroy houses, barns, and fields quickly, with little hope of human intervention saving the structures. A bucket brigade was the only system available to fight a fire, and often that could not be organized in time to douse the flames. In 1860, one family lost a straw stack, several tons of hay, a mule, and 116 sheep when a windstorm carried sparks from a fireplace twenty rods to the straw stack. Besides the threats they posed to homesteads and property, fires also sometimes damaged grazing lands and the mountain watershed. For example, fires started by Indians and whites swept most of the canyons of Davis County clear of timber and underbrush in 1855, a summer of dry, hot weather” (Leonard 1999).

Relevant Existing Policies

d. **Davis County Emergency Operations Plan**

i. Local:

1. The vast majority of incidents requiring emergency response within Davis County are relatively small emergencies. City and/or county emergency responders,

depending upon jurisdictional boundaries and functional responsibilities, will manage such emergencies.

2. As required by federal guidance, the National Incident Management System (NIMS) in conjunction with the Incident Command System (ICS) will be used by emergency responders to manage an incident when two or more agencies or disciplines respond to the same incident. A unified command structure should be used when multiple agencies respond.

ii. State:

1. When an incident overwhelms the capabilities of local responders, they may request assistance from the state. Such assistance may include personnel, physical resources and/or command leadership.
2. An incident resulting in a significant effect to the state and state resources will necessitate coordination between local and state officials.
3. State authorities will have a degree of jurisdiction over incidents involving state owned properties and interests. Every effort should be employed to function in a unified command management structure.
4. The state shall have authority to declare disasters and make other declarations as needed to protect state interests and citizens.

iii. Federal:

1. When an incident overwhelms the capabilities of local and state resources and capabilities, an appeal to appropriate federal authorities will be made. Upon arrival of such assets, federal officials will be integrated into existing incident command structures
2. Federal authorities will have jurisdiction over incidents in accordance with current federal regulations and laws.

e. **Utah Wildlife Action Plan**

i. Fire is returned to habitats from which it had been unnaturally excluded, the fire regime (frequency and intensity) in these habitats generally approximates a natural, pre-settlement regime.

ii. Inappropriate Fire Frequency and Intensity - Fire is excluded from habitats in which potential burns now would be frequent, large, and destructive to soils and native vegetation to the habitats are being actively managed (treated) to reduce components or factors that promote risk of catastrophic fire, such as cheatgrass, excessive conifer encroachment, or unnaturally large stands of mature Gambel oak.

Davis County Objectives

1. Fires are managed to enhance ecosystems while protecting human life, private property, sensitive species, and the local economy from catastrophic wildfires.

Davis County Policies

2. The County will work together with partners and other affected groups and individuals to reduce risks to communities and to maintain or enhance key habitats.
3. Davis County supports projects that alleviate the possibilities of catastrophic wild fire.
4. Work with the State of Utah Division of Forestry Fire and State Lands to implement the Wildland Fire Plan and to reduce wildfire risk in the wildland-urban-interface.
5. Support active vegetation management including using prescribed fire to avoid catastrophic fire, encourage aspen regeneration, reduce woody plant stocking density on high risk forests and rangelands, diminish the buildup of woody residues, improve forest health, and maintaining native plant diversity. As conditions allow, the least-intrusive fire suppression method should be employed over more intrusive methods. For example, wildland fire use is the preferred method of treatment. Where conditions are not appropriate for wildland fire use, prescribed burning will be the preferred method. Where prescribed burning is not feasible, non-fire fuel treatments will become the preferred method of treatment.
6. Advocate for active vegetation management on federally-administered lands, including USDA National Forest System Lands and Bureau of Land Management lands. Accelerate wildfire risk reduction on federal lands through the Forest Planning process. Emphasize fuelbreaks on federal lands to contain fires from migrating onto private lands.
7. Suppress the invasion of Phragmites invasive non-native plants through herbicide treatments followed by residue reduction. Prescribed burning is an efficient and effective way to diminish stem residue which delays the advance of desirable native wetland plants. Conduct prescribed fire on valuable wetlands when high-velocity canyon winds cast smoke westward, away from urban metropolitan areas, optimizing the conditions of atmospheric mixing and smoke dissipation.

WILDLIFE

FISHERIES

Definition

Game and nongame fish species. The term also includes the places where fish breed and live.

Related Resources

Canals & Ditches, Irrigation, Floodplains & River Terraces, Riparian Areas, Water Quality & Hydrology, Water Rights, Wetlands, Wild & Scenic Rivers, Wildlife, Recreation & Tourism.

Findings

a. Overview

i. Statewide, Utah's current fish and wildlife resource is highly diverse. Approximately 647 vertebrate species inhabit the state; of these, 381 are considered permanent residents, including 78 species of fish (Powell 1994).

ii. Davis County is geographically part of the Weber River Basin. Nearly 40 species of fish are found in the basin. "The only endangered species located in the basin is the June Sucker, a fish that is not native to the basin and exists only in a local pond as part of a recovery effort" (Utah Division of Water Resources 2009).

iii. The Utah Division of Wildlife maintains community fisheries such as ponds and reservoirs that are stocked with fish. Davis County has seven ponds stocked by UDWR, such as Bountiful Pond, Farmington Pond, and Clinton Pond, in addition to Holmes Creek Reservoir (Utah Division of Wildlife Resources 2016).

iv. Sport Fishing

1. Sport or recreational fishing is an important part of the outdoor recreation industry. The Utah Division of Wildlife Resources (UDWR) is responsible for managing fisheries in Utah with the primary goal of providing quality recreational fishing opportunities (UDWR n.d.). Assisting the UDWR in decision making and establishing management priorities are five Regional Advisory Councils (RACs) who provide local input on fishery-related issues (Wildlife Resource Code of Utah, Ch14, Sec. 2.6).

v. Weber Basin Water Conservancy District

1. "The Weber Basin Water Conservancy District- The district's primary function is to provide water to agricultural, municipal and industrial water users. In so doing, the district also has the responsibility to operate and maintain major project water storage, distribution and treatment facilities. By various agreements involving the Bureau of Reclamation, Division of Wildlife Resources, U.S. Fish and Wildlife Service and Ogden River Water Users Association, the district provides 1) instream flows within most reaches of both the Ogden and Weber rivers downstream of existing project reservoirs, 2) minimum annual diversions to the Ogden Bay Waterfowl Management Area, and 3) support efforts by state and federal agencies to maintain acceptable levels of water quality in the reservoir fisheries" (Utah Division of Water Resources 1997).

vi. Aquatic Invasive Species

1. Aquatic Invasive Species (AIS), also referred to as Aquatic Nuisance Species, are defined by the UDWR as non-native species of aquatic plants and animals that cause harm to natural systems and/or human infrastructure. Not all nonnative fish species are considered AIS, such as those that are desirable for sport fishing. These may include nonnative Rainbow Trout, Largemouth Bass, and catfish.
2. Invasive mussels in Utah waters have no natural competitors. Once they are established, they spread quickly, colonizing nearly any and all underwater surfaces. They are currently impossible to remove from contaminated water bodies and are easily spread to other waterbodies. The mussels can clog water transmission and power generation infrastructure, harm water- based recreational equipment, and outcompete both native and nonnative game species for nutrients. All these impacts can have profound impacts on sportfish populations.
3. Preventing the spread of AIS is currently the most effective management action. The UDWR has a statewide system of boat cleaning/decontamination stations, inspection check-points, and angler education efforts.

b. Control v Influence

i. "The populations of all fish and wildlife arc closely monitored and managed by the Division of Wildlife Resources. The division is legislatively charged with the responsibility to protect, propagate, manage, conserve and distribute protected wildlife throughout the state. The division prepares proclamations establishing annual fishing and hunting guidelines. The division is also responsible for the management of major state-funded waterfowl management areas" (Utah Division of Water Resources 1997).

ii. "The Fish and Wildlife Service has responsibility for protecting and promoting federal interests in fish and wildlife issues, laws and regulations" (Utah Division of Water Resources 1997).

c. Economic Considerations

i. "During calendar year 2011, DWR issued 483,806 Utah resident and non-resident fishing or combination hunting and fishing licenses, a 17% increase over the number of licenses sold in calendar year 2005 – the last year in which a statewide angler activity survey was conducted. [The data] estimated a total of 2,448,299 fishing trips by resident and non-resident anglers over the 2011-2012 study period. Statewide, trip numbers were highest

during July and August, with over 350,000 trips estimated for each of those months" (Krannich 2012).

d. Custom + Culture

i. Recreational fishing has been part of the local custom and culture for more than one hundred years. Davis County considers it a priority to maintain healthy fisheries for both public use and ecological sustainability.

ii. One of the efforts of the county agricultural society and local church leaders was to encourage residents to improve the production of animal products in the County. "The improvement effort expanded to include beekeeping and fisheries in 1871, when delegates to a county convention in Farmington organized a specialized society, the Davis County Branch of the Deseret Fine Stock and Bee Association. A nominating committee of bishops or their representatives picked five men for each of seven committees to encourage the improvement of horses, horned stock, sheep, bees, fish, swine and fowls, and general agriculture" (Leonard 1999).

Relevant Existing Policies

e. **Great Salt Lake Comprehensive Management Plan**

i. Recognize the importance and support a range of salinity levels that support the brine shrimp population, the associated food web, and the brine shrimp harvesting industry.

1. Coordinate with DWR and UGS to evaluate how authorization of water rights applications would affect salinity of GSL at a range of lake levels.
2. Coordinate with DWR to evaluate impacts to brine shrimp populations at a range of lake levels when reviewing new permits/leases and permit/lease renewals.
3. Identify research opportunities with DWQ, DWR, and UGS for studying the effects of lake salinity levels and water quality on brine shrimp.
4. Coordinate with DWQ to help ensure compliance with Utah Water Quality Act regulations (UTAH ADMIN. CODE R317).
5. Continue to support DWQ's efforts to monitor contaminants of concern in both brine shrimp and the water column.
6. Coordinate with DWQ to help ensure compliance with numeric criteria for pollutants of concern as they are established.
7. Coordinate with the managing, permitting, and intersecting entities to maintain ideal salinity levels for brine shrimp resources.
8. Continue to partner with UGS to monitor salinity levels and DWR to monitor brine shrimp populations.

Davis County Objectives

1. Davis County fisheries (existing and future) support healthy ecosystems and provide sport fishing.

Davis County Policies

8. Support natural resource management entities within Utah to prevent invasion of Aquatic Invasive Species (AIS) into the state and to contain AIS through accepted management practices to areas that are either already infested or become infested.

PREDATOR MANAGEMENT

Definition

The strategies and practices to control the actions of predators, or bringing into natural ecological balance predator populations, or reduce the number of conflicts with predator animals.

Related Resources

Agriculture, Livestock and grazing, Threatened, endangered, and sensitive species, Wildlife, Land Use

Findings

a. Overview

i. Predators in Utah include raptors, mountain lions, bears, wolves, coyotes, foxes, weasels, and snakes (APHIS 2016).

ii. The USDA established a program in 1895 called Wildlife Services (WS) to assist land managers. WS focuses on predator control activities for the protection of livestock. “Currently, WS operational activities include conducting rabies control and eradication efforts, managing invasive species, completing wildlife disease surveillance, reducing the impact of predation on livestock, preventing wildlife strikes at airports, protecting transportation infrastructure, and protecting threatened/endangered species, rare habitats, and ecosystems” (APHIS 2009).

i. The primary focus of predator control in Utah is protecting livestock from coyotes, black bear and mountain lion, and mule deer from coyotes.

1. In Utah, livestock protection from predators rests with the Utah Department of Agriculture (UDA) as explained in the Utah Agriculture Wildlife Damage Prevention Act (Utah Code 4-23). The UDA Wildlife Damage Prevention Board, created by the Wildlife Damage Prevention Act, oversees the State role in predator damage management. Although the USDA Wildlife Services (WS) supervises and manages the initiative, it is a cooperative program that is currently 50% funded by the State, 32% funded by WS federal appropriations, 14% from private funding, and 4% by other federal agencies (M. Worthen, Iron County, personal communication).

2. The program not only protects livestock from predation, but also monitors and controls zoonotic diseases transmittable by wildlife to humans, such as rabies and avian influenza, and provides protection to federally listed threatened and endangered species as requested by the Utah Division of Wildlife Resources (UDWR) and the U.S. Fish and Wildlife Service. Black bear and mountain lion are classified as big game and managed by the UDWR, whereas coyotes are classified as nuisance wildlife, and controlled primarily by UDA with the exception of mule deer or other big game protection. WS reports all big game and other DWR managed wildlife taken as a result of livestock protection to DWR (M. Worthen, Iron County, personal communication).

iii. Mule Deer Protection Act

1. In Utah, the primary agent for predator control, for protection of wildlife, is DWR. They manage predator populations (primarily black bear, mountain lion, and furbearers) through hunting permits and WS' on a case-by-case basis. In instances of confirmed black bear and mountain lion damage, the Utah DWR reimburses livestock owners for the damage.

2. In 2012, the State established the Mule Deer Protection Act which pays hunters a bounty fee for coyotes that are harvested. DWR also identifies deer units that are below herd management objective and can direct removal of coyotes from crucial deer winter ranges and critical fawning areas through aerial hunting and contracts with individual hunters

3. In Davis County, the Wasatch Mountains and the associated canyons are inside of the recommended coyote removal zone (Utah Division of Wildlife Resources n.d.).

4. Between 2014-2015, there were 110 coyotes removed by hunting in the Wasatch Mountains hunt unit (Utah Division of Wildlife Resources 2014).

b. Economic Considerations

i. Losses due to predation can be significant. In 2014 in Utah, 5,200 sheep and 12,100 lambs were killed by predators for a total value loss of nearly $3 million (U.S. Department of Agriculture 2015):

1. Coyotes were by far the largest contributor to predation deaths (2,800 sheep and 8,500 lambs), bears were second (1,100 sheep and 1,700 lambs), and mountain lions third (700 sheep and 900 lambs).

ii. Utah cattle are also killed by predators, though not in as many numbers. In 2010 in Utah, 300 head of cattle and 2,300 calves were killed by predators for a total value loss of $1.1 million (U.S. Department of Agriculture 2011):

1. Coyotes are responsible for the majority of cattle predation, including 58% of calf losses and 44% of cows.
2. Bears were responsible for 43% of the cow losses.

c. Control v Influence

i. The Utah Division of Wildlife is primarily responsible for predator control strategies and enforcement. Most of UDWR's revenue is generated from the sale of hunting and fishing licenses and permits. These funds are restricted for use by the UDWR only. All license dollars collected stay within the UDWR to execute the division's mission to protect and conserve the wildlife and their habitat in Utah.

d. Custom + Culture

i. "Davis County's first settlers found coyotes, bear, elk, moose, and a few mountain lions and bobcats, along with other animals, birds, fish, snakes, and insects familiar to residents today" (Leonard 1999).

i. One of the principles that drove for the establishment of the Forest Reserve Act of 1891 and Taylor Grazing Act 1934 was to address overgrazing and predator control.

Relevant Existing Policies

e. **Great Salt Lake Comprehensive Management Plan**

i. Recognize the need to maintain the isolation of nesting and breeding habitats for bird species of regional/global importance.

1. Coordinate with DWR and USFWS to determine effects of permitting action on rookeries.
2. Coordinate with DWR to implement activities that protect rookery habitat.
3. Coordinate with DOGM to help ensure compliance with permitting rules that pertain to bird habitat.
4. Consider the impact of recreational activities (hunting and boating) on island rookeries and coordinate with DWR to minimize impacts to bird habitat.

f. **Utah Predator Control Program Summary**

i. The DWR predator-control program provides incentives for hunters to remove coyotes. Primary goal of the program is to remove coyotes from areas where they may prey on mule deer. Participants receive $50 for each properly documented coyote that they kill in Utah.

g. **Utah Wildlife Action Plan**

i. Depleted native species whose populations require relief from native predators, receive assistance for as long as they need it, and no longer.

ii. Highly human-tolerant problematic bird and mammal species are kept in check where their success has the potential to become problematic.

h. **UDWR Management Plans**

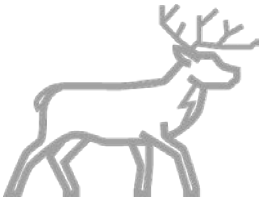
i. The UDWR maintains management plans for some larger, specific predators including cougars, bobcats, wolves, bears. Please see individual plans for more information.

Davis County Objectives

1. The County supports the management (including control) of predators as vital components of the ecosystem with due consideration given to private property rights and economic needs of the County.

Davis County Policies

1. The County supports finding local solutions to predator concerns.
2. The County opposes allowing predators to infringe on private property rights.
3. The County opposes introducing any new predators into the ecosystem without consultation with and consent of the County Commission.



WILDLIFE

Definition

Undomesticated animals usually living in a natural environment, including both game and nongame species.

Related Resources

Threatened, Endangered, or Sensitive Species, Predator Control, Agriculture, Livestock and Grazing, Land Use, Fisheries, Forest Management, Recreation and Tourism

Findings

a. **Overview**

i. The biological diversity of Davis County increases the importance of wildlife issues and the impact of management decisions

ii. "Populations of many species of wildlife have declined over the past 30 years due to a variety of manmade and natural factors. Unless adequate measures are taken to recover and conserve species populations and habitats, some of these species may become federally listed in the future" (Sutter et al. 2005).

iii. Best management practices for wildlife focus on principles and actions that allow people and wildlife to coexist, and on creating or maintaining healthy wildlife populations and habitat.

iv. "Cooperative Wildlife Management Units," (CWMU) can be created by the state as contiguous areas of land open for "hunting small game, waterfowl, cougar, turkey, or big game which is registered in accordance with [...] the Wildlife Board." These units can span over private, public, and state land, in an effort to manage based on an animal's range, rather than man-made borders. Davis County contains sections of the "Jacob's Creek," and "Hardscrabble" CWMUs. *Division of Wildlife Resources Website*

v. Primary control of wildlife management and planning is given to the State of Utah. The Utah Division of Wildlife Resources (UDWR) administers wildlife statutes and administrative rules, conducts wildlife studies, and regulates the taking of wildlife. The USDA Forest Service administers portions of public lands and habitats assigned as National Forests within the county.

vi. State species management plans provide guidance and direction for a number of species in Utah. These plans are taken through a public process to gather input from interested constituents and then presented to the Utah Wildlife Board for approval. Species covered by statewide plans include wild turkey, chukar, greater sage-grouse, mule deer, elk, moose, pronghorn, mountain goat, bighorn sheep, Utah prairie dog, beaver, northern river otter, black bear, cougar, bobcat, and wolf.

b. **Birds**: UDWR tracks the habitat coverages of birds in the state. The following birds are tracked by the agency and have crucial or substantial habitat inside the County (Utah State Parks 2009):

1. California Quail
2. Hungarian Partridge
3. Ringtailed Pheasant
4. Ruffled Grouse
5. Blue Grouse
6. Chukar Partridge

ii. Many more types of birds exist inside the Waterfowl Management Area, and more common birds are not tracked by UDWR.

c. Antelope Island State Park: Antelope Island has a huge amount of wildlife diversity. For example, an estimated 239 species of birds have been seen on the island including several species that have strayed to the island out of their usual range. Primary control over the ecological resources of the island is charged to UDPR. The park's RMP and the associated 2001 Wildlife Management Plan are the primary directive documents.

i. Bison

1. In 1893, four bulls, four cows, and four calves were brought to the island on a barge. These 12 animals provided the foundation for what has grown into one of the oldest and largest publicly owned herds of bison in the nation" (Utah State Parks 2009).
2. "The bison herd is now state-owned and managed by the Utah Division of Parks and Recreation. The park maintains a bison population of 600- 700 animals. An annual bison roundup is conducted to monitor the health of the herd, inoculate individuals, and to allow for the sale of excess animals" (Utah State Parks 2009).

ii. California Bighorn Sheep

1. "The concept of restoring bighorn sheep to Antelope Island began through the development of a Wildlife Management Plan for the island in 1989. Subsequently, joint efforts between the UDPR the UDWR and the Foundation for North American Wild Sheep resulted in the successful establishment of a very productive population of California bighorns. Watchable wildlife opportunities and the establishment of a donor herd for transplant projects were primary objectives for the project" (Utah State Parks 2009).
2. "A proposal was submitted in 1995 for the reintroduction and two years later, 23 sheep from Kamloops, British Columbia were released onto the island. In 2000, the growing herd was augmented with six additional sheep from Nevada" (Utah State Parks 2009).
3.
4. Wildlife conservation funding through very limited hunting opportunities on the Antelope Island State Park. Auctioned hunting permit sales generate revenues dedicated to habitat improvements and wildfire mitigation responses on the island.

d. **Wasatch Mountains Area**

i. Black Bear

1. "The black bear has been a protected species in Utah since 1967, when a group of sportsmen petitioned the Utah State Legislature to protect both cougar (*Puma concolor*) and bear" (UDWR 2011).
2. The management goal in Utah is to, "Maintain a healthy bear population in existing occupied habitat and expand distribution while considering human safety, economic concerns, and other wildlife species. A 'healthy' bear population is one that has a proportion of breeding age animals that will maintain population levels consistent with habitat, and that maintains genetic variability" (UDWR 2011).
3. The Black Bear Guidebook (2016) distributed by UDWR details the rules, boundaries, and licenses required for hunting. The boundaries cover the Eastern parts of the County.

ii. Moose

1. "In addition to organized transplants, moose that wander out of the mountains and into populated areas are also relocated. Most nuisance moose situations occur along the Wasatch Front in the spring and summer months when younger moose are dispersing. Additionally, depending on winter severity, moose may wander into towns during the winter months while they are searching for areas with less

snow. Some of those moose have been moved to areas throughout Utah to help bolster previously transplanted populations or to start new populations. Still others have been simply been relocated to suitable habitat within nearby units away from cities and towns" (UDWR n.d.).

iii. Elk

1. The general management goals for Elk in Utah are stated in the plan. "Manage for a population of healthy animals capable of providing a broad range of recreational opportunities including hunting and viewing. Consider impacts of the elk herd on other land uses and public interests including private property rights, agricultural crops and local economies. Maintain the population at a level that is within the long-term capability of the available habitat." These goals are included along with more specific acreage and population targets (UDWR 2012).
2. In Davis County, the winter range for these animals "are adjacent to the heavily populated Wasatch Front and are becoming very limited due to the impact of urban development" (UDWR 2012).

iv. Deer

1. The UDWR has created herd units all across the state in order to best describe the conditions and objectives of deer populations in those areas. Davis County falls under Deer Herd Units #1, #5, and #17 (UDWR 2013).
2. Each herd unit has both habitat and population management strategies that detail the monitoring, protection, maintenance, and improvement for the success of the species.

e. **Waterfowl Management Area - Farmington Bay**

i. "During migration, the diversity of sound and color astounds visitors to Farmington Bay Waterfowl Management Area (WMA). Hundreds of thousands of waterbirds, songbirds and raptors visit this area during the migration and nesting seasons. More than 200 different species have been documented on the management area" (UDWR n.d.).

ii. "Species that are commonly harvested are mallard, northern pintail, gadwall, green-winged teal, cinnamon teal, and northern shoveler. In November, the large bodies of water can be an excellent place to harvest scaup, ruddy duck, redheads, and canvasback" (UDWR n.d.).

iii. "In 1991, the Great Salt Lake and associated wetlands including Farmington Bay WMA were dedicated into the Western Hemispheric Shorebird Reserve Network. This designation reflects the significance of this ecosystem to more than 30 species and millions of individual shorebirds" (UDWR n.d.).

iv. Bird watching and fall waterfowl hunting has become an increasingly popular attraction for residents of the County and tourists alike.

f. Economic Considerations

i. The US Fish and Wildlife Service found that Utah residents and non-residents spent over $1.5 billion dollars in 2011 in Utah on recreation activities associated with wildlife (U.S. Fish and Wildlife Service, U.S. Department of Commerce, and U.S. Census Bureau 2011).

g. Custom + Culture

i. Historical accounts of how early settlers interacted with the local wildlife, describe the diversity that was observed. "The wildlife of Davis County was generally not a threat to

human life, but some animals could be a nuisance; others could be a source of food. Emily Stewart Barnes remembered, 'There were many wild animals; some of them are: rattlesnakes, blow snakes, blue racers, lizards, ground hogs, wolves, porcupines, skunks, rabbits, mink and deer in the mountains, as well as wild ducks and all kinds of birds.' When wolves became a threat to livestock and fowl, the county court offered a bounty for each wolf killed" (Leonard 1999).

ii. Managing and respecting the wildlife of Davis County has been a tradition for hundreds of years, and will continue into the future.

Relevant Existing Policies

h. **Great Salt Lake Comprehensive Management Plan**

i. Recognize the importance and support the sustainability of viable populations of nesting bird species of regional/global importance and the habitats that support them.

1. Coordinate and encourage the maintenance of a diversity of habitats and adequate food supply that support nesting birds.
2. Coordinate with DOGM to help ensure compliance with permitting rules that pertain to bird habitat.
3. Consider the impact of recreational activities (hunting and boating) on nesting bird populations and coordinate with DWR to minimize impacts to nesting bird habitat.
4. Support inventory, monitoring, and research of nesting bird populations through DWR.
5. Support DWQ and USGS research and monitoring of water quality impacts to nesting bird populations.
6. Support DWQ in maintaining water quality sufficient to protect the waterfowl, shorebird, and wildlife beneficial uses for GSL.
7. Minimize disturbance to nesting habitat areas by coordinating permitting and land management activities with DWR.
8. Coordinate with DWQ to help ensure compliance with Utah Water Quality Act regulations (UTAH ADMIN. CODE R317).
9. Coordinate with DWQ to help ensure compliance with numeric criteria for pollutants of concern as they are established.

ii. Recognize the need to maintain the isolation of nesting and breeding habitats for bird species of regional/global importance.

1. 1) Coordinate with DWR and USFWS to determine effects of permitting action on rookeries.
2. 2) Coordinate with DWR to implement activities that protect rookery habitat.
3. 3) Coordinate with DOGM to help ensure compliance with permitting rules that pertain to bird habitat.
4. 4) Consider the impact of recreational activities (hunting and boating) on island rookeries and coordinate with DWR to minimize impacts to bird habitat.

Davis County Objectives

1. Thriving wildlife populations provide wildlife viewing and hunting experiences for residents and visitors to the County.
2. Hunting continues to be part of the economy and traditions of the area.

Davis County Policies

1. The County supports wildlife management that seeks an optimal balance between wildlife populations and human needs.
2. The County opposes any federal land management that infringes on state jurisdiction over wildlife.
3. The County encourages public land management agencies to develop biological resource management plans that provide for the enhancement of native fish, game and nongame species, promote fishing and hunting on public lands, and provide a private property compensation program for certain damages created by wildlife.
4. Agencies should coordinate with the County before eliminating, introducing or reintroducing any species onto public lands and address potential impacts of such an action on private lands, customary use and private property interests in the public land, and the local economy.
5. Where resources are available, support and increase the number of pollinators through habitat enhancement and other measures.
6. Davis County encourages management of wildlife numbers at levels consistent with healthy habitat capabilities consistent with other uses of these habitats.

THREATENED, ENDANGERED, & SENSITIVE SPECIES

Definition

Species of plants, animals, and other living organisms which are, to some degree, threatened by extinction.

Related Resources

Wildlife, Land Use, Fisheries, Livestock and Grazing, Noxious Weeds, Fire Management, Predator Control

Findings

a. Overview

i. The Endangered Species Act (ESA) directs all federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the ESA. Animal or plant species are classified as endangered, threatened, candidate, or study species.

ii. The State of Utah sensitive species list is prepared pursuant to Utah Administrative Code R657-48. By rule, wildlife species that are federally listed candidates for federal listing, or for which a conservation agreement is in place, automatically qualify for the list. The additional species on the Utah sensitive species list—wildlife species of concern—are those species for which there is credible scientific evidence to substantiate a threat to continued population viability. It is anticipated that wildlife species of concern designations will act as an "early warning" system to identify species for which conservation actions are needed. Species on the State of Utah sensitive species list are not protected by any special state regulations.

iii. The BLM, and the USFS both maintain their own lists of sensitive species for the lands they administer, using their own criteria, in addition to the ones listed by the ESA. These agencies have their own policies and objectives for managing wildlife populations.

iv. The U.S. Fish and Wildlife Service have published specific recovery plans for many of the listed species in the state, including Mexican spotted owl, Southwestern willow flycatcher, razorback sucker, bonytail chub, Colorado pikeminnow, Humpback chub, and greenback cutthroat trout.

i. Primary control of wildlife management and planning is given to the State of Utah. The Utah Division of Wildlife Resources (UDWR) conducts wildlife studies and issues hunting permits. The federal government issues permits for areas in Davis County where grazing and wildlife compete for forage.

b. Animal Species in Davis County with special status

i. According to the UDWR, there are 36 species considered "sensitive" in the County. Eleven of these sensitive species have a wildlife action plan associated with them, including two of particular concern; the yellow-billed cuckoo, and the least chub are candidates for federal threatened and endangered species listing. The other nine that have state management plans are:

1. Burrowing owl
2. Bluehead sucker
3. Snowy plover
4. Peregrine falcon
5. Lewis's woodpecker

6. Bonneville cutthroat trout
7. American white pelican
8. White-faced ibis
9. Caspian tern

Source: (UDWR 2015)

ii. Antelope Island

1. **"**Antelope Island is habitat or potential habitat for 12 species considered to be species of concern (including the yellow-billed cuckoo, a candidate for federal threatened and endangered species listing). The remaining 11 species—two mammals, one fish and eight birds—are considered to be species of concern under Utah Division of Wildlife Resources criteria. Not all of these species have been observed on the island but there is potential for finding these species because of appropriate habitat and because of sightings close to the island" (Utah State Parks 2009).
2. Island Species of Concern:
    a. American white pelican
    b. Bald eagle
    c. Ferruginous hawk
    d. Long-billed curlew
    e. Short-eared owl
    f. Burrowing owl
    g. Grasshopper sparrow
    h. Bobolink
    i. Townsend's big-eared bat
    j. Kit fox
    k. Least chub

    Source: (Utah State Parks 2009).

c. Plant Species

i. "Utah is home to at least 600 rare vascular native plant species (and subspecies/varieties) including some 25 species that are federally listed as endangered or threatened under the Endangered Species Act of 1973. The 600 taxa represent almost 19% of our currently known flora. Of those, some 180 or almost 6% have been ranked by our rare plant committee as of "extremely high" or "high" concern. Many of these are highly restricted endemics (Utah has 475 endemics, i.e. geographically restricted, with 420 of those only occurring in Utah). Only a handful of states (Hawaii, California, Arizona, Florida, Texas and Oregon) are believed to have as many or rarer plant species as Utah. And this number is growing, since every year new species are still being discovered or recognized" (Utah Native Plant Society n.d.).

ii. "Places in Utah that currently represent "hot spots" where human encroachments are impacting areas of high biological diversity include the...continued loss of foothills habitat

and almost complete loss of valley habitats along the central Wasatch Front in Davis, Salt Lake and Utah counties...which all contain historically high levels of plant and animal diversity" (Utah Native Plant Society n.d.).

d. Economic Considerations

i. Much of the funding for conservation activities comes from hunter and angler license fees and habitat stamps, as well as federal excise taxes on shooting, boating, and fishing equipment. These sources may indirectly benefit some "non-game" species, but in general funding is harder to come by for these species.

ii. The Endangered Species Act prohibits consideration of economic impacts when determining whether to list a species, but it does require consideration of economic impacts when designating critical habitat.

iii. In 2013 the USFWS and the National Marine Fisheries Service issued a final rule regarding how and when these agencies evaluate the economic impacts of critical habitat designation.

iv. In 1997, as part of the state water tax, the Utah Legislature created the Endangered Species Mitigation Fund (ESMF) which significantly expanded the funding base for conservation of wildlife species which are designated as Utah Sensitive Species or are ESA-listed. The purpose of this fund is to avoid, reduce, and/or mitigate impacts of ESA listings on the people of Utah.

e. Custom + Culture

i. Species extinctions in the late 19th century and early 20th century triggered national awareness and response in the form of active wildlife management.

Relevant Existing Policies

f. **Utah Wildlife Action Plan (and associated species management plans)**

i. Please refer to the documents available from the UDWR for specific information about policies and objectives regarding species with special status.

Davis County Objectives

1. All existing federally listed species are recovered to the point of being delisted.

Davis County Policies

1. The County adheres to federal law and reasonable practices in protecting threatened, endangered, and sensitive species.
2. The County supports listing any new species as threatened or endangered with proper scientific evidence.
3. Davis County supports finding local solutions to protect sensitive species in an effort to prevent federal listing, and opposes introducing any new protected species into the County without full cooperation and approval from Davis County.

WATER RESOURCES

WATER QUALITY & HYDROLOGY

Definition

a. Water quality is the condition of water based on biological, chemical, and physical properties. Hydrology is the science of the distribution, effects, and properties of water.

Related Resources

a. Land Use, Fire Management, Wild & Scenic Rivers, Wetlands, Water Rights, Canals & Ditches, Irrigation, Livestock & Grazing, Riparian Areas, Recreation & Tourism, Fisheries, Threatened Endangered & Sensitive Species, Agriculture

Findings

a. Hydrology

   i. The hydrologic cycle describes movement of water on earth. Some of the processes by which water moves include: precipitation, infiltration (soil moisture and groundwater), and streamflow. In order to account for the distribution of water within a specific area, it is necessary to consider these processes. The watershed perspective is a way to quantify and analyze water and its effects at a specific location. A watershed, or drainage basin, is an area of land in which all water within drains to the same outlet. Watersheds are home to a variety of plant life including: bacteria, grasses, forbs, shrubs, and trees. Additionally, the watershed ecosystems in Utah support protozoa, invertebrates, amphibians, reptiles, fish, birds and mammals.

   ii. Winter and spring snowfall is the principle source of surface water in this region. Annual melting of high-elevation snowpack creates water runoff flows to refill reservoirs and recharge groundwater aquifers. Spring peak flows also support sediment transport, channel maintenance, and riparian vegetation. Spring rains provide a minor contribution to reservoir storage but are primarily important for postponing the timing of reservoir water use. Although thunderstorms may add flow, low flows or dry conditions generally occur in the late summer, which results in many water quality issues (Western Regional Climate Center 2002).

   iii. As surface water enters and moves through a watershed, some portion of the water infiltrates into the ground and recharges aquifers. Groundwater pumped from aquifers is a critical resource for culinary and agricultural water supplies. Groundwater enters aquifers through primary and secondary infiltration zones and naturally exits at discharge zones.

Groundwater discharge at seeps and springs supports aquatic habitat and provides important stream inputs, referred to as base flow, during dry months. Summer base flows are very important for aquatic species and support habitat for a wide variety of common and rare wildlife (Utah Division of Wildlife Resources 2015).

iv. The Utah Division of Water Resources projects that statewide demand for water will outstrip the currently developed water supply in about 25 years. This will require a strategy that may include conservation efforts, developing local water supplies, and the development of new sources of supply.

v. As dominant land use transitions to urban in Davis County, the total area of impervious surface increases. As farms and wildlands are converted into houses, roads, and other hard surfaces, water is prevented from infiltrating into the ground. This hardening of the landscape results in more water flowing overland during storm events and "flashier" stream responses with higher peak flows and shorter durations. Facilitating flood events will continue to be an important issue for the County.

a. Water Quality

i. In Utah, water quality is regulated by the state based on the source of pollutants entering waterways, defined as either "point source" or "nonpoint source" pollution. Permitted point sources (PS) discharge pollutants directly into a waterbody, usually through pipes or ditches originating from industries or waste treatment plants. Nonpoint sources (NPS) are pollution sources that do not originate from distinct locations and tend to vary in time and space. Nonpoint source pollution occurs when runoff from rainfall or snowmelt pick up pollutants from the human and natural landscape and transports them to a waterbody (Utah Division of Water Quality 2016).

ii. Water quality characteristics include:

    a. Conductivity / Total Dissolved Solids
    b. Dissolved oxygen
    c. Nutrients
    d. pH
    e. Suspended sediment
    f. Water temperature
    g. Turbidity
    h. Bacteria (*E. coli*)
    i. Metals (e.g. Copper and Aluminum)

iii. "Urban development can introduce stormwater and pollution into irrigation infrastructure. Unauthorized storm drain discharge increases the stress on already dilapidating systems and is also a source of pollution. Contaminants such as oil, fertilizer, chemicals (residential herbicides and pesticides), and other debris from urban areas enter the storm drain systems that empty into irrigation water. These pollutants are extremely problematic to farmers who are working to comply with food safety and water quality regulations" (Davis Conservation District 2012).

iv. A statewide assessment report, called the Integrated Report, is produced by the Division of Water Quality every other year. This report summarizes overall surface water conditions, estimates the importance of key water quality concerns, identifies impaired waterbodies,

and helps agencies prioritize resource needs. The current Integrated Report (2016) identifies sections of the Jordan River, near Farmington Bay, that are contiguous with the Davis County Line, as impaired. Impairments such as copper, dissolved solids, and *E. coli* have been found in Kays Creek, Farmington Creek, Holmes Creek, Barnard Creek, Parrish Creek, Stone Creek, and Mill Creek (Utah Division of Water Quality 2016).

i. Twelve monitoring stations are currently measuring water quality in the rivers, creeks, and streams of the County (Utah Division of Water Resources 1997).

ii. Point source pollutants are regulated under the Clean Water Act of 1972 and Water Quality Act of 1987 through the issuance of permits and possible fines if permit requirements are not met. The United States Environmental Protection Agency (EPA) is responsible for issuing discharge permits within the National Pollutant Discharge Elimination System (NPDES). In Utah, the State of Utah was granted primacy by EPA to manage the NPDES permitting program as the Utah Pollution Discharge and Elimination System (UPDES) and is operated by the Utah Department of Environmental Quality (DEQ) Division of Water Quality (DWQ).

b. Economic Considerations

i. In 2011, recreational fishing in Utah's lakes, streams, and rivers brought in $259 million. This includes the cost of equipment and multipliers like lodging, retail purchases, and dining in restaurants. Fishing relies on good water quality and hydrology (Kim and Jakus 2013). In 2012, a study of outdoor recreation found that $1.2 billion was spent for water related activities in Utah (Southwick Associates 2013). It is more cost effective to protect the water resource at its source and prevent contamination than to treat it in a wastewater treatment plant. "Nationwide, every $1 spent on source water protection saves an average of $27 in wastewater treatment costs" (Utah Division of Water Quality 2013).

i. Prepare60, a center established by four water conservancy districts in Utah, published a 2014 report illustrating that $17.9 billion spent on water infrastructure maintenance alone enables $5.4 trillion in ongoing economic activity. An investment in water resources of $15 billion would create 930,000 new jobs, $93 billion in incremental economic output, and $71 billion in additional personal income (Aguero 2014).

c. Custom + Culture

i. "Weather patterns during the first half-century of white settlement followed cycles not unlike those tracked in meticulous detail since the 1890s. An unofficial record for the quarter-century beginning with the winter of 1866—67 noted seasonal snowfall ranging from four feet nine inches to six feet six inches. Rainfall averaged between sixteen and twenty inches annually" (Leonard 1999).

ii. "Much of the water useful to settlers along Davis County's narrow strip of irrigable land originates in the rivers and streams that emerge from the mountains on the east. The Weber River was eventually tapped to supplement the scarce supply of water furnished by the streams of the short canyons along the Wasatch Front. Until then, the snowmelt which ran steadily from around early April until late August provided water for gardens, livestock, and farm crops. Nineteenth-century settlers lifted culinary water out of wells dug ten to thirty feet deep near their homes" (Leonard 1999).

iii. "Utah has long been aware of the importance of maintaining adequate levels of surface and groundwater quality. With the passage of the Utah Water Pollution Control Act of 1953 (UWPCA), a Water Pollution Control Committee (later changed to Water Quality Board) was created and given a number of responsibilities including the power to adopt, enforce

and administer regulations designed to protect the state's water quality" (Utah Division of Water Resources 1997).

iv. Water quality, hydrology, and watershed systems are essential to sustain life, and industry, as well as the built and natural environments in Davis County. This precious resource has been, and always will be, the lifeblood of the County.

Relevant Existing Policies

d. **Davis County General Plan**

i. Encourage municipalities to participate with Davis County in a storm water drainage system and management program.

ii. Encourage municipalities to adopt ordinances preventing stormwater runoff from flowing into irrigation ditches

e. **Davis County Comprehensive Hillside Master Plan**

i. Protect watershed areas

f. **Davis County Resource Assessment**

i. It is important that conservation measures in the county be maximized in order to stretch the limited water supply and to avoid, if possible, costly water projects.

ii. Agricultural water users need to maximize their irrigation efficiency by implementing the most water efficient irrigation technology. These projects are costly and often require grants and loans to implement. Likewise, [municipal and industrial] users need to implement both indoor and outdoor water conservation measures to ensure that all the water in the county is being put to the best use.

iii. Urban development can introduce stormwater and pollution into irrigation infrastructure.

iv. Storm water, tail water, and effluent water must be properly managed and comply with Utah State Water Law under Utah Code, Title 73.

v. When land is developed, it is important to ensure that water continues to be delivered to the agricultural users.

g. **Great Salt Lake Comprehensive Management Plan**

i. Please refer to the GSL CMP for specific information about the water quality and hydrology policies for the lake.

Davis County Objectives

1. The County values water quality for human health and safety as well as ecological health.
2. The County has an adequate supply of clean water to supply the domestic, recreational, and ecological needs of the residents and visitors.
3. Hydrology in the County is understood and managed in order to meet water needs.
4. Water quality plans are made in cooperation with state, federal, and other partners.

Davis County Policies

1. The County encourages actions by individuals, groups, and local governments that are aimed at improving water quality and supporting the hydrology of the County.
2. Support determination of safe yield for both surface and groundwater sources in times of plenty and during droughts.
3. Support projects and policies that maintain and improve soil ecology and vegetative cover in uplands.
4. Support projects that reduce loading to surface water from constituents that are not meeting State numerical standards.
5. Maintain and improve our fresh water supplies and watersheds, and increase our watershed production capabilities.
6. Davis County will not approve any project that would adversely impact water quality in the County and protest any development outside the County that adversely impacts the water quality of the County.
7. Coordinate with and request federal agency alignment with Davis County's Water Quality & Hydrology plan.

WATER RIGHTS

Definition

The legal right to make use of water from a stream, lake, canal, impoundment, or groundwater.

Related Resources

Water Quality & Hydrology, Canals & Ditches, Irrigation.

Findings

a. Overview

i. Water is a finite, but renewable resource, and because of varying annual supplies of water, its availability is subject to competition between stakeholders. The coordination of demand to supply water to Davis County's various interests is expected to always be a complex issue for stakeholders. Water is a resource taken from a dynamic, natural system resulting from a fluctuating cycle. Networks of moving water, above and below ground, extend beyond obvious topographic or political boundaries. Therefore, management and use of water supplies requires coordination between the various jurisdictions of local, state, and federal entities.

ii. "All waters in Utah are public property. A 'water right' is a right to divert (remove from its natural source) and beneficially use water. The defining elements of a typical water right will include:

1. A defined nature and extent of beneficial use;
2. A priority date;
3. A defined quantity of water allowed for diversion by flow rate (cfs) and/or by volume (acre-feet);
4. A specified point of diversion and source of water;
5. A specified place of beneficial use."

Source: (Utah Division of Water Rights 2011).

iii. "Rights for water diversion and use established prior to 1903 for surface water or prior to 1935 for ground water can be established by filing a 'diligence claim' with the Division. Such claims are subject to public notice and judicial review and may be barred by court decree in some areas of the state" (Utah Division of Water Rights 2011).

iv. "All other rights to the use of water in the State of Utah must be established through the appropriation process administered by the Division of Water Rights. The steps to this process for an 'Application to Appropriate Water' are as follows:

1. An Application to Appropriate Water is filed with the Division.
2. The application is advertised and protests may be received and a hearing may be held.
3. The State Engineer renders a decision on the application based upon principles established in statute and by prior court decisions.
4. If the application is approved, the applicant is allowed a set period of time within which to develop the proposed diversion and use water. When the diversion and use are fully developed, the applicant retains the services of a professional engineer or land surveyor who files 'proof' documentation with the Division showing the details of the development.
5. Upon verification of acceptably complete proof documentation, the State Engineer issues a Certificate of Appropriation, thus 'perfecting' the water right."

Source: (Utah Division of Water Rights 2011)

v. "Water appropriation issues in specific geographic areas of the state are often administered using policies and guidelines designed to address local conditions. These policies and

guidelines are generally developed for all or part of a defined Drainage Basin" (Utah Division of Water Rights 2011).

vi. The surface waters in Davis County are generally considered to be fully appropriated. New diversions and consumptive uses in these sources must be accomplished by change applications filed on existing rights. Non-consumptive use applications, such as hydroelectric power generation, will be considered on their individual merits (Utah Division of Water Rights 2013).

vii. There are two groundwater management plans set out by the state for Davis County, "with the objective to guide future development, establish policy on new appropriations of water, protect the resource from over-utilization and preserve water quality:

1. Bountiful Sub-Area of the East Shore Area
2. Weber Delta Sub-Area of the East Shore Area

Source: (Utah Division of Water Rights 2013).

viii. As water supplies fluctuate from year to year, any water right is subject to available supply. The State of Utah follows the Prior Appropriation System, which grants priority to water rights based upon that water right's chronologic seniority.

ix. "The State Engineer has adopted procedures for enforcing water rights violations. Under the new enforcement procedure, an action is initiated by the Division of Water Rights (DWRi) after a violation has been observed by an official working in the DWRi or another capacity for the state, or after a complaint is received from a water user, government agency, or other interested party. Private water users can report violations" (Donaldson, F. J. 2007).

b. Economic Considerations

i. Although water rights are the right to use appropriated water within the requirements of a given beneficial use, water rights are classified as "real property" in the State of Utah and are bought and sold much like real estate (Utah Division of Water Rights 2011).

c. Custom + Culture

i. "The Utah pioneers, in the late 1840's, were the first Anglo- Saxons to practice irrigation on an extensive scale in the United States. Being a desert, Utah contained much more cultivable land than could be watered from the incoming mountain streams. The principle was established that those who first made beneficial use of water should be entitled to continued use in preference to those who came later. This fundamental principle was later sanctioned in law, and is known as the Doctrine of Prior Appropriation. This means those holding water rights with the earliest priority dates, and who have continued beneficial use of the water, have the right to water from a certain source before others with water rights having later priority dates" (Utah Division of Water Rights 2011).

ii. "In the early territorial days, rights to the use of public streams of water were acquired by physical diversion and application of water to beneficial use, or by legislative grant. A 'county courts' water allocation system was enacted in 1852 and was in effect until 1880 when it was replaced by a statute providing for county water commissioners" (Utah Division of Water Rights 2011).

iii. "The key figure in water allocation was the local watermaster. Appointed watermasters managed the use of the water by assigning water turns to protect both individual and community rights. The system was launched only a month after Brigham Young's arrival

in Utah, when the Salt Lake High Council appointed Edson Whipple to superintend 'the distribution of the water over the plowed lands' in Salt Lake City" (Leonard 1999).

iv. It is the custom and culture of Davis County to protect and preserve water rights.

Relevant Existing Policies

d. **Utah Wildlife Action Plan**

i. Implement laws and policies for a broader array of agencies or conservation organizations to hold in-stream water rights for the benefit of aquatic habitats and SGCNs.

e. **Great Salt Lake Comprehensive Management Plan**

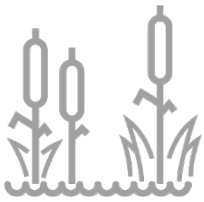
i. Coordinate with DWRi and UGS to evaluate how authorization of water rights applications would affect salinity of GSL at a range of lake levels. *GSL CMP*

Davis County Objectives

1. Water rights held by private parties, municipalities, the water conservancy district, and the County are effectively protected by the law.

Davis County Policies

1. The County asserts that private water rights should be protected from federal and state encroachment and/or coerced acquisition.
2. The County values existing water rights as part of the local heritage and culture.
3. The County values water rights as a necessary protection for growth and survival in our area.
4. Support projects that benefit in-stream uses and protect current water right holders.



WETLANDS

Definition

A wetland is a land area that is saturated with water, permanently or seasonally, such that it takes on the characteristics of a distinct ecosystem.

Related Resources

Livestock & Grazing, Land Use, Noxious Weeds, Wildlife, Water Quality & Hydrology, Wetlands, Wild & Scenic Rivers, Canals & Ditches, Irrigation, Riparian Areas, Recreation & Tourism, Agriculture, Water Rights

Findings

a. Overview

i. Wetlands have been defined in different ways by numerous entities and agencies. However, the US Army Corps of Engineers (Corps) and the US Environmental Protection Agency (EPA) jointly define wetlands as: "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that do under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." This definition of wetlands is perhaps the most relevant to local land managers and planners because the Corps and the EPA are the agencies that have legal jurisdiction over wetlands, including those wetlands on private property. Wetlands provide numerous benefits including wildlife habitat, aquifer recharge, and water quality improvements (U.S. Environmental Protection Agency 2015).

ii. According to the Utah Wetland Information Center, 1% of Utah's landscape is wetlands (Utah Geological Survey. n.d.)., however, over 75% of the State's wetlands occur along the northern and eastern shorelines of the Great Salt Lake (Utah Division of Wildlife Resources 2015).

iii. "Wetlands are one of the most important ecosystems on Earth. They perform numerous biological and hydrological functions and are a valuable resource to communities. Wetland functions include wastewater treatment or water filtration, biogeochemical cycling, flood-water control and storage, wildlife habitat, biologic productivity, and food-chain support; additionally, they have economic and cultural value (Lock, 1994) such as increased residential property values" (Bishop et al. 2009).

iv. The Army Corps of Engineers and the EPA have strict guidelines for any activities occurring on or near a wetland. Under Section 404 of the Clean Water Act (CWA), activities that involve excavation or placement of fill in jurisdictional waters or wetlands require a permit issued by the Corps and may be reviewed by EPA. Impacts to or near wetlands can require permits from federal, state, and local agencies.

b. Farmington Bay Wetlands

i. "Most of the Farmington Bay wetlands are located on the western edge of the Davis County urban corridor adjacent to the east shore of Great Salt Lake where the land surface has low relief" (Bishop et al. 2009).

ii. "The Farmington Bay Waterfowl Management Area (FBWMA) has been expanded to over 12,000 acres (4900 hm2) in Davis and Salt Lake Counties and is managed by the Utah Division of Wildlife Resources (UDWR). As many as 200 avian species have been documented using the wetlands associated with the FBWMA. The FBWMA wetlands provide critical year-round habitat for up to 57 species of waterfowl and shorebirds, as many as 200,000 individuals, nesting and foraging in the spring and summer, and are also an important stopover for millions of migrating waterfowl seasonally" (Yidana et al. 2010).

iii. "The Farmington Bay wetlands have been impacted by agricultural activities (including grazing), industrial and urban development, and water diversions including ditches and dikes" (Bishop et al. 2009).

i. "A recent addition to the wetland conservation effort of Farmington Bay is the Legacy Nature Preserve (LNP) (figure 1). This 2225-acre (900 hm2) area was reserved as mitigation for the Legacy Parkway to prevent future residential and industrial encroachment west of the parkway (Utah Department of Transportation, 2007)" (Yidana et al. 2010).

c. Economic Considerations

i. Wetlands provide recreational value as well as ecological, social or economic value. Possibly the most significant economic and social benefit of wetlands is flood control, but wetlands also provide essential functions in filtering water/improving water quality and providing habitat for waterfowl and other wildlife. Wetlands also recharge aquifers.

ii. An analysis of the Economic Significance of the Great Salt Lake (2012), estimated that the general recreation (non-hunting) activities associated with the resource amount to $26.3 million in net annual economic value. Publicly-owned treatment works discharges were estimated to be worth between $10.3 to $58.9 million annually. Other industrial and municipal discharges were not directly estimated, but shown to be a positive net value.

iii. Under the North American Wetlands Conservation Act (NAWCA), 10 Utah projects are funded through $3.7 million from NAWCA and $11 million from partner contributions; this illustrates a successful public-private partnership approach to conserve wetlands (Ducks Unlimited 2013).

d. Custom + Culture

i. "Unemployed young men who had enrolled in the Civilian Conservation Corps helped build the mountainside trenches and replant barren slopes in the damaged Davis County watershed. . .At Farmington Bay Wildlife Refuge, crews built dikes and nesting islands for birds" (Leonard 1999).

ii. Wetlands are an integral part of Davis County. Culturally wetlands are important beyond these traditions for the ecological and water quality value they add to the environment.

Relevant Existing Policies

e. **Great Salt Lake Comprehensive Management Plan**

i. Maintain GSL water quality to help ensure wetland health and beneficial uses.

1. 1) When considering new permits or lease renewals, coordinate with USACE and DWQ to help ensure impacts do not affect compliance with applicable water quality standards.
2. 2) Coordinate with BLM, DWR, DSPR, and other land managers to discuss potential impacts to wetlands resulting from a proposed project.
3. 3) Continue to support DWQ to assess and protect the aquatic life beneficial uses of GSL wetlands.
4. 4) Coordinate with DWQ issuance of water quality certifications pursuant to Section 401 of the Federal Water Pollution Control Act and Utah Water Quality Act (UTAH ADMIN. CODE R19-5-101?124).
5. 5) Continue to support DWQ in identifying water quality standards for wetlands.

ii. Recognize the importance and support the sustainability of a wetland mosaic.

1. 1) Consider implications to wetland hydrology and connectivity when evaluating permits on sovereign lands.
2. 2) Support wetland managers as they seek to achieve optimum duration and seasonality of inundation.
3. 3) Support efforts by DWR in working with DWRi to acquire water rights for specific areas of ecological
4. importance such as wetlands and WMAs.
5. 4) Support and encourage wetland protection efforts adjacent to sovereign lands. Assist with development of a list of priority wetlands that could be protected where protection efforts would benefit the GSL ecosystem

iii. Understand the extent and condition of wetlands around GSL.

1. 1) Foster collaboration between research and management entities, including DWR, DWQ, USFWS, and UGS, on future assessment and mapping of impounded and unimpounded wetlands.
2. 2) Coordinate with research and management entities to identify wetland stressors.
3. 3) Continue to support DWQ to assess and protect the aquatic life beneficial uses of GSL wetlands.

iv. Coordinate with other landowners and managers to support upland wetland habitats in other nesting and foraging areas near and associated with GSL (e.g., Cutler Reservoir, Utah Lake, Fish Springs National Wildlife Refuge, and Bear River).

f. **Utah Wildlife Action Plan**

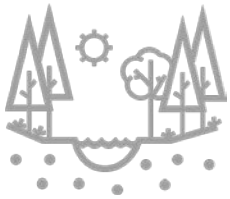
i. Implement laws and policies for a broader array of agencies or conservation organizations to hold in-stream water rights for the benefit of aquatic Key Habitats and SGCNs.

Davis County Objectives

1. It is the objective of Davis County to conserve, sustain and enhance wetland areas where possible. In some cases, however, the best course of action might be to implement vegetation regulation which will improve and enhance wetland function and the components of Aquatic Key Habitats.

Davis County Policies

1. Support projects, land uses, and water allocation policy that sustains wetlands as an Aquatic Key Habitat.
2. The water table in wetlands and riparian areas will be maintained or restored, when feasible.
3. Encourage the DWR to identify wetlands and riparian areas with significant wildlife values to aid in their conservation. Best Management Practices should be used to sustain and enhance wetlands and riparian areas.
4. Suppress the invasion of invasive, non-native Phragmites plants through herbicide treatments followed by residue reduction. Prescribed burning is an efficient and effective way to diminish stem residue which delays the advance of desirable native wetland plants. Conduct prescribed fire on valuable wetlands when high-velocity canyon winds cast smoke westward, away from urban metropolitan areas, optimized by the conditions of atmospheric mixing and smoke dissipation.
5. Participate in transportation planning efforts with UDOT, and WFRC that promote safe and effective transportation routes that minimize impacts to wetlands.



RIPARIAN AREAS

Definition

Riparian areas are ecosystems formed between the land and a body of water, often composed of dense vegetation.

Related Resources

Livestock & Grazing, Wild & Scenic Rivers, Canals & Ditches, Irrigation, Agriculture, Water Rights, Water Quality & Hydrology, Wetlands, Floodplains & River Terraces, Wildlife, Noxious Weeds, Fisheries, Recreation & Tourism, Fire Management, Land Use.

Findings

a. Overview

i. According to the Utah Wildlife Action Plan, "Riparian areas are the richest habitat type in terms of species diversity and wildlife abundance". These areas provide habitat to a range of wildlife including amphibians, birds, mammals, fish, and insects. Riparian areas also play a significant role in the erosion processes by slowing water, trapping sediment, and stabilizing stream banks (Utah Division of Wildlife Resources 2015).

ii. Riparian areas are important for many reasons. They act as buffers by intercepting or diluting pollutants and sediment before they reach the water. Riparian areas play an important role in erosion processes by slowing water and stabilizing banks. They provide critical wildlife habitat and are an important component of both terrestrial and aquatic ecosystems. The width of riparian areas is influenced by many factors including human disturbance, hydrology, and climate. Because riparian areas are highly sensitive to human disturbances, it is important to manage them with respect to surrounding areas and their land use.

iii. Davis County has many riparian areas along the Weber River, Jordan River, numerous mountain streams, many marsh areas, and the Farmington Bay area (Utah Automated Geographic Reference Center 2016).

iv. The Utah Comprehensive Wildlife Conservation Strategy prioritizes habitat categories based on several habitat criteria important to the species of greatest conservation need. The top key habitat statewide is Lowland Riparian (characterized by riparian areas <5,500 ft elevation; principal vegetation: Fremont cottonwood and willow), while the third most key habitat is Mountain Riparian (characterized by riparian areas >5,500 ft elevation; principal vegetation: narrowleaf cottonwood, willow, alder, birch and dogwood) (Sutter et al. 2005).

v. Riparian areas should be managed to protect vegetation characteristics. Conservation efforts include preserving existing riparian areas as well as restoring damaged ones. Preservation should also include the dedication of sufficient surface water and groundwater to support vegetation. Limiting the removal of water from the system is essential in maintaining the integrity of the riparian area. Restoration efforts must consider factors like hydrology, floodplain, and adjacent land use. Restoration design of riparian areas should follow a protocol that accounts for stream hydrology, soil characteristics, vegetation, adjacent land use, recreation, and other influences. Stream or river modifications may require permits.

vi. Many rivers, creeks and streams flow through Davis County, supporting riparian vegetation along their banks. The cottonwoods, willows, and other vegetation create habitat for wildlife. In Davis County, certain species identified as sensitive by the state, or federally listed, require riparian habitat. The bald eagle, and yellow-billed cuckoo, Lewis's woodpecker, Western pearlshell, and western toad, all rely on the riparian habitat of Davis County. Additionally, fish such as the Bonneville cutthroat trout, and bluehead sucker,

need the shade from trees along riverbanks to moderate the temperature of the stream (Davis Conservation District 2012).

b. Control v Influence

i. Federal agencies manage riparian areas and floodplains under Executive Orders 11988 and 11990, Sections 303 and 404 of the Clean Water Act, and also the Endangered Species Act. Riparian areas are also managed under individual resource management plans and other agency policies and guidelines, such as the Wasatch-Cache National Forest Revised Forest Plan.

ii. The Utah Division of Water Rights processes stream alteration permits in conjunction with the US Army Corps of Engineers, and Davis County Flood Control.

c. Economic Considerations

i. It is difficult to quantify the economic benefits of riparian areas. They are intertwined with nonmarket ecosystems and services like clean water, wildlife habitat, recreation, and tourism. Pre- or post-water treatment methods that utilize passive bioengineering techniques, including riparian area management, can significantly reduce water treatment costs, thereby avoiding some of the costs associated with engineered water treatment plants, which are extremely expensive (U.S. Forest Service 2008).

d. Custom + Culture

i. It is the custom of the people in Davis County to conserve riparian areas for the good of natural ecosystems, and for the people that use and enjoy them.

Relevant Existing Policies

e. **Blueprint Jordan River**

i. Restore riparian and in-stream habitats

Davis County Objectives

1. Davis County supports projects and land uses that protect the riparian corridors and stream ecology.
2. Private property rights are balanced with the need to preserve and care for riparian areas.

Davis County Policies

1. Identify priority riparian public trail corridors and acquire property and/or easements from willing landowners as opportunities arise.
2. Minimize significant soil compaction and disturbance in riparian ecosystems. Allow use of heavy construction equipment during period when the soil is less susceptible to compaction or rutting.
3. The County opposes riparian policies that infringe on private property rights or state water law and policy.

FLOODPLAINS & RIVER TERRACES

Definition

A floodplain is the low-lying area near a river, stream, or drainage which floods when the water level reaches flood stage. A river terrace is the bench or step that extends along the side of a valley and represents a former floodplain.

Related Resources

Fire Management, Livestock & Grazing, Land Use, Noxious Weeds, Fisheries, Wildlife, Water Quality & Hydrology, Wetlands, Wild & Scenic Rivers, Canals & Ditches, Irrigation, Riparian Areas, Recreation & Tourism, Agriculture.

Findings

a. Overview

i. Rivers are dynamic systems. River channels can migrate laterally as a result of bank erosion and deposition and also vertically as a result of bed aggradation or degradation. Floodplains, terraces, and other features are formed by these processes and are therefore part of the river system

ii. "The overall drainage area and related topography of the Weber River Basin consists of a transition from high mountain valleys with steep mountain ranges to flat spreading plains near the Great Salt Lake. The plains are more commonly known as the East Shore Area, which primarily consists of Oat, fertile lake beds formed by alluvial deposits from ancient Lake Bonneville. Several terraced benches mark the different lake levels" (Utah Division of Water Resources 1997).

iii. When a river channel reaches its maximum capacity, often during times of heavy rain or snow melt, water overflows the river's streambanks and floods into nearby areas that would otherwise remain dry land. This is especially true when water is delivered at a rate faster than the associated soils can absorb. Floods also occur when a bank or dam gives way and large amounts of water are released. Under most circumstances, flooding is a natural

process. Floodplains support rich ecosystems, in quantity and biodiversity. Nevertheless, floods can cause severe human impacts and therefore must be among resource planning considerations. Worldwide, floods are the leading cause of natural disaster deaths.

iv. Flooding most often occurs from two distinct event types: (1) spring runoff from melting snowpack at high elevations (both local and regional), and (2) summer rainstorms. While either event can trigger flooding, the dynamics of each are different. Snowmelt is a relatively predictable occurrence depending on the amounts of winter snowpack and rising spring temperatures. Snowpack melting in spring contributes to some localized flooding, but flooding is more common to happen along the region's larger rivers. In contrast, summer cloudburst events cause sporadic flooding events on otherwise dry washes. Both types of events can have impacts on the communities within the area.

v. At the federal level, the Federal Emergency Management Agency (FEMA) provides flood data that classifies areas based on their different flood hazards through the National Flood Hazard Layer (NFHL) and National Flood Insurance Program (NFIP). This enables elected officials, emergency responders, and the public to be informed and to 1) reduce or avoid impacts from floods, 2) guide development, and 3) reduce risk of floods.

vi. The National Flood Hazard Layer shows that the margins of Davis County are at risk of flooding from the Great Salt Lake, during a 100-year flood event, although the maintenance of the coastal floodplain would mitigate the effects on highly populated areas. Weber River, along the northern edge of the county, is also expected to spill over its banks in a 100-year flood event (FEMA 2017).

vii. As development activities encroach upon floodplains and alter the distribution and timing of drainage, flood-related problems generally increase. Best floodplain and river terrace management practices typically focus on avoiding structures and other development within these dynamic and sensitive areas. For flood hazards in these areas, officials often resort to designating setbacks (buffers) between potential floodplains and the built environment.

viii. "The (Army Corps of Engineers) implemented a small flood control project of 4.5 miles of channel enlargement along Kays Creek. The project extends from Fort Lane Street in Layton downstream to the Great Salt Lake and provides flood protection to the City of Layton and surrounding areas. The flood control facilities are currently maintained by Davis County" (Utah Division of Water Resources 1997).

ix. FEMA administers the National Flood Insurance Program, which provides affordable flood insurance to property owners, while also encouraging communities to adopt and enforce floodplain management regulations. The county has the authority to adopt and enforce floodplain management ordinances.

b. Economic Considerations

i. "The rising waters of the Great Salt Lake also have been responsible for substantial property damage in western Weber and Davis counties. During the 1987 water year, the lake reached the estimated 100-year record level of 4211.60. Resulting property damage and loss of commercial and industrial business amounted to well over $40 million. Property damage lo local farms and ranches was measured in the hundreds-of-thousands of dollars" (Utah Division of Water Resources 1997).

ii. Major economic considerations for floodplains are higher development costs to mitigate flood risks. Costs include earthen fill to raise building footprints above flood elevations and other flood control structures on private lands. Flood control costs may also be passed onto municipal and county governments during flood emergencies.

iii. Davis County collects a "flood control fee" from developers when issuing building permits. In addition, the Davis County Code of Ordinances Section 14.04.150 states, "The developer shall provide all storm drains, cross gutters, dipstone inlets and other appurtenant structures as required by the Davis County Engineers, and Article E of this chapter, to adequately dispose of the ten (10) year frequency storm flows generated within the limits of the development and from adjacent tributary properties."

iv. Another economic consideration is the cost of floodplain insurance to homeowners. Development in areas subject to floods should meet additional flood proofing requirements. Laws and regulations regarding floodplain management usually vary between communities.

c. Custom + Culture

i. "Runoff from melting snow, and summer flash flooding has historically been the major cause of flooding problems in Davis County. Several major residential communities and several business districts are situated in flood plains, and as a consequence, they have suffered property damage from flooding in past years. Flood plain studies were conducted for all major communities in Davis County some years ago. Those studies will be re-examined in 2003/2004" (Davis County Government 2014).

ii. Preventing floods and mitigating natural disasters has always been a priority for landowners in Davis County. Neighbors help neighbors when these disasters occur. The custom and culture of the area is to be responsible about structure and infrastructure placement and respect the inevitable changes in flowing water.

Relevant Existing Policies

d. **Davis County Code of Ordinances**

i. (14.04.370 - Mudslide (i.e., Mudflow) Prone Areas)

1. The Floodplain Administrator shall review permits for proposed construction of other development to determine if it is proposed within a mudslide area.
2. Permits shall be reviewed to determine that the proposed site and improvement will be reasonably safe from mudslide hazards. Factors to be considered in making this determination include but are not limited to:
    a. the type and quality of soils,
    b. evidence of groundwater or surface water problems,
    c. depth and quality of any fill,
    d. overall slope of the site, and
    e. weight that any proposed development will impose on the slope.
3. Within areas which may have mudslide hazards, the Floodplain Administrator shall require that:
    a. a site investigation and further review be made by persons qualified in geology and soils engineering;

b. the proposed grading, excavations, new construction, and substantial improvements be adequately designed and protected against mudslide damages;

c. the proposed grading, excavations, new construction, and substantial improvement not aggravate the existing hazard by creating either on-site or off-site disturbances; and

d. drainage, planting, watering, and maintenance not endanger slope stability.

ii. (14.04.380 - Flood-Related Erosion-Prone Area) The Floodplain Administrator shall require permits for proposed construction and other development within all flood-related erosion-prone areas known to the community.

e. **(Re)Connect: The Wasatch Front Green Infrastructure Plan**

i. Goal: To promote a healthy hydrological system which encourages efficient flood control and water conveyance, while providing clean water, wildlife habitat, and recreational uses.

f. **Davis County Shorelands Comprehensive Land Use Master Plan**

i. Region 2A: No development is desired west of the Legacy Parkway south of Centerville. In Centerville, from approximately Parrish Lane north to Glovers Lane in Farmington, the D&RG Rail Corridor becomes the western edge of development. Northward from Glovers Lane, the FEMA Flood Line becomes the western edge of development. Existing farmland that is located west of the no build line is an appropriate use for the area.

ii. Region 2B: There should be no development west of the FEMA Flood Line within the study area. Much of the land west of the proposed Legacy Highway in the most northern parts of this map is already preserved as open space as part of The Nature Conservancy's Management Area. Pockets of land west of the highway corridor are proposed as possible sites for mitigating future phases of the Legacy Highway in the area. An agricultural buffer should be maintained between the FEMA Flood line and housing development. Higher density housing and commercial uses should only be allowed east of rural cluster housing.

iii. Region 3A: No development is allowed west of The FEMA Flood Line throughout this area. An agricultural buffer should be maintained between the FEMA Flood Line and housing. Much of the land surrounding the North Davis sewer treatment plant is already preserved as agricultural land by the sewer district. Only rural cluster housing should be planned to occur next to agricultural lands. Higher density housing and commercial zones should only be allowed east of this land use.

iv. Region 3B: No development is desired west of the FEMA Flood Line. Current farming practices are an appropriate use for these lands. An agricultural buffer should be maintained between the FEMA Flood line and housing developments. Only conservation development housing should be allowed adjacent to the agricultural buffer. Higher density housing and commercial development should only be allowed east of conservation development housing.

g. **Blueprint Jordan River**

i. Establish buffers between the river and the built environment.

ii. Preserve and rehabilitate natural river features and functions.

iii. Replace structural water conveyance devices with alternatives that allow for flood management plus improvements for water quality, recreation, and habitat.

h. **Great Salt Lake Comprehensive Management Plan**

i. Consider how changes in land use above and below the meander line could have adverse impacts on GSL resources and development.

1. Coordinate with management agencies listed above to understand how proposed changes in land use would impact GSL resources and surrounding communities.
2. Coordinate with local cities, counties, and land managers that have jurisdiction of lands above the meander line to help ensure future development would not have adverse effect on GSL resources or that GSL would have adverse effects on future development.
3. Support FEMA determination* that residential and commercial development should not occur below 4,217 feet; this would be done to minimize impacts to GSL resources and infrastructure during periods of high lake levels.

ii. Minimize damage to transportation infrastructure from GSL.

1. Coordinate with responsible agencies to determine the appropriate level of involvement in processes that consider impacts of future transportation projects.
2. Participate in transportation planning efforts with UDOT, Wasatch Front Regional Council, and the Bear River Association of Governments that promote safe and effective transportation routes that minimize impacts to GSL resources.
3. Encourage transportation and residential and commercial-related infrastructure development to occur above 4,217 feet (FEMA 100-year floodplain).

Davis County Objectives

1. Floodplains and river terraces are stable enough to withstand flooding events.

Davis County Policies

1. Floodplains should be identified and, as appropriate, and a risk/hazard analysis should be performed for project sites where long-term occupancy is proposed.
2. The County values floodplains and river terraces as an important part of the local ecology, and supports thoughtful, practical management of floodplains and river terraces to achieve and/or maintain proper functioning condition of these ecosystems.

WILD & SCENIC RIVERS

Definition

An administrative designation created under the National Wild and Scenic Rivers Act of 1968 applied to preserve certain free-flowing rivers that "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values".

Related Resources

Recreation & Tourism, Land Use, Livestock & Grazing, Irrigation, Canals & Ditches, Water Rights, Water Quality & Hydrology, Wetlands, Floodplains & River Terraces, Riparian Area, Fisheries, Wildlife, Threatened Endangered Sensitive Species.

Findings

a. Overview

i. The Wild and Scenic Rivers Act is notable for preserving the special character of rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection (Bureau of Land Management 2012).

ii. Under the Wild and Scenic Rivers Act (1968), rivers are classified into three categories:

1. Wild rivers represent "vestiges of primitive America" in that they are free-flowing segments of rivers with undeveloped shorelines that typically can only be accessed via trail.
2. Scenic rivers are dam-free river segments with undeveloped shorelines but accessible in places by roads.
3. Recreational rivers are more developed than Wild or Scenic river segments and can be accessed by roads.

Source: (Bureau of Land Management 2012)

iii. Section 5(d)(1) of the Wild and Scenic Rivers Act directs federal agencies to identify potential additions to the National Wild and Scenic Rivers System through federal agency plans. Under these provisions, federal agencies study the suitability of river sections they manage for designation under the Wild and Scenic Rivers Act. Sections that are determined to be suitable can be managed to preserve their suitability by an agency land management

plan while awaiting congressional designation (National Wild and Scenic Rivers System 2016).

iv. Utah currently has only one river under this designation. The Virgin River was designated as a Wild and Scenic River in May 2009 (National Wild and Scenic Rivers System 2017). There have been no designations of Wild and Scenic Rivers in Davis County.

v. Certain stream segments in the Wasatch-Cache-Uinta-National Forest have been identified as potential wild/scenic rivers, but none of the potential reaches are in Davis County.

b. Control v Influence

i. Wild and Scenic Rivers are designated by Congress or the US Secretary of the Interior. To be eligible for designation, a river must be free-flowing and contain at least one "outstandingly remarkable" value (scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value) (Bureau of Land Management 2012). Designated rivers are typically managed by federal agencies, but can also be managed by partnerships of adjacent communities, state governments and the National Park Service allowing communities to protect their own outstanding rivers and river-related resources (National Parks Service 2010).

c. Economic Considerations

i. At present the economic implications of Wild and Scenic River designation are not totally understood, nor quantifiable. The tradeoff between increases in recreation and tourism sectors and the potential economic loss of future river development should be considered. An analysis of Wild and Scenic River designation done by Utah State University, made some observations: primary impacts of designation relate to a reduction in the grazing in riparian areas; and other impacts include further regulations on adjacent public and private land uses (Keith et al. 2008).

ii. Healthy rivers provide essential ecological services which would otherwise be engineered and paid for. These services include purification of water, nutrient banking in floodplains, unpolluted fisheries, flood protection, and groundwater recharge. Preserving certain stretches of a river as wild or scenic can "lock-in" these essential services for the good of the people (Wilson and Carpenter 1999).

d. Custom + Culture

i. Where citizens of Davis County are not responsible for the designation or management of Wild and Scenic Rivers, and as there is only a short history (since 1968) of this designation in the US, no custom or culture can be associated with the federal designation "Wild and Scenic Rivers" at this time; however, county residents maintain that rivers in general are an integral element of sustaining and improving the health of the regional economy and ecology. Citizens of Davis County have always prized rivers for their aesthetic, ecological, recreational, and hydropower value. Managing rivers for multiple uses has historically been, and continues to be a tradition based on facilitating many users and values.

Relevant Existing Policies

No Wild and Scenic River policies exist in the Davis County General Plan.

Davis County Objectives

1. River segments that have been designated as wild, scenic, or recreational are adequately protected and functioning.
2. River segments that have not been designated as Wild and Scenic Rivers by Congress are not managed as de facto wild and scenic rivers.

Davis County Policies

1. The County opposes river management that exceeds the statutory authority of the Wild and Scenic Rivers Act.
2. Federal agencies should work with the State, local and tribal governments, and the agencies involved, to coordinate its decision making on wild and scenic river issues and to achieve consistency wherever possible.
3. Should designations occur on any river segment as a result of Secretarial or congressional action, existing rights, privileges, and contracts will be protected. Under Section 12 of the Act, termination of such rights, privileges, and contracts may happen only with the consent of the affected non-federal party.

DITCHES & CANALS

Definition

A man-made depression created to channel water where there is lack of water.

Related Resources

Land Use; Livestock and Grazing; Irrigation; Agriculture; Water Rights; Water Quality and Hydrology; Wetlands; Riparian Areas; Fisheries; Recreation and Tourism; Wild and Scenic Rivers; Wildlife; Fire Management; Threatened, Endangered, and Sensitive Species

Findings

a. Overview

i. Water deliveries are an essential component of agricultural production and may also be relied upon for urban landscape watering and gardens.

ii. The shift from crop irrigation to landscape irrigation can help water rights holders maintain beneficial use and avoid forfeiture of water rights.

iii. There are numerous irrigation canals that run throughout the county. The most prevalent are the Layton Canal, Davis and Weber Canal Company, and Haight Bench Canal. These canals and intricate network of ditches supply irrigation water throughout the county.

iv. "As time has passed and technology has improved, many of the irrigation canals within the county have become outdated or are in a state of disrepair. While many have been converted to pressurized pipe, open canals and ditches are the source of many issues. Open systems are subject to erosion, and water loss from seepage and evaporation and can be safety hazards. Repairs and improvements are expensive, yet critical, to maximize water availability, water conservation, and safety" (Davis Conservation District 2012).

b. Control v Influence

i. Canal and irrigation companies are outside of the County's control but could be influenced by private shareholders. As of 2015, there were 61 canal companies in Davis County (Utah Division of Water Rights 2014). The majority, about 65% of the irrigation water available in Davis County, is from the Weber River and the Echo and Rockport reservoirs. The other 35% is drawn from local mountain streams (Godfrey et al. 2005).

ii. Canal safety plans are protected by law and held private by the irrigation companies. The canals generally are maintained by individual canal companies and a good amount of drainage water has unrestricted access to dump into canals (WFRC CRMP Toolkit).

c. Economic Considerations

i. "The price of water in Davis County is among the highest in the state. Agriculture is dependent upon affordable water. When canal companies make major improvements or have to pay legal expenses, those costs are passed on to the users. Many canal companies cannot afford to make major improvements and are forced to upgrade systems only after a major problem occurs" (Davis Conservation District 2012).

ii. Many organizations holding water rights operate on finite budgets for which regular available funding is limited. These funds typically cover only basic maintenance and intermittent or minor upgrades. Occasionally, such organizations can apply for and receive funding to accommodate more extensive upgrades. However, those opportunities are often rare and the resources required to obtain such funding is likewise limited. Funding sources are available for water delivery systems to pay for post-break repairs, maintenance, or the capital upgrades that are necessary to preserve public safety.

iii. The Utah Legislature has made funding available to assist canal companies to develop and implement safety management plans.

d. Custom + Culture

iv. "Rainfall in Davis County is not adequate to supply agricultural and municipal and industrial (M&I) users with supplemental water. Therefore, early settlers developed an extensive canal system to provide irrigation water for agricultural use. Today, the canals are also used to supply water to the increasing urban population. Many of these delivery

systems are private, non-profit shareholder owned companies" (Davis Conservation District 2012).

v. Traditionally, irrigation water has been distributed via a network of canals and ditches from rivers and streams; but with time and circumstances dictating, many have been piped.

vi. The first canals, laterals, and ditches in Davis County […] were built by cooperative effort. Hitching oxen to a plow, the men marked out a channel, then widened and deepened the ditch with scrapers and shovels. They flooded their fields and furrowed their row crops to control the moistening of the soil. Within a few years a network of distribution ditches had spread out across the foothills and along the borders of the farmlands to disburse the water (Leonard 1999).

vii. The use, upgrade, and maintenance of Utah's network of canals, ditches, and dams continues today.

Relevant Existing Policies

e. Davis County General Plan

i. Storm water runoff is often allowed to run into irrigation ditches from adjacent subdivisions and other developments, polluting the irrigation water and, in some cases, resulting in overflow from the ditches and flooding of surrounding properties.

ii. Policy:

1. Encourage municipalities to adopt ordinances preventing stormwater runoff from flowing into irrigation ditches.
2. Encourage municipalities to participate with Davis County in a storm water drainage system and management program.

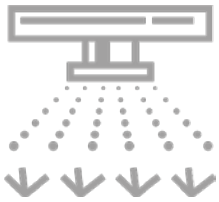
iii. Davis County should require that all bona fide agricultural parcels be accessible from a proper right-of-way, that the parcels have access and rights to irrigation water, and that they be of a minimum size of 5 acres for agricultural viability.

Davis County Objectives

1. Ditches and canals are managed for optimum efficiency and conservation for the safety of the public and water rights holders.

Davis County Policies

1. The County values existing ditches and canals as part of the local heritage and culture, balanced with the need to innovate as new technology becomes available.



IRRIGATION

Definition

Irrigation is the process in which water is supplied to plants at intervals for agriculture. The watering of land by artificial means to foster plant growth.

Related Resources

Land Use, Agriculture, Water Quality & Hydrology, Wilderness, Water Rights, Forest Management, Predator Control, Noxious Weeds, Canals & Ditches. Land Access, Wetlands, Wildlife

Findings

a. Overview

i. Irrigation is the practice of supplemental application of water to land (beyond that water which is directly received by the land from naturally occurring precipitation) for the purpose of increasing the agricultural output of cropland and to sustain additional vegetation growth throughout the landscape. Much of Utah's agriculture would not be possible if not for irrigation. Utah's arid climate provides limited and frequently unreliable annual rainfalls. Many of the canals and ditches remain open, but over time many have been lined or piped to improve operational efficiency.

ii. Dams, canals, and pipelines are constructed to take advantage of the topography of each watershed and redistribute water from rivers and streams outward to lower elevation lands, which are more suitable for crop production.

iii. Within each watershed, various entities or individuals have legal claims (i.e., water rights) to use the water for "beneficial use" and are permitted to divert waters from streams into the storage dams, canals, and pipelines. The distribution of water is governed by state law and is based largely on geographic proximity, available supply, and ownership of the water rights.

iv. The majority, about 65% of the irrigation water available in Davis County, is from the Weber River and the Echo and Rockport reservoirs. The other 35% is drawn from local mountain streams (USU Davis County Agricultural Profile). The 2012 Census of Agriculture indicated that Davis County had 55,017 acres of land in farms (including livestock operations), of which 11,965 were harvested cropland and 13,809 acres were irrigated (USDA 2012).

v. "All of the drainages and related streams within Davis County are not directly tributary to the Weber and Ogden rivers, but a percentage of all water used in the county is diverted from the Weber River. In short, the county is highly dependent on water from the upper Weber River" (Utah Division of Water Resources 1997).

vi. "The Farmington Area Pressurized Irrigation District, created by Davis County in 1969, has been delivering pressurized irrigation water service since 1977 to Farmington, south Kaysville, south Fruit Heights and areas of unincorporated Davis County. This district replaced the services of five stock pioneer irrigation companies. The system utilizes the flows of four Wasatch Front Canyon streams supplemented by Weber Basin Water Conservancy District contracts to supply more than 3,300 users with pressurized irrigation for agriculture and M&I purposes" (Utah Division of Water Resources 1997).

vii. Canal and irrigation companies are outside of the County's control but could be influenced by private shareholders. Irrigation services in Davis County are controlled by 61 canal companies and their associated shareholders (Utah Division of Water Rights 2014).

b. Economic Considerations

i. Low average rainfall leaves crop production dependent almost entirely on irrigation from freshwater sources (Davis Conservation District 2012).

ii. There is increasing competition between agricultural and urban water users. Urban sprawl causes a need for irrigation infrastructure improvements, thereby drastically increasing annual assessment costs (Davis Conservation District 2012).

c. Custom + Culture

i. During early development from the mid-1800s to the turn of the century, annual flows of the Weber and Ogden rivers were more than sufficient to meet the needs of most agricultural interests. However, it became apparent a considerable percentage of the basin had exceptional soils and climate that could support irrigated agriculture on a much larger scale. As a result, the demand for additional irrigation water grew quite rapidly. By the late 1890s, local canal and irrigation companies were constructing reservoirs in the upper reaches of the Ogden and Weber rivers (Utah Division of Water Resources 2009).

ii. The first canals, laterals, and ditches in Davis County...were built by cooperative effort. Hitching oxen to a plow, the men marked out a channel, then widened and deepened the ditch with scrapers and shovels. They flooded their fields and furrowed their row crops to control the moistening of the soil. Within a few years a network of distribution ditches had spread out across the foothills and along the borders of the farmlands to disburse the water (Leonard 1999).

iii. "Early conservation projects addressed a critical county-wide problem. Large irrigation water distribution ditches along nearly every section-line road had eroded into deep, wide chasms that narrowed road widths. These chasms were both a safety and an erosion problem. By 1981, over 261 miles of open ditch had been enclosed in underground concrete pipes, which are now largely unseen and unnoticed by the county's exploding urban population" (Davis Conservation District 2012).

iv. "Early projects also addressed areas where irrigation wastewater had eroded topsoil from steep and uneven farm fields. Over ten square miles of land-leveling greatly conserved irrigation water and reduced topsoil loss. Fifty-one miles of lined ditches and hundreds of water control structures, coupled with farm conservation plans and sprinkler systems on steep slopes, have improved irrigation efficiency and runoff water quality" (Davis Conservation District 2012).

Relevant Existing Policies

d. **Davis County General Plan**

i. Encourage municipalities to adopt ordinances preventing stormwater runoff from flowing into irrigation ditches.

ii. Davis County should require all bona fide agricultural parcels be accessible from a proper right-of-way, that the parcels have access and rights to irrigation water, and that they be of a minimum size of 5 acres for agricultural viability.

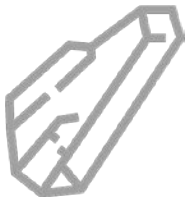
Davis County Objectives

1. Water is managed so that growth is not inhibited by water resources.

Davis County Policies

1. The County values irrigated agriculture as part of the local economy, and opposes any plans or policies on public land that might limit access to sources of irrigation water rights.
2. The County supports agricultural efficiency to conserve irrigation water.

MINERAL RESOURCES



MINERAL RESOURCES

Definition

Natural resources in the form of minerals (solid inorganic substances)

Related Resources

Water Rights, Land Use, Air Quality, Water Quality and Hydrology, Energy, Mining, Cultural, Historical, Geological, and Paleontological, Land Access

Findings

a. Overview

i. Mineral resources are deposits or occurrences of inorganic materials with intrinsic economic value (such as ore, aggregate, oil, and gas) that may be extracted from the earth's crust. Mineral resources are regulated and managed based on type, and are grouped into three categories: locatable, leasable, and saleable.

ii. Locatable Minerals

1. This category includes high-value minerals such as gold, silver, and copper (metallics and nonmetallics) that are subject to the Mining Law of 1872 as amended by 30 USC 2. Under the Mining Law, mining claims can be filed for these minerals. The category also includes certain industrial minerals such as gypsum, chemical grade limestone, and chemical grade silica sand. Uncommon varieties of mineral materials such as pozzolan, pumice, decorative rock, and cinders may also be regulated as locatable minerals if demonstrated to have unique market value.

iii. Leasable Minerals

1. This category includes gas, oil, oil shale, coal, oil sands, phosphate, and geothermal resources, and are subject to the Mineral Leasing Act of 1920, as amended and supplemented (30 USC 181, et. seq.), the Mineral Leasing Act for Acquired Lands as amended (30 USC 351-359), and the Geothermal Steam Act of 1970 (30 USC 1001-1025). Examples of leasable minerals include coal bed methane, oil and gas, tar sands, and geothermal resources.

iv. Saleable Minerals

1. This category includes more common mineral resources including sand, stone, gravel, pumice, clay, and petrified wood. Regulation of these minerals on public lands is authorized by 30 USC 601. State and private lands are regulated by state, county, and local jurisdiction and land use codes. Some saleable minerals are sand and gravel, clay, and stone.

v. Major commodities produced in Utah, in descending order of value, include phosphate, gilsonite, expanded shale, common clay, bentonite, and gypsum. Within the next 25 years, future industrial mineral production is expected to continue to come predominantly from the areas of Utah that have had historic industrial mineral production.

vi. The mines operating in Davis County are primarily focused on rock aggregates. Limited veins of other minerals in the Wasatch Mountains have been found such as gold, silver, copper, and lead ores. These prospects are mostly inaccessible because of the high slopes.

vii. "The Utah Department of Transportation's May, 2001 publication, Interstate 15 User Guide On the Road Again Map, reports that 7 million cubic yards of sand and gravel fill and 2.5 million square yards of concrete using crushed rock aggregate were used in the reconstruction of Interstate 15 through the Salt Lake Valley. Most of this material came from local Wasatch Front sources" (Case 2017).

b. Great Salt Lake

i. "The brines of GSL contain several ions that can be combined into valuable minerals during evaporative processes. The major ions in GSL brines in order of relative abundance are chloride (Cl-), sodium (Na+), sulfate (SO4 --), magnesium (Mg++), and potassium (K+). Because of the terminal nature of GSL, the only way for the ions, or salts, as they are commonly called, to be removed from GSL is through mineral extraction" (Utah Division of Forestry, Fire, & State Lands 2013).

ii. An early estimate of total tons of dissolved salts in GSL was 4.2 billion tons of salt in 1966 (Sturm 1980). Since then, the Utah Geological Survey (UGS) estimates of total tons of dissolved solids in GSL have fluctuated from 4.0 to 5.5 billion tons because of the dynamic conditions in the lake (Gwynn 1995). In 2011, UGS estimated that there are 4.5–4.9 billion tons of dissolved solids in GSL (Naftz 2011)" (Utah Division of Forestry, Fire, & State Lands 2013).

c. Economic Considerations

i. Construction sand and gravel, crushed stone (including limestone and dolomite), and dimension stone contributed the second-largest share of the overall value of industrial minerals produced in Utah during 2010, with an estimated value of $201 million, a $9 million (4%) decrease from that of 2009" (USGS 2015).

ii. "Brine-derived products, including salt, magnesium chloride, potassium chloride, and sulfate of potash, were the largest contributors to the value of industrial-mineral production in Utah in 2010, with a combined value of $370 million, about $75 million (17%) less than that in 2009" (USGS 2015).

iii. "The Great Salt Lake is an important resource with respect to the production of salt and other brine-derived commodities, including magnesium chloride and potassium sulfate" (USGS 2015).

d. Custom + Culture

i. "Like earlier indigenous peoples who lived along the shores of the Great Salt Lake for centuries, Mormon settlers found the lake a ready source for salt. Harvested by individuals

and cooperatively, salt was used to season or pickle foods and to prepare meats for winter storage. The easily harvested compound soon became a successfully exported product for Davis County's entrepreneurs. Residents of South Weber filled their wagons with salt from the lakeshore sloughs, cleaned it, and sold it to Ogden residents. People elsewhere in the county likewise quickly moved beyond the bucket-at-a-time collection of salt for personal needs. Hauling off a wagonload, they would sell the product locally at fifty cents for a heaping bushel" (Leonard 1999).

ii. "The county's first salt company was organized in Syracuse in 1880 by George Payne. Three years later, in Farmington, Isaac Sears, "Mac" MacKeg, and James Melius organized the Deseret Salt Company These two pioneering companies served both the local and mining markets with crude salt. Their methods were simple. Using horse-powered pumps, they piped lake water into ponds for controlled evaporation. As the salt crystallized, workers shoveled it into piles within the pond, then carted it out in large wheelbarrows to continue drying. Loaded into sacks, the salt for export was hauled by wagons or the railway to out-of-state ore-processing plants" (Leonard 1999).

Relevant Existing Policies

e. **Great Salt Lake Mineral Leasing Plan (2013)**

i. Goals:

ii. Assess current conditions related to mineral resource extraction and known reserves/balances.

iii. Integrate mineral resource planning with other resource planning.

iv. Plan for leasing and efficient development of mineral resources.

v. Establish transparent mineral leasing application process.

vi. Identify data gaps in existing knowledge related to mineral extraction.

vii. Assert role of FFSL as a manager of State-owned lands.

viii. Please see the full GSL MLP for more complete information about the existing objectives

f. **Great Salt Lake Comprehensive Management Plan**

i. *Please see the full GSL CMP for more complete information about the existing objectives*

Davis County Objectives

1. Minimize, or as appropriate prevent, adverse impacts on surface resources.
2. Avoid or minimize significant and conflicting public or private investments near sites where mineral activities may occur within the foreseeable future.
3. Ensure that adequate reclamation of disturbed areas is accomplished.

Davis County Policies

1. Encourage extractive industries to be in compliance with federal, state and County laws and regulations, while protecting multiple use concepts and rights to access.
2. Avoid and mitigate detrimental disturbance to the riparian area by mineral activities. Initiate timely and effective rehabilitation of disturbed sites.
3. Allow mineral leasing where it has been determined that stipulated methods of mining will not affect the watershed values to any significant degree.

MINING

Definition

The process or industry of extracting minerals or other geological materials from a mine or other extractive process.

Related Resources

Water Rights, Land use, Air Quality, Water Quality and Hydrology, Energy, Mineral Resources, Cultural, Historical, Geological, and Paleontological, Land Access

Findings

a. Overview

i. Mineral resources are deposits or occurrences of inorganic materials with intrinsic economic value (such as ore, aggregate, oil, and gas) that may be extracted from the earth's crust. Mineral resources are regulated and managed based on type, and are grouped into three categories: locatable, leasable, and saleable. The primary minerals that are being withdrawn include potash and fossil fuels.

i. The State of Utah has primacy on regulation and reclamation of mining activities on all lands within the state, and the Utah Legislature assigned responsibility for administration of mining to the Utah Division of Oil, Gas, and Mining (DOGM).

ii. For regulation of mineral ore mining, the DOGM administers permitting, inspection, and enforcement procedures under the Utah Mined Land Reclamation Act. All large mining operations within the state are required to have an approved notice of intention with the Minerals Program prior to beginning operations. Mining operations are broken up into the three categories: (1) large mine, (2) small mine, and (3) exploration under the Minerals Rules. The DOGM maintains a permit database of active and reclaimed mine sites. The DOGM Minerals Program regulates all mining operations as defined in the Utah Mined Land Reclamation Act.

iii. Mining on public lands administered by the Forest Service, on the eastern edge of the county, are subject to federal regulations. "The Mining Law of 1872, as amended, governs the prospecting for and the appropriation of metallic and most nonmetallic minerals on the 140 million acres of National Forest set up by proclamation from the public domain. . .In the Mining and Minerals Policy Act of 1970, Congress declared that it is the continuing policy of the Federal Government, in the national interest, to foster and encourage private enterprise in (among other goals) the development of domestic mineral resources and the reclamation of mined land" (U.S. Forest Service n.d.).

b. Mines on State Land

i. There are four mineral mines in Davis County with active permits from the DNR Division of Oil, Gas & Mining:

1. Lamb, Sessions & Young
2. Thomas Pit - Lakeview Rock Products Inc.
3. UDOT Beck Street Quarry - Lakeview Rock Products Inc.
4. Whitehill - Granite Construction Co.
5. *Source: (Utah Division of Oil, Gas, and Mining 2017)*

ii. "In the past Antelope Island was thought by many to be an offshoot of the Oquirrh Mountains. In the 1870s several small mines dotted the Oquirrh Mountains. With the success of these mines many felt that it would be lucrative to stake their claims on the virgin ground on Antelope Island." In time, the geology of the area indicated that mineral reserves were too sparse to be economically viable (Utah State Parks n.d.).

c. Mines on Public Land

i. There are several abandoned, prospect, and presently producing mines on US Forest Service land along the eastern edge of the County. Most are focused on saleable minerals like gravel and rock (U.S. Geological Survey 2017).

d. Economic Considerations

i. Construction sand and gravel, crushed stone (including limestone and dolomite), and dimension stone contributed the second-largest share of the overall value of industrial minerals produced in Utah during 2010, with an estimated value of $201 million, a $9 million (4%) decrease from that of 2009" (U.S. Geological Survey 2015).

ii. "Brine-derived products, including salt, magnesium chloride, potassium chloride, and sulfate of potash, were the largest contributors to the value of industrial-mineral production

in Utah in 2010, with a combined value of $370 million, about $75 million (17%) less than that in 2009" (U.S. Geological Survey 2015).

iii. "The Great Salt Lake is an important resource with respect to the production of salt and other brine-derived commodities, including magnesium chloride and potassium sulfate" (U.S. Geological Survey 2015).

e. Custom + Culture

i. "While Utah's flatlands attracted farmers, the hills and mountains surrounding the populated valleys offered a different commercial opportunity. The territory's mining boom of the 1870s and 1880s attracted national attention and piqued the interest of at least a few Davis County residents. . .The county's most promising mining boom followed the discovery of copper and silver on Antelope Island in the late 1880s. Prospectors dug dozens of test holes and organized several mining companies. Five operators joined forces in 1899 as the Great Salt Lake Mining Company; four others continued independent operations. One mine yielded ore containing 26 percent copper, and, before long, more than fifty miners were at work on the island. They expected to discover yields like those of the Bingham Canyon copper mine in the Oquirrhs, directly across the lake to the south. Antelope Island's most promising vein played out quickly, however, and the short lived boom ended" (Leonard 1999).

ii. Deep in the Wasatch Mountains, the site of the Burro Mine was discovered by early residents of the County, in 1907. Historical documents claim that silver, gold, copper, and lead were all found. The ore was hauled down mill creek by a combination of 1,200-foot gravity aerial tram, a 4,400 foot stone boat haul to the road, and then a six mile wagon trip to the railroad at Woods Cross (Western Mining History 2017).

Relevant Existing Policies

f. **Davis County Comprehensive Hillside Master Plan**

i. Goal: Mitigate the effects of existing gravel pits

1. Policy: Review and modify, where necessary, hours of operation, haul routes, etc.
2. Policy: More closely monitor and enforce clean air/road/noise standards
3. Policy: Encourage existing operators to landscape and/or screen their operations as much as possible

ii. Goal: Discourage new gravel pits

1. Policy: Establish specific development and mitigation standards
2. Policy: Require extraordinary review and public involvement
3. Policy: Require bonding at the time of permit for the replacement of public infrastructure due to increased impacts
4. Policy: Require extended bonding (10 years) for rehabilitation
5. Policy: Do not allow haul routes through residential areas

g. **Great Salt Lake Comprehensive Management Plan**

i. Promote the development of quantitative metrics to determine the values of GSL non-commodity resources.

1. Recognize the importance of determining accurate valuation of GSL's resources in coordination with UGS, DSPR, Utah Office of Tourism, DOGM, DWQ, DWR, and cities and counties. Specifically, resource valuations could include recreation (e.g., bird watching, waterfowl hunting, and boating), mineral extraction, and oil, gas, and hydrocarbon production.

Davis County Objectives

1. The County supports responsible mineral exploration and extraction.

Davis County Policies

1. All decision making regarding where mineral extraction is permitted within the County involves active participation from the County.

ENERGY RESOURCES

Definition

Renewable or nonrenewable resources used to obtain energy.

Related Resources

Mining, Mineral Resources, Cultural, Geological, Paleontological, Land Access, Water Quality & Hydrology, Water Rights, Air Quality, Land Use

Findings

a. Overview

i. "The unique geologic history, geography, and climate of Utah have resulted in an abundance of nonrenewable and renewable energy resources. Nonrenewable energy resources include fossil fuels, such as oil, coal, and natural gas, as well as naturally occurring elements, such as uranium. Renewable energy resources are those that are replenished by natural processes and include geothermal, solar, and wind energy" (Utah State University 2009).

ii. Two power plants exist in Davis County. One municipal waste biomass plant and one natural gas plant. Hill Air Force Base also harnesses landfill gas for generating power (Vandenberg 2016).

iii. Four oil refineries exist in Davis County. Built between 65 and 80 years ago, these plants have been converting oil into energy products such as gasoline, diesel fuel, jet fuel, and other oil products. While relatively small by national standards, the refineries are regulated by the Utah Division of Air Quality, and the EPA (Utah Petroleum Association n.d.).

b. Biomass

i. "The Renewable Energy Atlas of the West (Nielsen et al., 2006) estimated the electricity-generating potential from landfill gas and animal waste to be 1 million megawatt hours per year. Currently, there are five power plants in Salt Lake and Davis counties utilizing municipal waste or landfill gas as the power source for generating electricity. The combined capacity of these five plants is 4.4 megawatts (UGS, 2009e)" (Utah State University 2009).

c. Geothermal

i. "Geothermal power generation come from the transport of heat to the surface through several geological and hydrological processes. Geothermal resources commonly have three components: 1) a heat source, 2) relatively high permeability reservoir rock, and 3) water to transfer the heat." Davis County has multiple high-temperature regions, suitable for power generation" (Utah State University 2009).

ii. Large sections of Davis County are within the Utah Renewable Energy Zones Task Force Geothermal Zone. This zone was created based on findings of significant geothermal areas in Utah" (Utah State University 2009).

iii. Wasatch Front valleys have thermal springs which can be tapped for geothermal power. The valleys of Davis, Weber, and Salt Lake have a combined 1,329 square miles of area that have the presence of thermal-gradient boreholes with gradients of 100°C per kilometer or greater (Klauk 1984).

iv. Hooper hot springs, along the east shore of the Great Salt Lake has been measured as having significant temperatures (Klauk 1984).

d. Wind

i. Most of Davis County does not have the average wind speeds necessary for viable wind energy production. The exception is in South Weber; the canyon that Weber River flows through has been identified as a wind drainage canyon. The high winds that come through the canyon are strong enough to be harnessed for energy production (Berry et al. 2009).

e. Solar

i. Compared to other parts of the state, Davis County's potential for large-scale solar farms is low because of the need for large tracts of land and consistent sun (Rangeland Resources for Utah, 2009). However, private citizens and companies have installed smaller photovoltaic systems for personal use. The Kroger distribution center in Layton uses solar panels on their roof to supplement their energy budget (Vandenberg 2016).

f. Oil, Coal, and Natural Gas

i. While oil, coal, and natural gas have a significant impact on the Utah economy, Davis County has very limited reserves of hydrocarbon plays within its borders. Davis County has not produced any measurable amount of oil or natural gas in its history (Utah Division of Oil, Gas and Mining 2017).

g. Economic Considerations

i. The power generation sector of Davis County supported about 14 jobs in 2015. The direct statewide output of power generation in the County is approximately $3.5 million, with an additional ~$1.6 million in indirect and induced output (Governor's Office of Energy Development 2015).

h. Custom + Culture

i. "Another potential commercial resource was discovered along the lake's east shoreline in 1883, when artesian-well drillers hit an underground pool of natural gas at the 550-foot level in north Centerville. Nothing was done to develop the gas on the land of Ephraim Garn for another decade, however. At that time, the American Gas Company bought out the owner's rights, and in February 1895 the company agreed to supply fuel to the Salt Lake and Ogden Gas and Electric Company. Manufactured gas had been used to light Salt Lake City streets since 1872. The Davis County natural gas replaced this earlier source; but, within a year, customers were complaining about unreliable pressure in the lines (and) after only three years of commercial use, Davis County's marsh-gas wells were capped. The first street lighting in Davis County was furnished in Bountiful by Lakeshore Gas and Oil Company beginning in 1902" (Leonard 1999).

Relevant Existing Policies

i. **Great Salt Lake Comprehensive Management Plan**

i. Allow for new oil, gas, and hydrocarbon leasing activities that are consistent with the long-term sustainability of GSL, according to Utah Code 65A-10-8.

1. Consider new leases according to oil, gas, and hydrocarbon leasing categories and leasing processes outlined in the MLP.
2. Consider how proposed oil, gas, and hydrocarbon projects would impact GSL resources through review of site-specific analysis.
3. Coordinate with DOGM to incorporate best management practices in new leases.
4. Coordinate with permitting and management agencies to determine the appropriate level of involvement in processes that consider future oil, gas, and hydrocarbon projects.
5. Coordinate with DWQ to help ensure compliance with Utah Water Quality Act regulations (Utah Admin. Code R317).

j. **Antelope Island RMP**

i. Investigate opportunities for renewable energy resources such as wind, solar, ground source heat pumps and partnering with university research groups.

Davis County Objectives

1. Promote the efficient use of natural resources and the conservation of energy.

Davis County Policies

1. Should energy resources be developed on public lands in Davis County, the County will encourage companies to use the best technology and mitigation techniques to protect natural amenities and resources.

AGRICULTURAL RESOURCES

AGRICULTURE

Definition

Agriculture is the cultivation of plants or animals for fiber, food, fuel, or other products.

Related Resources

Ditches and Canals, Irrigation, Water Quality, Water Rights, Livestock and Grazing, Land Use, Land Access, Noxious Weeds Wetlands, Riparian Areas, Wildlife, Threatened, Endangered and Sensitive Species, and Economic Considerations

Findings

1. **Overview**

   i. Agriculture in Davis County is important for the natural, cultural, social, and economic benefits it provides. Agriculture successfully balances those benefits and continues to be a valuable source of jobs, local tax base, a variety of environmental benefits, scenic beauty, food and fiber for human consumption, and fuels management in grazing areas.

   ii. Davis County's predictable weather, lengthy growing season, high quality soil, and excellent micro climate make it among the best suited locations for agriculture in the state. Davis County ranks first in Utah for sweet corn, second in both vegetable and greenhouse crops, and fourth in fruit production. The county ranks ninth in the state based on total agricultural cash receipts (Davis Conservation District 2012).

   iii. In a 2012 snapshot, there were 493 farms in the county, with 55,017 acres of land in farms, with an average size of 112 acres, each. Pastureland is the top crop item, making up 70.3% of the farm acreage, followed by vegetables, and wheat for grain. The growing season in Davis County is one of the longest in Utah. It averages about five and a half months (U.S. Department of Agriculture 2012).

   iv. "The most prevalent crop rotation that producers practice is to leave alfalfa in for seven years, plant wheat for two years, and then replant alfalfa. Producers typically get three to four cuttings of alfalfa each year. Another rotation is wheat, sweet corn, and then vegetables. A third common rotation is grain corn, snap beans, and then wheat. Most grain is planted in the fall of the year" (Godfrey et al. 2005).

   v. "About 25% of all inputs (e.g., seed, fertilizer, pesticides, etc...) are purchased locally while the remaining 75% is bought in neighboring counties). The majority of the farming and

ranching in the county occurs in the Layton, Syracuse, and West Point areas in the northern part of the county" (Godfrey et al. 2005).

vi. "The preservation of agricultural lands and agricultural sustainability go hand-in-hand. Davis County was once a thriving agricultural community. It is now highly urbanized, with much of the best soil and agricultural lands taken out of production. Although the primary cause of the decline is urban encroachment, other contributing factors include increased land values, aging farmers, high production costs, invasive weeds, and increased government regulations. When farmers are not profitable, or are unable to run their businesses, they are often forced to sell their land for development. Once land is developed, the benefit it once provided is lost" (Davis Conservation District 2012).

vii. The average age of farmers continues to increase nationally and in Utah. Current farmers are aging while still working to maintain their lands. The average age of a Utah farmer is 57, and in Davis County, the average is 62. Farming is losing its successors as many children are choosing other occupations (U.S. Department of Agriculture 2012).

viii. Benefits of local agriculture include food and fiber, open space and wetland habitat for migratory birds, upland game, and local deer populations, as well as a buffer from development for the important migratory bird area adjacent to the Great Salt Lake (Davis Conservation District 2012).

ix. Utah Code 17-41-403 calls for agricultural protection areas. Other efforts to protect farmland include conservation easements, and protective/agricultural zoning.

2. Climate

i. Davis County is considered by scientists to be in a cold semi-arid climate, which means the climate can feature warm to hot summers and cold, sometimes very cold winters, as well as major temperature swings between day and night by as much as 55 degrees Fahrenheit (Davis County Government 2015).

ii. The coldest temperatures in Davis County occur in January with an average low of 20°F; whereas the hottest temperatures occur in July with an average high of 89°F. Annual precipitation levels average between 18 and 25 inches, with the month of May being the highest with an average of 2.7 inches and the month of July being the lowest with only 0.98 inches. It must be noted that due to Davis County's bordering relationship with the Great Salt Lake, an occurrence called "Lake-Effect Snow" can produce above average snowfalls because cold winds from the west move across the long expanse of the Great Salt Lake's warmer water, providing energy and picking up water vapor which freezes and is deposited onto the relatively narrow section of Davis County that is sandwiched between the Great Salt Lake to the west and the Wasatch Mountain Range to the east. This can lead to snow during the winter on the valley floor of Davis County of roughly 60 inches and on the high bench areas up to 90 inches average for the entire winter season (Davis County Government 2015).

3. Soils

i. Most of the soils in Davis County formed in parent material either deposited by streams in ancient Lake Bonneville, sorted by the action of lake water, or deposited during the post-Bonneville period as alluvium on floodplains of the major streams, as alluvial fans. The significant population increase in Davis County has limited the amount of soil available for agricultural production and has placed a high demand on the remaining soil. Other causes for soil loss in the county include erosion, compaction, and contamination (Davis Conservation District 2012).

ii. Davis County's rich soil and moderate climate makes it one of the best suited areas for agriculture in Utah. It is critical to ensure that the remaining high quality soil remains available for agricultural production. Food and fiber crops are renewable resources, but the soil it takes to grow them is not (Davis Conservation District 2012).

iii. Most soil in the county falls under the Mollisol soil order, with some zones of Entisols, Alfisols, and miscellaneous marshy areas (NRCS Soil Assessment GIS Layer).

iv. Some agricultural concerns in the area include residue, nutrient and pest management to control erosion and to protect water quality. The small, part-time farms may be less likely to adopt soil conservation due to cost and low farm income (National Resource Conservation Service 2005).

4. Control v Influence

i. In Davis County, private property owners and farm operators control this resource. Most crop farming happens on private land with little outside influence. The agency with the most influence on agriculture in the County is the Natural Resources Conservation Service. The County and municipalities have influence over land uses and zoning which will impact agriculture.

5. Economic Considerations

i. Davis County agriculture is located in the heart of the Wasatch Front. The close proximity to market outlets creates a unique benefit to both the farmers and the community. Producers are able to make a higher profit by skipping wholesale and out-of-state markets and selling directly to consumers. Local specialized markets include grocery stores and restaurants, community supported agriculture, farmers markets, agro-tourism, and roadside stands. The community enjoys a sustainable fresh local food source and a connection to their food that many urban areas are lacking (Davis Conservation District 2012).

ii. In 2012, total market value of crop sales in Davis was over $31 million, with an average of $74,564 per farm. 81% of the counted farms operated with under $20,000 in sales during the census year, 15% of farms made between $20,000 - $499,000, and 3% made over $500,000 (U.S. Department of Agriculture 2012).

iii. In 2015, farm employment was comprised of 645 jobs, 436 of which were farm proprietors. This made up about 4% of the total employment in Davis County (Economic Profile System 2017).

iv. While not a major economic driver, agriculture in Davis County is important for the natural, cultural, social, benefits it provides. Agriculture successfully balances those benefits and continues to be a valuable source of jobs and income locally.

6. Custom + Culture

i. "On the gently sloping ancient lake terraces and foothills between the saline flatland and the mountain slopes Mormon settlers found fertile soil rich in humus, moistened naturally by a sparse sixteen inches of water in an average year. In its native state, grasses and sagebrush covered the lower vegetation zone. Cottonwoods appeared along the streams and scrub oak on the upper benchlands. It was in this environment along the eastern shore area of the ancient lake that the Numic peoples had cultivated gardens, gathered seeds and berries, and stalked game. In this same area the new settlers established irrigated farms, planted orchards and gardens, and grazed livestock" (Leonard 1999).

ii. "Through the entire pioneer period, the chief economic interest of Davis County's residents was agriculture. Most of the men farmed either as a full-time occupation or as a sideline.

Agriculture provided the raw materials for other industries, including gristmills, tanneries, and creameries. It supplied work for farm laborers and for some skilled workers. Older boys helped their fathers with chores, irrigation, and harvesting of the crops. Many women worked in the fields alongside their husbands. In addition, women tended the gardens, helped with the dairying, prepared meals, and made clothing for the family" (Leonard 1999).

iii. "Many communities around the intermountain west are known for their farmer's markets. Residents can drive directly to the source to buy fruits, vegetables, and even dairy products that have been processed by local farmers. There is a market for locally produced fresh products. Roadside stands and markets distinguish a community and help preserve a community's rural atmosphere" (Davis County Government 2001).

iv. The 2015 Annual Report by the Utah Department of Agriculture and Food (UDAF) states that, "Nearly 95 percent of Utahns believe farming and ranching are important to the future of the state." The preservation of agricultural lands and resources is seen by many to provide tangible value to the state and/or intrinsic character to the lifestyle of its communities.

Relevant Existing Policies

7. Davis County General Plan Introduction (2006)

i. AGRICULTURE AND URBAN USE CONFLICTS:

ii. Where urban development has spread out into areas that are still in use agriculturally, a number of conflicts have developed. The resolution of some of these conflicts will take concerted action on the part of County and municipal government, developers, farmers, and neighborhood residents.

iii. A problem which has received a lot of attention in recent years is the location of large irrigation ditches which run through or adjacent to new subdivisions. Residents are worried about young children falling into these ditches, and farmers worry about the ditches being used as garbage dumps by the subdivision residents. Davis County does not anticipate nor encourage new urban development in the Unincorporated County, however, new subdivisions within municipalities frequently abut active agricultural lands in the unincorporated areas. Policy

1. Policy: Encourage municipalities to adopt ordinances requiring all new development to either pipe irrigation ditches or provide fencing where the ditch must remain.

iv. Storm water runoff is often allowed to run into irrigation ditches from adjacent subdivisions and other developments, polluting the irrigation water and, in some cases, resulting in overflow from the ditches and flooding of surrounding properties.

1. Policy: Encourage municipalities to adopt ordinances preventing stormwater runoff from flowing into irrigation ditches.

2. Policy: Encourage municipalities to participate with Davis County in a storm water drainage system and management program.

v. Many agricultural properties are criss-crossed with field drains. The exact locations of these field drains are often not known. As agricultural properties are developed, the

severing or plugging of the field drains by developers can affect adjacent properties that are still in agricultural use.

1. Policy: Encourage municipalities to adopt ordinances requiring developers to locate field drains and assure that the flow and function of the drains is not impacted by development.

vi. Where subdivisions are located directly adjacent to lands still in use for crops, there is often vandalism and theft of farm equipment and crops.

1. Policy: Encourage municipalities to adopt ordinances requiring developers to provide a fence between agricultural areas and development.

vii. AGRICULTURAL PARCELING

viii. State law in Utah allows the division of property by an owner for agricultural purposes without complying with local subdivision regulations or seeking approval from local officials. Agricultural parcels are often created with no legal access, minimum size, or other normally required standards or improvements. It has been the experience of Davis County officials that buyers of agricultural parcels often have the misunderstanding that these parcels are building lots.

1. Policy: Davis County should require all bona fide agricultural parcels be accessible from a proper right-of-way, that the parcels have access and rights to irrigation water, and that they be of a minimum size of 5 acres for agricultural viability.

Davis County Objectives

1. Thriving agriculture helps preserve the culture of Davis County by providing exposure to traditional Western lifestyle and food production.

Davis County Policies

1. The County recognizes the value of preserving agricultural land as well as the natural open space that defines the county as a truly unique landscape. As a result, the county will continue to adopt policies and zoning ordinances that reinforce this ethic. This will be balanced with a reasonable growth focused approach that recognizes the value of expanded residential and commercial development in the County.
2. Support voluntary efforts initiated by agricultural landowners to create Agriculture Protection Areas covering their properties per state code (Utah Code Title 17/Chapter 41).

NOXIOUS WEEDS

Definition

Noxious weeds are plants that are considered harmful to agricultural or horticultural crops, natural habitats or ecosystems, or humans or livestock. Often times they are non-native species, which spread rapidly due to habitat disruption or poor land management.

Related Resources

Forest Management, Fire Management, Agriculture, Livestock and Grazing, Riparian Areas.

Findings

a. Overview

i. "Noxious and invasive weeds are one of the most serious problems that threaten healthy lands in Utah. Both noxious and invasive weeds are competitive non-native species that are introduced into environments where they readily adapt and reproduce prolifically. They negatively affect agricultural lands, forests, nature preserves, stream banks, private lands, and parks. If left unmanaged, weeds can quickly dominate a landscape, crowding out native plants, reducing forage for animals, and increasing the risk of wildfire" (Davis Conservation District 2012).

ii. "Noxious and invasive weed infestations in Davis County tend to be concentrated near roads, highway corridors, railroad lines, recreational trails, improperly managed grazing areas, canals, fence lines, dormant and stalled construction sites, and in privately owned ranchettes. These areas are not always adequately maintained and are problematic sources of weed infestations" (Davis Conservation District 2012).

iii. "It is critical to keep potential invaders, such as myrtle spurge, out of the County. Once a noxious or invasive weed is established, it becomes extremely difficult to manage. Control measures may be unavailable, inadequate, or simply uneconomical, thus frequently forcing land managers to try and stop the weed from spreading rather than eradicating it. Weeds with extensive distributions in the county include: bindweed, common purslane, dyer's woad, hoary cress, poison hemlock, phragmites, and puncture vine" (Davis Conservation District 2012).

iv. "Small contained populations of noxious and invasive weeds that are detected early have a high probability of being effectively controlled. High priority weeds in this category, within Davis County, are black henbane, Canada thistle, dalmatian toadflax, goatsrue,

Japanese knotweed, jointed goatgrass, leafy spurge, medusahead rye, purple loosestrife, Russian olive, Scotch thistle, St. Johns wort, silver nightshade, tamarisk, yellow nutsedge, and yellow star thistle. It is critical to remain vigilant and treat these populations before they become too widespread. Eliminating these weeds before they cause damage to the landscape will save the county from losing biological resources and lessen the financial burden it takes to control them once they spread out of control" (Davis Conservation District 2012).

v. In less developed areas at lower elevations, a key management concern is the spread of cheatgrass that predominantly invades semi-desert shrub communities. Cheatgrass has been blamed for much of the reduction of fire return intervals and the occurrence of larger fires (Utah State University 2009).

vi. As described in the Antelope Island Resource Management Plan (2009), noxious weeds support increased fire frequency on the island. Noxious weeds also recover quickly from fires and dominate water resources, leaving native plants a more difficult path to recovery. "Noxious weeds out-compete native plants, increase overall range and soil degradation, create water table fluctuations, decrease wildlife carrying capacity, increase wildfires, decrease scenic and recreational opportunities and may poison wildlife. Management efforts are currently underway to control and eradicate a number of these weed species from the island's rangelands" (Utah State Parks 2009).

vii. The USDA is the primary leader involved in preventing the introduction of invasive species, largely through the Animal and Plant Health Inspection Service (APHIS). The Natural Resource Conservation Service (NRCS) also contributes to preventative measures and education on plants that may pose a risk to cropland, rangeland, or wildlands.

viii. Davis County Public Works Department manages state and county declared noxious weeds (Davis County Government 2015).

ix. Davis County is also a member of the Weber River Cooperative Weed Management Area (CWMA) partnership. This organization "has fostered cooperative efforts and resources across multiple departments, agencies, and jurisdictional boundaries. Often CWMA's are able to secure substantial government funding because the scope of projects can be increased to include weeds across federal, state, county, municipal, and private properties." The Weber River CWMA has organized weed control efforts on Antelope Island, pulling and spraying weeds with the help of volunteers and state staff (Conservation Habitat Management 2017).

b. Economic Considerations

i. "The invasion of non-native plant species not only produces various ecological modifications, but also results in substantial socioeconomic impacts, particularly to the livestock industry and land management agencies responsible for fire suppression. Invasive plant species cause more economic loss on rangeland than all other pests combined. Invasive plants reduce the carrying capacity for livestock by lowering the forage yield. Consequently, the costs of managing and producing livestock increase" (Utah State University 2009).

ii. "The importance of herbicides in modern weed management is underscored by estimates that losses in the agricultural sector would increase about 500% from $4.1 billion to $20 billion per year without the use of herbicides" (Whitesides 2004).

iii. "The implementation of one control method is rarely effective in achieving the desired results for curtailing the spread of invasive plants. Successful long-term and cost-effective

management programs should integrate a variety of mechanical, chemical, biological, and cultural control techniques. Integrated management involves the deliberate selection, combination, and implementation of effective invasive plant management strategies with due consideration of economic, ecological, and sociological consequences... Presently, there are several examples of integrated strategies used to manage invasive plants and improve rangeland communities. Much attention has been focused on the integration of targeted or prescription grazing with other control methods, as the incorporation of grazing management is an essential component in successfully addressing invasive plant problems" (Utah State University 2009).

c. Custom + Culture

i. "Another challenge to both crops and clean communities were the noxious weeds of the region. After twenty years in Utah, area citizens decided it was time to join forces in eliminating the most troublesome weeds from fields and meadows and from along fences, hedges, and roads. Residents joined in an unsuccessful effort to eradicate mustard, sourdock, sunflower, parsnip, cocklebur, and other nuisance weeds, though they did reduce their number somewhat" (Leonard 1999).

ii. Noxious weed control, especially on public lands, is important to maintain ecological integrity and land health. This is and always will be a priority for Davis County.

Relevant Existing Policies

d. **Antelope Island State Park Resource Management Plan**

i. Eradicate noxious and invasive species.

e. **Great Salt Lake Comprehensive Management Plan**

i. Target and treat invasive weed species (especially Phragmites) and eradicate colonizing invasive species in GSL wetlands.

1. Identify concentrations and dispersal vectors for Phragmites during receding lake levels.
2. Coordinate with DWR, USFWS, local cities and counties, and other landowners or managers adjacent to GSL on weed control and removal programs.
3. Develop annual weed management objectives and facilitate their implementation.
4. Aggressively eradicate colonizing invasive plant species. Eradication efforts should focus on areas where there are high-quality and/or numerous resource values (e.g., wetlands and recreation opportunities).

f. **Utah Strategic Plan for Managing Noxious and Invasive Weeds**

i. Appropriately manage existing and invasive weeds in Utah through:

1. A) education and research
2. B) Mapping and monitoring
3. C) Prevention, early detection, and rapid response
4. D) Control - integrated weed management
5. E) Restoration

6. F) Regulation and enforcement
7. G) Funding

g. **Utah Wildlife Action Plan**

i. Goal: Locations/habitats that currently do not have non-native plant problems remain free from the introduction and spread of invasive non-native plants.

Davis County Objectives

1. The county works cooperatively with private, municipal, state, and federal partners to locate and manage noxious weeds.

Davis County Policies

1. The County encourages federal land agencies to protect public lands bordering private lands from predatory animals, rodents, noxious weeds and vectors.
2. The County supports comprehensive weed management that reduces or eradicates seed sources for noxious weed infestations.

LIVESTOCK & GRAZING

Definition

a. Livestock: domesticated animals raised in an agricultural setting to create food, fiber, labor, or other products.

b. Grazing: a method of feeding whereby domestic livestock consumes plant material and convert it into meat, milk, and other products.

Related Resources

Land use, agriculture, water quality & hydrology, wilderness, water rights, forest management, predator control, noxious weeds, Wildlife Wetlands, Riparian areas Threatened and Endangered and Sensitive Species, and Cultural, Historical

Findings

a. Overview

i. Livestock and grazing in Davis County is important for the cultural, social, and economic benefits it provides. While it is not a major economic driver in the County, livestock and grazing successfully balance those benefits and continue to be a valuable source of jobs and income locally. The practices of raising livestock and grazing animals are generally considered part of agriculture; please refer to the agriculture section in this plan for more information.

i. The Livestock Grazing in Utah: History and Status (2008) report states, "Rangelands in Utah are primarily administered by the Bureau of Land Management (BLM) and the Forest Service (FS). Data from the BLM indicate that use by domestic livestock has declined more than two-thirds over time (in the state). Most of this decline has been associated with the reduction of the sheep industry. Similar data for the FS indicate that declines in the use of FS lands have not been as dramatic as on BLM lands, but usage of FS lands today is about half what it was 60 years ago" (Godfrey 2008).

ii. The top livestock inventory items in Davis County are cattle & calves, followed by layers, and horses & ponies (U.S. Department of Agriculture 2012).

iii. The majority of the farming and ranching in the county occurs in the Layton, Syracuse, and West Point areas in the northern part of the county (U.S. Department of Agriculture 2012).

i. "Historically, dairy farms were prevalent in the county, but today, only one dairy farm with approximately 300 cows remains…There is an increase in popular small acreage farming operations that produce chickens, goats, horses, and other livestock" (Davis Conservation District 2012).

iv. The Utah Department of Agriculture and Food (UDAF) conducted a census in 2015, estimating that Davis County had 3,200 head of cattle & calves, 1,700 head of beef cows, and 600 head of sheep/lambs (*UDAF 2015*).

ii. There is one US Forest Service grazing allotment that is split between Davis and Morgan Counties. Grazing on this allotment is managed in accordance with the Revised Forest Plan Wasatch-Cache National Forest, written in 2003 (*USFS 2013*).

iii. A BLM factsheet states that well-managed grazing can provide numerous environmental benefits, including healthy watersheds, carbon sequestration, recreational opportunities, and wildlife habitat (*Bureau of Land Management 2016*).

iv. There are no BLM grazing allotments in Davis County.

v. Some agricultural land use concerns in the area include complications related to overgrazing, including poor pasture condition, soil compaction and water quality issues (*NRCS 2005*).

vi. In large part Davis County private property owners and farm operators control this resource when occurring on private property. Where grazing takes place on federal lands, federal land managers are responsible for the many regulations and restrictions.

b. Economic Considerations

i. As urban areas spread inside of Davis County, livestock and grazing activities have been in decline. Less than 1% of total employment in the county came from animal production. While this resource is relatively minor, certain communities rely on local animal products (*Economic Profile System 2017*).

c. Custom + Culture

i. "Most farms in early Davis County included livestock—both working stock and animals that helped feed and clothe the pioneer families. The most common working animals were oxen, needed to prepare the fields for planting. The 1850 census reported 616 oxen in the county, enough for each farm to have four. Of course, they were not evenly distributed, but only 20 percent of farms reported having no oxen. . . Eighty percent of all households in the county owned at least one horse. . . All but five homes in the county (all of them in Bountiful) reported owning milk cows. Most homes kept at least one cow to provide fresh milk for drinking. Other families owned several cows in order to make butter and cheese. A typical family kept two or three cows. Enough butter was produced in Davis County during the year period ending 1 June 1850 to provide 107 pounds per household. Cheese production averaged eighty pounds per family. About 40 percent of the households reported owning "other cattle," presumably beef cattle. Most of the owners reported having at least a single animal to as much as a herd of a dozen or so. Other useful animals serving the needs of Davis County's pioneers were pigs and sheep. Nearly 70 percent of the county's residents kept swine in 1850. . . Sheep were owned by only 15 percent of the residents, and the herds were typically small" (Holzapfel 1999).

i. "Despite the reduction in production agriculture, Davis County boasts 49 Century Farms. These are farms or ranches that have been in continuous ownership by a family for at least 100 years" (Davis Conservation District 2012).

ii. Since the 1800's when Davis County first saw an influx of settlers, people have been raising cattle, sheep, turkeys and horses for food, fiber, labor, and recreation. This tradition of ranching or raising poultry is still practiced professionally and celebrated locally.

Relevant Existing Policies

d. **Great Salt Lake Comprehensive Management Plan**

i. Provide grazing opportunities that promote the long-term health of GSL land available for grazing.

1. Coordinate with DWQ, Utah Department of Agriculture and Food, and Natural Resources Conservation
2. Service to encourage and support best management practices.
3. Manage grazing opportunities and potential conflicts of grazing with other GSL resources.
4. Allow grazing that helps reduce growth and spread of noxious weeds (e.g., Phragmites sp.).

5. Promote research and methods to yield sustainable foraging habitat.
6. Coordinate with DWR to evaluate the impacts to wildlife, including nesting bird habitat, associated with proposed grazing.

Davis County Objectives

1. Encourage rangeland health, forage, and grazing stability on public lands. Promote the use of good science to establish data used in rangeland decision making.
2. Grazing rights are managed under best grazing practices including the time/timing/intensity model.
3. AUMs within the County remain at or above current levels unless a scientific need for reduction is demonstrated to the satisfaction of the County.

Davis County Policies

1. Livestock grazing on public land should be managed and regulated by state and federal agencies so as to maintain and enhance desired plant communities for the benefit of watershed, wildlife, water quality, recreation, and livestock grazing as required by the applicable land use plans. Such management should be developed specifically and individually for each public land grazing allotment in order to achieve the desired result throughout the County.
2. Encourage livestock use to be compatible with recreation use. Locate structural and design non-structural improvements to meet visual quality objectives.

ECONOMICS & SOCIETY

ECONOMIC CONTEXT

Definition

An overview of the impact that public lands have on the County economy.

Related Resources

Every issue in this Plan relates to the economy of Davis County.

Davis County Objectives

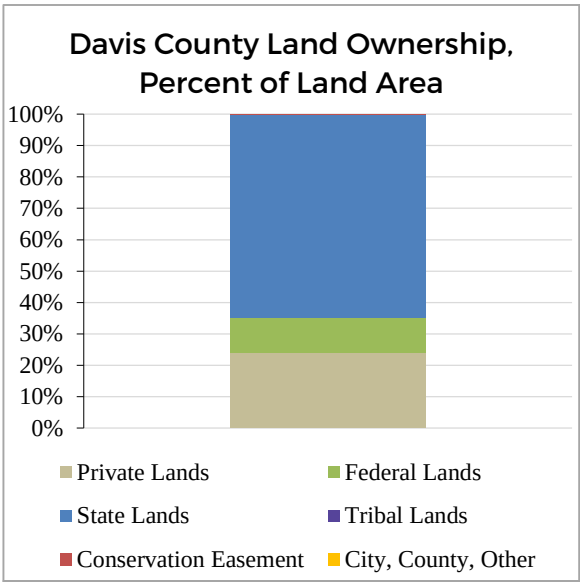
1. The County has a strong and diverse tax base and sustainable natural systems.
2. The County has low unemployment and residents are self-sufficient.
3. The County retains and preserves quality jobs.
4. The County is business-friendly and supports improved education, training, and advancing employment opportunities for people who choose to work in Davis County.
5. Quality jobs in Davis County are those that are full-time, year-round, and could support a household.

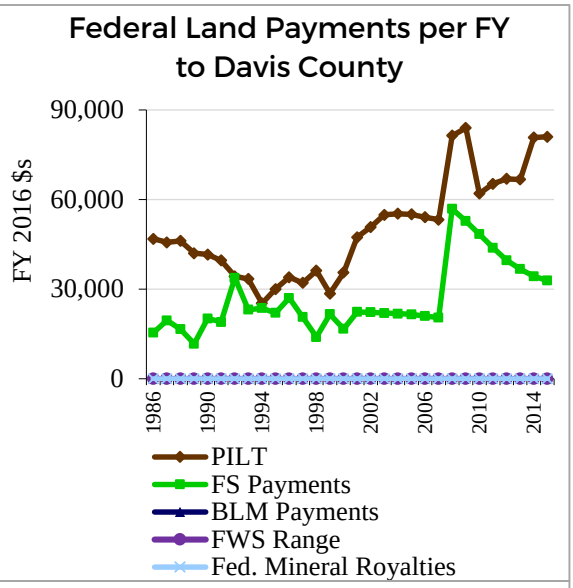
Davis County Policies

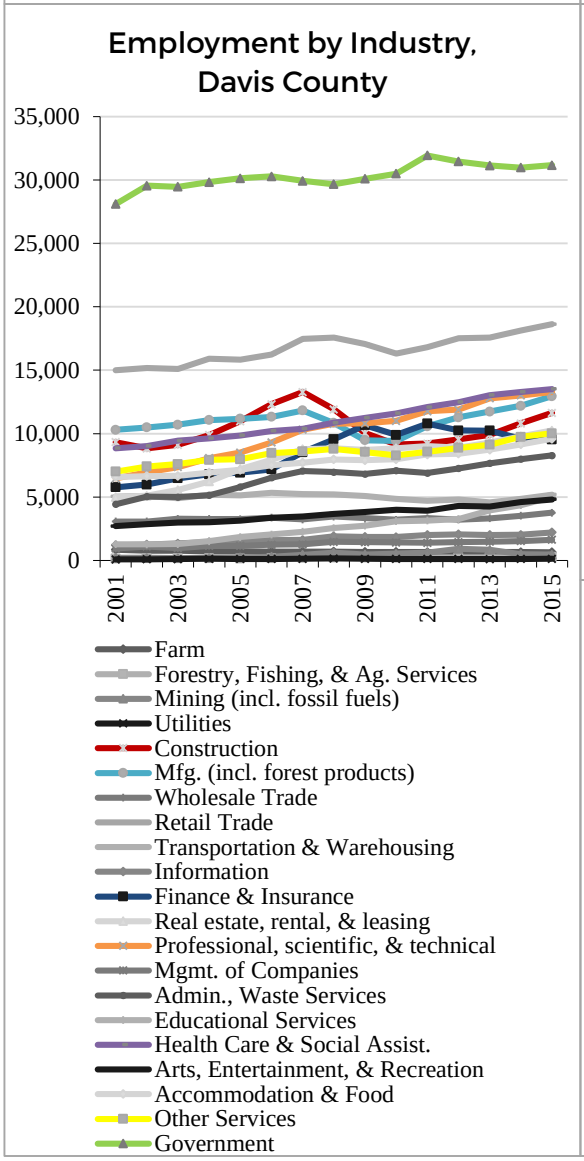
1. The County will promote economic development by coordinating with the State and neighboring jurisdictions.
2. The County does not support burdensome business or environmental regulations that could negatively impact quality employment opportunities.

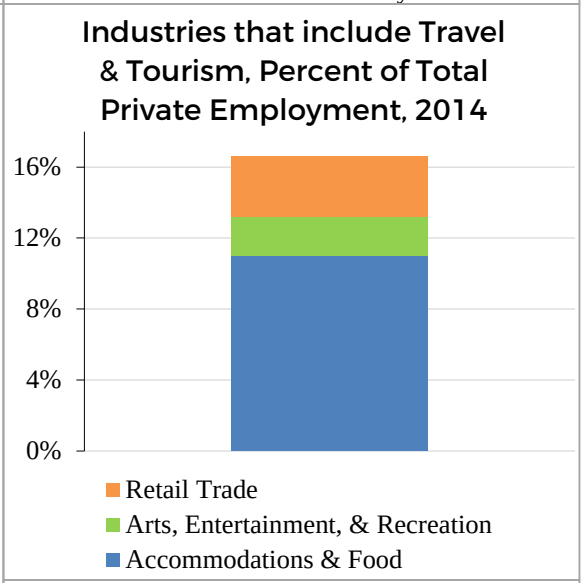
Findings

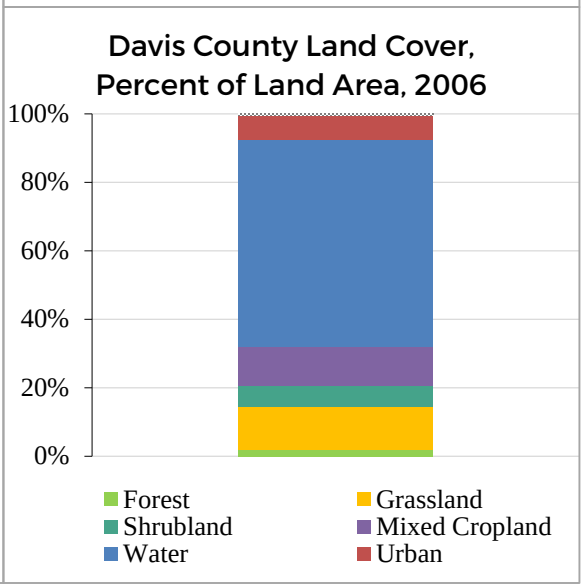
See following page


Davis County Land Ownership, Percent of Land Area
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Private Lands
Federal Lands
State Lands
Tribal Lands
Conservation Easement
City, County, Other


Federal Land Payments per FY to Davis County
FY 2016 $s
90,000
60,000
30,000
0
1986
1990
1994
1998
2002
2006
2010
2014
PILT
FS Payments
BLM Payments
FWS Range
Fed. Mineral Royalties


Employment by Industry, Davis County
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
2001
2003
2005
2007
2009
2011
2013
2015
Farm
Forestry, Fishing, & Ag. Services
Mining (incl. fossil fuels)
Utilities
Construction
Mfg. (incl. forest products)
Wholesale Trade
Retail Trade
Transportation & Warehousing
Information
Finance & Insurance
Real estate, rental, & leasing
Professional, scientific, & technical
Mgmt. of Companies
Admin., Waste Services
Educational Services
Health Care & Social Assist.
Arts, Entertainment, & Recreation
Accommodation & Food
Other Services
Government


Industries that include Travel & Tourism, Percent of Total Private Employment, 2014
16%
12%
8%
4%
0%
Retail Trade
Arts, Entertainment, & Recreation
Accommodations & Food


Davis County Land Cover, Percent of Land Area, 2006
100%
80%
60%
40%
20%
0%
Forest
Grassland
Shrubland
Mixed Cropland
Water
Urban

AIR QUALITY

Definition

The degree to which the ambient air is pollution-free, measured by a number of indicators of pollution.

Related Resources

Fire Management, Energy, Mining

Findings

a. Overview

i. Air pollutants are those substances present in ambient air that negatively affect human health and welfare, animal and plant life, property, and the enjoyment of life or use of property. Ambient pollutant concentrations result from interaction between meteorology and pollutant emissions. Because meteorology can't be controlled, emissions must be managed to control pollutant concentrations.

ii. "The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The CAA establishes two types of air quality standards: primary and secondary. Primary standards are set to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards are set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The EPA has established health-based NAAQS for six pollutants known as criteria pollutants. These are carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead. The Division of Air Quality (DAQ) monitors each of these criteria pollutants, as well as several non-criteria pollutants for special studies at various monitoring sites throughout the state" (Utah Division of Air Quality 2015).

iii. The Clean Air Act (1970) and its amendments set the laws and regulations regarding air quality, give authority to the US Environmental Protection Agency to set standards and rules, and delegate regulatory authority to individual states with EPA oversight, provided certain standards are met. The purpose of air quality regulations enforced by the EPA and the DAQ in Utah are to protect public health and welfare by decreasing pollutant concentrations through emissions reduction. Construction and mining projects require assessment of air quality impacts and may require an emissions permit and/or a fugitive

dust control plan from the DAQ. Fines of up to $10,000 per day may be issued if rules/laws are not properly followed.

iv. "Poor air quality is a significant concern to public health in Davis County. Pollution levels peak during the summer and winter months. Inversions are common and are exacerbated by the local topography and regional stagnant high pressure systems" (Davis Conservation District 2012).

v. "The Environmental Protection Agency (EPA) designates a locale as a nonattainment area if it exceeds the health based standards for a given pollutant. This designation process plays an important role in whether the air quality in a given area is healthy. Davis County is designated as a nonattainment area for both particulate matter and ozone" (Davis Conservation District 2012).

vi. "Once an area is designated as a nonattainment area for a pollutant, the state is required to write a State Implementation Plan (SIP) that details how that pollutant will be controlled. As a part of the Wasatch Front nonattainment area, Davis County is tied into the PM2.5 SIP that also includes Box Elder, Weber, Tooele, and Salt Lake Counties. Utah and Cache counties are part of the collective area, but have separate SIPs. The Utah Division of Air Quality has developed a Davis County specific working group that is collaborating on emission reduction strategies to bring the air back into attainment" (Davis Conservation District 2012).

b. PM2.5

i. "Particulate matter (PM2.5) is a mixture of extremely small particles and liquid droplets that measure 2.5 micrometers or less. PM2.5 forms when volatile organic compounds (VOCs) and ammonia combine with nitrogen oxides (NO and NO2) in the atmosphere. The county's leading source of nitrogen oxides is combustion from vehicles. Other major contributors include refineries, construction, and soot. The agricultural source of ammonia in Davis County originates outside of the county" (Davis Conservation District 2012).

ii. "The county is prone to prolonged inversions during stagnant winter conditions of calm winds, clear skies, and long nights. The inversions trap PM2.5 and other pollutants in the valley. They peak November through March" (Davis Conservation District 2012).

iii. Davis County is part of the Salt Lake City PM2.5 Non-Attainment Area (NAA), along with surrounding counties. The associated State Implementation Plan (SIP) outlines the sources of emissions, and the strategies for reducing those emissions to levels that are compliant with the EPA. The strategies are broken into three types of sources:

iv. Mobile Sources

1. "Vehicles contribute over half of the emissions that lead to the formation of PM2.5 during winter inversions, so reducing mobile source emissions in nonattainment areas is a priority. The combination of Tier 2 federal fleet standards and local transportation plans to reduce trips and vehicle miles travelled (VMTs) will result in up to a 50 percent reduction in vehicle emissions by 2019. Transportation plans and programs by municipal planning organizations and UDOT within the Salt Lake and Utah County nonattainment areas will need to conform with the emission budgets in the SIP to ensure that transportation activities do not interfere with air quality progress" (Utah Department of Environmental Quality 2013).

2. "In the fall of 2015, the EPA awarded $685,918 to the Utah Clean Diesel Program. This award helped replace 18 school buses in Davis, Granite, Provo, Tooele, and

Weber school districts, along with two Utah Department of Transportation maintenance trucks" (Utah Division of Air Quality 2015).

v. Point Sources

1. "Large manufacturing (point) sources will reduce their emissions through the installation of Best Available Control Technology (BACT) required under the SIP. Costs to install point source controls will range between $1,357 to $25,319 per ton of reduction. Point sources will also be required to offset any future emission increases through the nonattainment area banking and trading program. Utah's oil refineries will see the largest emissions reductions from the required application of state-of-the-art emissions controls. When fully implemented, these controls will reduce annual emissions by over 2,000 tons per year from current emission rates. The permitting process and previous SIPs have regularly controlled emissions from point sources. Additional emission controls imposed by the Salt Lake and Provo PM2.5 SIPs will result in 4,600 fewer tons per year emitted from point sources along the Wasatch Front" (Utah Department of Environmental Quality 2013).

vi. Area Sources

1. "Area Sources include smaller, localized emission sources, such as: small businesses and manufacturers, home and commercial heating, food preparation, and printing services. The Air Quality Board approved 23 new area source rules to reduce area source emissions. Costs to install area source controls will range between $238 and $6,560 per ton" (Utah Department of Environmental Quality 2013).
2. "New area source rules will reduce emissions from:
    a. Commercial Cooking
    b. Consumer Products
    c. Printing and Publishing
    d. Painting and Degreasing
    e. Wood Stoves and Boilers

Source: Utah Department of Environmental Quality (2013)

c. Ozone

i. Ground-level ozone is formed when volatile organic compounds (VOCs), also known as hydrocarbons, and nitrogen oxides (NOx) interact in the presence of sunlight. Sources of VOC and NOx emissions include:

1. Large industries, such as chemical manufacturers, and combustion sources, such as power plants burning fossil fuels.
2. Small industries, such as gasoline-dispensing facilities, auto body paint shops, and print shops.
3. Automobiles, trucks, and buses.
4. Off-road engines, such as aircraft, locomotives, construction equipment, and gasoline-powered lawn and garden equipment.

ii. "Ozone concentrations typically peak between 2 p.m. and 8 p.m. from May to September. It is primarily a summer issue, but it may also have implications for winter particulate problems" (Davis Conservation District 2012).

iii. Davis County is considered a maintenance area for ozone emissions. The most recent State Implementation Plan created regarding the regulating and controlling of this pollutant is the 2007 SIP 8-Hour Ozone Maintenance Provisions for Salt Lake and Davis Counties, published by the Utah Department of Environmental Quality. This plan outlines the monitoring network and specific requirements for "reasonably available control technology," such as upgrading to modern refrigerants and installing cleaner burners in power plants.

iv. In October of 2015 the EPA lowered the NAAQS for ozone from 75 to 70 parts per billion. A review of the ozone data for Utah indicated that Davis and other counties on the Wasatch Front and the Uinta Basin were not meeting the revised standard. On September 29, 2016 Governor Herbert under Section 107(d)(1) of the Clean Air Act recommended to the EPA Administrator that these areas be designated nonattainment. EPA's final determination will occur in October of 2017.

d. Economic Considerations

i. Economic consequences of poor air quality may include:

1. Increased time away from work and health care costs associated with stroke, heart disease, chronic and acute respiratory diseases, including asthma, and premature death.
2. Decreased appeal of tourism.
3. Deterring new businesses and industries from moving to the area.
4. Increased operating expenses for significant pollutant sources due to pollution control measures as required by air quality management plans.
5. Stunted growth and yield of agricultural crops.
6. Threat of additional federal regulation and potentially reduced highway funding.

e. Custom + Culture

i. "Air quality is the leading environmental health concern in Davis County, identified in the 2012 Key Informant Survey. In the open-ended response survey, an overwhelming 80% (292) of respondents documented air quality as a main concern. Air pollution was also identified as the leading force working against health in Davis County." (Davis County Health Department 2014).

Relevant Existing Policies

f. Community Health Improvement Plan

i. "The goal of the air quality action plan is to increase understanding of air quality conditions throughout Davis County and ensure the public is aware of air pollution issues so that better informed citizens, businesses, and government agencies choose behaviors and policies which result in reduced air pollution and improved air quality. This will be done by improving and increasing air monitoring and ensuring information is publicly available; encouraging and supporting active transportation and use of public transportation; and

implementing a community education campaign about lifestyle and behavior choices that reduce air pollution."

ii. Short Term (1-2 Years)

1. Increase the number of deployable particulate matter (PM) monitors in Davis County from 0 in 2013 to 12 by December 31, 2015.
2. Increase the number of regulatory air monitoring stations in Davis County from 1 in Bountiful in 2013 to 2 in 2015.
3. Expand number of air pollutants that are measured and reported in Davis County from 3 (PM2.5, Ozone, NO2) in 2013 to 4 by December 31, 2015.
4. Develop and/or adopt an active transportation master plan in one city by December 31, 2015.
5. Davis County trails map will be completed and available to the public by December 31, 2014.

iii. Long Term (3-5 Years)

1. Davis County air monitoring results will be available to the public in real-time by December 31, 2017.
2. Decrease percentage of the Davis County workforce that drives to work alone from 78.8% in 2013 to 76% by December 31, 2018. (Baseline: American Community Survey, 2007- 2011)
3. Increase percentage of Davis County residents who use public transportation to commute to work from 2.8% in 2011 to by 3.3 % by December 31, 2018. (Baseline: American Community Survey, 2007-2011)
4. Increase on street bicycle lanes from 74.06 miles in 2013 to 222.00 miles by December 31, 2018. (Baseline: Davis County Health Department City Health Policy & Resource Assessment)
5. Improve walkability index for at least 2 FrontRunner stations in Davis County by December 31, 2018. (Baseline: UCATS Report 2013, Woods Cross, Farmington, Layton, & Clearfield stations.)
6. Increase number of no idling policies adopted by business, cities, and other organizations from 1 in 2013 to 3 by December 31, 2018. (Baseline: Davis County Health Department City Health Policy & Resource Assessment)
7. Conduct 15 air quality education presentations throughout Davis County by December 31, 2018.

g. Great Salt Lake Comprehensive Management Plan

i. Reduce fugitive dust emissions from exposed lake beds.

1. Coordinate with DSPR and DWR to manage illegal motor vehicle traffic on dirt roads around the lake and on the exposed lake beds.

ii. Promote compliance with emissions standards for industries that use GSL resources.

1. Coordinate with DAQ to evaluate emissions of all criteria pollutants associated with proposed projects and work with DAQ to identify appropriate mitigation strategies to offset major emissions.

2. Coordinate with DAQ to evaluate whether industries with Forestry, Fire, and State Lands (FFSL) leases meet DAQ emission standards.

Davis County Objectives

1. Davis County discourages projects that would substantially decrease air quality or violate established quality standards put in place by the State of Utah.

Davis County Policies

1. The County recognizes that one of the threats to the County's air quality is catastrophic wildfire, and encourages land management agencies to enact programs that allow prescribed burning, forest improvement techniques such as forest thinning, pruning, and removal of brush and insect-killed trees, and other methods for reducing fire hazard that ultimately protects air quality.
2. Prescribed burns should be consistent with the State of Utah Division of Environmental Quality (UDEQ) permitting process and timed in conjunction with meteorological conditions so as to minimize smoke impacts.
3. Federal agencies should work cooperatively with the Utah Airshed Group to manage emissions from wildland and prescribed fire activities.
4. Davis County encourages agencies to ensure that prescribed burns will be approved and timed to maximize smoke dispersal.

LAW ENFORCEMENT

Definition

The designated personnel group who has federal, state, or local authority within a jurisdiction to enforce the law or respond to an emergency.

Related Resources

Recreation and Tourism, Land Use, Land Access, Fire Management, Water Rights

Findings

a. Overview

i. Law enforcement is concerned with the specific, and sometimes overlapping, jurisdictions of law enforcement, response personnel, and emergency management across a county. In the context of resource management planning, appropriate goals might address public safety, property protection, and interagency coordination policies and recommendations as these relate to public use areas. County search and rescue teams are another important component of public safety related to public lands.

ii. Key law enforcement issues related to natural resources management and public lands are coordination among jurisdictions of various law enforcement personnel and funding issues such as funding for search and rescue operations.

iii. Residents consider the county to be a relatively safe place to live and raise their families.

b. County and Local law enforcement entities include:

i. Municipal police departments

ii. The Davis County Sheriff's Office

1. A subdivision of the office, "The Davis County Sheriff's Search & Rescue, established more than 40 years ago, provides the citizens of Davis County with professional search & rescue services free of charge 24 hours per day, 365 days per year. This 35-member all-volunteer team responds to calls for assistance in the rugged mountains and waterways throughout Davis County. Search & Rescue volunteers spend thousands of hours each year training to ensure that they are able to provide professional service when called upon for assistance. This service is provided under the direction of the Davis County Sheriff's Office" (Davis County Search & Rescue 2017).

c. State law enforcement includes:

i. Utah Highway Patrol

ii. Utah Division of Wildlife Resources Conservation Officers

iii. Utah Department of Agriculture and Food, Livestock Inspection Bureau

iv. State Park Rangers

1. Antelope Island State Park

d. Federal and law enforcement includes:

i. US Forest Service Officers and Special Agents

ii. Hill Air Force Base

e. Economic Considerations

i. An appropriate level of service for law enforcement is essential for all levels of government to protect the health, safety, and welfare of the County, which will in turn positively impact the local industry. Benefits are direct and indirect.

ii. Annual operating costs for local law enforcement (County Sheriff's departments) are influenced by public lands law enforcement activities, including coordination activities with state and federal law enforcement agencies. Costs associated with search and rescue operations are increasing in many areas of the state, particularly with increased recreation use of remote lands.

iii. The Utah Search and Rescue Assistance Card (USARA Card) offers expense-paid rescue to individuals (hunters, hikers, other backcountry enthusiasts) for an annual fee. Money raised by the program will support the State's Search and Rescue Financial Assistance Program. County Search and Rescue teams will receive reimbursement for equipment, training and rentals from the program.

f. Custom + Culture

i. Law enforcement has always been important to citizens in Davis County for the safety, protection, and security provided.

Relevant Existing Policies

g. **Great Salt Lake Comprehensive Management Plan**

i. Protect GSL resources from impacts resulting from OHV trespassing.

1. Together with the BLM, DSPR, and DWR, identify areas where OHV trespassing is a problem and develop methods to prohibit illegal access.
2. Coordinate with industry groups and landowners on the authorized locations of OHV use on private land around GSL.
3. Coordinate with intersecting agencies to develop educational material and enforcement strategies that would discourage OHV users from trespassing.

ii. Recognize the importance of search-and-rescue access.

1. Coordinate with DSPR and UGS regarding the identification of bioherms that could cause navigational hazards.
2. Support DSPR and counties' sheriff's departments (search-and-rescue teams) in facilitating rescues.
3. Coordinate with search-and-rescue entities to identify areas or infrastructure within the lake that have lake level access constraints, including marinas, and identify how to operate safely around constraints.

Davis County Objectives

1. The Sheriff's Office works cooperatively with state and federal law enforcement to protect the rights of the citizens of the county.

2. The Sheriff's office and the county commission have a close working relationship with open lines of communication.

Davis County Policies

1. The County recognizes the Davis County Sheriff as the primary law enforcement official in the County. Federal and state law enforcement actions in the County should be coordinated through the County Sheriff's Office.

CULTURAL, HISTORICAL, GEOLOGICAL, & PALEONTOLOGICAL RESOURCES

Definition

In general terms, this refers to human and natural resources which have intrinsic value because of their age, anthropological, heritage, scientific, or other intangible significance.

i. Cultural: of or relating to culture; societal concern for what is regarded as important in arts
ii. Historic: of, or pertaining to, history or past events
iii. Geological: the study of the Earth, its rocks, and their changes
iv. Paleontological: includes the study of non-human fossils to determine organisms' evolution and interactions with each other and their environments

Related Resources

Land Access, Land Use, Energy, Air Quality, Law Enforcement, Mineral Resources, Mining, Recreation and Tourism, and Water Quality and Hydrology

Findings

a. Cultural and Historical

i. Cultural resources include archaeological sites, standing structures (e.g., buildings, bridges), and other places of importance that are more than 50 years of age (under federal guidelines). Many historical and cultural resources are very sensitive and protected by law; however, it is important to remember that all cultural sites might not be determined to be important or significant, and that those not considered as such would not be adversely affected by any planned projects. (BioWest CRMP Toolkit).

ii. "For centuries before white men arrived to note their presence, Native Americans lived in Davis County, drawing from the natural environment to survive. They may have occupied the region as early as 12,000 years ago, in nomadic cultures called the Paleo-Indian and (later) the Archaic centered on the hunting of mammoths, camels, bison, and then smaller animals and the collection of wild plant foods. About 1,500 years ago the prehistoric peoples of Utah became farmers when they domesticated crops, including corn, beans, and squash" (Leonard 1999).

iii. "The culturally related Ute and Shoshone peoples established separate territories that overlapped in the Great Salt Lake Valley. This area was shared by the groups but not aggressively claimed or defended. . . Davis County was home to Indians from both groups" (Leonard 1999).

iv. "It is well known that the Mormons, members of the Church of Jesus Christ of Latter-day Saints, came to Utah to find a refuge from the troubles that had plagued them in the Midwest. Those who first established permanent white settlements in the area that became Davis County arrived with that motive. But the immediate impetus for pushing north from Great Salt Lake City was the need to keep livestock from destroying the first crops planted in the Salt Lake Valley" (Leonard 1999).

v. "The communities of Kaysville and Farmington continued at a slow growth rate until the arrival of the Utah Central Railroad in late 1869. The railroad was built south from the Union Pacific line in Ogden to Salt Lake City. This construction of this line was a major impetus to growth in the area. The railroad provided increased distribution of agricultural goods throughout the region and opened new outside markets for these commodities, as well as allowing for the importation of industry, farming equipment and goods".

vi. "While industry was growing to the north and south of Davis County, agricultural activities continued to dominate the economy of the area throughout the 19th century and well into the twentieth century. Dairy farming and the raising of alfalfa hay and grain were the two enterprises most prominent in the county (Adams 1948:128; Bowman 1948:173). Several creameries were built to process milk products in Layton, Kaysville and South Weber in the late 1800s. Later, sugar beets became an important crop and a sugar beet factory was built in Layton".

vii. "The economy of the area continued to develop slowly during the early twentieth-century with a marked improvement towards the end of the Great Depression and prior to the United States' entry into World War II. The time period (late 1930s), marked a radical change for Davis County. As political events began to change and war loomed, the Federal government began a buildup of defense industry establishments along the Wasatch Front

including areas of Davis County. In 1939, Congress appropriated money for the construction of Hill Air Force Base in Layton, which was completed in November 1940 (Christensen 1989). At the same time, the US Army needed a supply point close to rails in the west that could service the various military bases along the west coast and borders. In September 1941, the Utah General Depot in Ogden (now Defense Depot Ogden) was operational. With entry into the war, the Navy also needed a supply base close to railroads and away from enemy attack. Hence, in June 1942 construction of the Clearfield Naval Supply Depot was started and completed in April 1943 (Christensen 1989). These facilities along with the Ogden Arsenal, which was established in 1920, formed a strong military presence in Davis County during World War II and markedly altered the economic and population patterns of the county and permanently changed the landscape".

viii. "Since World War II the economy of the area has seen a decreased reliance on agriculture and has become more of an expansion of the Wasatch Sprawl between Salt Lake City and Ogden. A growing number of local industries have also started in the area such as those located at the massive Freeport Center (formerly Clearfield Naval Supply Depot). Hill Air Force Base continues to be a major employer of Davis County residents".

ix. The National Register of Historic Places is the official list of the Nation's historic places worthy of preservation. "Authorized by the National Historic Preservation Act (NHPA) of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources" (National Parks Service n.d.). For its size, Davis County has a large number of historic places. The County has 54 registered historic places, catalogued by the National Park Service, including the Bountiful Historic District, Farmington Main Street Historic District, several rides at the Lagoon amusement park, historic houses, and many others (*National Register of Historic Places*). Additionally, Davis County has over 5,000 properties that have been surveyed and are on file at the Utah State Historic Preservation Office. (*historicbuildings.utah.gov*) The NHPA also established the State Historic Preservation Office (SHPO). SHPO was created in order to coordinate a statewide inventory of historic properties, nominate properties to the National Register, manage the statewide preservation plan, and educate and consult locals through the Certified Local Government (CLG) program. CLG's in Davis County include Layton City, Farmington, Centerville, Bountiful, Syracuse, and West Bountiful.

b. Geological

i. "Evidence of (Lake Bonneville) can be seen as terraces on the mountainside and benchlands along the foothills of the mountains. Lake Bonneville created its highest major beachhead nearly 1,000 feet above the valley floor, at an elevation of 5,150 feet above sea level. The lake actually rose even higher before finding an outlet to the sea via the Snake River plain at Red Rock Pass in northern Cache Valley. As it dropped rapidly below the Bonneville level, the lake stabilized first at the Provo level, at an elevation of 4,800 feet, and formed a prominent bench. The Weber River delta, which extends into northern Davis County, was formed and merged with the Provo level at this time. The lake moved gradually downward in numerous small steps to the less-visible Stansbury level, at around 4,450 feet, and the Gilbert level, around 80 feet above the present lake level of about 4,200 feet. As evaporation continued, the ancient sea receded to form both Utah Lake and its landlocked remnant, the Great Salt Lake" (Leonard 1999).

ii. "The Wasatch mountain range along Davis County's eastern border was formed nearly 100 million years ago during the Cretaceous period of geologic time. The uplifting of ancient sediments at that time brought to the surface sedimentary and igneous rocks that had been

formed more than 2 billion years earlier, including some in Farmington Canyon that at 2.6 billion years of age are the oldest visible in the state. The Wasatch Range took its current form during a period of renewed faulting and uplifting during the Tertiary period, 60—40 million years ago. Shallow oceans had covered the area for millions of years. The weight of sediment deposited on the ocean's floor helped to encourage the sinking of the region westward that is now known as the Great Basin. The resulting Wasatch Fault line extends along the mountains' western edge from Collinston, in Box Elder County south to Nephi. It is still an active earthquake zone" (Leonard 1999).

c. Seismicity

i. "Utah straddles the boundary between the extending Basin and Range Province to the west and the relatively more stable Rocky Mountains and Colorado Plateau to the east. This boundary coincides with an area of earthquake activity called the Intermountain Seismic Belt (ISB). Utah's longest and most active fault, the Wasatch fault, lies within the ISB. Unfortunately, the heavily populated Wasatch Front (Ogden – Salt Lake City – Provo urban corridor) and the rapidly growing St. George and Cedar City areas are also within the ISB, putting most of Utah's residents at risk" (Utah Seismic Safety Commission 2008).

ii. The Wasatch fault zone extends about 240 miles along the Wasatch Front from Malad City, Idaho, on the north to Fayette, Utah, on the south. The fault is divided into 10 segments based on various geologic criteria; fault movement on a given segment is capable of generating earthquakes as large as M 6.5–7.5. Geologic evidence indicates that the five central segments between Brigham City and Nephi are the most active. These five segments coincide with the most densely populated part of Utah (Utah Geological Survey 2010).

iii. Even though no large earthquakes have ruptured the Wasatch fault in the 163 years since Mormon settlers first arrived in Utah, abundant geologic evidence shows that the central Wasatch fault has generated more than two dozen large (M ~7) earthquakes in the recent geological past. An earthquake of this size is a serious threat to the citizens of Utah and has the potential to be extremely destructive (Utah Geological Survey 2010).

a. Archaeological

iv. "Pictographs painted on rocks in local canyons offer a fragile reminder of the Fremont people. Campsites, burial places, grinding tools, and projectile points have been identified in dozens of locations in Davis County" (Leonard 1999).

v. Antelope Island has caught the interest of archaeologists in recent years. "The Wasatch Formation located on the east side of the island contains detritus from thousands of feet of thrust-sheet mountain range that disappeared through erosion. Boulders and cobbles in the Wasatch Formation contain fossils of corals, brachiopods, crinoids, and other ocean-dwelling organisms" (Utah State Parks n.d.).

vi. Currently, in Davis County there are 189 known archaeological sites with just 10.97% of all lands in the county inventoried for those resources by professionals. This ranks Rich County 27th in Utah in the number of known sites, and only behind Morgan, and Rich Counties for lowest number of known archaeological sites. The low number of known sites is a direct result of the lack of development-driven archaeological inventories, not the lack of potential resources in the county. Recent archaeological inventories in Davis County are being driven for habitat improvement, wildlfire, and utility infrastructure. Of the 189 known sites, 30.9% are of the prehistoric period ranging from the earliest Paleoindians to the Fremont and Shoshone peoples, 67.9% are historic period much of it relating to the homesteading, ranching, and grazing heritage of the county, and 1.2% of

sites have both prehistoric and historic components. Finally,56.8% of those sites are significant for the National Register of Historic Places.

d. Control and Influence

i. "Laws are in place to make sure that federal and state projects don't carelessly destroy cultural resources… State and federal agencies that undertake projects must "take into account" how their project activities will affect historic and archaeological resources. Common projects include construction, rehabilitation, demolition, licensing, permitting, or transfer of public lands… The State Historic Preservation Office (SHPO) provides guidance to agencies and governments who are affected by these laws." Section 106 of the National Historic Preservation Act sets forth a process where any project involving federal lands, funds, permits, or licenses needs to take into account the action's effects on historic properties. The Utah cultural resources law (UCA 9-8-404 et seq.) establishes a similar process for any project involving state lands, funds, or permits. (www.heritage.utah.gov/history/shpo-compliance)

ii. Building codes that meet seismic standards are controlled by the County and, in some places, the individual municipalities.

e. Economic Considerations

i. The value of cultural, historical, geological, and paleontological resources is difficult to quantify. However, there is intrinsic value to each resource for its contribution to the shaping of our current civilization, culture, and lifestyle.

ii. Earthquakes in the Wasatch Front will certainly impact the people, economy, and infrastructure of Davis County. Roads, pipelines, power lines, water resources, telecommunications, and food systems could all be disrupted in the event of a natural disaster in Utah.

iii. "To meet the needs of the dramatically growing population along the Wasatch Front, $14.4 billion of new transit and highway infrastructure is planned over the next three decades" (Utah Seismic Safety Commission 2008).

iv. Cultural, historical, geological, and paleontological resources are often connected with tourism and recreation. For example, the Utah Geological Survey has created a GeoSites online interactive map to help people explore Utah's geological sites.

v. Historic buildings and districts provide character, a sense of stability, and a unique marketing angle for businesses; thus, community planners can draw upon local historic resources to stimulate economic development.

vi. A study by the Utah Heritage Foundation found that, "Utah benefited by $717,811,000 in direct and indirect spending by visitors to Utah heritage sites and special events, and $35,455,268 in investment that stayed in Utah rather then sent to Washington, D.C. because of projects that utilized the Federal Rehabilitation Tax Credit" (Utah Heritage Foundation 2013).

vii. "Historic preservation in Utah is not about putting a fence around monuments. The historic resources of Utah are part of the daily lives of its citizens. However, the historic resources of Utah are also providing a broad, significant contribution to the economic health of this state" (Utah Heritage Foundation 2013).

f. Custom + Culture

i. The custom and culture of Davis County is to respect all cultures and preserve or honor significant historical stories, figures, objects, structures, or events. It is the custom of the

County and its residents to rely on the land and geology for fuel, fiber, food, and minerals. Mining, mineral extraction, and ranching have been a way of life for more than a century. Historic photos and accounts evidence the tradition of resource utilization and dependence in Davis County.

Relevant Existing Policies

g. (Re)Connect: The Wasatch Front Green Infrastructure Plan

i. Goal: To promote the development of healthy communities, places we live, work, and gather. To preserve and strengthen cultural resources, places of heritage, and economic health.

ii. Goal: To protect the working lands of the Wasatch Front, which include forests, orchards, rangelands, and agricultural lands. To support the economic viability of working lands, maintain their benefits, and to retain the rural character of the region.

h. Great Salt Lake Comprehensive Management Plan

i. Recognize the importance of cultural resource protection on sovereign lands.

1. Support SHPO on the management of known cultural resource sites on sovereign lands.
2. Consider how future projects using state funds would affect historic properties, according to UCA 8-8-404.
3. Adhere to UCA 9-9-402 and UTAH ADMIN. CODE R230-1 regarding the discovery of human remains on sovereign lands.
4. Consult with SHPO regarding how future proposed uses may impact cultural resource sites, as needed.
5. Recognize the importance of cultural resource protection on sovereign lands.

ii. Recognize the importance of paleontological resource protection on sovereign lands.

1. Support UGS on the management of known fossil locations on sovereign lands.
2. Consider how future projects using state funds would affect paleontological resources, according to UCA 79-3-508.
3. Consult with UGS regarding how future proposed uses may impact paleontological resources, as needed.

iii. Minimize impacts to the scenic values of GSL.

1. Consider visual impacts of a proposed project on the visual character of GSL when considering new actions.
2. Consider how additional lighting from a proposed project would impact GSL resources and visitor experience.
3. When considering a proposed project, identify strategies to mitigate impacts from surface-disturbing activities as appropriate.
4. Coordinate with local cities, counties, and other landowners to minimize impacts to visual resources outside of the meander line but within the GSL viewshed.

Davis County Objectives

1. Protected resources contribute to cultural education of the county and also to the economy.
2. Seek to identify, preserve, and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations.

Davis County Policies

1. As resources are made available, locate and determine the significance of paleontological, historical, and archeological sites and, as appropriate, nominate sites to the National Register.
2. Protect known burial sites, associated burial goods, and sacred items in accordance with the Native American Graves Protection and Repatriation Act and the Archaeological Resources Protection Act.
3. Cooperate with the appropriate federal and state agencies to ensure county road and trail construction and maintenance activities avoid or minimize impacts to cultural resources.

RECREATION & TOURISM

Definition

Recreation is an activity done for enjoyment. Tourism is the social, cultural, and economic phenomenon of visiting places for pleasure.

Related Resources

Land access, Land Use, Cultural Historical Geological Paleontological, Wilderness

Findings

a. Overview

i. "[Davis] county lies sandwiched between the Wasatch Mountains and the Great Salt Lake that takes up about 365 square miles of its total area, leaving only 265 square miles of land. Home to Utah's first courthouse, Davis County is known for its restaurants, amusement parks, agricultural ambiance, and access to Antelope Island State Park. In addition, it serves as a gateway to the Great Salt Lake. Lagoon Amusement Park, Cherry Hill Water Park, and Boondocks Fun Center are popular attractions for kids and families, especially during the summer months. A seven-mile causeway on the western edge of Davis County leads to the largest island in the Great Salt Lake—Antelope Island, which is home to free-ranging bison, mule deer, bighorn sheep, pronghorn antelope and a variety of desert wildlife" (Kem C. Gardner Policy Institute 2016).

ii. "[Antelope Island State Park (AISP)] is a 28,240-acre natural area located in the southeastern corner of the Great Salt Lake and within Davis County. It is accessible by a seven-mile-long causeway that begins just west of Syracuse. AISP is an important local recreation source for [adjacent] counties. In addition, Davis County values the park as a draw for out-of state visitors" (Utah State Parks 2009).

iii. Antelope Island State Park received 398,147 visitors during 2016; a 46% increase from the visitation in 2010 (Utah State Parks 2017).

iv. The Great Salt Lake Nature Center inside the Farmington Bay Wildlife Management area is another source of outdoor conservation education, and is managed by the Utah Division of Wildlife Resources (Office of Outdoor Recreation 2013).

v. The Wasatch-Cache National Forest's Revised Forest Plan (2003) recognizes that recreational uses of the forest are varied and increasing. The forest wide goal is to manage for "an array of recreation opportunities and settings" for a variety of users. Further the goal is to "balance growth and expansion of recreation" by managing recreation in a way sustainable within the ecosystem (USFS 2003).

vi. The Land and Water Conservation Fund (LWFCF) can help local governments fund the creation and development of public outdoor recreation areas through a 50-50 matching reimbursement program. Federal oversight of the program is provided by the National Park Service; however, the program is administered locally by the State of Utah, through Utah State Parks and Recreation. Since 1966, Davis County has been awarded over $5.8 million for 61 projects to build and improve public outdoor spaces (Utah State Parks n.d.).

vii. Creating and maintaining trails is a priority of Davis County because citizens have come to rely on them for health, recreation, and access to the outdoors. The Davis County Trails Master Plan was created with the goal of "providing a system of interconnecting and looping trails throughout the County. These trails will have different levels of development that lend themselves to users of all abilities and provide for a variety of experiences. Access to the County's most important open spaces, wildlife habitats and natural areas will be preserved. The trails will provide alternate transportation routes, some of which will be useful to bicycle commuters" (Davis County Government 2005).

viii. The County can influence recreation by providing adequate recreation infrastructure (showers, campsites, trails, etc) and advertising recreation resources. The County can not control consumers nor influence competing destinations.

b. Economic Considerations

i. Employment related to travel and tourism made up 16.7% of the total employment in Davis County, according to a 2014 report. Food service made up 10.7% of jobs, within the category (Economic Profile System 2017).

i. "Total tourism-related tax revenues grew 13.2% in fiscal year 2014, including 15% increases in both county and municipality transient room tax revenues. In 2014, there were quarterly year-over increases in all leisure and hospitality subsectors, and most notably 21% increases in accommodations sales in the winter and summer of 2014. Davis County's leisure and hospitality sector experienced a 5.4% increase in jobs and a 6.1% increase in wages. Since 2010, leisure and hospitality jobs in Davis County have increased by about 20% each spring/summer (from fall/winter)" (Kem C. Gardner Policy Institute 2016).

ii. "In 2014, the amusement and recreation subsector added 202 new jobs and the accommodations subsector added 77 new jobs. The public sector experienced the only noted employment decreases, dropping slightly from 955 to 939 leisure and hospitality sector jobs" (Kem C. Gardner Policy Institute 2016).

iii. The Utah Search and Rescue Assistance Card (USARA Card) offers expense-paid rescue to individuals (hunters, hikers, other backcountry enthusiasts) for an annual fee. Money raised by the program will support the State's Search and Rescue Financial Assistance Program. County Search and Rescue teams will receive reimbursement for equipment, training and rentals from the program. Such expenses are often borne by the counties. Once the USARA card is available for purchase, marketing materials will be available to counties for promoting the program.

b. Custom + Culture

i. For more than a century citizens and visitors have been taking advantage of the unique landscape in Davis County for recreation. Enjoyment of the natural features adds to the quality of life for those living in the county, and are essential for attracting new residents and visitors. *A History of Davis County* recounts, "The commercial resorts developed along the shores of the Great Salt Lake attracted the greatest general interest in the new age of enterprise. Of those opened between 1870 and the late 1890s, more than half were in Davis County. These popular resorts offered swimming, dancing, dining, boating, and other entertainment" (Leonard 1999)

ii. The Davis County Health Assessment report (2012) found that all participants of the focus group thought it is easy to find recreation and to be physically active. "All commented on the many hiking, biking, and walking trails, parks, fishing ponds, swimming pools, city recreation activities, and organized sports for them and their families to access" (Davis County Health Department 2014).

Relevant Existing Policies

a. No Relevant Existing Policies regarding recreation and tourism were found in the Davis County General Plan.

b. Policies created by adjacent interests such as the Wasatch-Cache National Forest, the Great Salt Lake Comprehensive Management Plan, and the Antelope Island RMP, may involve County participation.

Davis County Objectives

1. Davis County supports responsible public land recreation and tourism.
2. The County seeks to accommodates a spectrum of activities, while recognizing that not all are compatible in the same location. When conflicts arise, Davis county will pursue practical solutions in an atmosphere of open communication, broad participation, and respect.

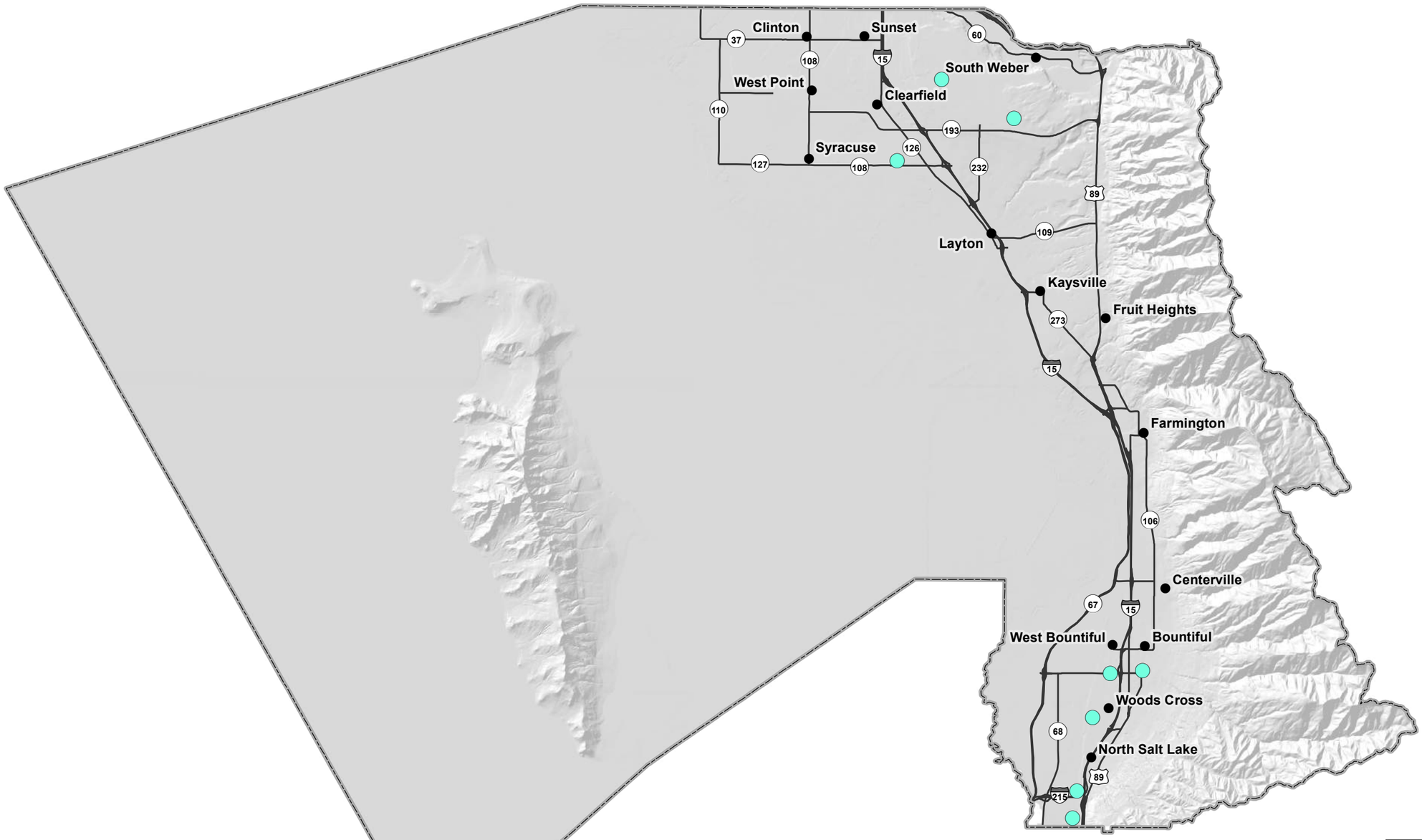
Davis County Policies

1. Participate as an active partner with public land management agencies to ensure that public land recreational resources are managed in ways that contribute to the protection of sensitive resources, the economy of the county and state, the overall quality of life, and the recreational experience of county residents and visitors.
2. The County supports development of appropriate facilities where the present facilities are not meeting the demand and where it meets the highest net public benefit.
3. Support the design of facilities which are accessible to handicapped persons in proportion to the anticipated number of users with handicaps.
4. The County supports locating camping areas a reasonable distance from streams and riparian areas to protect water quality.
5. The County supports the extension of the Bonneville Shoreline Trail through public lands in Davis County.
6. The County supports trail access through the Legacy Nature Preserve.

MAPS & REFERENCES

Davis County

Air Emissions Inventory



Utah Division of Air Quality
Air Emissions Inventory

N

0 2 4 Miles

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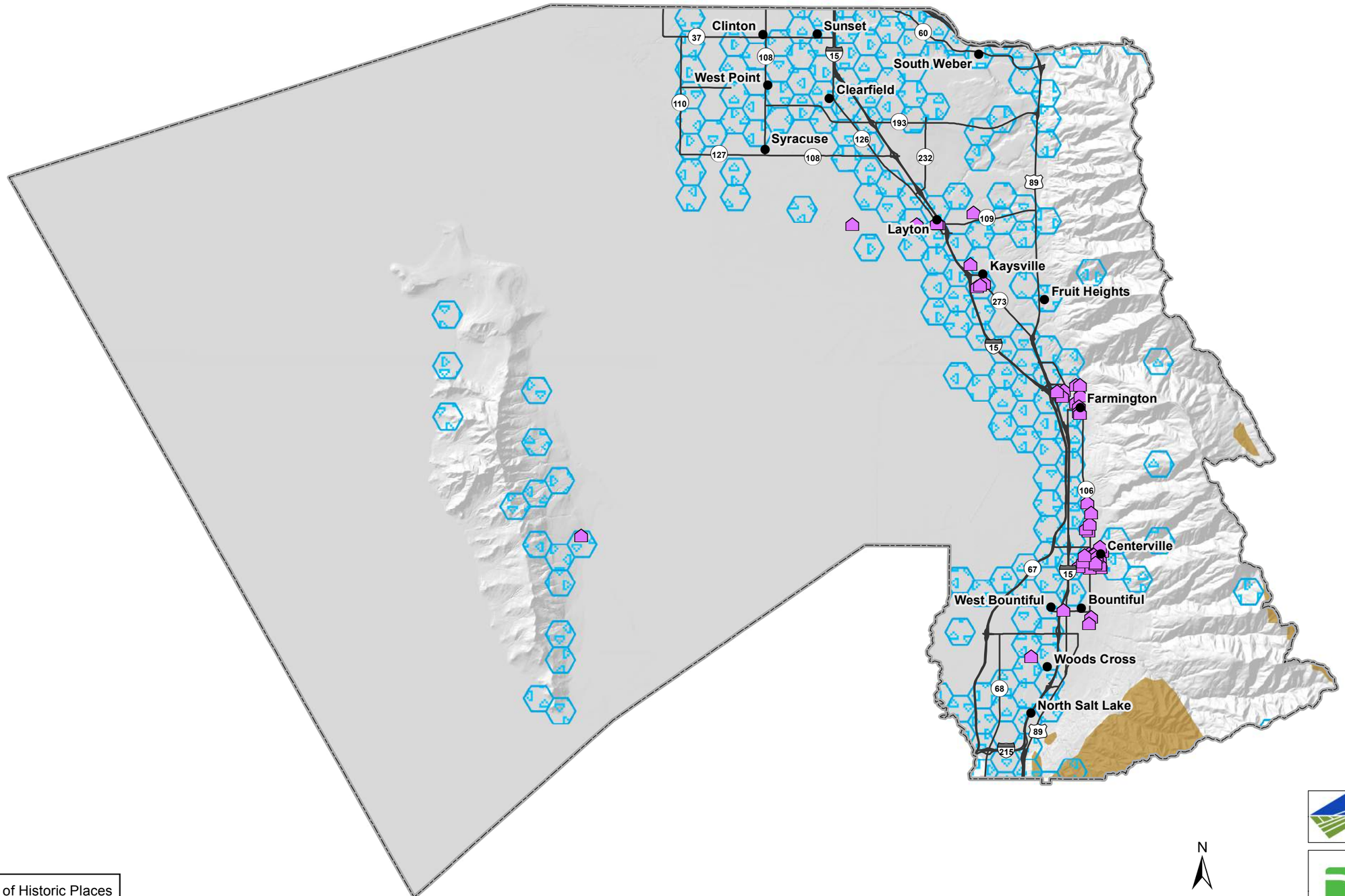
Cultural and Paleontological Resources



National Register of Historic Places

Known Archaeology Sites Present

N

0 2 4 Miles

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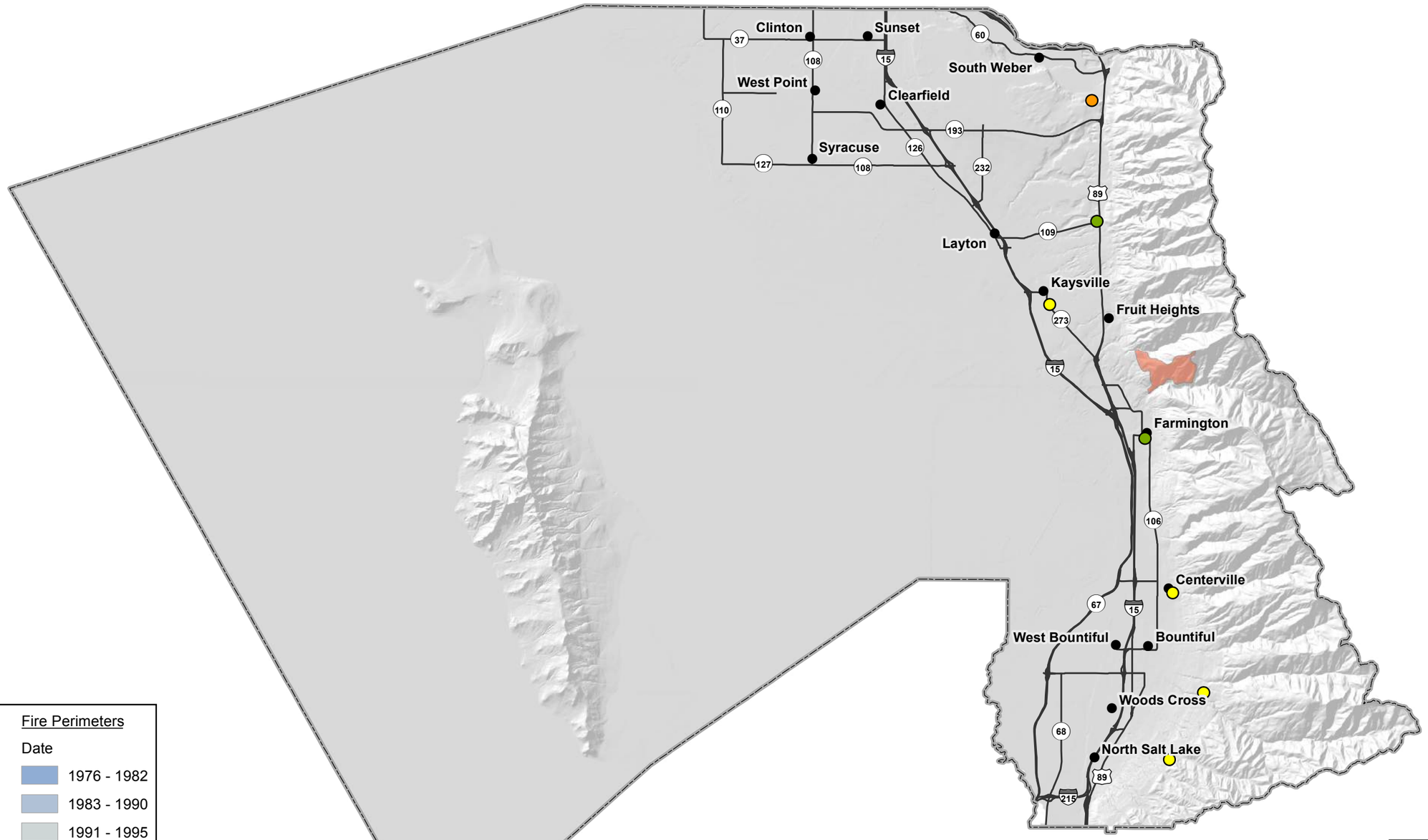
Fire Management



Communities At Risk

Overall Score

- None
- 0 - 7
- 7 - 8
- 8 - 10
- 10 -12

Fire Perimeters

Date

- 1976 - 1982
- 1983 - 1990
- 1991 - 1995
- 1996 - 1998
- 1999 - 2002
- 2003 - 2005
- 2006 - 2009
- 2010 - 2015

N

0 2 4 Miles

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Floodplains

Flood Hazard Areas

N

0 2 4 Miles

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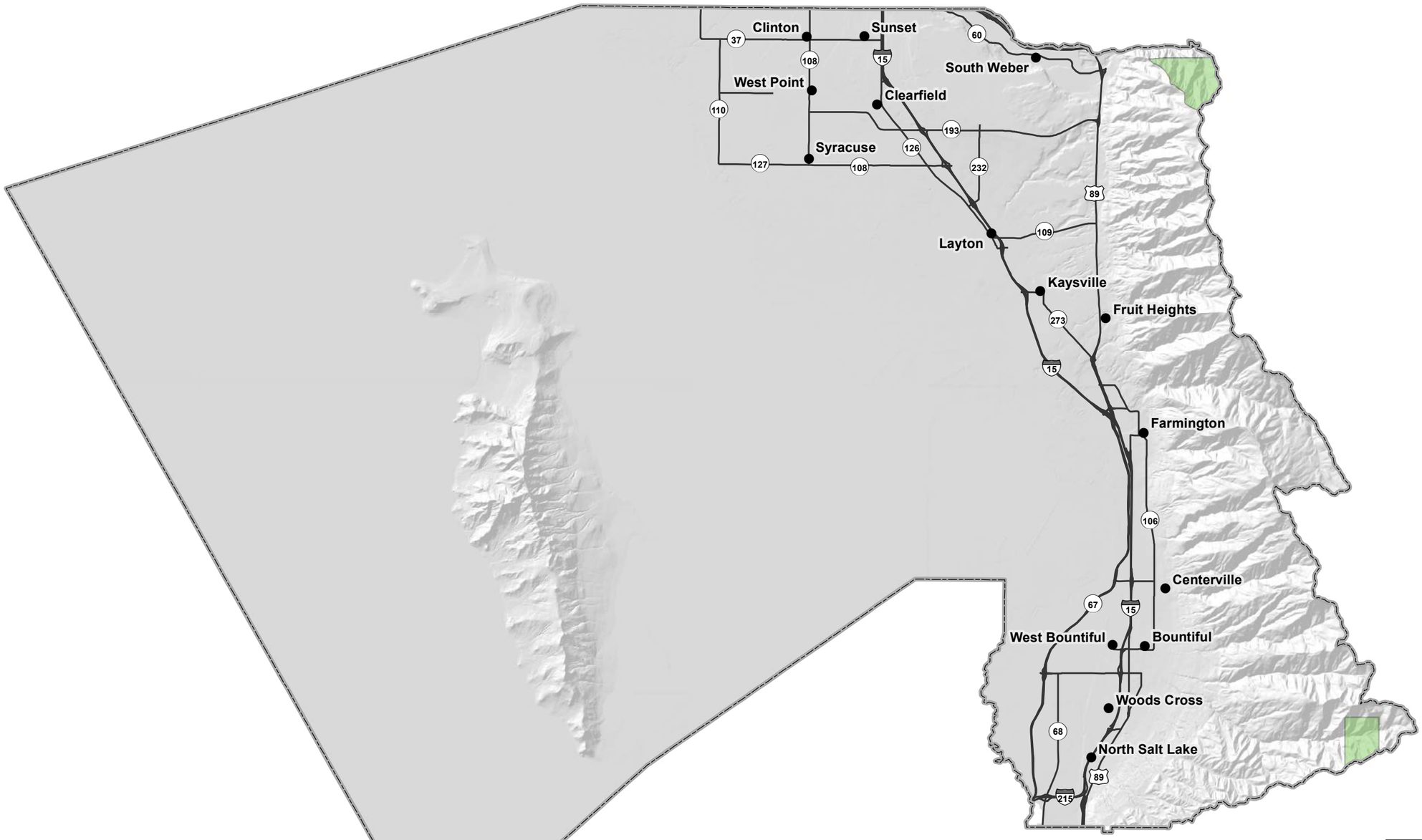
Grazing Allotments



Grazing Allotments (By Manager)

US Forest Service

N

0 2 4 Miles

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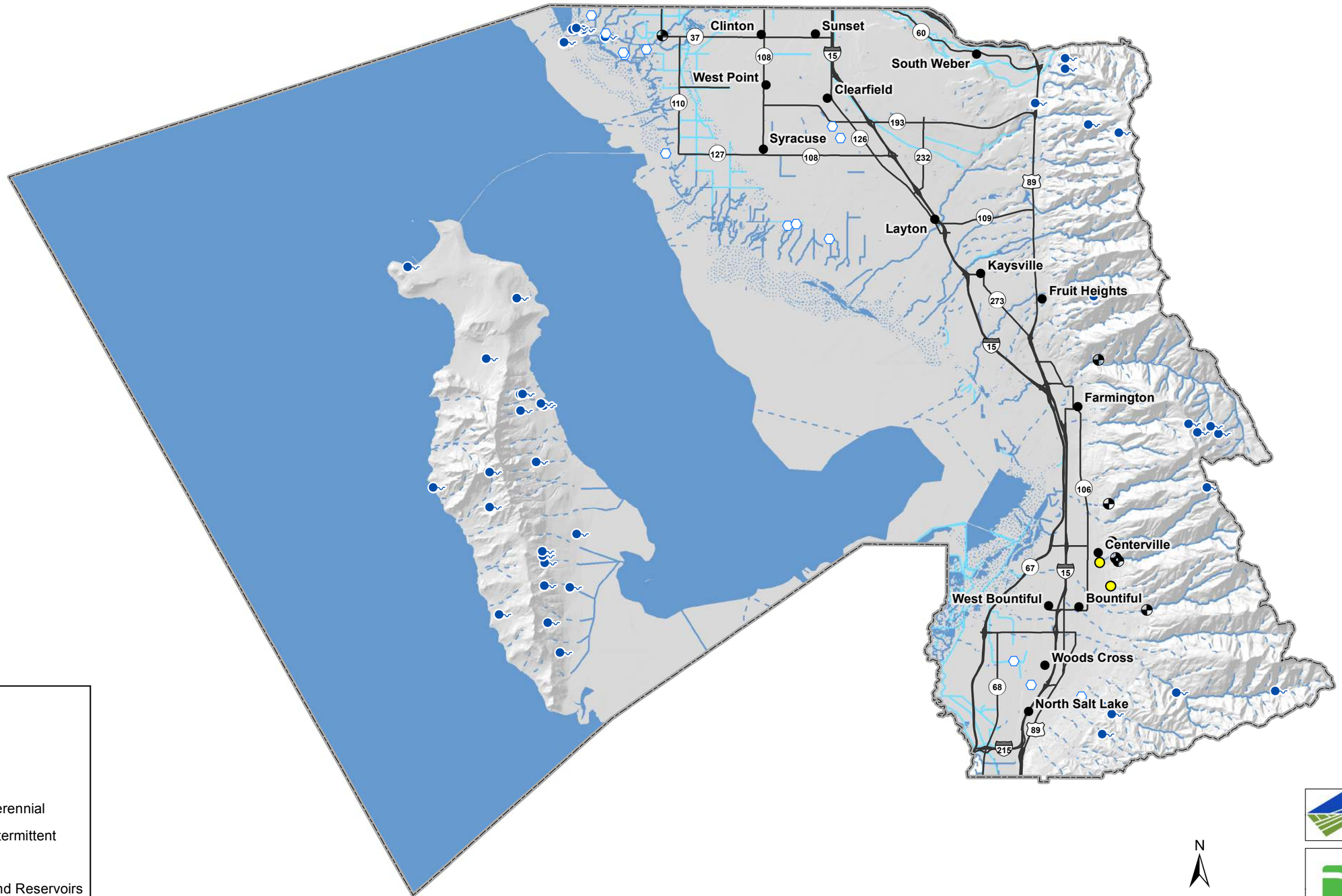
Hydrology



- Gaging Station
- Sink Rise
- Spring/Seep
- Well
- Stream/River - Perennial
- Stream/River - Intermittent
- Canal
- Lakes, Ponds, and Reservoirs
- Swamps and Marshes

N

0 2 4 Miles

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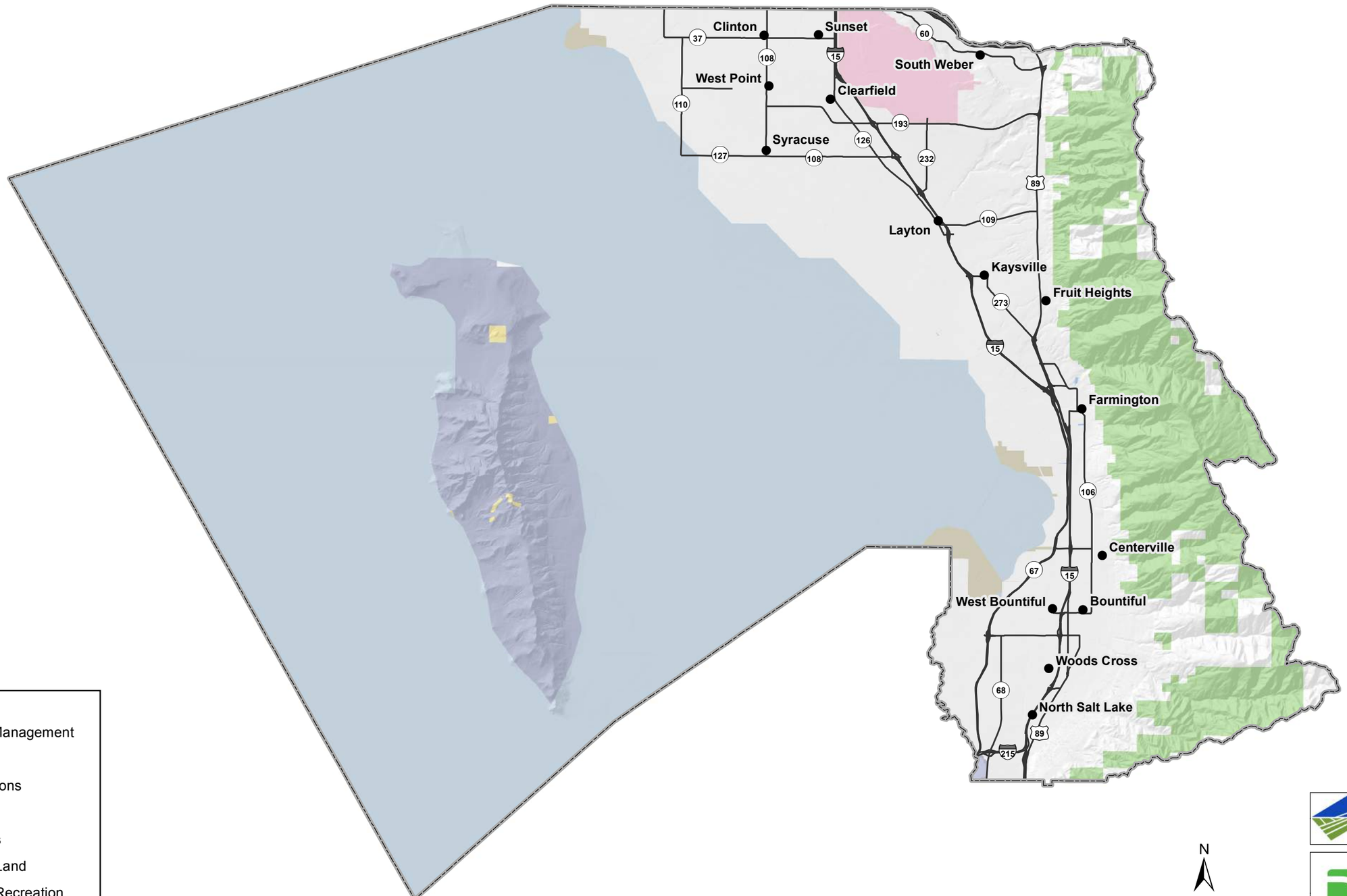
Landownership



Landownership

- Bureau of Land Management
- National Forest
- Military Reservations
- Private
- State Trust Lands
- State Sovereign Land
- State Parks and Recreation
- State Wildlife Management Area

N

0 2 4 Miles

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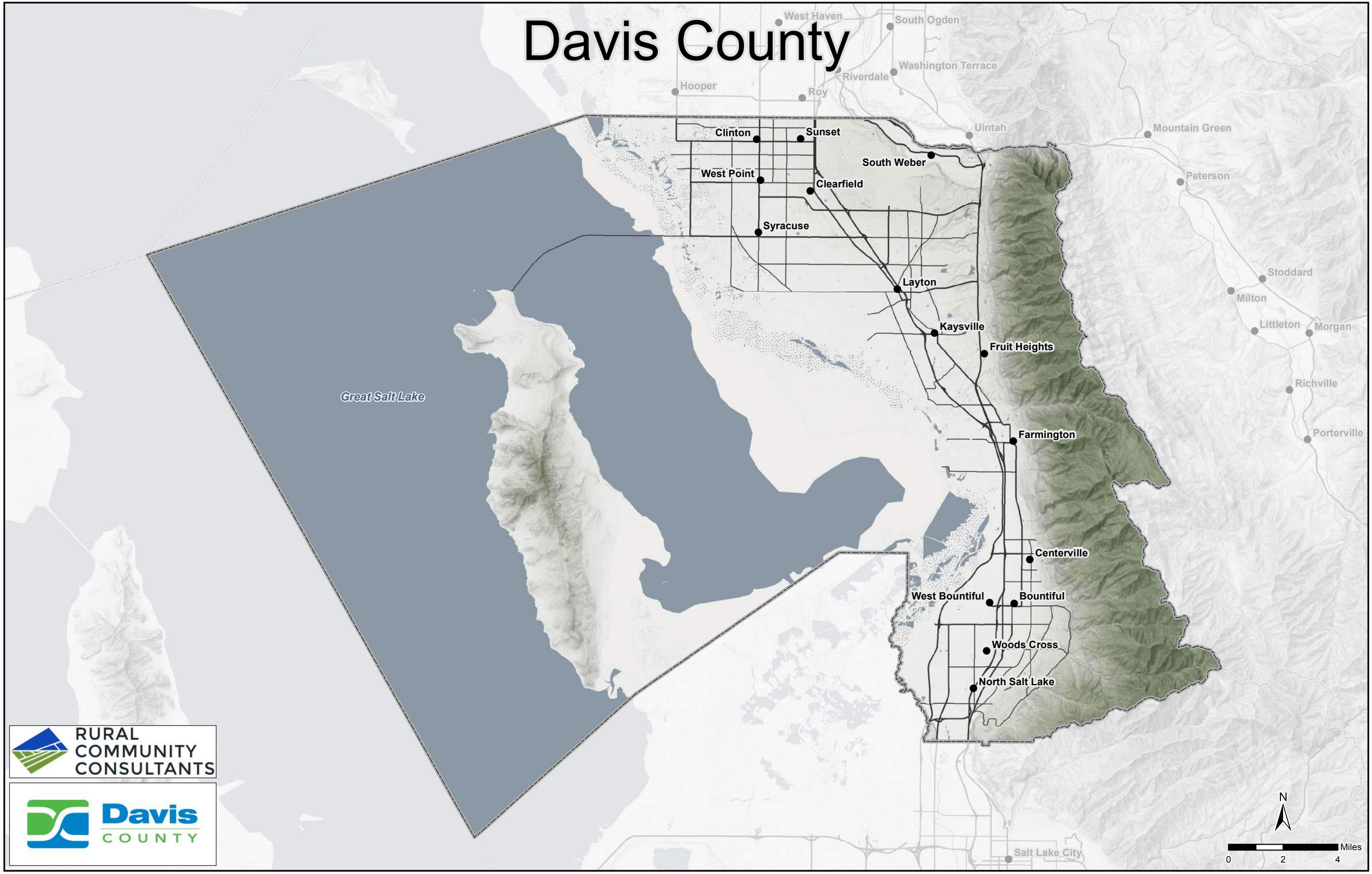

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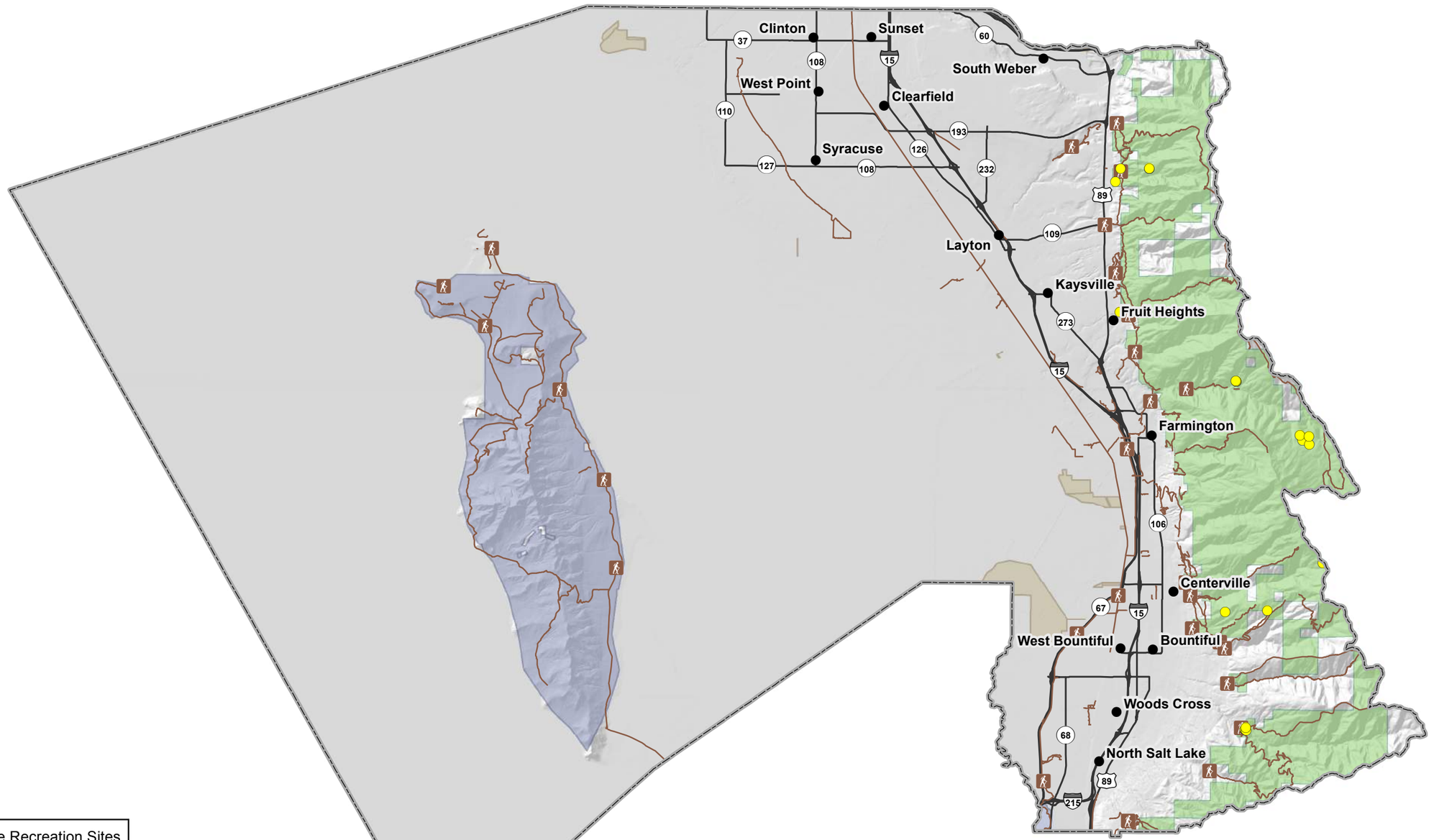
Recreation Points and Areas of Interest



- US Forest Service Recreation Sites
- Trailheads
- Trails
- National Forest
- State Parks and Recreation
- State Wildlife Management Area

N

0 2 4 Miles

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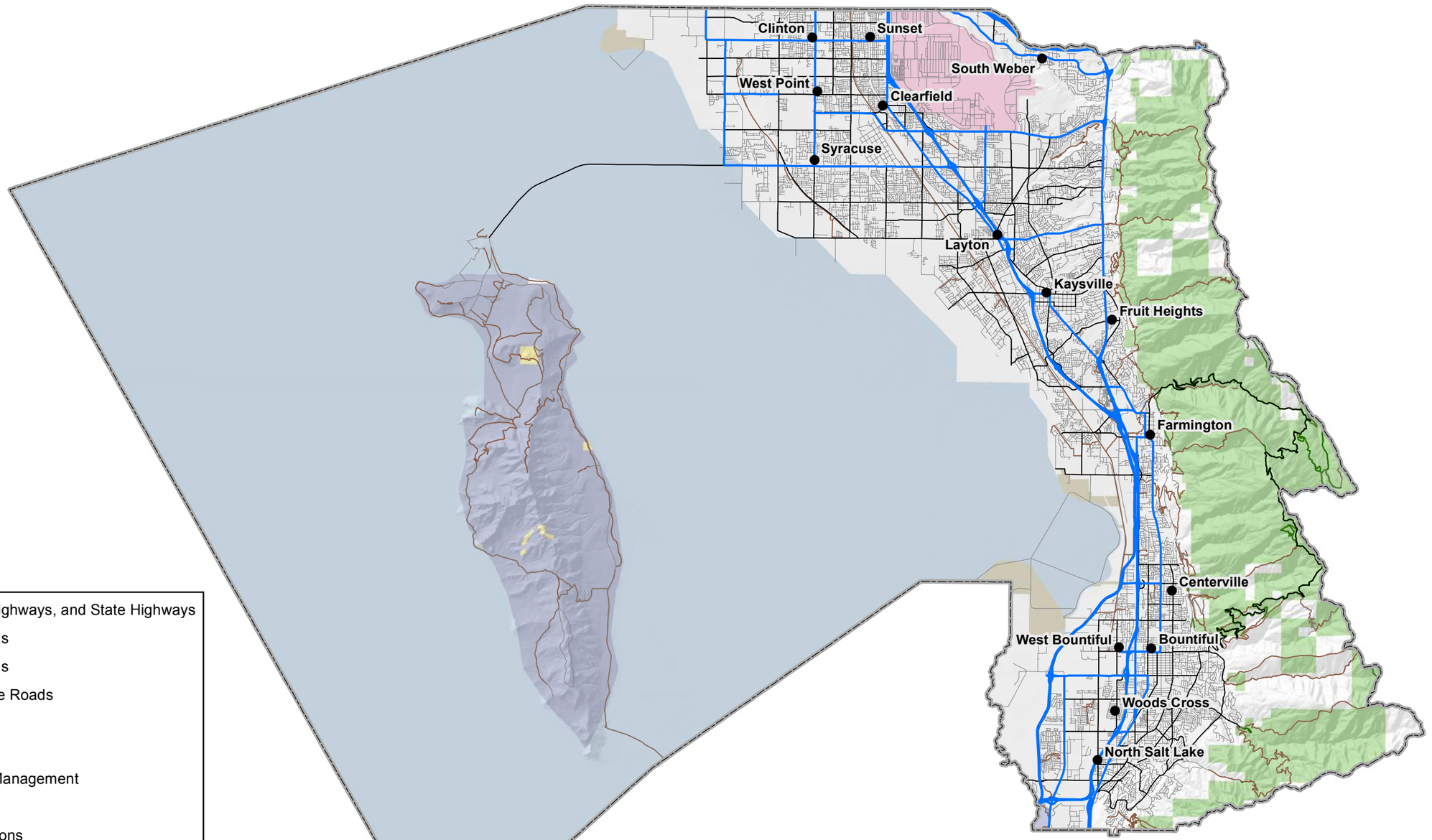
Roads and Trails



- Interstates, US Highways, and State Highways
- Major Local Roads
- Minor Local Roads
- US Forest Service Roads
- Trails

Landownership

- Bureau of Land Management
- National Forest
- Military Reservations
- Private
- State Trust Lands
- State Sovereign Land
- State Parks and Recreation
- State Wildlife Management Area

N

0 2 4 Miles

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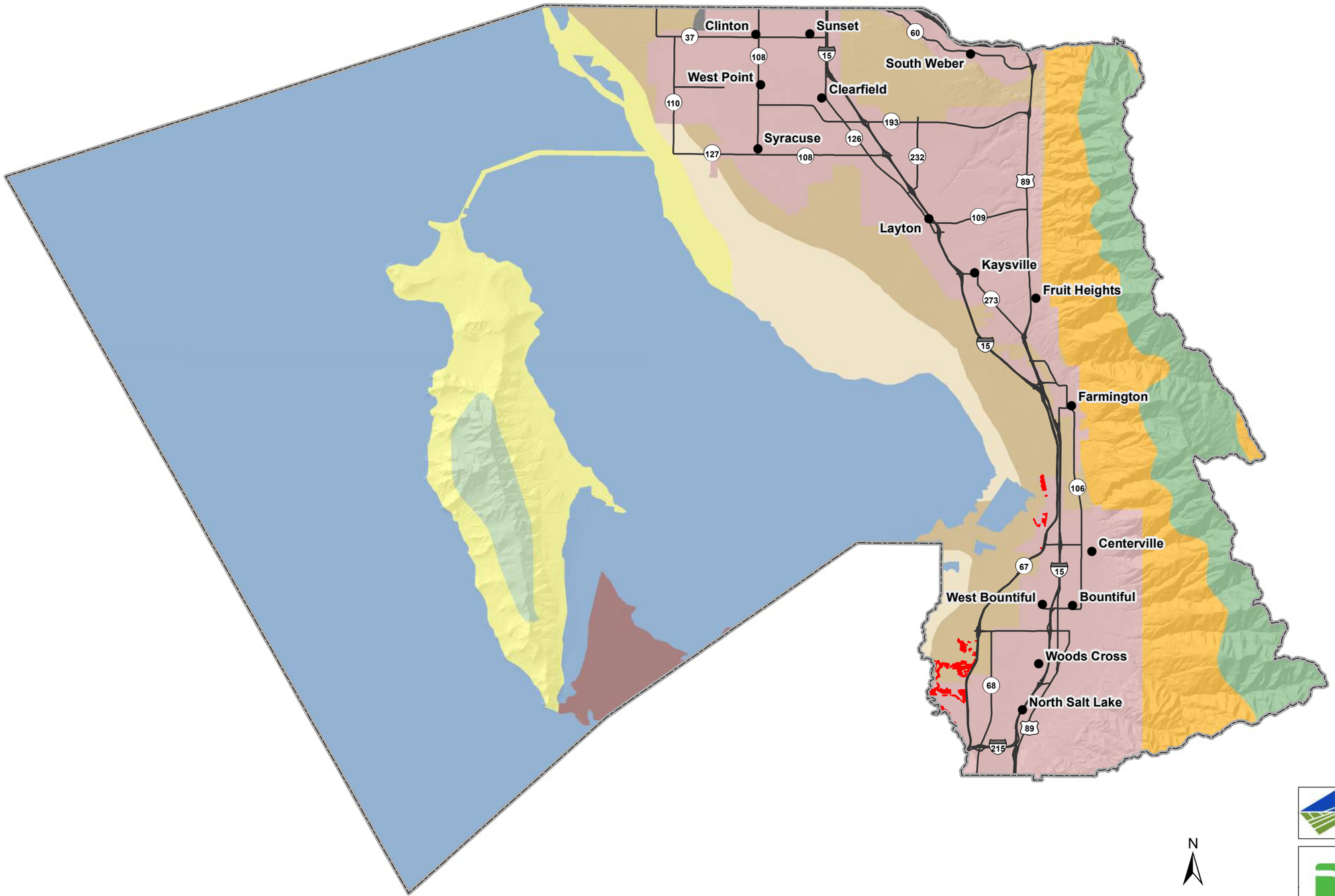
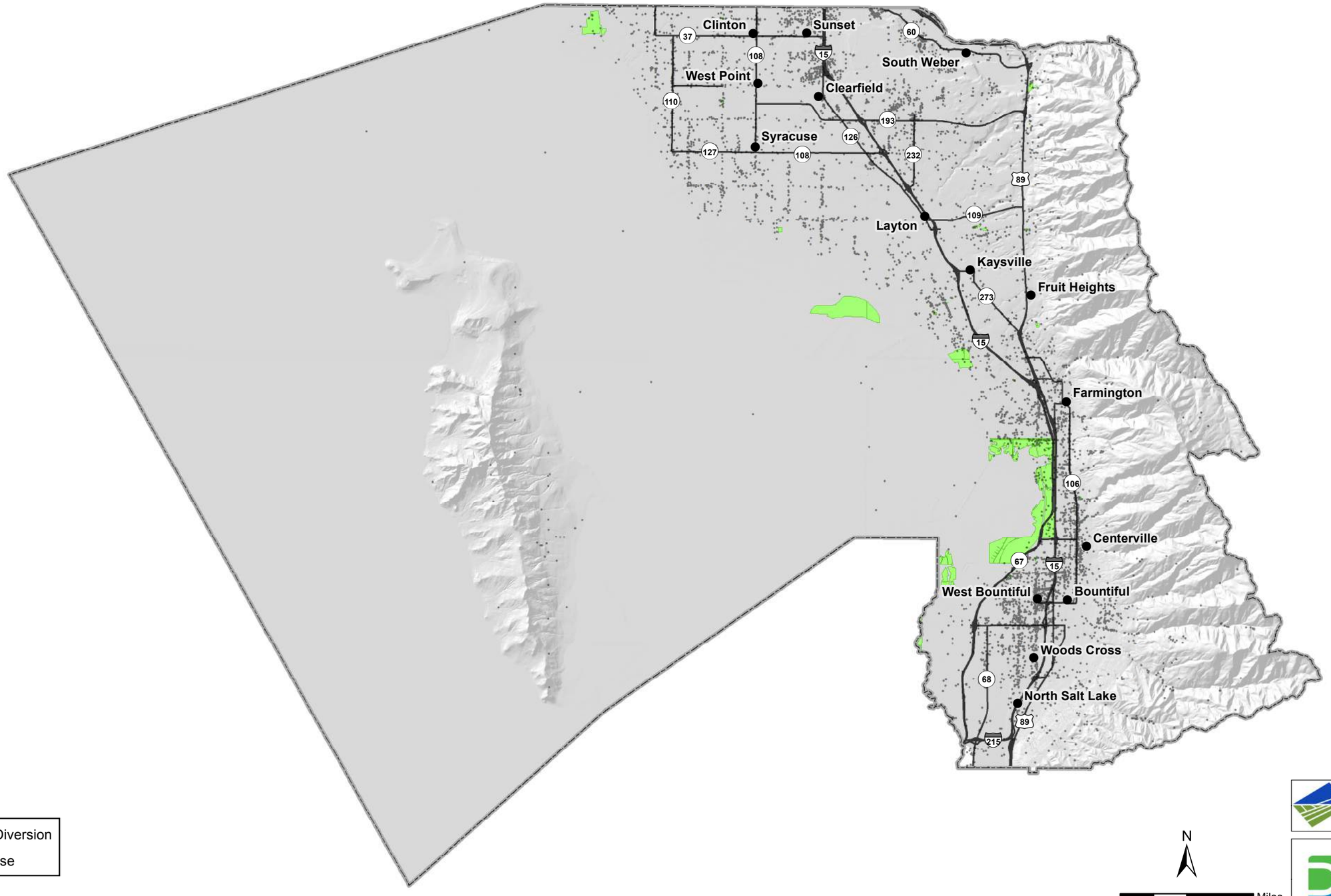
Vegetation



Davis County

Water Rights



Points of Diversion

Place of Use

N

0 2 4 Miles

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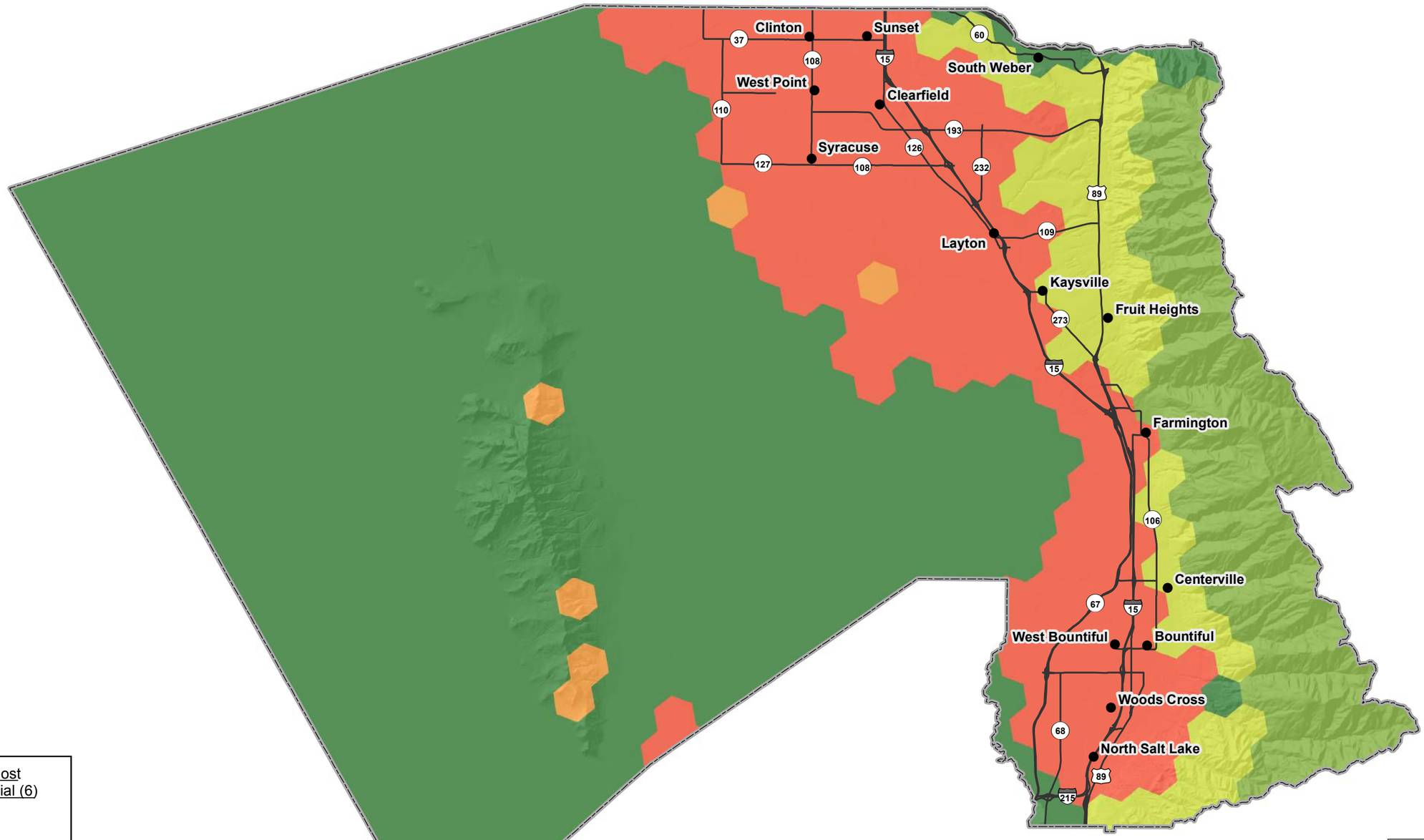
Wildlife Habitat



Crucial Habitat Rank - Most Crucial (1) to Least Crucial (6)

- Rank 1
- Rank 2
- Rank 3
- Rank 4
- Rank 5
- Rank 6

N

0 2 4 Miles

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