

IRON COUNTY

RESOURCE MANAGEMENT PLAN



Acknowledgements

CRMP STEERING COMMITTEE MEMBERS

Craig Laub – Utah Farm Bureau Federation
Donnie Hunter – Sportsmen for Fish and Wildlife
Tyce Palmer – Enterprise/Iron Conservation District
Chad Reid – USU Extension
Maria Twitchell – Iron County Tourism Bureau
Scott Stubbs – Iron County Woolgrowers
Paul Monroe – Exec Director Central Iron County Water Conservation District

IRON COUNTY PLANNING COMMISSION

Kendall Cripps
Brandon Hunter (Chairman)
Phil Schmidt (Vice Chair)
Ron Larsen
Mike Brown
Diane Pratt
Blake DeMille

IRON COUNTY COMMISSION

Alma Adams
Dale Brinkerhoff
Mike Bleak

COUNTY PLANNING STAFF

Mike Worthen, Natural Resources Specialist
Reed Erickson, County Planning
Chad Nay, Building Official/Zoning Administrator

CONSULTING TEAM

Rural Community Consultants
Mike Hansen, Shannon Ellsworth, Isaac Hansen

www.rural-community.com

IRON COUNTY, UTAH ORDINANCE 2017-3

AN ORDINANCE OF THE BOARD OF IRON COUNTY COMMISSIONERS, PROVIDING FOR AMENDMENTS TO THE GENERAL PLAN OF IRON COUNTY, UTAH (the "General Plan"); INCORPORATING THE IRON COUNTY RESOURCE MANAGEMENT PLAN INTO THE GENERAL PLAN; ESTABLISHING POLICY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, in order to provide for the health, safety and general welfare of the citizens of Iron County, Utah, the County commission is committed to establish and keep current a General Plan that specifies goals relating to land use, county resources, housing, the environment, transportation and public facilities and services and policies that facilitate those goals; and

WHEREAS, on October 10, 1995, the County Commission adopted the General Plan of Iron County, Utah as Ordinance 137 in accordance with the provisions of Utah Code Annotated relating to the adoption and content of General Plans in the State of Utah; and

WHEREAS, since the adoption of the General Plan, changes have occurred in the land use patterns, demand for and potential supply of high quality natural resource development and preservation located in the unincorporated areas of the County, the state and local laws and policies related to resource use and development of lands outside of incorporated cities and towns; and

WHEREAS, in 2015 the Utah Legislature adopted HB 323 requiring each Utah county to develop a resource management plan as a part of the county's general plan; encouraging each county to identify any common interests the county shares with any other proximate county with regards to the elements of the resource management plan and to establish consistent objectives and policies with regards to the common interests identified; and,

WHEREAS, the Iron County Commission desires that the County General Plan contain a resource management plan element that provides for the protection, conservation, development, and managed use of resources that are critical to the health, safety, and welfare of the citizens of Iron County and of the state; and serves as a basis for communicating and coordinating with the federal government on land and resource management issues; and,

WHEREAS, in June, 2009 the County adopted the "Iron County Resource Management Plan" with subsequent additions of plans for Wilderness, Sage Grouse, Wild Horses, and ACECs (Areas of Critical Environmental Concern) in order to create a tools for the implementation of the goals and policies of the General Plan; and the County Commission believes the use of said resources may be expanded to establish appropriate uses and possible developed projects; and

WHEREAS, the County Commission has also established a number of additional policies that should be implemented over the next several years in order to more fully achieve the goals and policies of the General Plan and the County Resource Management Plan; and

WHEREAS, the County Commission finds that it is in the best interest of the County after taking into consideration the citizen's health, safety and welfare, to amend the County General Plan; and

WHEREAS, the Planning Commission of Iron County has held a duly advertised and noticed public hearing on the proposed amendments to the General Plan of Iron County, Utah for the purpose of receiving public comment regarding the content of the amendments and has carefully and thoroughly reviewed and considered the comments received, and has voted to forward the proposed amendment to the Iron County Commission with a recommendation to the County Commission that the General Plan Amendments and incorporation of the Iron County Resource Management Plan into the General Plan of Iron County, Utah be adopted; and

WHEREAS, the Iron County Commission has held a duly advertised and noticed public hearing on the proposed ordinance and after considering the planning commission recommendation, public comments and the language of the proposed ordinance, the County Commission concludes that the proposed ordinance appropriately considers and balances the Iron County Resource Management Plan with all interests in accordance with the purposes and goals of the County Land Use, Development, and Management Act and the Iron County General Plan.

NOW THEREFORE, BE IT ORDAINED AND ENACTED BY THE BOARD OF COUNTY COMMISSIONERS OF IRON COUNTY, UTAH AS FOLLOWS:

1. The document "2017 Iron County Resource Management Plan - Amendments to the General Plan of Iron County, Utah" attached hereto is hereby adopted, with necessary formatting, grammatical and spelling revisions as required.
2. All ordinances adopted subsequent to the 2017 Iron County Resource Management Plan - Amendments to the General Plan of Iron County, Utah shall comply with the goals and policies of the General Plan of Iron County, Utah as amended.
3. The provisions of the 2017 Iron County Resource Management Plan - Amendments to the General Plan of Iron County, Utah shall supersede any inconsistent provisions in the existing General Plan and incorporated sections of the previously adopted Iron County Resource Management Plan – June 2009.
4. Iron County Resource Management Plans that were previously adopted are hereby repealed and replaced with resource plans contained in the 2017 Iron County Resource Management Plan - Amendments to the General Plan of Iron County, Utah, specifically include:
The Iron County Resource Management Plan – June 2009

The Iron County Greater Sage Grouse Resource Management Plan – September 2013
 The Iron County Wild Horse Resource Management Plan – February 2016
 The Iron County Proposed Wilderness Regions Interim Resource Management Plan –
 January 2011
 The Iron County Areas of Critical Environmental Concern (ACEC) Plan – May 2016

5. This ordinance shall become effective immediately after the required publication thereof, as set forth in Utah Code §17-53-208.
6. Elements of the Iron County General Plan identified in this amendment, shall be, and hereby are, amended with the express intent of promoting more thorough resource management, better communication and coordination with the federal government on land and resource management, and encouraging greater utilization of resources identified herein.
7. Should any portion of this ordinance be found for any reason to be unconstitutional, unlawful, or otherwise void or unenforceable, the balance of the ordinance shall be severable therefrom, and shall survive such declaration, remaining in full force and effect.

PASSED AND ADOPTED BY THE BOARD OF COUNTY COMMISSIONERS OF IRON COUNTY, UTAH this 26th day of June, 2017.

BOARD OF COUNTY COMMISSIONERS
 IRON COUNTY, UTAH



By: Dale M. Brinkerhoff
 Dale M. Brinkerhoff, Chair

ATTEST:

Jonathan T. Whittaker

Jonathan T. Whittaker
 County Clerk

VOTING:

Alma L. Adams	<u>Aye</u>
Dale M. Brinkerhoff	<u>Aye</u>
Michael P. Bleak*	<u>Absent*</u>

Table of Contents

○ Acknowledgements.....	2
○ Table of Contents.....	6
○ Executive Summary.....	7
○ Background.....	8
○ Legal Basis.....	9
○ Agriculture.....	15
○ Air Quality.....	25
○ Cultural, Historical, Geological, and Paleontological Resources.....	27
○ Economic Considerations.....	36
○ Energy Resources.....	38
○ Fire Management.....	46
○ Fisheries.....	60
○ Floodplains and River Terraces.....	64
○ Forest Management.....	66
○ Irrigation, Ditches & Canals.....	88
○ Land Access.....	92
○ Land Use.....	98
○ Law Enforcement.....	105
○ Livestock and Grazing.....	109
○ Mining and Mineral Resources.....	121
○ Noxious Weeds.....	136
○ Predator Control.....	142
○ Recreation & Tourism.....	148
○ Riparian & Wetland Areas.....	157
○ Water Rights, Quality, and Hydrology.....	161
○ Wild & Scenic Rivers.....	171
○ Wild Horses.....	175
○ Wilderness & Lands with Special Designations.....	192
○ Wildlife, T&E, and Sensitive Species.....	204
○ Maps.....	222

Executive Summary

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.

Iron 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.

Ultimately, this Resource Management Plan is an effort to outline how the majority of Iron County residents would like the public lands that surround us managed. 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.

Background

Development of this Plan

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

- **Subject matter stakeholder interviews.** Individual interviews were conducted with different stakeholder groups and subject matter experts. These interviews were conducted via telephone or in-person by the project consultant. The results of these interviews were incorporated into the plan, but the commenters were promised anonymity. We also had several stakeholder groups help identify concerns and issues, and consisted on the following interests: Recreation, Water Rights, Irrigation and Flood Control, Agriculture, Forest Management, Livestock and Grazing, Wildlife, Sensitive Species and T&E Species, Special Designations (Wilderness, ACEC, Wild and Scenic Rivers).
- **Focus group surveys.** County staff conducted individual presentations and conducted surveys with a number of groups. The County Planning Commission and Public Lands Committee served as the primary focus groups.
- **Online public surveys.** In October 2016, a website was created for the initiative (<http://IronCountyPlan.org>). In May 2017, it was also 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. The County had two meetings with the Planning Commission, (one to introduce preliminary drafts and solicit public input), and a second meeting to provide public comment and make recommendations to the Iron County Commission. A specific webpage was developed by plan contractors to give public, state and federal agencies, etc. an opportunity to provide comment. Iron County placed a link to the webpage to give the public at least 30 days to comment before it was brought before the Iron County Commission to consider.

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. Listing of best available data sources
4. Findings of historic and current conditions
5. Objective for the resource/issue
6. County policy

Legal Basis

Federal Land and Natural Resources Planning

Two of the major federal landowners in Utah, the Bureau of Land Management (BLM) and the Forest Service, are required to engage in land and natural resource planning processes which can affect the use and development of natural resources. The BLM is required by Section 202 of the Federal Land Policy and Management Act of 1976 [FLPMA] to “*develop, maintain and...revise land use plans which provide by tract and areas for the use of the [BLM] lands.*” Similarly, the Forest Service is required to “*develop, maintain, and...revise land and resource management plans for units of the National Forest System.*” (16 U.S.C. §1604(a)).

Coordination and Consistency with State, Local, and Tribal Plans

Both the BLM and the Forest Service are required to coordinate their land and natural resources planning efforts with those of the state, local and tribal jurisdictions. For example, the BLM is required to:

1. Become “apprised” of State, local and tribal land use plans;
2. Assure that consideration is given to those State, local and tribal plans that are germane to...plans prepared for public lands; and
3. Assist in resolving...inconsistencies between Federal and non-Federal Government plans. (43 U.S.C. §1712(b)(9))

Specifically, state and local officials are “*authorized to furnish advice to the [BLM] with respect to the development and revision of land use plans ...guidelines, ...rules and ...regulations for the public lands.*” (43 U.S.C. §1712 (b)(9)) This is significant because land use plans adopted by the BLM are required to “*be consistent with State and local plans to the maximum extent consistent with Federal law and the purposes of [FLPMA].*” (43 U.S.C. §1712(b)(9)) The duly adopted regulations of the BLM further define this consistency requirement by requiring that the BLM resource management plans shall be “*consistent with officially approved or adopted resource related plans, and the policies and programs contained therein, of... State and local governments and Indian tribes, so long as the guidance and resource management plans are also consistent with the purpose, policies and programs of Federal laws and regulations applicable to public lands.*” (43 U.S.C. §1610.3-2(a)) The term “consistent” is defined to mean that the duly adopted BLM plans for the natural resource within the county “*will adhere to the terms, conditions, and decisions of officially approved and adopted resource related plans*” of local and state governments. (43 C.F.R. §1610.3-1)

BLM regulations also provide that “*in the absence of officially approved or adopted resource management plans of ...State and local governments...[Federal] resource management plans shall, to the maximum extent practical, be consistent with officially approved and adopted resource related policies and programs of...State and local governments.*” However, as before, the consistency only applies to the extent the policies and programs are “*consistent with the policies, programs and provisions of the Federal laws and regulations applicable to the public lands*” (43 C.F.R. §1610.3-2(b))

The Forest Service is required to coordinate “*with the land and resource management planning processes of State and Local governments.*” (16 U.S.C. §1604(a)) The Forest Service’s planning regulations state that the “*Responsible [Forest Service] Official must provide opportunities for the coordination of Forest Service planning efforts...with those of other resource management agencies.*” Furthermore, the agency’s planning regulations provide that “*the Responsible Official shall seek assistance, where appropriate from other state and local governments...to help address management issues or opportunities.*” (36 C.F.R.

§219.9) Although there is no explicit parallel requirements for consistency of Forest Service plans with plans of state, local and tribal governments as that contained within FLPMA for the BLM Resource Management Plans, the Forest Service is required to “*discuss any inconsistency*” between the proposed plan’s provision and “*any approved State or local plan and laws.*” Further, if any inconsistencies exist, the plan must “*describe the extent to which the [Forest Service] would reconcile its proposed action with the plan or law.*” (40 C.F.R. §1506.2(d)).

Federal Planning Criteria

Counties may use duly adopted plans, programs and policies to directly influence public land and resource planning and decision-making processes. Counties with such plans should begin by informing federal land and resource management agencies of these documents and their provisions. To be truly effective, county plans should articulate the county’s policies and positions in regard to public lands and resources including the county’s interpretation/definition of the specific criteria federal agencies must consider as they prepare/develop land and resource management plans. For example, county plans can define, among other things, the desired future conditions for the county’s economy, lifestyle, and recreational needs of the citizens, and the necessary use of federally-managed lands and resources to achieve these desired future conditions.

Forest Service

The National Forests were originally set aside to provide a continuous supply of timber and to protect water sources for local communities and agriculture needs. Later, through the adoption of the Multiple-Use Sustained Yield Act of 1920, Congress determined that the forest should be “*administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes,*” which purposes were declared to be “*supplemental to, but not in derogation of*” the original purpose. (16 U.S.C. §528)

The Forest Service is required to “*use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences*” in its land and resource plans, The Forest Service must assure that the plans “*provide for multiple use and sustained yield of the products and services obtained therefrom in accordance with the Multiple-Use Sustained-Yield Act of 1960, and in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness.*” The plans must “*determine forest management systems, harvesting levels [of timber] and procedures*” based on all the uses mentioned above, the definitions of multiple use and sustained yield as laid out in the law, and the availability of lands and their suitability for resource management. (16 U.S.C. §1604(b) and (e))

Forest Service regulations specifically define “*principles of planning*” to guide agency resources planning processes and activities. (36 C.F.R. §219.3)

a) *Land management planning is an adaptive management process that includes social economic, and ecological evaluation; plan development, plan amendment, and plan revision; and monitoring. The overall aim of planning is to produce responsible land management for the National Forest System based on useful and current information and guidance. Land management planning guides the Forest Service in fulfilling its responsibilities for stewardship of the National Forest System to best meet the needs of the American people.* (36 C.F.R. §219.3(a))

The Forest Service is also required, as part of the development and interpretation of data and information used to prepare resource management plans and proposals, to consider and incorporate the concept and conditions of sustainability. “*Sustainability...has three interrelated and interdependent elements: social, economic, and ecological.*” (36 C.F.R. §219.10)

a) *The overall goal of the social and economic elements of sustainability is to contribute to sustaining social and economic systems within the plan area. To understand the social and economic contribution of National Forest System lands presently make, and may make in the*

future, the [Forest Service] must evaluate relevant economic and social conditions and trends as appropriate during plan development... (36 C.F.R. §219.10(a))

Expectations for ecological sustainability as well as ecosystem and species diversity are also provided.

Bureau of Land Management

FLPMA provides that the BLM must manage the lands under its jurisdiction (referred to as “public” lands) *“in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values, “and will provide for, among other things, “outdoor recreation and human occupancy and use, “and “food and habitat for fish and wildlife and domestic animals.”* Moreover, the BLM must specifically manage the public lands *“in a manner which recognizes the Nation’s need for domestic sources of minerals, food timber, and fiber from the public lands.”* (43 U.S.C. §1701(8) and (12))

The BLM is required to *“use and observe the principles of multiple use and sustained yield”* and, just as the Forest Service must, *“use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic and other sciences”* in the preparation of its plans. (43 U.S.C §1712(c)(1) and (2)) The BLM must also *“consider present and potential uses of the public lands”* and *“provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards of implementation plans.”* (43 U.S.C. §1712(c)(5) and (8))

Multiple-Use and Sustained Yield

Both the Forest Service and the BLM are required to manage the lands under their jurisdiction pursuant to the principles of *“multiple-use”* and *“sustained yield.”* These terms have been defined within the provisions of FLPMA for the BLM and within the provisions of the Multiple-Use Sustained Yield Act of 1960 for the Forest Service. Both definitions are lengthy and worthy of careful study. Nevertheless, it is apparent that the definitions are not crystal clear, leading to the differing interpretations concerning the development or preservation of natural resources and the environment.

The definitions do state, however, that multiple-use is to be considered in the context of the best combination of land use that meet the present and future needs of the nation with respect to *“recreation, range, timber, minerals, watershed, wildlife and fish, and natural, scenic, scientific, and historical values.”* Furthermore, it states that these resources are to be managed in a *“harmonious and coordinated”* manner that does not lead to *“permanent impairment of the productivity of the land and the quality of the environment.”* Finally, multiple use does not, by definition, mean the *“greatest economic return or the greatest unit output.”* (43 U.S.C §1702(c)). See also 16 U.S.C. §531(a)). For the Forest Service, the *“establishment and maintenance of areas of wilderness”* is specifically determined to be consistent with the principle of multiple use. (16 U.S.C. §529)

The term *“sustained yield”* is defined to mean the achievement of *“a high level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple-use.”* (43 U.S.C. §1702(h)). See also 16 U.S.C. §531(b))

National Environmental Policy Act (NEPA) and Cooperating Agency Status

Environmental Impact Statement (EIS) Process Overview

Preparation of land and natural resource management plans by the BLM and the Forest Service is a major federal action requiring the preparation of an Environmental Impact Statement (EIS) under the provision

of the National Environmental Policy Act (NEPA). (42.U.S.C. § 4231 et. seq.) NEPA requires federal agencies to fully disclose the nature and condition of the environment within the area of interest. Under NEPA, agencies must formulate various alternatives for future management and compare those alternatives to a “no-action” alternative of continuing the current management scheme. NEPA specifically requires the agency preparing the EIS to seek decisions that, among other things, “*attain the widest range of beneficial uses of the environment without degradation,...preserve important historic cultural, and natural aspects of our national heritage,... and ...achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities.*” (42 U.S.C. §4331(b)) The development of an EIS by a federal agency as part of the process to prepare a resource management plan or proposed action includes a number of well-established steps. Each of these steps provides an opportunity for comment by local governments based on their plans and policies. These steps, in general, are:

1. “Scoping” of the issues;
2. preparation of an “Analysis of the Management Situation;”
3. preparation of the various “Alternatives” with the associated necessary management scenarios and conditions;
4. issuance of a “Draft EIS” for public comment; and,
5. issuance of a Final EIS and a “Proposed Record of Decision,” which lays out the proposed final decision including the terms and conditions for management of the lands and natural resources for the life of the plan or for the specific project.

Issuance of the proposed Record of Decision is followed by a period for appeal by interested parties, which, upon resolution of the appeals (if any), is followed by adoption of the Record of Decision and implementation of the plan or specific project.

In many cases, Environmental Assessments are used by the federal agency to determine if a project or federal action requires or warrants an EIS. The EA is not as detailed as an EIS and does not require the degree of public involvement as does an EIS, however, the decision document is required to go through a public comment process and can be appealed as identified in the agency’s implementation regulations required by the federal Council on Environmental Quality. If the decision document following an EA does not warrant further consideration via an EIS, the decision document becomes final and the project can move forward.

Governor’s Consistency Review

For plans prepared by the BLM, the Governor of the state is given an opportunity for a “consistency review” immediately following the issuance of the Proposed Record of Decision. BLM is required to “*identify any known inconsistencies with the State or local plans, policies, or programs,*” and to “*assist in resolving, the extent practical, inconsistencies between Federal and non-Federal Governments plans.*” The Governor is given Iron County Resource Management Plan 8 Legal Basis 60 days to “*identify inconsistencies and provide recommendations in writing*” in response. The BLM must accept the recommendations of the Governor if the BLM State Director determines that the recommendations “*provide for a reasonable balance between the national interest and the state’s interest.*” (43 U.S.C. §1712(b)(9) and 43 C.F.R. §1610.3-2(e). See also 40 C.F.R. §1506.2(d))

NEPA Provisions Regarding Cooperating Agency Status

The federal Council on Environmental Quality has issued specific regulations relating to the implementation of NEPA provisions. One of these directives provide for the elimination of duplication with state and local processes. This regulation requires federal agencies to “cooperate with state and local agencies to the fullest extent possible to reduce duplication between NEPA and state and local requirements.” This cooperation specifically includes, but is not limited to:

- joint planning processes,
- joint environmental research and studies,
- joint public hearings, and
- joint environmental assessments (40 C.F.R. §1506.2(b))

The Council of Environmental Quality also supports inviting state and local governments to become “cooperating agencies” in the preparation of federal land and natural resource management plans and the associated EISs. The invitation to become a cooperating agency is not based on the fact that state or local governments are entities that may be affected by the outcome of the process. Instead, cooperating agency status is specifically based on the state of local government’s position as professionals having jurisdiction by law in the planning area or as professionals holding special expertise in an issue to be addressed in the analysis or decision. (Memo from James Connaughton, Chairman of the CEQ) This status does not relieve the federal agency of the responsibility as the decision-maker, and does not guarantee a decision that the cooperating agency may necessarily favor. Cooperating agency status allows cooperators to participate in the scoping process, the inventory of data and analysis of current situation process, the preparation of alternatives, the impact analysis, and in the preparation of the draft and final EISs. Participation as a cooperating agency in federal planning efforts will specifically require the cooperators to respect the timing and confidentiality inherent in the federal process. Failure to adhere to these conditions may lead to revocation of cooperating agency status. BLM has proposed a regulatory rule change which would solidify the cooperating agency concept in BLM planning, stating that a “cooperating agency relationship” would complement the requirement under FLPMA to coordinate with state and local governments. (69 F.R §43378.)

State Planning Coordinator Responsibilities

The State Planning Coordinator is authorized to prepare plans, programs and policies for the state that, among other things:

- *“incorporate the plans, policies, programs, processes and desired outcomes of the counties where the federal lands or natural resources are located, to the maximum extent consistent with state and federal law,”*
- *“develop, research and use factual information, legal analysis, and statements of desired future condition” for regions of the state, “as necessary to support the plans, policies, programs, processes, and desired outcomes of the state and counties where the federal lands or natural resources are locate,”* and
- Establish and coordinate agreements with federal agencies that facilitate state and local participation in the development, revision and implementation of federal plans. (Utah Code §63-38d-401)

State law continues by establishing “*findings*” that shall be considered by state and local governments as they interact with federal agencies in the preparation of federal land and natural resource management plans. These findings provide the framework for the necessary considerations of state and local plans and policies which the federal agencies are required to consider as part of their planning efforts. The findings include a definition of multiple use that emphasizes support for state and local plans that are designed to produce and provide the watersheds, timber, food fiber, livestock

and wildlife forage, and minerals necessary to meet present needs and future economic growth and community expansion. As well as meet the recreational needs and the personal and business related transportation needs of the citizens of the state without impairing the productivity of the land.

The findings also indicate, for example, that: the federal government must seek water rights within the state appropriation system; federal agencies must support the purposes of the school trust lands compact in their land management decisions; development of solid, fluid and gaseous minerals of the state is important to the state economy; and transportation and access routes are vital to the state’s economy. Furthermore, the findings indicate parameters for state and local government support or opposition to

specific federal land planning issues such as Areas of Critical Environmental Concern, Wildland Scenic River studies, land exchanges, agricultural production and open space, forest management, off-highway vehicle use, and predator control. (See Utah Code §36-6-38d-401(6) and (7) for the complete list of findings.)

Federal Advisory Committee Act

The Federal Advisory Committee Act of 1972 (FACA) was enacted to formalize and stabilize the process by which federal agencies receive advice from interested parties. It establishes conditions under which federal agencies may establish such committees, how they must be composed and chartered, and requires meetings and activities to be open to the public. FACA does not affect the requirement under FLPMA to coordinate with state and local governments nor does it affect the establishment of a cooperating agency relationship. FACA also does not apply to any state or local committee or other group established to make recommendations to state or local governments about any issue, including land and natural resource utilization issues. (5 U.S.C. Appendix)

Agriculture

Related Resources

Irrigation + Ditches & Canals, Noxious Weeds, Water Rights + Quality and Hydrology, and Land Use

Overview and History

Agriculture has been a mainstay in southern Utah for centuries. Spanish explorer Silvestre Vélez de Escalante kept detailed journals of his travels in the Southwest and made notes concerning Southern Paiute horticulture, writing in 1776, that there were “well dug irrigation ditches” being used to water small fields of corn, pumpkins, squash, and sunflowers (Warner 1995). Nearly every traveler who documented his explorations in southern Utah had an account that made reference to fields cultivated by the Southern Paiute along Ash Creek, the Santa Clara River, and the Virgin River. Water was the crucial element to traditional Paiute lifeways and subsistence strategies (National Parks Service 2017). Since the 1850’s when Iron County first saw an influx of settlers, people cultivated the land to support their lives and lifestyle.

The county considers agriculture to be part of its history, custom, and culture. For over 150 years lands and waters have been the foundation of agriculture in Iron County. Farmers and ranchers continue working these lands to provide agricultural products and have also built and fostered a wide range of structures, community relationships, ecosystems, and scenic legacy of barns, farmhouses, ditches, hayfields and pastures.

This section of the CRMP identifies strategies to recognize, continue and, where beneficial, enhance those long-standing relationships, resources and facilities to support operations. Looking forward, the plan also calls for new approaches and innovations so that agriculture in Iron County can continue to thrive and be protected in a future of social and environmental change. Such an approach is nothing new, as farmers and ranchers have been adapting to new conditions since the mid 1800’s when the first pioneers arrived in the county from the mid-western US and Europe and had to adjust their methods to be successful in arid Utah.

“The agricultural nature of the area has indeed been a large factor in supporting residents of the area. In addition, the open space and rural qualities of the county are attractions for people wishing to leave the congestion and complexity of more urbanized areas of the country” (Iron County Commission 1995).

Current Conditions/Programs

“The Iron County agricultural sector in 1994 was composed of 17 different industrial classifications, producing output valued at \$41.8 million (in 2015 dollars). Agricultural operations employed about 670 people. By 2015, the agricultural sector was composed of 12 different industrial classifications producing output valued at \$221.6 million and employed about 990 people. In Iron County, agriculture is dominated by hogs, cattle, dairy, sheep, and hay production with output valued at \$209.4 million and employs an estimated 820 people” (B. Wood, Iron County Economic Development, unpublished report).

Agriculture in Iron County is important for the natural, cultural, social, and economic benefits it provides. Agriculture continues to be a valuable source of jobs and income locally. In the County, agriculture

provides jobs, local tax base, a variety of environmental benefits, scenic beauty, and food and fiber for human use. According to the USDA National Agricultural Statistics Service (2016), the primary crops produced in Iron County are alfalfa, wheat, barley, and corn silage. Although agriculture plays a significant role in the economic, environmental, and cultural well-being of the county, many farms are struggling to keep up with technology and pressures from state and federal regulations. According to the Utah Agriculture Sustainability Task Force (2012), “The number and size of farms and ranches has dramatically changed in Utah. From 1900 to 1990, the number of Utah farms decreased. Beginning in 1990 the number of farms began to increase again. The 2015 Utah Agricultural Statistics report recorded 18,100 farms. The number of farms in Iron County increased from 487 in 2007 to 509 in 2012 according to the USDA Census of Agriculture. Most of the farms in the county are between 1-179 acres in size.

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. Farming is losing its successors as many children are choosing other occupations. It is more difficult now to transfer the farm to the next generation.”

In Iron County, private property owners and farm operators control this resource. The following influence agriculture in Iron County:

- **USDA Natural Resource Conservation Service (NRCS):** NRCS is an agency within the U.S. Department of Agriculture. NRCS provides America’s farmers and ranchers with financial and technical assistance to voluntarily put conservation on the ground, not only helping the environment but agricultural operations as well. All programs offer science-based solutions that benefit both the landowner and the environment. The following programs are available to farmers:
 - Financial Assistance – Farmers, ranchers and forest landowners can receive financial assistance from NRCS to make improvements to their land by participating in Farm Bill conservation programs, Land Shape Conservation Initiatives, solutions for small-scale farms programs, drought resources, and resources for small farms.
 - Technical Assistance – NRCS conservationists provide technical expertise and conservation planning for farmers, ranchers and forest landowners wanting to make conservation improvements to their land.
 - Easements – NRCS provides incentives to farmers, ranchers and forest landowners wanting to put wetlands, agricultural land, grasslands and forests under long-term easements.
- **Environmental Protection Agency (EPA)** – Farming operations can contribute to nutrient pollution when not properly managed. Fertilizers and animal manure, which are both rich in nitrogen and phosphorus, are the primary sources of nutrient pollution from agricultural sources. Excess nutrients can impact water quality when it rains or when water and soil containing nitrogen and phosphorus wash into nearby waters or leach into ground waters. EPA has in place programs to monitor water quality and regulations to sources of pollution. EPA also reacts to natural disasters or emergencies at the request of the state and county.
- **Utah Department of Agriculture and Food (UDAF)** - The mission statement for the UDAF is to “promote the healthy growth of Utah Agriculture, conserve our natural resources, and protect our food supply.” To carry out this mission, UDAF develops regulations to protect public health and safety as well as agricultural markets through high standards of labeling and inspections. The UDAF works to protect, conserve, and enhance Utah’s agricultural and natural resources, including water and land, and to administer two low-interest loan funds to develop resources and

financing new enterprises. Marketing and development programs help to search for ways to expand current markets and develop new ones (Utah Department of Agriculture and Food 2015). The divisions in UDAF include:

- Animal Industry – Prevention and control of animal disease and theft through animal health, meat and poultry inspection, livestock inspection, fish health, elk farming and elk hunting parks, and veterinary diagnostic labs.
 - Plant Industry & Conservation – Ensure disease and pest free plants, grains, seeds, as well as properly labeled agricultural commodities, and the safe application of pesticides and farm chemicals. Assist farmers and ranchers in caring for and enhancing Utah’s natural resources. Programs include insect control, fertilizer and feed, seed & grain inspection/testing, pesticide applicator licensing and product registration, fruit and vegetable inspection and grading, noxious and invasive weeds, plant quarantine and pest survey, organic certification, nursery program, and promotes the Grazing Improvement Program to plan and manage grazing as a tool for maintaining healthy rangelands, watersheds, and wildlife habitat.
 - Regulatory Services – Food safety oversight and consumer protection of agricultural products and services through weights and measures, Dairy and egg farm inspections, food establishment inspections, food labeling and food safety compliance, and bedding, quilted clothing, and upholstered furniture.
 - Conservation Commissioner - Preserve and protect Utah’s soil and water resources and ensure the development and utilization for the betterment of Utah agriculture and its people.
 - Homeland Security - Protect food, animals and agriculture from acts of terrorism and other potential hazards; and maintain awareness through education and training.
 - Laboratory Services - State laboratory chemists and microbiologists verify food and product samplings as a service for other department divisions.
- Some important Acts passed by the Utah Legislature to protect agriculture include:
 - **Agriculture Protection Act (APA)** – The purpose of Agriculture Protection Act: 1) Protect landowners from nuisance lawsuits; 2) Protect landowners from unreasonable restrictions from state and local agencies on farm structures and practices; 3) Serve as notice to prospective land buyers that they are purchasing land next to a protected farming operation; and 4) Protect landowners from changes in zoning designations unless all landowners within the APA provide written approval. The APA is flexible allowing the landowner the option to remove some or all of the land from protection, add more land to existing areas, and allow for multiple landowners in the same area to file for one agriculture protection area.
 - **Utah Farmland Assessment Act or Greenbelt Act (UFAA)** – Utah has a balanced tax policy that includes property, income, and sales tax. State legislative action has allowed agricultural producers to enjoy specific exemptions or modifications of some taxes. The most common is the Utah Farmland Assessment Act (UFAA). Sometimes known as the “Greenbelt Act,” this legislation was passed in 1969. The purpose of this act is to allow qualifying land to be assessed and taxed at significantly lower rates reflective of productivity. Voters approved this constitutional amendment to encourage retention of land in agriculture and to protect productive farm lands. This method of assessment is vital, especially to agricultural operations in close proximity to urban areas (Israelsen et al. 2009). Greenbelt areas are also part of the county’s heritage and can make

communities more desirable and livable. These areas provide green, open spaces, which could improve air quality and reduce the urban heat island effect.

Iron County Zoning Ordinances: The County and municipalities have influence over land uses and zoning which will impact agriculture. Iron County ordinances are found at: https://www.municode.com/library/ut/iron_county/codes/code_of_ordinances

Irrigation: The irrigation districts were created for the purpose of delivering water to their patrons. As such they are effectively non-profit water user associations. In addition to irrigation, these districts also supply a number of other uses, including municipal, industrial, pond maintenance, recharge projects, etc. However, the main purpose the districts exist is to deliver irrigation water. See the Irrigation + Ditches and Canals section of this Resource Plan for a list of all irrigation districts and companies in the county.

Economic Considerations

In 2003 county production statistics (2004 Utah Agricultural Statistics), Iron County was the highest producing county in Utah for potatoes. It was second in production of alfalfa hay and hogs. The county had the fourth largest inventory of sheep and the fifth highest in “All cattle and calves.” Iron County was ranked third in total cash revenue from crop production.

A recent report published through Utah State University (2016) showed that agriculture contributes more than 15% of the state's total economic output. "Agriculture processing and production sectors combine to account for \$21.2 billion in total economic output in Utah after adjusting for multiplier effects (compared to \$15.2B in 2008)" (Ward and Salisbury 2016). In terms of employment and taxes, the study found, "A total of 79,573 jobs are agriculture related generating compensation \$3.5 billion (compared to 66,500 jobs in 2008)," and that "The agriculture production and processing sectors generate \$497 million in state and local taxes (compared to \$350 million in 2008)" (Ward and Salisbury 2016).

Iron County ranked second in hay production, and third in sheep numbers.

Table 1. Production by Commodity, Iron Commodities Production

Commodity	Production 2014	Production 2015	State Ranking
Hay	329,000 tons	245,000 tons	2
Cattle (All)	43,000 head	41,000 head	
• Dairy	7,500 head	8,500 head	
Sheep	28,000 head	29,500 head	3

Source: Utah Agriculture Statistics Report, 2015.

Table 2. Number of in Iron County

# of Farms	Land in Farms	Harvested Cropland	Irrigated Land
509	532,464 acres	62,909 acres	61,619 acres

Source: USDA 2012 - Census of Agriculture in Iron County

Agriculture accounts for approximately 17% of the total economic production in Iron County.

Farm Land Trends in Iron County: Stakeholders identified the following trends that are being explored or have the potential of being developed in the county:

- Urban Development Impacts: More and more urban development is spreading into historical agriculture areas. Each development requires water and the only source is from agriculture.

Agriculture is a large part of Iron County’s culture and of importance to the citizens for quality of life. The County needs to take measures to protect water for agriculture while allowing development to proceed.

- Water preservation efforts (see Water Rights, Quality, and Hydrology section).
- Dairies: During the past few years three large dairies have located in Iron County, two in Parowan Valley and one in the Escalante Valley near New Castle. Although this year’s agriculture reports do not reflect an accurate number of cows being milked at these facilities, it is estimated to be somewhere around 10,000 cows. Most feed consumed by the dairies is grown locally, creating a demand for corn that was not heavily produced before.
- Hay Exports and Processing Facilities: Iron County ranked second in the state for alfalfa hay production. The quality of hay (nutrient content) grown in the County creates a demand in outside markets. One farm provides bales of a specific size to China markets, further expanding sales opportunities.
- Improved Irrigation Practices: As technology in irrigation practice grows, farm practices change. A few farms in the valley are experimenting with drip-irrigation systems to both conserve water and increase yield.
- Aquaculture Opportunities: Warm water in the New Castle region has brought increased interest in aquaculture facilities to raise fish species as shrimp, commercial feed fish, and tilapia.
- Other trends and opportunities include specialized crops and livestock, increased hog production in the north central portion of the County, turkey rearing interests in the Escalante Valley – Enterprise area, community vegetable gardens, more farmers markets, etc.

Desired Future Conditions

Desired future conditions are those goals and objectives identified by the stakeholders along with the policies needed to bring about the goals. The following were provided at the stakeholder meetings:

Issue 1. Water - The State Engineer is considering requests to convert water share from surface water to groundwater, causing greater pressure on existing groundwater, especially where surface water has disappeared.		
GOAL	OBJECTIVE	POLICY
No net increase in water uses.	Prohibit surface water share conversion to groundwater shares.	Iron County is opposed to converting surface water shares to groundwater causing greater pressure on already depleted ground water.

Issue 2. Protecting Canal and Ditches ROW. Canals have potential to cause damage to urban and residential areas, especially during runoff periods or floods if not properly maintained and protected.		
GOAL	OBJECTIVE	POLICY
Make canals safe from flooding for human safety and property damage.	Follow through with HB 370 to map all canal and ditches by irrigation companies and develop mitigation plan for each.	Iron County encourages irrigation companies to map canals and comply with HB 370.

Issue 3. Water Conversion to M&I – Water conversion to M&I via development caused by pressures from development or surrounding counties

GOAL	OBJECTIVE	POLICY
Protect agriculture water through preservation plans.	Develop plan through user groups to preserve and protect irrigation water for use in agriculture (i.e. conservation bank).	Iron County supports efforts to protect agriculture from urban growth to ensure there will always be adequate agriculture in the future Iron County opposes transferring water from within to outside interests.

Issue 4. Water storage – Effort to store water runoff is currently not meeting water demands. Storage through recharge and reservoirs (reservoirs) and recharge projects are not adequate to keep up with water demands in the county.

GOAL	OBJECTIVE	POLICY
Increase ability to store surface water and groundwater.	Develop plan through irrigation companies to construct water storage reservoirs. Develop water recharge plans in the county to allow excess surface water to settle into the groundwater at strategic locations.	Iron County supports efforts by the CICWCD and other irrigation companies to plan and construct recharge sites throughout the county. Iron County will work with irrigation companies to come up with and support plans for additional storage reservoirs in strategic locations.

Issue 5. Ag Protection (APA) – As the population in the County grows, conflicts will arise with rural and urban residences and regarding farming and ranching operations such as smell, noise, dust, etc.

GOAL	OBJECTIVE	POLICY
Protect farming practices from encroaching development.	Analyze current state laws for adequacy. Stress laws in CRMP. Review proposed subdivision for conflicts and make policy for non-approval of perceived conflicts.	Iron County supports APA that protects farms from farm related activities that may conflict with developments, residences, etc.

Issue 6. Noxious Weeds – Concern regarding encroachment of noxious weeds from development and disturbance.

GOAL	OBJECTIVE	POLICY
No-tolerance guidelines for weed invasions during development.	Develop policies to prevent encroachment of noxious weed invasion due to development, such as post development treatment and responsibilities.	Iron County supports a policy for development entities to treat development sites post development.

Issue 7. Export Markets for Agricultural Commodities - Iron County is ideally located for markets due to the location of the railroad and the major interstate corridor between SLC and Las Vegas/Los Angeles and needs to be proactive in developing such markets.

GOAL	OBJECTIVE	POLICY
Develop export markets in Iron County.	<p>Transportation corridors – continue to improve and promote in marketing plans.</p> <p>Ordinances – insure they are business friendly and make companies want to come to the county.</p> <p>Location – ideally located between major cities with major interstate highways and rail services.</p>	Iron County supports marketing strategies that highlight location, transportation corridors, and business friendly ordinances through economic development and planning and zoning ordinances.

Issue 8. Predator Control – Predator control to protect livestock is important to the County. Support to maintain existing tools and management plans is needed.

GOAL	OBJECTIVE	POLICY
Have an adequate predator control program for livestock protection in the County.	<p>Develop policies that Iron County supports a strong predator control program.</p> <p>Support existing predator management tools such as leg-hold traps, foot snares, shooting, aerial hunting, and toxicants.</p>	Iron County supports an efficient predator control program through UDA and WS, and support continued use of existing management tools.

Issue 9. Crop Damage – Compensation policies for crop damage caused by big game needs to be re-evaluated in light of new market for corn and increased deer damage as a result. Current assessment methods do not reflect true damage.

GOAL	OBJECTIVE	POLICY
Ensure compensation policies for big game damage to crops is fair and equitable.	Encourage DWR to revisit current Crop Damage guidelines to compensate farmers from big game damage – specifically the assessment value of the crop damaged and what will be compensated.	Iron County supports review of crop damage compensation guidelines, specifically crop damage assessment.

Issue 10. Wolves – Ensure policies are in place to support DWRs existing Wolf Management Plan, and current county resolution that encourages delisting of the gray wolves and disallowing Mexican wolves to move or be translocated into the County.

GOAL	OBJECTIVE	POLICY
No wolves in the county either by translocation or natural movement.	Reaffirm existing Utah Wolf Management plan and County Resolution 2012-1.	Reaffirm support for the Utah Wolf Management Plan and Iron County Resolution 2012-1.

Issue 11. Domestic Dog Damage to Livestock – Current dog damage to livestock policy does not allow UDA/WS employees to shoot dogs due to liability issues. Puts burden on livestock owner and County Sheriff.

GOAL	OBJECTIVE	POLICY
Have a strong domestic dog control policy when damaging livestock.	Review existing stray dog policy for taking domestic dogs damaging livestock, and if needed, add more flexibility for land owners, County Sheriff, and UDA/WS employees.	Iron County supports a strong livestock protection policy on taking domestic dogs damaging livestock.

Issue 12. Pesticide Registration for UPD Control – Iron County supports use of pesticides to control UPDs as allowed by current state and federal guidelines. If not, this issue becomes moot until delisting occurs.

GOAL	OBJECTIVE	POLICY
Have a variety of control tools to manage UPDs on private lands, including toxicants.	If appellate court upholds lower court decision for state management of UPDs on private lands. Once UPD is delisted, Iron County can move forward with UDA on registering appropriate pesticides, such as fumigants and treated grain for UPD control.	Iron County supports registering pesticides for UPD control on private lands after UPD is delisted.

Issue 13. Insect, Weed, and Disease Control – Insects, weed, and disease control on crops continues to be a major concern for farmers. Pesticides and herbicides are continually vulnerable to stricter regulations from EPA and the State, increasing the cost to produce crops. Agriculture needs to continue to support pesticides and herbicides for crop damage and keep costs to a minimum.

GOAL	OBJECTIVE	POLICY
Support continued use of pesticides and herbicides for crops.	<p>Via resolution, support use of pesticides and herbicides for crops in the county.</p> <p>80% of the soils in Iron County are producing at least 60% of their capacity.</p> <p>Class II and Class III Pinyon/Juniper woodlands are managed to limit their extent to pre-European settlement conditions.</p> <p>Soils are stabilized through vegetative treatments that utilize an optimum combination of native and non-native species.</p> <p>Consistent with ecologic site descriptions, Iron County soils produce 50% of their potential by 2025 and 70% of their potential by 2050.</p>	<p>Pass resolution in support of the use of pesticides and herbicides on crops.</p> <p>Temporary roads shall be evaluated to determine if continued use provides a benefit to the public without jeopardizing land health.</p> <p>Fragile soils are identified during preparation of project-level plans, and necessary mitigation measures are developed to allow the project to move forward, while minimizing risks and degradation to soil resources.</p>

References

FOLLOWING FROM http://www.wfrc.org/new_wfrc/crmp/

1. Utah Department of Agriculture and Food. 2015. [Utah Agriculture Statistics and Annual Report](#).
2. USDA: National Agricultural Statistics Services. 2002. [County Summary Highlights](#).
3. USDA: National Agricultural Statistics Services. 2007. [County Summary Highlights](#).
4. USDA: National Agricultural Statistics Services. 2012. [County Summary Highlights](#).
5. Utah State University Extension. 2011. [Water Quality Best Management Practices](#). Website accessed: 12/29/15.
6. USDA: Natural Resources Conservation Service. 2011. [NRCS Utah Conservation Practice Cost Data](#).
7. State of Utah, Agriculture Sustainability Task Force. 2012. [Planning for Agriculture](#).
8. Ward, R.A., P. Jakus, and L. Coulibaly. 2013. [The economic contribution of agriculture to the economy of Utah in 2011](#). Center for Society, Economy and the Environment Paper #2013-01. Department of Applied Economics, Utah State University, Logan Utah.
9. California Department of Food and Agriculture. 2015. [California Agricultural Production Statistics](#). Accessed: 2/17/2016.
10. Leydsman McGinty, E. I. 2009. [Urbanization in Utah](#). Pp. 153-156 in [Rangeland Resources of Utah](#). Utah State University Cooperative Extension Service in Cooperation with the State of Utah Governor's Public Lands Policy Coordination Office.
11. [Utah Code 17-41-403](#).
12. http://extension.usu.edu/files/publications/publication/AG_farmland_2009-01pr.pdf
 1. Agricultural Sustainability Task Force
 2. Water-Related and Agricultural Land Use
 3. Utah State University County Agricultural Profiles
13. Iron County General Plan (1995)
14. Cedar Breaks History and Culture, <https://www.nps.gov/cebr/learn/historyculture/southern-paiute-indians.htm>

Air Quality

Related Resources

Fire Management, Energy, Mining Resources, Land Use, Agriculture

Overview and History

Overview

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

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.

Custom, Culture, and History

Iron County has always valued clean air.

Current Conditions & Programs

“The major sources located in the urban areas of the State are associated with typical industrial operations such as peaking power plants, sand and gravel operations, mining, and general industrial manufacturing.” The significant, permitted sources of emissions in Iron County are:

- O’Sullivan Furniture
- Cedar City Yard
- Agrinautics
- Bulldog Crushing/Hot Mix
- Cedar City Pit
- GenPak Corporation
- Furniture Manufacturer

Source: (JBR Environmental Consultants Inc 2008)

The Clean Air Act (CAA) of 1970 and its amendments set the laws and regulations regarding air quality, give authority to the US Environmental Protection Agency (EPA) to set standards and rules, and delegate regulatory authority to individual states with EPA oversight, provided certain criteria are met. The purpose of air quality conformity regulations, enforced by the EPA and the Utah Division of Air Quality (DAQ) in Utah, is to protect public health and welfare by lowering pollutant concentrations through a reduction in emissions (Utah Division of Air Quality 2015).

The CAA is the main body of legislation regulating air quality in the US. It a huge piece of legislation with many areas of focus. It addresses air pollution emissions from stationary (power plants, mines, refineries, etc.) and mobile sources (cars, trucks, trains, etc.), setting maximum concentrations of pollutants that are widespread and harmful to human health, limiting emissions of particularly harmful

chemical compounds, improving air quality in areas with poor air quality, keeping the air clean in areas with good air quality, and delegating regulatory authority.

DAQ does not operate an air quality monitoring station in Iron Country. However, the air is generally considered pristine and expected to meet all federal and state air quality standards on most days.

Economic Considerations

Negative impacts from poor air quality may include healthcare costs or time away from work due to stroke, heart disease, and respiratory diseases. Impacts may also be seen in decreased tourism appeal or scenic resource perception, business or industry growth deterred, and increased operating expenses for pollution source for required pollution control measures (Stewart 2012).

Desired Future Conditions

Issue 1. Maintaining Air Quality – Sensible air quality regulation is a high priority for Iron County.		
GOAL	OBJECTIVE	POLICY
Maintain or improve air quality at existing levels.	Continue existing requirements by state and federal government.	<p>Support sensible clean air regulations and guidelines as long as they do not put an undue burden on industry, homeowners, or agriculture.</p> <p>Oppose regulations that place restrictions on homeowners that use firewood to heat houses in Iron County.</p> <p>Prescribed fires scheduled for completion on federal lands should be coordinated with the State Smoke Coordinator prior to ignition and follow the requirements of the State’s Enhanced Smoke Management Plan (https://smokemgt.utah.gov/static/pdf/SMP011606_Final.pdf) to minimize air quality impacts.</p>

References

1. A History of Iron County
2. Division of Air Quality – 2015 Annual Report
3. Division of Air Quality - 2014 Emissions Inventory
4. USFS Air Quality Resources Technical Report (2008)
5. Stewart, H. 2012. “Air Quality is Important for a Healthy Economy”. Utah Business (2012)

Cultural, Historical, Geological, and Paleontological Resources

Related Resources

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

Overview and History

Overview

The terms custom and culture describes the character of the citizens of Iron County through history and current practices. Custom is a usage or practice of the people which long and unvarying habit, has become compulsory and has acquired the force of law with respect to the place or subject-matter to which it relates (Bouvier 1856). Culture is defined as the customary beliefs, social forms, and material traits of a group; an integrated pattern of human behavior passed succeeding generations (Webster's New Collegiate Dictionary 1975).

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

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

Custom, Culture, and History

The custom and culture of Iron 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 Iron County.

Over 66.3% of residents in Iron and Washington County residents "strongly agreed" with the idea that Utah's public lands are an important part of the culture and heritage of their community (Krannich 2008).

Current Conditions & Programs

Demographics

Iron County has a total area of 3,301 square miles of which 3,297 square miles is land and 4.4 square miles is water, making water one of the most important commodities in the county. Of the total square miles, BLM and Forest Service make up 1,496 and 412 square miles of land respectively. State lands include 221 square miles, the Cedar Breaks National Monument includes 9.6 square miles, tribal lands are 3.1 square miles of land, and private land includes the remainder of 1,159 square miles. It should be noted

that with the majority of land ownership being federal, it stands to reason that public lands is a large and important part of Iron County's culture.

Cultural and Historical

Iron County's culture is a mosaic of history that has shaped the use of the landscape and natural resources over the centuries. The cultures of agriculture (farming and grazing), the sacredness of Native American sites (i.e. Parowan Gap) and Native American customs (i.e. gathering pinyon nuts), of mining (iron extraction), of hunting and fishing, and of the natural beauty of Cedar Breaks are all examples of the influences that have shaped the County over time. Although federal land managing agencies strive to protect physical resources such as archaeological sites, structures, or places of importance, it is important for managers to keep in mind that today's culture is influenced by use and management of natural resources.

Native American Cultures

Fremont and Paiutes (Virgin Anasazi) Indians were the first known inhabitants of Iron County. "Historically, the largest population concentrations of Paiutes were along the Virgin and Muddy rivers in Washington County; other Paiutes adapted to a more arid desert environment that centered on water sources such as springs. Both desert and riverine groups were mainly foragers, hunting rabbits, deer, and mountain sheep, and gathering seeds, roots, tubers, berries, and nuts. Paiutes also practiced limited irrigation agriculture along the banks of the Virgin, Santa Clara, Muddy rivers and small streams. They raised corn, squash, melons, gourds, sunflowers, and, later, winter wheat. The first recorded contact between Utah Paiutes and Europeans occurred in 1776 when the Escalante-Dominguez party encountered Paiute women gathering seeds. In 1826-27 Jedediah Smith passed through Paiute country and established an overland route to California. Trappers, traders, and emigrants on their way to California soon followed. The increased presence of Europeans and their animals had serious effects on the Paiutes." (Paiute Indian Tribe of Utah, 2019-2017). There are several Native American resources important to the County. Some include the chart source materials south and east of Brian Head, Parowan Gap, and numerous other petroglyph sites, several lithic sites scattered throughout the county, pinyon pine nut sources in the western portion of the County, and sacred tribal rituals important to the Paiute Indian Tribe.

Explorers and Important Events

Dominguez/Escalante Trail - In 1776 two Franciscan friars, Dominguez and Escalante, were sent to search for an overland route from Santa Fe New Mexico to the recently established settlement of Monterey California. They made it as far as the Iron and Beaver County line, before being overtaken by winter. By casting lots, the majority of the group decided to return to Santa Fe. The small hill where they cast lots is in Iron County and called Casting of the Lots Knoll.

The Old Spanish National Historic Trail - The Old Spanish Trail became the fifteenth national historic trail when Congress designated it as such and President George W. Bush signed the adoption bill early in December 2002. The Old Spanish Trail linked two provinces of Mexico separated by such difficult topography and climatic extremes that a route was successfully opened only in 1829. In that year Antonio Armijo, a merchant from Santa Fe, led 60 men and 100 mules on the known trails blazed northward by trappers and traders with the Utes, and backtracked along the route Spanish padres Dominguez and Escalante recorded as they returned to Santa Fe from southern Utah more than fifty years earlier. (Old Spanish Trail Association). The Old Spanish Trail became an important part of commerce as goods were moved via mule trains from Santa Fe to California, and returning with mules and horses back to New Mexico. The trail intersects Iron County from Bear Valley on the east side to New Castle on the southwest side. Recent efforts have focused attention on signing the trail to preserve and make it known to the public.

Mormon Settlement - Shortly after arriving in Salt Lake Valley, Brigham Young sent an exploratory team to find places in the vast west suitable for settlement. When the exploratory team discovered iron ore, settlers were sent to the area with the main intent of mining the ore and settling the area. Parowan was the first settlement in the area in 1851. Parowan has been called the “Mother Town of the Southwest” because of the many pioneers who left from there to start other communities in the area and surrounding states. In its first year, colonists were asked to settle Johnson Fort, now Enoch, where a stockade was built, and were also sent to settle along Coal Creek, site of the settlement to manufacture iron, which became Cedar City. The Mormon heritage is rich in the County today, with celebrations for the settlement of communities and important religious commemorations by campouts, plays, parades, festivities, etc.

Iron Ore - Iron County obtained its name from the iron resources found west of Cedar City, in the Iron Springs and Pinto Mining Districts, which represent the largest known iron ore resource in the continental United States west of the Mississippi River” (BLM 2013). “Without question, Iron County is accurately named. Within its borders lie the richest and most accessible iron ore bodies in the western United States. The mining district is three miles wide and twenty-three miles long, occupying only sixty-nine of the county's 3,300 square miles. However, economically and historically, its impact has eclipsed that of any other facet of the natural landscape...Iron County became the second wealthiest county in Utah in the 1950s when its iron mines were producing millions of tons of ore for steel plants in northern Utah, California, and Colorado” (Seegmiller 1998).

Agriculture - Agriculture has been a mainstay in southern Utah for centuries. Escalante kept detailed journals of his travels in the Southwest and made notes concerning Southern Paiute horticulture, writing in 1776, that there were “well dug irrigation ditches” being used to water small fields of corn, pumpkins, squash, and sunflowers. Since the 1850’s when Iron County first saw an influx of settlers, people cultivated the land to support their lives and lifestyle. The County considers agriculture to be part of its history, custom, and culture. For over 150 years lands and waters have been the foundation of agriculture in Iron County. Farmers and ranchers continue working these lands to provide agricultural products and have also built and fostered a wide range of structures, community relationships, ecosystems, and scenic legacy of barns, farmhouses, ditches, hayfields and pastures.

Livestock - J.M Palmer stated “the original settlers of cedar who arrived in the fall of 1851 brought with them some well-bred, shorthorn, dual-purpose type cattle. They were good beef producers as well as good milking cows.” William R. Palmer reported that “sheep were first brought to Cedar City in November 1852 by the Wallden Family who later moved to Beaver. They had ten head, but as fast as people could get hold of them, every family acquired one or two or more to produce the wool that was needed to spin the family clothing.” By 1869 Palmer reports the Coop Sheep Company, at that time the only users of open range, had built up to 5,000 head of sheep. Settlers quickly found that Cedar Mountain was an ideal place to raise livestock (particularly sheep), which resulted in a large rise in animal numbers. In 1910, the first Agriculture Census for the State was published and reported 7,504 cattle, which included 1,002 dairy animals and 190,953 sheep and lambs in Iron County. (C. Reid, USU Extension, personal communication).

Southern Utah University - Cedar City was selected as the site of the new school. A new Ward Hall was constructed to house the new school, however, shortly after opening, the City was told that use of the Hall did not comply with the intent of the law and a new facility would have to be built before the coming school year or the funding would be lost.

“Winter had set in and the town's building materials were nonexistent because of the construction of the Ward Hall. Still, the people of Cedar City set out to do the impossible. On January 5, 1898, a group of men left Cedar City. Their task was to cut logs necessary to supply the wood for the new building. It took the men four days bucking deep snow just to reach the saw mills located near the present day ski resort, Brian Head. The way back was just as arduous as the trip up. The snow had obliterated the trail they had originally blazed and the snow was even deeper. The wagons could not make it and were abandoned at a

clearing. It was in this phase of their march that an old sorrel horse proved so valuable. Placed out at the front of the party, the horse, strong and quiet, would walk steadily into the drifts, pushing and straining against the snow, throwing himself into the drifts again and again until they gave way. Then he would pause for a rest, sitting down on its haunches the way a dog does, heave a big sigh, then get up and start all over again. "Old Sorrel" was credited with being the savior of the expedition" (Southern Utah University 2017). The story demonstrates the culture of a "can-do" attitude and the importance education played in the lives of early pioneers.

The Parowan Gap - The Parowan Gap Petroglyphs are a historic treasure in Iron County. "Several centuries ago Native Americans traveling through the area stopped and pecked chiseled designs onto the smooth faces of large boulders found on the east side of the gap. Over the years many of the boulders have been covered with these chiseled figures known as petroglyphs. The petroglyphs here are thought to be the work of several cultural groups and represent a long period of use by Native cultures. What these designs mean is still unknown. Archaeologists debate that they represent concepts, ideas, or actual happenings. Perhaps, they were part of a religious activity or hunting ritual. The local Native Americans consider them to be an important part of their cultural history relating stories of their ancestor's lifeways" (Utah Travel Industry Website 2017).

Cedar Breaks National Monument - On August 22, 1933, President Franklin D. Roosevelt declared Cedar Breaks as a National Monument. Between 1920 and 1923, a road was built connecting Cedar Breaks to the east side of Zion National Park, for ease of visitation. First named by the Paiutes as the Circle of Painted Cliffs, it was later named as Cedar Breaks. Travel to the area became even more popular in the 1930's after advertising showcased the monument. The railroad spur from Lund to Cedar City was used to transport travelers to Cedar City, where they were transferred to buses and visited the monument and surrounding national parks. This past year visitor numbers were in excess of 900,000 people.

"The Deer Hunt" - Although to the general public hunting deer may be considered a recreation, to the locals it is a long-standing tradition, handed down from the first settlers who depended on the abundant supplies of meat for survival. Today, families in the County look forward to the opening day of deer season to join on camp-outs with family members. It serves as a way to reconnect with family values and the beauty of the natural resources Iron County has to offer.

Iron County has 19 sites listed on the National Register of Historic Places, including the Cedar City Historic District, Parowan Meetinghouse, and many others (National Parks Service 2017).

Geological

"Iron County overlaps two of Utah's three major physiographic provinces. The eastern portion is part of the Colorado Plateau and the western portion is part of the Basin and Range Province, known as the Great Basin. The Colorado Plateaus Province is an area of strongly carved, table-like relief, here and there modified by volcanic action. Dominant topographic features are plateaus, cliffs, canyons, volcanic cones, and lava fields. The sedimentary rocks and thicker lava flows are displayed as platforms at different altitudes, bordered by slopes of imposing height. The platforms are bordered by broad terraces on which are developed benches that record the different erosion of both more-resistant and fragile stratigraphic formations" (Seegmiller 1998).

"The western portion of Iron County is an area of generally north-south-trending mountain blocks and broad, sediment-filled valleys. Some of these mountain blocks are composed of sedimentary rocks, mostly Cretaceous and Tertiary period sandstones and shales; others are igneous, ranging from volcanic-welded tuffs and ash-fall tuffs to granitoid intrusive rocks" (Seegmiller 1998).

“The Red Hills west of Parowan are sandstone and shale, with some volcanic tuffs in the northern part and cinder cones and lava flows in the southern part. The mountains of the Pinto and Iron Springs mining districts- Three Peaks, Granite Mountain, and Iron Mountain-are Tertiary period quartz monzonite intrusives surrounded by sedimentary rocks” (Seegmiller 1998).

“The Swett and Harmony mountains southwest of Cedar City are mostly Tertiary volcanic tuffs with some younger sedimentary rocks. Other ranges surrounding the Escalante Desert are composed of a wide variety of Tertiary volcanics” (Seegmiller 1998).

“The most extensive valley is the Escalante Valley or Desert. Extending from Milford to Enterprise, this relatively flat valley is covered by alluvial sediments” (Seegmiller 1998).

Seismicity

“Because earthquakes result from slippage on faults, from an earthquake-hazard standpoint, faults are commonly classified as active, capable of generating damaging earthquakes, or inactive, not capable of generating earthquakes. Fault-related surface rupture has not occurred in southwestern Utah historically, but the area does have a pronounced record of seismicity. At least 20 earthquakes greater than magnitude 4 have occurred in southwestern Utah over the past century. Earthquakes pose a significant risk to Iron County, due to the general seismic activity of the entire state of Utah, which averages over 2 earthquakes somewhere in the State each day, over 700 per year. Iron County in particular is located on the Intermountain Seismic Belt which runs along the I-15 corridor. This hazard risk is of moderate probability but potentially extremely high consequence” (Iron County Commission 2016).

Paleontological

Several dinosaur tracks have been found in the Parowan Gap area of Iron County. These tracks, made by ornithopods, ceratopsians and theropods, are the “oldest known in North America, and possibly in the world.” The tracks (natural casts) occur in the Iron Springs Formation and are usually in the fallen blocks of light yellow-brown sandstone. These footprints were first made in malleable stone, which has since eroded away to expose the sandstone imprint (Milner et al. 2006).

Control and Influence

“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” (Utah Division of State History 2016).

The National Historic Preservation Act is legislation intended to preserve archaeological and historical sites in the US, along with several others laws and regulations. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices (SHPO). The National Register of Historic Places, managed by the National Park Service, is the nation's official list of buildings, districts, sites, structures, and objects worthy of preservation, and are officially designated "historic properties", either archaeological or historic. The State Historic Preservation Office (SHPO) and Officer 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 (National Parks Service 2017).

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

The Utah Antiquities Act (UCA 9-8-404 et seq.) protects significant paleontological and cultural resources and applies to all paleontological resources that are on or eligible for inclusion in the State Paleontological Register. Other states laws which protect paleontological resources include Utah NAGPRA [Utah Code Ann. 9-9-401 et seq.] and SITLA's NAGPRA rules [Utah Admin. Code R850-61

Economic Considerations

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.

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

Though unmeasured in the economy, the value brought to the County by paleontological research and tourism is important.

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.

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.

A study by the Utah Heritage Foundation (2013) 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 than sent to Washington, D.C. because of projects that utilized the Federal Rehabilitation Tax Credit".

"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).

Relevant Existing Policies

Goal PS7: Encourage the development of a wide range of cultural activities throughout the planning area.

Pol. PS7. 1: Preserve and enhance designated significant historic assets and other structures and amenities which provide focal points and which broaden the cultural and preservation opportunities within the County.

Goal EN1: Minimize damage and hazards resulting from seismic activity, unstable soils, flooding conditions, and other geologic hazards.

Pol. EN 1.1 Encourage all new development to have an adequate water supply, road widths, and reasonable secondary emergency access to minimize health and safety risks.

Pol. EN 1.2 Require that soils containing toxic or hazardous substances be cleaned up to the satisfaction of the agency having jurisdiction prior to development or redevelopment.

Pol. EN1.3 Review development proposals located in or immediately adjacent to areas of soil instability, liquefaction areas, and steep slopes to provide geotechnical studies, determine if a significant constraint exists relative to these various issues and to determine appropriate land use and structural design.

Pol. EN1.4 Promote open space and recreational uses in designated flood zones unless the hazard can be adequately mitigated.

Pol. EN1.5 All structures will meet or exceed Uniform Building Code required earthquake resistant design standards.

Pol. EN 1.6 Develop hillside grading standards, by ordinance, to minimize the hazards of erosion and slope failure.

Pol. EN 1.7 To protect all natural flood channels.

Goal EN2 Prepare Iron County for self-sufficiency in the event of a major emergency or earthquake.

Pol. EN2.1 Develop an earthquake/emergency preparedness plan which includes, but is not limited to, the establishment of a volunteer pool to assist in responding to a seismic event. Along with creating a volunteer pool to help provide food and shelter to those impacted persons requiring help within the County.

Pol. EN2.2 Develop a plan in cooperation with hospitals, schools, major businesses, utilities, the Red Cross, churches and other service providers to work together and train in preparation for a coordinated response during a major event.

Desired Future Conditions

In addition to the General Plan goals and policies, Iron County identifies the following goals, objectives and policies to further highlight those areas of public land management that Iron County recognizes are import in preserving the customs and cultures of the area:

Issue 1. Federal Land Increases – Federal lands seem to expand lands through trades or purchases.		
GOAL	OBJECTIVE	POLICY
No net increase of federal land ownership in the county.	Coordination and cooperation at onset of land exchange or procurement proposals.	Support no net gain of federal lands unless approved by Iron County Commissioners.

Issue 2. Watershed Management – Watershed protection may not be highest priority as management strategies are considered in the important watersheds.		
GOAL	OBJECTIVE	POLICY
Properly manage watersheds and other resources.	Establish watershed management and protection as high priority during management planning. Involve Iron County in plan development.	Support management of rangelands and forestlands to maintain and enhance desired plant communities that benefit watersheds, wildlife, water quality, recreation, and sustainable livestock grazing.

Issue 3. Overall Management Objective – Concern that management of public lands may be moving further away from management of those resources most important to the well-being and culture of the citizens of the County.		
GOAL	OBJECTIVE	POLICY
Preserve the culture of Iron County.	Coordination with the County on land use plans and planning.	Public lands must be managed in a manner that recognizes the Nation’s need for a domestic source of minerals, food, timber, and fiber.

Issue 4. Consultation and Coordination – Some public land agencies and offices may excluding the County during the pre-planning and planning phase project and plan development.

GOAL	OBJECTIVE	POLICY
<p>Federal agencies following the mandates of FLPMA and NEPA for involving local governments in planning.</p>	<p>Jointly hold “coordination” meetings to discuss planning, concerns and issues. Coordination is defined as involving local governments in discussions of projects beyond what requirement of Cooperating Agency.</p> <p>Invite Iron County as a “cooperating agency” to participate in the NEPA analysis portion of plan development.</p>	<p>Require consultation and coordination with the County at the earliest possible time for all NEPA analyses. This includes participation in the development and disclosure of reasonable and foreseeable alternatives, economic and human impact analysis, and mitigation requirements.</p>

Issue 5. Permittee Coordination and Planning – During rehab projects after fires or revegetation treatments, permittees may not be included in planning, and important range improvements that could be included are not considered.

GOAL	OBJECTIVE	POLICY
<p>Multiple range improvement opportunities during fire rehab or vegetation treatments.</p>	<p>Include permittee in such planning projects.</p>	<p>It is critical for project planning and activities to be coordinated within the agency departments and with all impacted permittees to allow for opportunities to serve multiple resources with each project (e.g.: when a fire rehab project is going in, installation of a watering ponds for domestic livestock and wildlife use). By taking advantage minimizes disturbance in the allotment and allows the permittee to improve domestic grazing distribution, helps wildlife, and “wild” horse where applicable.</p>

Issue 6. Communication with Permittees – Often times when allotments or lease areas are visited by federal land agencies or associated personnel, the permittee/leasee are not notified.

GOAL	OBJECTIVE	POLICY
Make communication and coordination on all aspects of the permitted use.	Communication with permittees a must regarding site visits on permitted/leased lands.	Communication is required with permittees or leases prior to completing a site visit to the allotment or lease.

Issue 7. Grazing a Multiple-Use – Concern that Federal Agencies is placing less and less emphasis on grazing and as a multiple-use principle.

GOAL	OBJECTIVE	POLICY
Recognize Grazing as a multiple-use principle and an important part of Iron County’s custom and culture.	Require discussion in all plans pertaining to land use where grazing is mentioned, that it is an important aspect of Iron County’s custom and culture.	Domestic livestock grazing shall continue to be recognized as an important multiple-use on BLM and FS lands as documented in FLPMA, NFMA and the Taylor Grazing Act. The custom and culture of Iron County is based on continued access to BLM and FS lands for livestock grazing, commensurate with and adjudicated to their private land base properties.

Issue 8. Iron County Custom and Culture – Concern the land use plans completed by federal agencies not truly depicting the custom and culture of Iron County.

GOAL	OBJECTIVE	POLICY
Recognize all resources on federal lands as part of Iron County’s custom and culture.	Require discussion in all plans pertaining to land use that natural resources are important to Iron County’s custom and culture.	Access to all resources on federal lands shall also be recognized as part of the custom and culture of Iron County.

Issue 9. Multiple-Use in Special Designated Areas – The principle and emphasis of multiple-use in custom and culture plan discussions seems to have gotten lost or watered down in land-use planning, especially when an area is considered for or designated as special use.

GOAL	OBJECTIVE	POLICY
Keep County custom and culture up-front on all land-use planning and discussions.	Regular coordination meetings with the County and federal/state agencies.	Encourage multiple-use as custom and culture on current and future federal land special designation areas.

Economic Considerations

Vision

Iron County communities thrive and are sustainable due to a healthy balance between man, development, natural resources, and land health.

Iron County has two distinct economic regions the urban corridor centered by Cedar City and the rest is rural. The urban region has a robust diversified economy and the rural region has a natural resource base economy.

Iron County's natural resources and amenities are almost exclusively on Federal Lands managed by the US Forest Service, Bureau of Land Management, or National Park Service. Therefore, how these resources are managed determines the long run sustainability of Iron County.

Agricultural and Forestry Industries

Agriculture and natural resources has provided for community stability and resilience throughout the history of Iron County. The agricultural sector in 1994 was composed of 17 different industrial classifications producing output valued at \$41.8 million in 2015 dollars. Agricultural operations employed about 670 people. By 2015 the agricultural sector was composed of 12 different industrial classifications producing output valued at \$221.6 million and employed about 990 people. In Iron County agriculture is dominated by hogs, cattle, dairy, sheep, and hay production with output valued at \$209.4 million and employing 820 people (G. Miller, Rocky Mountain Advisory LLC, unpublished report).

Tourist Industries

Tourism in Iron County is natural resource based. For decades Iron County has had Cedar Breaks National Monument, Brian Head Ski Resort, and Shakespearean Festival as the center pieces for tourism in the County, although there are State Parks and other tourism opportunities in Iron County. Iron County and Cedar City have invested a substantial amount of money, time, and effort to diversify tourist opportunities. In 1994 tourist industries accounted for about \$64.7 million in 2015 dollars and employed about 1,391 people. By 2015 tourist industries accounted for about \$117.6 million and employed about 2,015 people (G. Miller, Rocky Mountain Advisory LLC, unpublished report).

Service Industries

Since 1994 service industries have grown the most in Iron County. In 1994 service industries accounted for about \$278 million in 2015 dollars and employed about 3,375 people. By 2015 this had grown to about \$1 billion and employment grew to about 9,826 people (G. Miller, Rocky Mountain Advisory LLC, unpublished report).

Water

The Natural Resources Conservation Service (2005) identified 907,610 acres as forest lands and 1,064,773 acres as rangelands. If these conditions are met water yield most likely will increase by 0.5 acre feet per acre for forest lands and 0.05 acre feet per acre of rangeland. If the water is valued at \$30.00 per acre foot. Then, the economic value of the water yield would increase by approximately \$15.2 million.

Objectives

- a. The county has a strong and diverse tax base.
- b. The county has low unemployment and residents are self-sufficient.
- c. The county retains and preserves quality jobs.
- d. The county is business-friendly and supports improved education, training, and advancing employment opportunities for people who choose to work in Iron County.
- e. Quality jobs in Iron County are those that are full-time, year-round, and could support a household.

Policies

- a. The county will promote economic development by coordinating with the State and neighboring jurisdictions.
- b. The county does not support burdensome business regulations that could negatively impact quality employment opportunities.

Energy Resources

Related Resources

Mining, Mineral Resources, Cultural, Historical, Geological, and Paleontological, Water Quality and Hydrology, Water Rights, Air Quality, Land Use

Overview and History

Overview

This section describes the major energy occurrences and developments in Iron County. Wind, solar, biomass, geothermal, and hydroelectric power are considered to be renewable energy resources. Solar power refers to the energy from the sun that is converted into thermal or electrical energy. Geothermal energy is derived from the heat stored in the Earth's interior. Biomass energy is the burning or use of organic materials as a source of energy. Hydroelectric power is the generation of electricity by a turbine or generator using the gravitational force of falling or flowing water. Biogas is also a renewable energy in which a mixture of different gases are produced by the breakdown of organic matter from raw materials such as municipal waste, plant material, manure, and sewage. Through anaerobic digestion or fermentation of biodegradable materials, gases such as methane, carbon dioxide, and hydrogen are produced which can be oxidized and combusted as fuel or converted for use in numerous other ways.

Renewable Energy development is relatively new to Iron County as federal incentives have encouraged solar development and interest in wind. Although geothermal has been used as an energy source, the use has been limited. Several solar farms have been built in Parowan, Cedar City, and the New Castle valleys. New technology has improved efficiency of alternative energy as greater demand is increasing. Research into storage systems for electricity to meet demands is showing promise, and when developed will increase the need for more solar and wind energy. Iron County is situated in an ideal area for both types of energy and sees trends stabilizing to increasing.

Custom, Culture, and History

Most Iron County communities were founded near streams and as electricity was developed, water was used to produce electricity through small hydroelectric power plants. Today, two are still functional hydroelectric plants - Center Creek (Parowan) and Red Creek (Paragonah, both owned by Parowan City Corporation).

“The iron ore deposits west of Cedar City, and the coal reserves in Cedar Canyon presented a means of producing the commodities that were needed in the early western communities especially since overland trails and freighting routes had not yet been established” (Iron County Commission 1995).

“Coal in the canyons east of Cedar City and iron ore in the mountains to the west brought mining and smelting activity to Iron County in the 19th Century. Smelting efforts finally failed because of the lack of economical transportation to large markets and metallurgical grade coals. Settlers soon turned to farming and ranching” (Iron County Commission 1995).

Over 74% of residents in Iron and Washington County believe that public land managers should either maintain or increase the extent to which exploration for development of oil and gas activities occur on Utah's public lands (Krannich 2008).

Current Conditions & Programs

Oil, Oil Shale, Oil Sands, and Natural Gas

“Interest in oil and gas, and natural gas exploration in [Iron County] is currently low compared to other areas in Utah or the West, evidenced by a low number of exploration authorizations. No competitive bids were placed for seven oil and gas lease parcels offered for sale in Iron County on May 24, 2011” (BLM 2013).

Nuclear

“Nuclear power is a source of energy derived from the fission (splitting) of atoms. It accounts for approximately 19 percent of total electricity generated in the United States. Utah neither generates nor imports power from nuclear power plants. By-products of nuclear energy are cleaner than those produced by burning fossil fuels for power (near-zero emissions of carbon dioxide, sulfur oxides, nitrogen oxides, and ash), but it does produce solid waste by-products that must be stored. While these waste products are small compared to the electricity produced, they require specific safety measures” (USU 2009). Iron County has limited accessible uranium resources and no active mines.

Coal

Coal is the remains of plant material preserved in stratified layers in the earth's crust. Mining of coal beds in Utah is conducted mainly to provide fuel for the electric power generation industry, as well as for some commercial and industrial uses (RPG 2005).

“The coal resources in the Kolob-New Harmony coal fields are substantial, but challenged by relatively low quality and by current market standards. Historically, coal was produced and important to the local economy. Reported quality of the coal is less than coal resources in the Wasatch and Book Cliff coal fields, which has not prompted current exploration and development. These coal fields are also coincident with lands that now have high-value surface resources that could be in conflict with mineral exploration and development” (BLM 2013).

Geothermal

“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” (USU 2009). Iron County has several high-temperature regions suitable for power generation mainly on the eastern edge of the Escalante Desert region.

Large sections of Iron 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. Iron County Code 17.35 addresses Geothermal Energy. Geothermal resources are considered a leasable fluid mineral to the BLM. Leasing geothermal resources is similar to the oil and gas leasing process (BLM 2013).

Solar

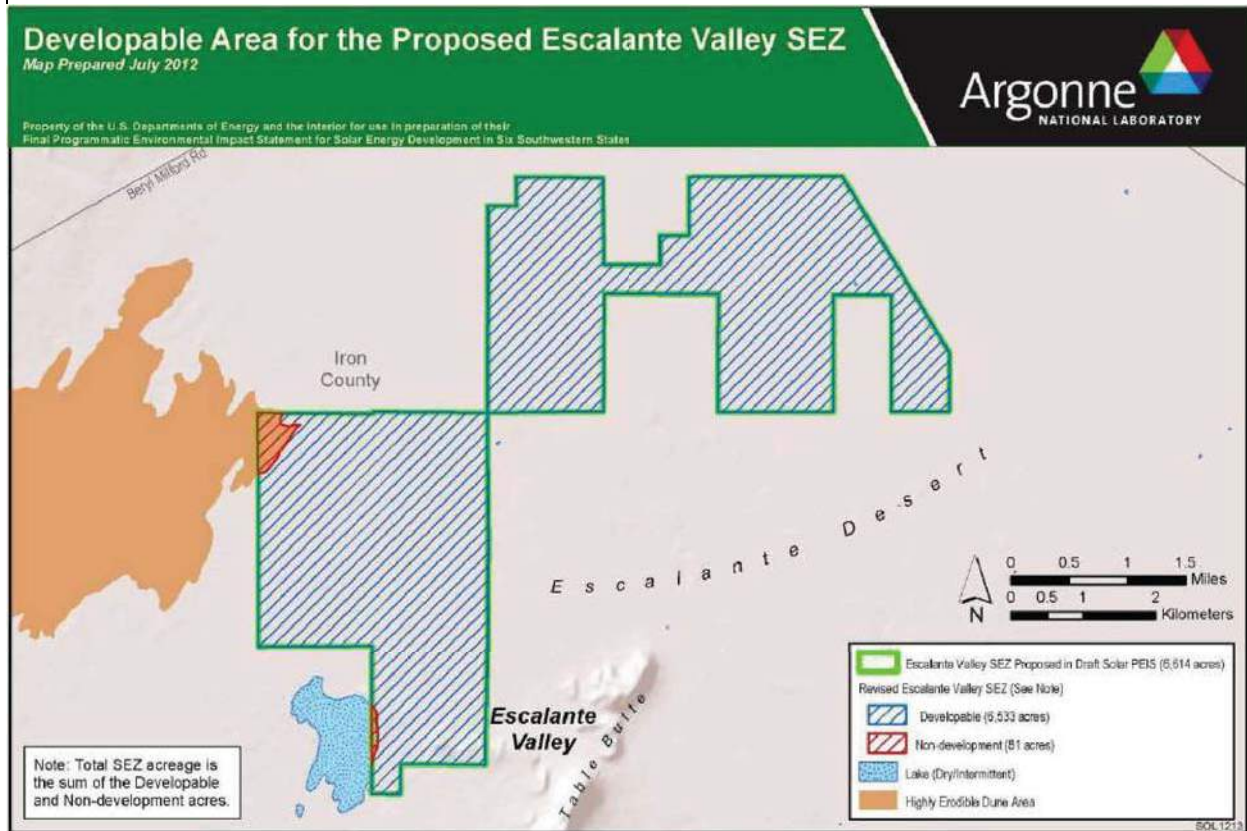
“Utah has about 16,500 km² (6,370 square miles) of land that, at least technically, could support utility-scale solar power. A rule-of-thumb for CSP is that the field of solar collectors required for a 50 MW plant is one square kilometer (0.39 square mile, or 247 acres). Therefore, Utah contains about 16,500 sites of sufficient contiguous size for a 50-MW CSP installation” (Berry et al. 2009).

In the past few years, crude oil prices have collapsed worldwide and public demand for solar energy has skyrocketed, partly fueled by incentives offered by the federal government. Table 1.0 illustrates that there are 18 solar power plants that have been constructed in the county in the last five years, and three that are in the planning stage. These solar plants combined produce 917 megawatts of power. All solar plants are located on private lands and abide by stipulations in the conditional use permits issued prior to construction (Iron County Ordinance, 17.33).

Iron County Solar Projects				
#	Project Name	Location	Size	Acreage
1	Red Hills Renewables	Parowan Valley	80 MW	700
2	Buckhorn Solar	Parowan Valley	3 MW	40
3	Cedar Valley Solar	Cedar Valley	3 MW	30
4	Beryl Solar	Escalante Valley	3 MW	30
5	Enterprise Solar	Escalante Valley	80 MW	710
6	Fiddlers Canyon #1	Iron Springs	3 MW	30
7	Fiddlers Canyon #2	Iron Springs	3 MW	30
8	Fiddlers Canyon #3	Iron Springs	3 MW	20
9	Fremont Solar	Parowan Valley	100 MW	1128
10	Rush Lake Solar	Cedar Valley	100 MW	1275
11	Three Peaks Solar	Cedar Valley	120 + Stor	1200
12	Granite Mountain West	Cedar Valley	50 MW	400
13	Granite Mountain East	Iron Springs	80 MW	650
14	Iron Springs Solar	Cedar Valley	80 MW	845
15	Quichapa 1	Cedar Valley	3 MW	74.24
16	Quichapa 2	Cedar Valley	3 MW	40.82
17	Quichapa 3	Cedar Valley	3 MW	48.36
18	Appaloosa Solar I	Cedar Valley	200 + Stor	2718
TOTALS			917 MW	9969.42
<i>Source: Iron County 2017</i>				

Beginning in 2003, the BLM and Department of Energy (DOE) initiated a series of Programmatic Environmental Impact Statements (PEIS) for renewable energy development on public lands in the western states. The PEIS for solar energy was completed in 2012 and designated 19 Solar Energy Zones (SEZ’s) in 6 western states. This was further prioritized by the President’s Climate Action Plan in 2013 which pushed for substantial increases in electricity generation from renewable sources, including on public lands. Three SEZ’s were identified in Utah with 1 of those in Iron County, the Escalante Valley SEZ (See Map 1.0). The identification of the SEZ’s was designed to facilitate utility-scale energy development by establishing agency-wide policies and procedures for processing renewable energy applications and pre-screening areas for sensitive and cultural issues while identifying locations where

resource conflicts were minimal. The BLM considers areas outside the SEZ's as Variance Areas, or potential exclusion areas for utility-scale solar energy development.



Map 1.0 Escalante Valley SEZ

Although the BLM completed and PEIS to promote solar installations, companies have sought out private holdings to construct solar facilities. The time consuming and expensive regulations imposed by the federal government to construct solar sites on BLM lands makes such areas undesirable at this point in time.

Biomass

Bioenergy is the use of biomass as fuel to generate electricity. Wood is the most common biomass energy resource, but other sources such as food crops, grassy and woody plants, residues from agriculture or forestry, algae and organic components can be used. The most common technique for generating power is the use of direct-fired systems which use biomass as a fuel source to produce steam which drives an electric generator turbine.

Woody biomass is primarily composed of the residues from forest restoration projects which are designed to improve wildlife habitat, increase forest and rangeland health and reduce wildfire risks. These restoration projects consist primarily of land treatments which thin and clear overstocked forest and woodland stands, removing understory, smaller diameter trees, and brush. The most common source of woody biomass with the potential for energy production in this area is the pinyon-juniper woodland.

Biomass projects typically take place on BLM-administered lands where stewardship contracts with small businesses, communities, and nonprofit organizations take on the restoration projects while harvesting the biomass products.

Estimates of existing biomass resources are expressed in tons per acre (TPA) of yield. The yield level in TPA is divided into three categories of potential: low (0 to 5 TPA), medium (5 to 20 TPA), and high (more than 20 TPA). An assessment of biomass resource potential for the public lands administered by the Cedar City Field Office showed that 51.8 percent was low potential, 44.4 percent was medium potential and only 3.8 percent was rated as having high yield potential for producing biomass. The factors to which biomass energy will be developed will depend on multiple factors including: available federal subsidies, federal policies, BLM resource management plans, planned vegetation treatment locations, transmission infrastructure availability, proximity to load centers, population energy demands, advancements in technology, and costs versus competing sources of energy. Limitations on Biomass energy production are more complex and different from those for other energy resources, resulting in a lower optimism for future development of biomass as an energy resource in this area.

Wind

There are several high confidence wind zones in Iron County that could be developed for wind energy. The Enterprise and Harmony Mountains sites have the potential for 230 and 60 megawatts of energy, respectively, but were dropped from consideration due to Department of Defense fly zone concerns. The Black Mountains and Chipman Peak sites overlap both Iron and Beaver Counties. These sites have potential for 160 and 200 megawatts, respectively (Berry et al. 2009), however, the mitigation required for sage-grouse have discouraged serious consideration from wind energy companies.

Wind turbine technologies continue to improve and turbines are now able to generate economically competitive electricity in lower wind speed areas through the use of longer turbine blades, taller hub heights, and advanced controls. Also, improvements in wind resource forecasting, wind plant control technologies, and energy storage now allow wind plants to generate electricity at a smoother, more consistent rate than in the past. These factors enable more accurate predictions of output for management by the electric utilities that generate and/or purchase the power generated by wind projects (Four Corners Wind Resource Center, unpublished report). One negative feature of the wind turbines is the take wildlife such as bird and bats.

Economic Considerations

“Employment directly related to energy produces earning at a rate almost twice that of other jobs in the state. Energy employment generated \$2.853 billion in wages in 2013. The energy sector generated state and local taxes, fees, and royalties of \$656 Million in FY2013” (Utah Office of Energy Development 2014). However, most jobs are in the construction and installation of the energy production facilities and are short term. Once the facility is operational most sites only employ a few individuals for maintenance and oversight.

“The energy sector in Utah is also responsible for considerable revenues for state and local governments. In total, approximately \$655.6 million was generated by the energy industry by way of taxes, fees, and federal government distributions. With an estimated \$15.8 billion in property value, the sector generates approximately \$189 million in annual property taxes for state and local governments. Notably, these revenues continued increasing throughout the Great Recession, a time when government revenues were declining and demand for services increased. The energy sector provided increased stability for the state’s finances during a challenging period in history.” (Governor’s Office of Energy Development 2015).

Development of the renewable energy resources in the County has the potential to be an important contributor to the local economy. Wind and solar resource development costs have dropped dramatically in the last several years. In many places, electricity from wind and solar resources is now cost competitive

with all other sources of new electricity generation, and many existing sources of generation. Due to advancements in technology, better forecasting, and better controls, wind and solar energy can be economically developed in areas not previously thought possible.

With the expansion of the Energy Imbalance Market in the West, higher levels of renewable energy can be managed by participating utility electrical systems. Thus, geographically dispersed renewable energy development, such as Utah based projects, can more easily contribute to local and regional energy needs and clean energy goals

Relevant Existing Policies

Goal LU7: Develop policies that provide for the long term availability and responsible development of the County's mineral, hydrothermal, and hydrocarbon resources by ordinance.

Pol.LU7.1: Adopt a County mineral, hydrothermal, and hydrocarbon resources ordinance.

Existing policies were copied from the Iron County General Plan (1995)

Desired Future Conditions

Alternative energy has become an important component in the County since the federal government provided incentives to private companies to develop it as part of a national initiative for clean energy. During the past few years several solar plants have leased private lands and constructed solar plants. Iron County envisions this trend to continue as long as incentives are available, and as new technology furthers the future for solar and wind. Although conditions are ideal for wind energy in the County, concerns by local citizens of wind towers spoiling the viewshed have discouraged private entities from moving forward. Most ideal wind farm sites are located on federal lands where regulations also discourage development. The following are goals and objectives of energy in Iron County:

Issue 1. Future access to lands with special designation – Although areas within special designations (ACEC, Lands with Wilderness Characteristics) may not currently show potential for energy production, areas should be left accessible to future development as technology changes.		
GOAL	OBJECTIVE	POLICY
Make lands classified with special designations (ACEC, Lands with Wilderness Characteristics, etc.) available for future energy development.	Federal agencies to include in or amend land use plans flexibility to develop solar/wind energy in areas with special designations except wilderness areas, NPS, roadless areas, or tribal owned lands.	Support flexibility in special designated areas to allow for future energy development.

Issue 2. Transportation and Access Across Federal Lands - Transportation and access routes to and across federal lands, including all rights-of-way vested under R.S. 2477, prescriptive easements and Title V are vital to the economy and to the quality of life in the County and must provide, at a minimum, a network of roads throughout the resource planning area that provides for movement of people, goods, and services across public lands.

GOAL	OBJECTIVE	POLICY
Keep transportation and access routes across federal lands open for energy development and other purposes.	Include in Iron County Transportation Plan. Ensuring that BLM addresses the issue in upcoming RMP.	Support ROWs vested under RS 2477, prescriptive easements and Title V provided access.

Issue 3. No Net Loss of AUMs in Energy Development Areas – Concern expressed about losing AUMs as a result of energy development.

GOAL	OBJECTIVE	POLICY
No net loss of AUM on public lands resulting from energy development (would not include voluntary relinquishment of AUMs by the permittee).	Iron County to work with land agency whenever AUMs are proposed to be reduced as a result of energy development.	Iron County supports the development of energy resources while maintaining a strict No-Net-Loss of grazing AUM’s on public lands. Any changes in grazing use shall only be the temporary suspension of AUM’s due to drought or other natural occurrences and shall be based on monitoring data of at least five (5) years.

Issue 4. Site Reclamation – Concern about site not being reclaimed when solar/wind projects are at the end of their production and decommissioned.

GOAL	OBJECTIVE	POLICY
On private lands leave site in an approved condition.	In Conditional Use Permit (CUP), identify reclamation activities and responsibilities when decommissioning the site.	Support reclaiming decommissioned sites to tilled farmland or another authorized land use state.
On federal lands, leave sites according to approved reclamation practices as identified by the federal land agencies.	Use federal guidelines on reclamation practices. Deviations from these guidelines require consultation with the County Commissioners. Federal agencies to work with Iron County Planning	Encourage modern reclamation practices, including site specific soil analysis amendments, mulches, and barriers increasing the probability of successful reclamation which will help speed the natural process of restoration. Support inclusion of appropriate non-native species in seed mix to enhance the

	<p>and Zoning through the CUP process.</p>	<p>ability of the soil to withstand erosion and control sediment flows off construction sites as needed.</p> <p>The County should be involved in any initiative, mitigation, or compensatory mitigation programs or studies.</p> <p>Require enforcement of the use of weed-free seed mixes and products in all restoration efforts.</p> <p>Support consistent, appropriate reclamation of all surface resource disturbances as soon as feasible after impacts have been created. “As soon as feasible” means restoring at the time and season that reseeding methods are most likely to succeed and are appropriate for the site (e.g., seeding should occur in the fall).</p> <p>Open all federal lands shown to have reasonable solar/wind potential leasing with stipulations and conditions that will protect resource values.</p> <p>Support analysis of all fiscal and economic impacts to the solar/wind industry and the county from any proposed land management changes or natural-resource related plans.</p> <p>Use best available technologies and best management practices in energy development to reduce pollution impacts during all stages of development, with the appropriate economic analysis to ensure economic viability.</p>
--	--	--

References

1. BLM Cedar City Planning Area: Mineral Potential Report (2013)
2. BLM Cedar City Planning Area: Renewable Energy Potential Report (2013)
3. BLM Cedar City Office: “Analysis of the Management Situation” (2013)
4. USU: Rangeland Resources of Utah (2009)
5. DNR: Utah Renewable Energy Zones Task Force (2009)
6. A History of Iron County
7. Public Lands and Utah Communities: A Statewide Survey of Utah Residents 2008
8. Iron County Code of Ordinances, 17.33, Solar Power Plants
9. Iron County Code of Ordinances, 17.34, Wind Energy Systems and Facilities
10. Iron County Code of Ordinances, 17.35, Geothermal Power Plant
11. BLM Programmatic EIS on Solar Energy, 2012

Fire Management

Related Resources

Floodplain and River Terrace, Riparian Areas and Wetlands, Wildlife and Threatened Endangered and Sensitive Species, Recreation and Tourism, Air Quality, Noxious Weeds, and Forest Management

Overview and History

Overview

Fire management is defined as the actions to control, extinguish, use, prevent, or influence fire for the protection or enhancement of resources as it pertains to wildlands.

Fires are an integral component of a natural process and are needed to maintain a healthy ecosystem. Historically, it has played an important role in the promotion of plant succession and the development of plant community character. Control of fires during the last decades has changed plant communities and resulted in conditions that can sustain uncharacteristically large fires. As a result of decadent vegetation, fires in the drought years are more frequent and consume larger areas creating new challenges to managing resources in the County.

Activities on private property on the Markagunt Plateau (Cedar Mountain, Cedar Breaks and Brain Head areas) have changed dramatically over the past 50 years. What was once an area used primarily for grazing and timber harvesting, is now dotted with “mountain cabins”, subdivisions, and a major ski resort. This change in land use has increased fire suppression activities by the adjoining federal and state lands for added protection of private holdings. Unfortunately, forests left without fire for decades grow old and become more susceptible to disease, beetles, and catastrophic wildfires.

Custom, Culture, and History

“Prior to Euro-American settlement in the mid-1800s, fire played an important role in the health and evolution of ecosystems by recycling nutrients, improving soil productivity, and by maintaining biodiversity, community composition, habitat structure, and watershed condition. While the value of fire in ecosystems has only been realized in the recent past, aboriginal Americans noted and made use of fire throughout their time in the region. Historic accounts show that fire was used in localized areas to increase the availability of desirable plants, as a hunting strategy, and to remove available forage in the event that enemies attempted to cross tribal lands. Accounts by friars Domínguez and Escalante, on their exploration into what would become the Utah Territory, reported intentional burning by local Paiute Indians to dissuade the party of explorers that was mistaken for a group of invading Comanche Indians” (USU 2009).

Fire-fighting and management is, and always has been, important to citizens in Iron County. Proper fire prevention, management, and mitigation are critical to protecting the health, safety, and welfare of the County and its residents.

Current Conditions & Programs

“Due to the alteration of natural fire regimes, significant changes to the vegetation structure, vegetation type, and the natural fire return intervals have occurred. Major ecosystems, including grasslands, sagebrush, sagebrush steppe, and upland forested regions have experienced some of the greatest alterations due to fire suppression policies. The Federal Wildfire Occurrence Dataset indicates that Utah was subject to nearly 24,000 fires between 1980 and 2007. The increased frequency and intensity of fires has had a significant impact on the ecosystems of Utah” (USU 2009).

“Fire suppression efforts have interrupted the natural fire cycle in many intermountain rangeland environments. The frequency, intensity, severity, and seasonality of fire have been altered. Vegetation and wildlife communities have been modified; rangeland productivity has decreased; fuel loads have reached unprecedented levels; fire-tolerant, non-native plants have proliferated; and catastrophic fires have become common” (USU 2009).

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 which affects thousands of acres on an annual basis.

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 (USU 2009).

Response to fire incidents, especially wildland fires, relies on proper oversight, guidance, and partnership among a variety of trained professional organizations. 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.

Iron County and Cities/Towns:

Iron County provides a wide variety of services to the citizens and visitors through the fire program. In addition to municipal calls such as vehicle and structural fires firefighters also have advanced training in Wildland Fire Management, Hazardous Materials Response, Cold Water Rescue, Aircraft Rescue Firefighting and High Angle Rope Rescue. Firefighters are trained and certified through the Utah Fire and Rescue Academy and exceed the minimum requirements for the state of Utah. By agreement Iron County contracts fire management services with the Utah Division of Forestry, Fire & State Lands and local community fire departments.

By cooperative agreement between Iron County and the Utah Division of Forestry, Fire & State Lands, the primary responsibility for fire control is delegated to the Fire Warden, who is designated by the State Forester. The Fire Warden is the official representative to the Utah Division of Forestry, Fire & State Lands as well as Iron County on all wildland fire matters within Iron County. Municipal fire authority remains with the local Fire Chief having jurisdiction in the area. The Fire Warden coordinates and cooperates with local, state and federal cooperators to deliver safe, cost effective fire suppression, fire prevention and pre-suppression projects county wide.

The following is a list of local fire departments located throughout the County:

- Beryl Fire Department
- Brian Head Public Safety
- Cedar City Fire Department (3 stations)
- Kanarraville Fire Department
- New Castle Fire Department
- Paragonah Fire Department
- Parowan Fire Department

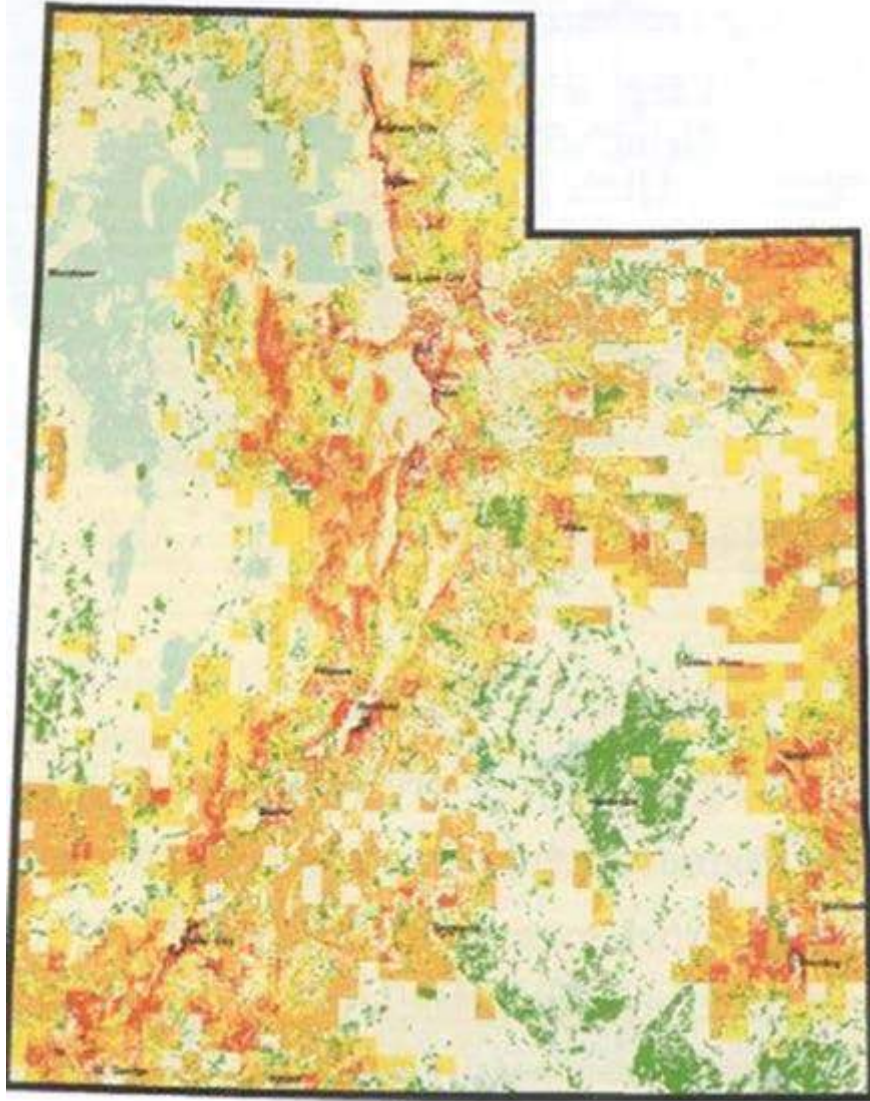
Iron County and municipalities provides a wide variety of services to the citizens and visitors through the fire program.

State Fire Marshall:

Utah Fire Assessment Project:

“The Utah Fire Assessment Project used GAP land cover data to help identify general hazard areas at a statewide level for fire management. The assessment defined, and then ranked risks, values, and hazards and assigned a final analysis rating based on a combination of these factors. Risk, defined as the potential for fire occurrence, was based upon historical fire occurrence, fire size, and ignition source. Values, also called “social concerns” were based on features to be protected. Hazard was defined as areas with the potential for extreme fire behavior based upon present vegetation. The vegetation map was produced from modified Utah GAP Analysis data. The original 36 GAP vegetation types were combined into 16 associations based on similar fire behavior and resistance to control. These 16 associations were further grouped into four hazard level ratings. These hazard categories were grouped together based on similar fire behavior characteristics. The assessment was based upon overstory vegetation present. It provides no information about dead and down fuels or understory vegetation. Final analysis of these categories provided a coarse scale, statewide assessment of areas of concern” (USGS 2010).

“This analysis identifies potential areas with a serious fire threat as well as areas where detailed interagency planning and tactical analyses and treatment may be needed. These efforts indicate areas of Southern Utah that are at risk and are suitable for fuel treatments” (USGS 2010). Iron County is included in the Color Country Interagency Fire Zone, which has an interagency Fuels Committee. As part of the National Fire Plan, the interagency fuels committee developed a community risk assessment process and strategy that has assessed and ranked all the communities within the Color Country Area. Communities were assessed by interagency teams of fire personnel and community leaders with regard to the risk from wildland fire, the capabilities of the community to respond to wildland fire incidents, access and egress for fire fighters and the public and hazardous fuel loads including opportunities for vegetation treatment projects to reduce risk to the community. Color Country Fire Management Agencies, led by the Bureau of Land Management have expended millions of dollars and successfully treated tens of thousands of acres of public, state and private lands adjacent to communities at risk from wildland fire in Iron county and will continue to do so as funding and agency direction permit.



Source: USGS 2010

Federal Agencies:

In 2000, the National Fire Plan (NFP) was developed to increase the ability of BLM and USFS to respond to severe wildland fires and minimize their impacts on communities, while ensuring sufficient firefighting capacity for the future. The NFP addresses five points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability.

The Healthy Forests Initiative (HFI) was launched in 2002 to protect natural resources from unnaturally intensive and destructive fires along with reducing the risks wildfires pose to people and the environment. Additionally, the President's Council on Environmental Quality was directed to streamline National Environmental Policy Act (NEPA) compliance. A streamlined process was created for environmental assessments for fuels treatments. Categorical Exclusions (excluding the requirement of full NEPA analysis) were developed for some kinds of fuel treatments based on project size, location, treatment method, compliance with existing land and resource management plans, and other environmental laws.

BLM specifically added regulations to allow decisions to be made about wildfires when vegetation, soils, or other resources on public lands are at substantial risk of wildfire due to drought, fuels buildup, erosion, or other damage from wildfire. Secretary Order 3336 (U.S. Department of the Interior 2015) provides enhanced policies and strategies for suppressing rangeland fire and restoring burned sagebrush ecosystems. The order was largely driven by Greater Sage- grouse habitat conservation, but it applies to wildlife, ranching, and recreation. A focus is also on controlling the invasion of annual grasses (primarily cheatgrass) with the intention of reducing the likelihood and severity of fire, to slow the spread of invasive species, and to restore the health and resilience of the landscape.

The HFI also changed guidance for Section 7 Endangered Species Act (ESA) consultation for hazardous fuels treatment projects. After training, agency personnel can make determinations without consulting with, or obtaining written concurrence from, the U.S. Fish and Wildlife Service (FWS) or National Marine Fisheries Service for actions that support the NFP and HFI.

Also in 2002, the Wildland Fire Leadership Council (WFLC) was established by the Secretaries of Agriculture and Interior to support the coordination and implementation of Federal Fire Management Policy. It was a committee that includes federal, State, tribal, county, and municipal government officials to provide policy coordination, accountability, and effective implementation of Federal Wildland Fire Management Policy and related long-term strategies. The group created the National Strategy Committee to provide leadership and oversight for strategy implementation.

The Healthy Forests Restoration Act (HFRA) (2003) sped up hazardous fuel reduction and forest restoration projects on lands at risk of wildland fire and/or of insect and disease epidemics. The Act also authorized and defined Community Wildfire Protection Plans. The Western Regional Strategy Committee (a subset of the National Cohesive Wildland Fire Management Strategy) was created in 2011 to implement collaboration across stakeholders and landscapes to restore fire-resilient landscapes, create fire-adapted communities, and improve wildfire response. The Regional Committees are in the process of transitioning the planning completed through the national objectives to on-the-ground implementation of the Regional Action Plans.

More recently, the USFS developed the Western Bark Beetle Strategy: Human Safety, Recovery and Resiliency (USFS 2011) to detail how the USFS will respond to the mountain pine beetle epidemic over the next five years. Currently, the USFS is focusing on the mitigation of hazard trees and fuels and to reduce the potential negative impacts on the watershed.

Bureau of Land Management – Post-fire Revegetation Efforts

BLM Handbook H 1742-1 (Burned Area Emergency Stabilization and Rehabilitation Handbook – Public) (2007) describes the planning process, standards, compliance and monitoring/reporting requirements for the Burned Area Emergency Response (BAER) program. It is tiered to Departmental Manual (DM) Part 620, Wildland Fire Management (2004). BAER is to address emergency stabilization needed to prevent further damage to life, property, natural, and cultural resources by including information about effects to existing vegetation. BAER Teams perform emergency assessments and soil stabilization treatments immediately following wildfire containment.

Emergency stabilization is defined as “planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life and property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to

prevent degradation of land or resources. Emergency stabilization actions must be taken within one year following containment of a wildland fire” (620 DM 3.3E).

The objective of emergency stabilization is to “determine the need for and to prescribe and implement emergency treatments to minimize threats to life or property or to stabilize and prevent unacceptable degradation to natural and cultural resources resulting from the effects of a fire” (620 DM 3.4A).

The priorities for post-fire protection are: human health and safety, property and unique biological resources (designated Critical Habitat for federal and state listed, proposed or candidate threatened and endangered species) and significant heritage sites (620 DM 3.7A).

Rehabilitation is defined as “efforts undertaken within 3 years of containment of a wildland fire to repair or improve fire-damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by fire” (620 DM 3.3M).

Rehabilitation objectives are to (620 DM 3.4B): Evaluate actual and potential long-term post-fire impacts to critical cultural and natural resources and identify those areas unlikely to recover naturally from severe wildland fire damage; Develop and implement cost-effective plans to emulate historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with approved land management plans, or if that is infeasible, then to restore or establish a healthy, stable ecosystem in which native species are well represented; and Repair or replace minor facilities damaged by wildland fire. Allowable rehabilitation actions are limited to: lands unlikely to recover naturally, weed treatments, tree planting, repair/replacement minor facilities, and monitoring.

Emergency Stabilization (ES) Plans are prepared immediately following a wildfire when stabilization is necessary. The Burned Area Rehabilitation (BAR) plans may be prepared concurrently. Funding may not be in place until the following fiscal year, but may be available sooner. ES is funded through Wildland Fire Operations. Plans in excess of \$100,000 are approved in Washington DC, less than \$100,000 may be approved by the State director. BAR activities are funded through the Other Fire Operations, Burned Area Rehabilitation. Funding is on a priority basis determined by the Interior BAER Working Group in consultation with the Office of Wildland Fire Coordination.

Emergency Stabilization and Rehabilitation (ESR) plans must be consistent with Land Use Plans, as well as any applicable activity level plans (e.g., Area of Critical Environmental Concern plans, Wilderness plans).

Due to the “emergency nature” of stabilization treatments, BLM may issue a decision to implement treatments immediately, or on a date specified in a decision document. A Full Force and Effect (FFE) decision may be issued using 43 C.F.R. § 4190.1 for rangelands and 43 C.F.R. § 5003.1 for forest lands. Any appeal of wildfire management decisions is appealed directly to the Interior Board of Land Appeals (IBLA) rather than through normal protest and appeal processes.

FFE decisions still require the BLM to make “reasonable efforts” to discuss the decision with interested parties, partners, stakeholders, and State, local, and Tribal governments during the project planning and NEPA analysis. Efforts must also be made to allow for public comment during the planning process.

If livestock removal or modification is important to the success of the ESR treatment, and the determination is made to implement the treatment immediately, and the decision is placed in FFE, then the livestock grazing modification should also be placed in FFE. The decision must clearly document what resources are at “substantial risk of wildfire” or “at immediate risk of erosion or other damage due to wildfire” and the factors placing those resources at risk of post-fire damage.

Forest Service – Post-Fire Revegetation Efforts

The USFS uses the Rapid Assessment of Vegetation Condition after Wildfire (RAVG) process to provide information to assist with post-fire vegetation management within 45 days of fire containment. RAVG products include mapping and Geographic Information Systems (GIS) products showing the location of basal area loss within the fire perimeter, and a summary of vegetation affected by the fire organized by basal area loss. The Remote Sensing Applications Center creates these products by comparing pre-fire digital imagery with burn severity maps. RAVG data are used in the BAER process.

Current Programs

Wildfires do not adhere to political boundaries, and cooperation among different agencies and jurisdictions covering federal, state, county, municipal, and rural/ volunteer fire departments is essential for successful fire management response. 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. Federal, state, county, and local cities and towns have joined together to promote programs to prevent damage when threatened by fires (Utah Division of Forestry, Fire and State Lands). Some of these programs include:

- **Wildland Urban Interface:** The wildland-urban interface (WUI) is commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels. This WUI zone poses tremendous risks to life, property, and infrastructure in associated communities and is one of the most dangerous and complicated situations firefighters face.

The safety of the citizens of any community is a shared responsibility between the citizens; the owner, developer or association; and the local, county, state and federal governments. The primary responsibility, however, remains at the citizen/owner and association level. Homeowners and property owners can find a wide variety of information on how to prepare their homes, property, and lives for wildfire on the state and federal websites.

- **Fire Department Grants:** The program represents a strong collaborative effort with the Department of the Interior, the U.S. Forest Service, the Utah Fire and Rescue Academy and the Utah Division of Forestry, Fire & State Lands to provide assistance to Utah’s fire departments. Each of these agencies shares a strong commitment to improve the safety and capability of Utah’s fire service. The purpose of the Fire Department Assistance Grant program is to provide technical and financial assistance to the fire departments of Utah to improve their ability to safely and effectively provide fire protection and manage hazardous material incidents. Its primary objective is to assist communities in organizing, training and equipping fire departments.
- **Utah Wildfire Risk Assessment Portal:** The Utah Wildfire Risk Assessment Portal (UWRAP) is the primary mechanism for the Division of Forestry, Fire and State Lands to deploy wildfire risk information and create awareness about wildfire issues across the state. It is comprised of a

suite of applications tailored to support specific workflow and information requirements for the public, local community groups, private landowners, government officials, hazard-mitigation planners, and wildland fire managers. Collectively these provide the baseline information needed to support mitigation and prevention efforts across the state.

- **Catastrophic Wildfire Reduction Strategy:** Catastrophic wildfires significantly impact our landscapes, economy, and infrastructure and are considered the most preventable natural disaster facing Utah. Reducing large fires in Iron County will protect life, property, communities, economies, and the environment. The goals of the Catastrophic Wildfire Reduction Strategy are:
 - Resilient Landscapes
 - Fire Adapted Communities and
 - Strong & Effective Local Wildfire Response

In 2015, the Utah legislature passed HB 408, the Catastrophic Public Nuisance Act that allows counties to designate a watershed as a public nuisance if the watershed is in such condition where it is susceptible to catastrophic wildfire, causing a threat to the health and safety of the citizens of cities and towns. In order to qualify as a catastrophic public nuisance, state or federal lands have to be in a condition where resources have been managed or neglected to the point that:

1. The threat of catastrophic wildfire is demonstrated by:
 - a. Stand density, basal area, or ground fuel loading greater than 150% of land health standards;
 - b. An insect or disease infestation that threatens the mortality of at least 20% of the trees in the area; or
2. The conditions of the area threatens:
 - a. Quantity of quality of the public water supply of a political subdivision;
 - b. Health, safety or welfare of the citizens of the political subdivision;
 - c. Air quality of the nonattainment area; or
 - d. Vegetative resources required to support land health and authorized livestock.

After a watershed has been declared a catastrophic public nuisance and the public agency has been notified, they must prepare a plan for abatement of the nuisance within a reasonable amount of time.

Most of the forestland in Iron County is within the Dixie National Forest and the risk of fire has always been a concern, Forest Service policies over the past few decades have led to major increases in the volume of live vegetation and dead woody debris on the forest and have substantially increased the possibility for large-scale, catastrophic fire. The factors causing the increase in vegetation are (1) aggressive fire suppression, (2) decreases in timber harvest due to political pressure from wilderness advocates, and (3) bark beetle and other tree diseases. Cultural features most at risk from catastrophic fire include:

- Occupied structures and concentrations of structures (primarily homes and businesses)
- Public water supplies (infrastructure and watersheds)
- Unoccupied structures providing essential public and economic services (e.g., utilities and oil and gas facilities)
- Economically significant timber harvest areas
- Irrigation water supplies (infrastructure and watersheds)
- Livestock grazing areas and infrastructure
- Wildlife management areas, including State of Utah Sage Grouse Management Areas
- Roadways, especially those providing important cultural and economic linkages

Iron County has declared three areas in Iron County as a catastrophic public nuisance. These areas include the Parowan Watershed, the Brian Head Watershed, and the portion of the Panguitch Watershed that is within Iron County (see maps 1, 2, and 3). The Dixie National Forest has been notified of these designations and has been working with Iron County to mitigate the nuisance.

Economic Considerations

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. 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. One area of major concern is the wildland-urban interface. As development in this interface continues, firefighting costs will increase.

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.

Relevant Existing Policies

(Iron County General Plan)

Goal EN3: Coordinate Iron County Emergency Preparedness efforts with incorporated areas within Its boundaries.

Pol. EN3.1: Coordinate inter-county training and emergency preparedness activities.

Goal EN4: Minimize potential damage and hazards resulting from fire.

Pol. EN4.1 All new subdivisions and planned unit developments must be served by a water system that meets the fire flow requirements established by the fire code.

Pol. EN4.2 Require all public roadways, subdivisions, and planned developments containing private roadways to be constructed according to minimum standards to encourage that vehicular access for emergency vehicles can be maintained.

Pol. EN4.3 Promote adequate fire protection service to encourage the maximum safety feasible throughout the county and work to minimize response times.

Pol. EN4.4 Encourage dual access systems, particularly in mountainous and high fire risk areas.

Pol. EN4.5 Minimize fire risks by allowing controlled burns in accordance with Utah State law.

Pol. EN4.6 Evaluate the need for fire-resistant landscape buffers, and/or zone buffers for development located in high risk fire hazard areas.

Desired Future Conditions

Iron County reaffirms existing goals and policies as stated above. The following are issues, goals, objectives and policies identified by stakeholders:

Issue 1: Catastrophic Wildfire Threats to Culinary Watersheds and Private Property – In addition to the three mentioned watersheds Iron County feels are at risk to wildfire and have declared them as public nuisances, Iron County has identified three other areas where private property is threatened by catastrophic wildfire and needs attention from the Forest Service to mitigate such threats. These areas include 1) Ashdown Gorge Wilderness; 2) Hancock Peak; and 4) the Red Creek Reservoir area (see map).

GOAL	OBJECTIVE	POLICY
Protect watersheds from threats of catastrophic wildfire.	Follow through with declaration of watershed threats and proper mitigation needed to address concerns.	Iron County supports proper management for forests to protect culinary watersheds from catastrophic wildfire.
Protect private property at risk from catastrophic wildfire in Ashdown Gorge, Hancock Peak, and Red Creek Reservoir.	<p>Forest Service to develop plans for identified areas that threaten private property to mitigate threats via controlled burns and mechanical treatments. Plans to be completed by end of 2018.</p> <p>Work with federal and state agencies to address the threat.</p>	Iron County supports efforts to draft plans for the three identified areas that threaten private property.

Issue 2: Management of Non-Native and Noxious Weeds – After fire events, there exists a need to rehabilitate areas to minimize non-native and noxious weeds from invading.

GOAL	OBJECTIVE	POLICY
Conduct rehabilitation projects as-soon-as possible to minimize spread of non-native and noxious weeds.	<p>Reseeding with certified weed-free seed.</p> <p>Lands impacted by wildfire are reseeded with desirable native and/or non-native plant communities prior to infestation by noxious or invasive weeds.</p> <p>Use of livestock grazing, chemical, and other mechanical control.</p>	The management of non-native and noxious weeds, including cheatgrass, after wildland fire events using tools including (but not limited to) livestock grazing, chemical, and other mechanical control is critical to protect ecosystem health.

Issue 3: Fuels Reduction for Prevention – Ranges and forests are not being managed to minimize or prevent wildfire.

GOAL	OBJECTIVE	POLICY
Use fuel reduction to prevent and minimize wildfire.	<p>Fuel reduction through silviculture and livestock grazing.</p> <p>Selective timber harvest and thinning.</p> <p>Prescribed and controlled burns.</p> <p>Increase timber harvest and adjust requirements to meet local timber industry capabilities.</p>	Reduce fuel loads to prevent and minimize wildfires.

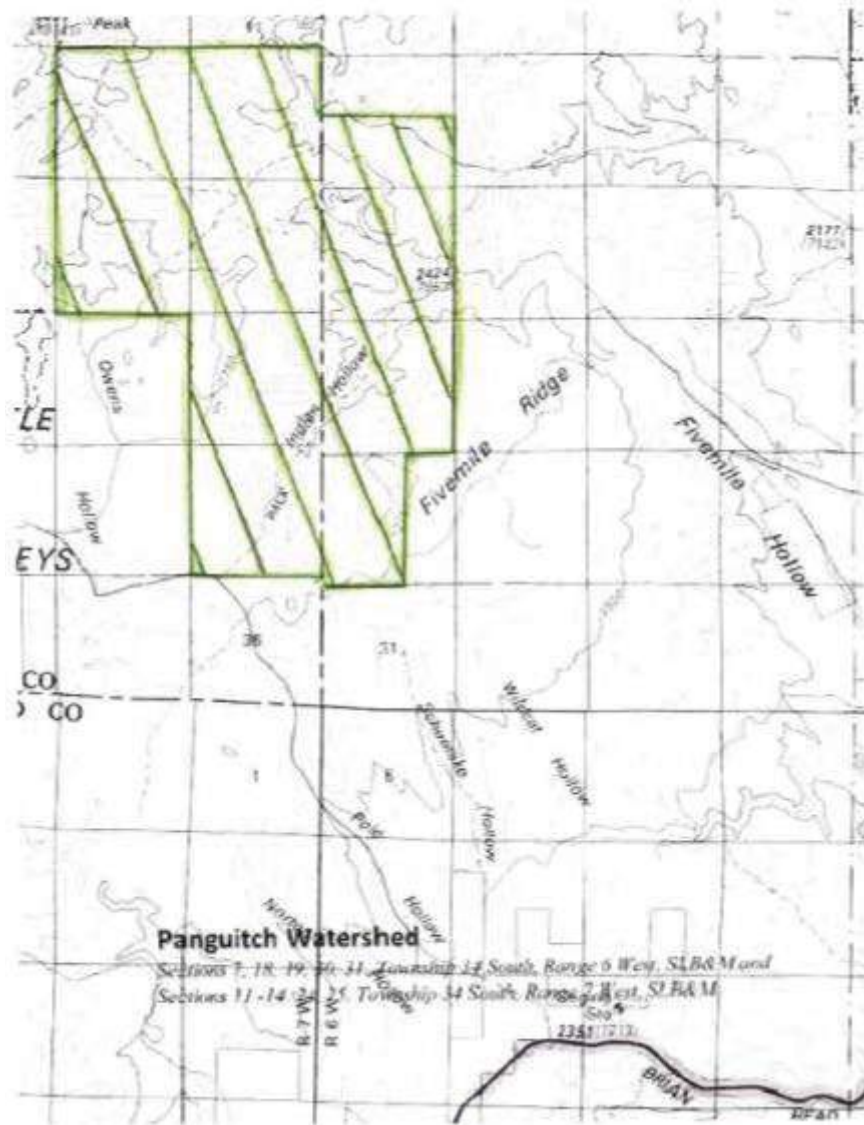
Issue 4: Suspended Grazing AUMs – Concern that suspended grazing AUMs promote vegetation over-growth and add to wildland fire potential.

GOAL	OBJECTIVE	POLICY
On private lands leave site in an approved condition.	In Conditional Use Permit (CUP), identify reclamation activities and responsibilities when decommissioning the site.	Support reclaiming decommissioned sites to tilled farmland or another authorized land use state.
Use grazing to help manage for fire.	<p>Public lands to review grazing permits and AUMs as a tool for fire prevention.</p> <p>Adaptive management practices for grazing should be developed and included in term permits to allow for flexible management practices that will decrease fuel loads on the landscape, particularly in areas with cheatgrass infestations or heavy grass understory.</p>	<p>Managed livestock grazing is an appropriate management tool for revegetation and fuels reduction.</p> <p>Livestock grazing should be returned to pre-fire levels when post-fire monitoring data shows objectives have been met, or have been achieved to extent allowed by the site potential.</p>

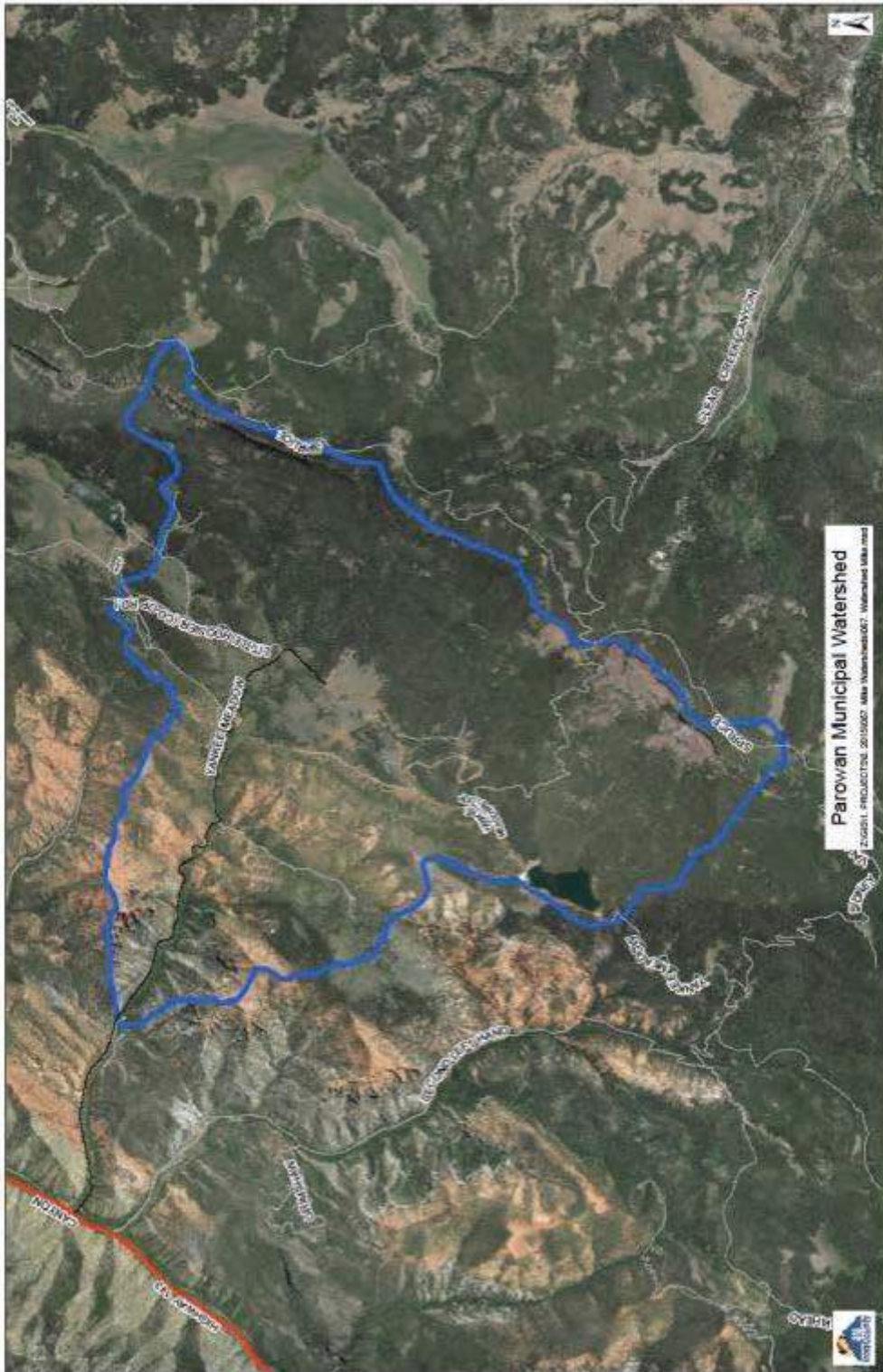
References

1. Master Cooperative Wildland Fire Management and Stafford Act Response Agreement.
2. Federal Firefighting Costs (Suppression Only)
3. An Analysis of a Transfer of Federal Lands to the State of Utah
4. The True Cost of Wildfire in the Western US
5. Utah 2014 Approved State Hazard Mitigation Plan
6. Rangeland Resources of Utah, 2009
7. Utah Catastrophic Wildfire Reduction Strategy
8. HB 408, Catastrophic Wildfire and Public Nuisance Amendments

Map 1. Panguitch Watershed Map



Map 2. Parowan Watershed Map



Map 3. Brian Head Town Watershed Map



Fisheries

Related Resources

Canals and Ditches + Irrigation, Floodplains and River Terraces, Riparian Areas + Wetlands, Water Rights + Water Quality, Wild and Scenic Rivers, Wildlife + Threatened and Endangered Species, Recreation + Tourism

Overview and History

Overview

Fisheries are the places where fish breed and live, or where people hunt for fish. The term also includes game and nongame fish species.

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).

Custom, Culture, and History

According to a 2008 survey, 84.6% of residents in Iron and Washington counties ranked the importance of opportunities to fish in area lakes, streams and rivers as "moderately" or "very important" for the overall quality of life for their community (Krannich 2008). Over 35% of residents in Iron and Washington County residents [the majority] believe that the amount of protection of important fish and wildlife habitat on Utah's public lands should stay the same (Krannich 2008). Historical photos and stories reflect that recreational fishing has been part of the local custom and culture for more than one hundred years. The area's mountains and ranges provide for recreational fishing as well as a multitude of other outdoor activities. These are sources of pride for local residents and attractions for visiting tourists.

Current Conditions & Programs

Federally Protected Species

The only federally protected fish species are found in the Virgin River drainage. In Iron County the area includes only the far northern portion of Deep and Crystal creeks. Two species of fish are protected under conservation agreement, the virgin spinedace and flannelmouth sucker (Utah Division of Wildlife Resources, personal communication).

Sport Fishing

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. Assisting the UDWR in decision making and establishing management priorities are five Regional Advisory Councils (RACs) who provide local input

on fisheries-related issues. Rivers, lakes, and reservoirs that provide exceptional angling experiences are given Blue Ribbon Fisheries (BRF) status (Utah Code § 23-14-2.6).

The Paragonah Reservoir has been recognized as a Blue Ribbon Fishery for criteria such as water quality, quantity, accessibility, and natural reproduction capacity of the fish. This water body contains rainbow trout typically up to 17 inches in size. This fishery can be a point of promotion to attract recreational anglers (UDWR 2015).

In Utah, sport fish species are usually grouped into 1) cold water species, which typically include whitefish, trout, char, and salmon; and 2) warm water-cool water species, which include sportfish such as bass, pike, walleye, perch, catfish, bluegill, and crappie. Rare fish species and those subject to federal listing under the Endangered Species Act (ESA) are referenced more fully in the Threatened, Endangered, and Sensitive Species section. In general, sport fishing for these species is not permitted.

“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 et al. 2012).

UDWR stocks fish in many waters around the state. Utah’s system of state fish hatcheries makes it possible to supply more people with a better quality fishing experience involving higher catch rates and/or larger fish specimens than would otherwise be possible given the capacity of our waters to produce fish and the population’s demand for fishing opportunities.

Aquatic Invasive Species

Aquatic Invasive Species (AIS), also referred to as Aquatic Nuisance Species, are defined by the UDWR as nonnative 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 (UDWR 2009).

Invasive mussels in Utah waters have no natural competitors, so 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 (UDWR 2009).

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.

Control & Influence

The UDWR is responsible for managing fisheries in Utah. Fish habitats (that is the state’s streams, rivers, lakes, ponds, and reservoirs) are managed by the underlying landowner, which can include state and federal agencies (UDWR n.d.).

Economic Considerations

“Recreational fishing provides a significant economic impact to the Utah economy and economic benefit to anglers” (Kim and Jakus 2013).

“Economic impacts or contributions are based on anglers’ expenditures associated with the fishing trips. Expenditures affect the local and regional economy through the interrelationships among different sectors of the economy. Input-output (IO) analysis of expenditure patterns traces the effects ‘upstream’ and ‘downstream’ through the economy, resulting in the multiplier effects. The angler survey, conducted in the months of March, April and May of 2012, revealed that a typical angler spent \$84 per trip on a fishing trip in Utah in 2011. Average expenditure to visit a BRF was estimated to be \$90 per trip” (Kim and Jakus 2013). Estimates based on data from the 2011 National Survey of Fishing Hunting and Wildlife-Associated Recreation indicate statewide contributions by Utah anglers equated to \$799.9 million, and supported 7,206 jobs in the state.

Fishing of over 78 species in Utah represents a significant sector of Utah’s tourism economy. Almost \$400 million was spent in association with fishing, hunting, and wildlife appreciation activities in 1985 (Powell 1994).

Relevant Existing Policies (Iron County General Plan)

Goal LU2: Protect water resources and quality which are essential to short and long term economic, recreational, and cultural viability.

Pol. LU2.1: Carefully consider transfers in water use, acquisition of new water, creation of conservancy districts, development of water markets, the promotion of water conservation, and alternative uses of water brought on by new water demands and needs in relationship to the history, traditions, and culture of Iron County.

Pol. LU2.2: Prepare needed plans for the protection of all aquatic threatened and endangered species within its boundaries.

Pol. LU2.5: Notify, consult and otherwise involve the general public of all changes in water use development or restrictions in Iron County.

Desired Future Conditions

Issue 1. Invasive Aquatic Species – Concern that invasive aquatic species of mussels may enter into Iron County waters.		
GOAL	OBJECTIVE	POLICY
Do not allow invasive aquatic species of mussels to enter into the county.	Work cooperatively with DRW Biologists to identify monitoring activities to prevent spread of invasive mussels	<p>Increase efforts to eradicate invasive aquatic species and organisms, specifically <i>Myxobolus cerebralis</i>, which are harmful to fish and fisheries in Iron County.</p> <p>Impaired waters in the Coal Creek and Virgin River are reclassified to include only those tributaries with native targeted fish populations and conditions suitable for cold water fisheries.</p>

Issue 2. Introduction of Non-Native Fish – Concerns expressed about introduction of hybrid and non-native fish species into Iron County waters could impact quality of fishing and existing desirable species.

GOAL	OBJECTIVE	POLICY
<p>Coordinate with UDWR on important decision making in regards to fish.</p>	<p>Become more directly involved in important decision-making concerning the management of fish and fisheries in the county, including the introduction or reintroduction of fish species into Iron County waters.</p>	<p>To the extent that they do not exist, pursue agreements with the state and federal agencies guaranteeing that Iron County will be consulted with prior to and during any decision-making or planning concerning fish or fishery management. The agreements will guarantee that fish or other aquatic species will not be introduced or reintroduced into Iron County without the express approval of the Iron County Commission.</p>

References

1. DNR: State Listed Species by County
2. Wildlife Management in Utah - Utah Education Network
3. UDWR - Blue Ribbon Fisheries
4. The Economic Contribution and Benefits of Utah’s Blue Ribbon Fisheries (2013)
5. “Public Lands and Utah Communities: A Statewide Survey...” (2008)

Floodplains and River Terraces

Related Resources

Fire Management, Livestock & Grazing, Land Use, Noxious Weeds, Fisheries, Wildlife + Threatened and Endangered Species, Water Rights + Water Quality and Hydrology, Riparian Areas + Wetlands, Wild & Scenic Rivers, Canals & Ditches + Irrigation, Recreation & Tourism, Agriculture

Overview and History

Overview

A floodplain is a 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.

Rivers are dynamic systems. River channels can migrate laterally as a result of erosion and deposition, and 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.

When a river channel reaches its maximum capacity, often during times of heavy rain or snow melt, water overflows the river's banks 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.

Custom, Culture, and History

Preventing floods and mitigating natural disasters has always been a priority for landowners in Iron 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.

According to a 2008 survey, 68.5% of residents in Iron and Washington counties ranked the importance of water resources that provide habitat for fish and wildlife as "very important" for the overall quality of life for their community (Krannich 2008).

Current Conditions & Programs

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 (Hylland and Mulvey 2003). While either event can trigger flooding, the dynamics of each are different. Snowmelt is a relatively predictable occurrence dependent on the amounts of winter snowpack and rising spring temperatures. Snowpack melting in spring contributes to some localized flooding, but more commonly flooding happens 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 (Southeastern Utah Association of Local Governments 2003).

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.

As development activities encroach upon floodplains and alter the distribution and timing of drainage, flood-related problems generally increase. The 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.

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.

Economic Considerations

Higher development costs to mitigate flood risks are the major economic consideration for floodplains. Flood-control costs may be passed on to municipal and county governments during emergencies. Another economic consideration is the cost of floodplain insurance to homeowners. Floods also have the potential to cause severe financial impacts in the form of damages to structures, transportation systems, and other infrastructure.

Relevant Existing Policies

Goal LU2 Protect water resources and quality which are essential to short and long term economic, recreational, and cultural viability.

Pol. LU2.6 The County shall identify municipal watersheds important for domestic water production and flood control and work with owners of those watersheds to manage and protect those watersheds for the production of quality water and the prevention of soil erosion and flooding.

Goal LU 10 Utilize streams and other bodies of water within Iron County as central recreational corridors and identify other significant natural features to be designated as open spaces, parks, and recreational opportunities.

Pol. LU 10.1 Encourage multiple uses of public easements and public lands, such as the flood inundation areas within Iron County for recreational purposes.

Goal EN1 Minimize damage and hazards resulting from seismic activity, unstable soils, flooding conditions, and other geologic hazards.

Pol. EN 1.4 Promote open space and recreational uses in designated flood zones unless the hazard can be adequately mitigated.

Pol.EN 1.7 To protect all natural and man-made flood channels

Desired Future Conditions

Reaffirm goals and policies in existing policies.

Forest Management

Related Resources

Fire Management, Noxious Weeds, Wilderness, Wildlife + Threatened Endangered and Sensitive Species, Water Rights + Quality and Hydrology, Livestock and Grazing, Recreation and Tourism, Agriculture

Overview and History

The value of forests in Iron County includes much more than just wood. The majority of this region's water comes from high-elevation forests and it can be argued that water, which plays a central role in the economy, politics, and culture of the semi-arid West, is the most important forest resource. Recreation, quality wildlife habitat, and forage for domestic livestock are also exceedingly important forest resources.

Prior to settlement by immigrants, Native Americans frequently set fires as a way to replenish feed for the wildlife that sustained them.

“[During the earliest years of European settlement] the most valuable natural resources of the mountains were water and timber. . . Timber resources came from unregulated government lands, but they were considered so vital to the general welfare that at first local citizens regulated the timber and lumber industries through the Mormon concept of stewardship. In February 1852 the territorial legislature placed control of all public lands, timber, and water in the hands of county courts” (Seegmiller 1998).

When Mormon explorers were searching for territory, Addison Pratt was among the company that surveyed what is now Iron County. His writings describe “thousands of acres of cedar, constituting an inexhaustible supply of fuel, which makes excellent [char]coal. In the center of these forests rises a hill of the richest iron ore. The water, soil, fuel, timber, and mineral wealth of this [Cedar] and Little Salt Lake Valley, it is judged were capable of sustaining and employing from 50,000 to 100,000 inhabitants, all of which would have these resources more conveniently situated than any other settlements the company had seen west of the states” (Seegmiller 1998).

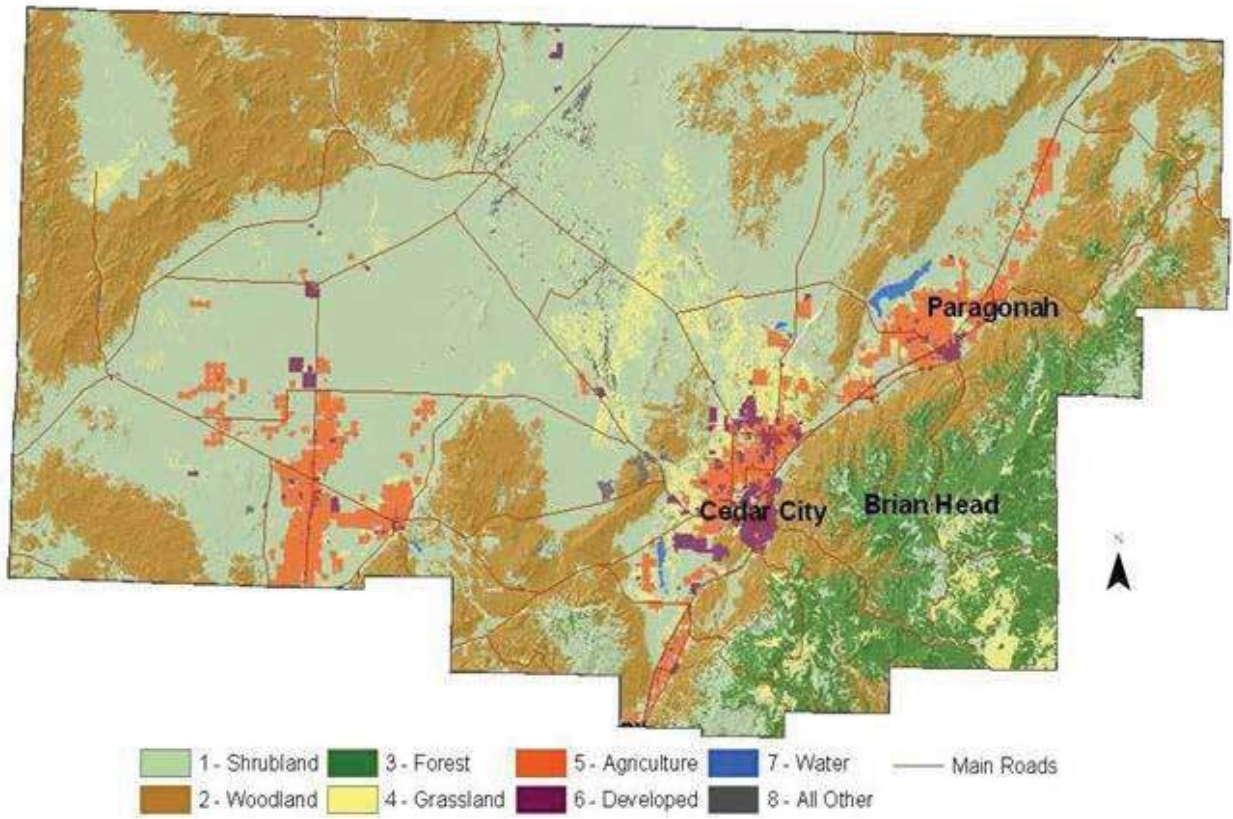
According to a 2008 survey, 62.9% of residents in Iron and Washington counties ranked the importance of forested areas that provide timber for logging and lumber as "moderately" or "very important" for the overall quality of life for their community (Krannich 2008).

It is the custom and culture of Iron County to use and manage landscapes and resources, including forests, for multiple uses. Logging has been a part of the custom and culture of the County, along with wood gathering for fence posts and firewood.

Livestock and grazing in forests has always been part of the tradition of Iron County. Sustaining the overall agriculture industry in the region requires the use and good stewardship of forests in Iron County. An overarching theme for any discussion of vegetation, particularly forest vegetation, in the Interior Western United States is disturbance. Forests in this region are fundamentally shaped by disturbances, both natural and those associated with human use. The long history of use, and in some cases abuse, of these forest resources have in many cases resulted in unwanted consequences that are a major challenge to resources managers (Long 2003).

Dixie National Forest: The Dixie National Forest (DNF) was established in 1903 and took in all of Pine Valley Mountains, Mt. Charleston, the Sheep Creek range (near Las Vegas) and the Mt. Logan, Mt. Dellenbaugh, and Mt Trumball areas of the Arizona Strip. In the late 1930's the Powell, Sevier, Aquarius, and the Dixie National Forests were all consolidated into one national forest by Congress, giving it the name of Dixie National Forest (U.S. Forest Service 2017). With the creation of the Grazing Service (BLM) the lands were split leaving that portion in southern Utah as the Dixie National Forest. The Forest and Rangeland Resource Planning Act of 1974 established standards for how the USFS manages national forests, required the development of land management plans for national forests and grasslands, and required the Forest Service to regularly report on resource trends in their forests and rangelands. It was updated in 2010 and requires periodic assessments to summarize findings about the status of trends, and projected future of forests, rangelands, wildlife, climate change, etc., as land use change from 2010 to 2060 (U.S. Forest Service 2016). Numerous planning rules that guide how the Forest Service will plan were issued since 2000 and revised planning rules were issued most recently in 2012. The first DNF Land and Resource Management Plan was issued in 1986 and revised several times thereafter mainly for inclusion of specific timber sales, Research Natural Areas, urban wildfire interface, travel, and energy related issues. In Iron County, the DNF administered lands account for approximately 963,347 acres or 45.6% of the total land ownership in the county.

Bureau of Land Management (BLM): In Iron County, the BLM administered lands account for approximately 1,215,177 acres or 57.5% of the total land ownership in the county. Much of the lower desert lands are winter ranges, while the higher ranges are grazed during spring/fall/winter months. The Taylor Grazing Act of 1934 provides for the regulation of grazing on the public lands (excluding Alaska) to improve rangeland conditions and regulate their use. The Act created the Grazing Service, which eventually became the Bureau of Land Management.



Land Cover/Land Use		
	Acres	%
Forest	907,610	43%
Grass/Pasture/Haylands/Cropland	75,000	4%
Shrub/Rangelands	1,064,773	50%
Water/Wetlands	21,107	1%
Developed/Urban	42,214	2%
Iron County Totals *b	2,110,704	100%
*a: Estimate from Farm Service Agency records and include CRP/CREP.		
*b: Totals may not add due to rounding and small		

Source: Iron County Resource Assessment, Natural Resources Conservation Service 2005

Current Conditions

Catastrophic Fire (see Fire Management Plan):

Most of the forest types, with the exception of pinyon/juniper, in Iron County occur within the Dixie National Forest. While the risk of fire has always been a concern, Forest Service policies over the past few decades have led to major increases in the volume of live vegetation and dead woody debris on the DNF and substantially increased the possibility for large-scale, catastrophic fire. The factors causing the increase in vegetation are (1) aggressive fire suppression; (2) decreases in timber harvest due to political pressure from wilderness advocates; and (3) bark beetle and other tree diseases. Cultural features most at risk from catastrophic fire include:

- Occupied structures and concentrations of structures (primarily homes and businesses)
- Public water supplies (infrastructure and watersheds)
- Unoccupied structures providing essential public and economic services (e.g., utilities and oil and gas facilities)
- Economically significant timber harvest areas
- Agricultural facilities (barns, fences, etc.)
- Irrigation water supplies (infrastructure and watersheds)
- National monument, state parks, and other areas where smoke could affect visitor use
- Livestock grazing areas and infrastructure
- Wildlife management areas, including identified Sage Grouse Management Areas
- Roadways, especially those providing important cultural and economic linkages

Recognizing the potential for fire to harm people and communities, the Forest Service has designated several “Wildland-Urban Interfaces” (WUIs), defined as areas at the interface between undeveloped and developed lands, where the Forest Service will actively engage in fire prevention activities. These activities primarily consist of creating shaded and unshaded fuel breaks using mechanical equipment. There are several WUIs in the DNF. The DNF has identified priorities for treatment of WUI areas. WUI treatments generally require NEPA analysis and NEPA decisions prior to implementation.

The State of Utah’s Division of Forestry, Fire, and State Lands (Division) and county fire marshals share responsibility for wildlands fire managements on private property. The Division is responsible for large-scale wildlands fire management planning, and has analyzed the potential for both fire and the potential for fire to harm health, safety, and welfare of people and communities. The Division also

implements fire prevention projects in high-risk areas, consisting primarily of creating fuel breaks. Often this is done in coordination with county fire marshals and may include funding of county efforts.

Forest Management

Iron County has a great diversity of natural vegetation which is reflective of a broad range of environmental conditions. Different types of vegetation are associated with differences in elevation. Increasing elevation is associated with increasing precipitation and decreasing temperatures (both summer and winter). These strong environmental gradients result in zones of vegetation types ranging from hot/dry low elevation desert to cold/wet high elevation alpine communities. Southern Utah, like the rest of the Middle and Southern Rocky Mountain Region, has both lower and upper treelines (Long 1994). Below the lower treeline, conditions are generally too dry for trees to survive; above the upper treeline, conditions are generally too cold. The montane forest and woodland vegetation occurring between the upper limit of the pinyon-juniper woodlands and upper treeline is the subject of this assessment (**Figure 1**).

The total area of Iron County is about 2.11 million acres. About 43.1% of this area is forested (i.e., vegetation dominated or potentially dominated by trees), with pinyon-juniper woodlands representing the largest proportion (**Figure 2**). Montane forests and woodlands (i.e. excluding P-J) occupy about 0.21 million acres in the County. Of this area 1.6% of forest land is further classified as higher productivity timberland with the potential to produce at least 20 cubic feet per acre, per year. Nearly 0.6% of the total forest land within the County is in some form of reserve (e.g., parks).

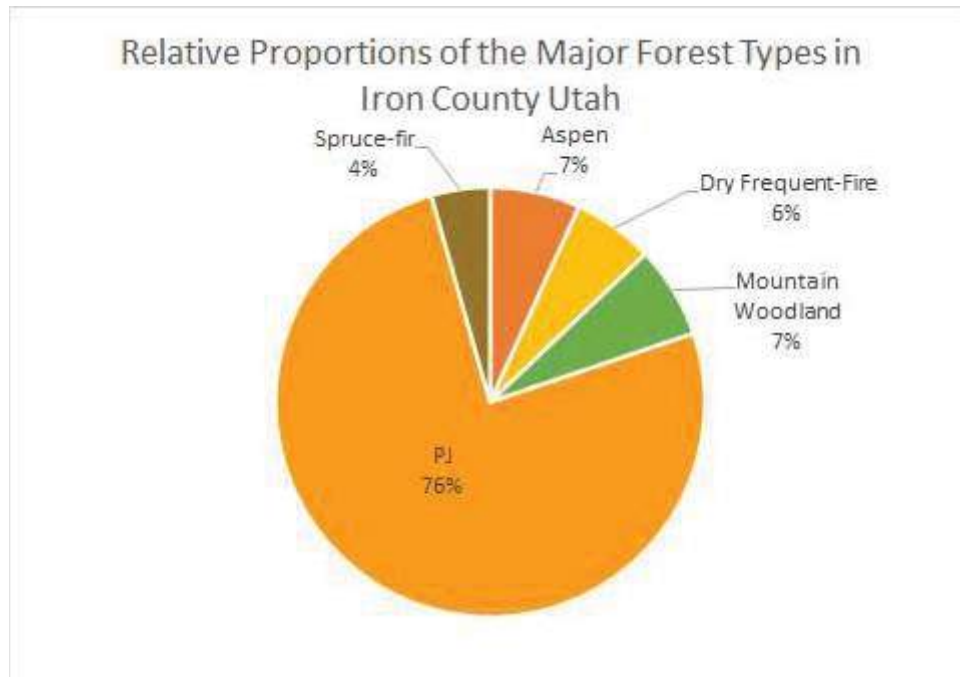


Figure 2. Relative proportions of the major forest types in Iron County (FIA 2000-2014).

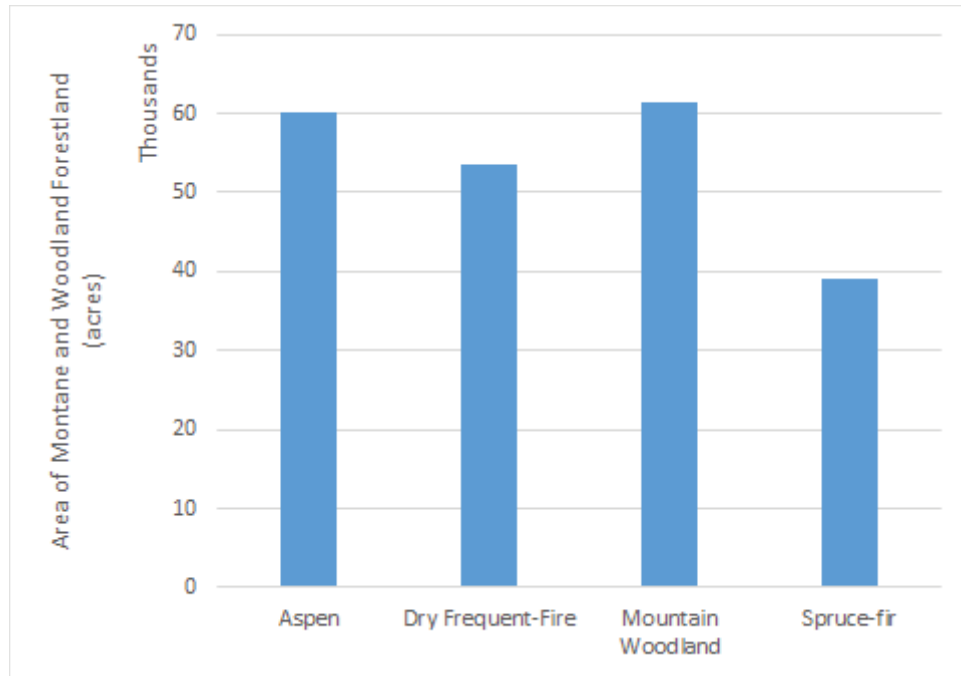


Figure 3. Acres of the major forest types in Iron County (FIA 2000-2014).

Ownership and management of forests (including Pinyon-Juniper) in the County are dominated by the federal government (78.8% of total and 74.4% of the unreserved forest). Private ownership accounts for about 25.4% of the total montane forest and woodlands.

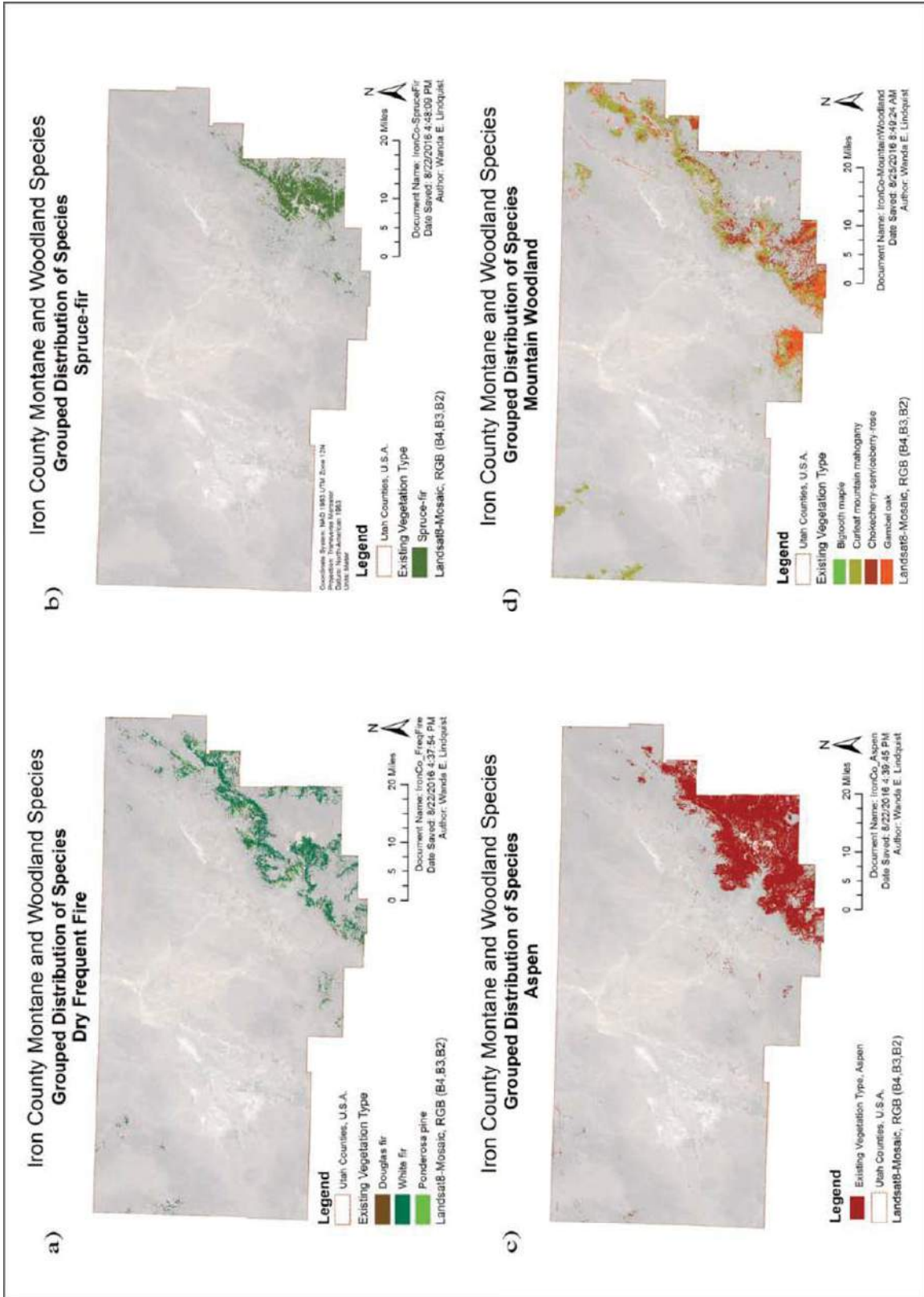


Figure 4. Distribution maps of the important montane and woodland species in Iron County

Forest Types:

Within Southwestern Utah there are 12 specifically recognized montane forest and woodland types (Table 1 includes the common and scientific names of the important tree species). Three types are pooled under the characterization *Dry frequent-fire type* (this includes ponderosa pine, Douglas-fir, white fir, and mixtures of these three species) (Figure 4a). Two types representing various combinations of subalpine fir and Engelmann spruce are combined as the *Spruce-fir forest type* (Figure 4b). The remaining types are the *Aspen forest type* (Figure 4c) and the *Mountain woodland type* (Gambel oak, mountain mahogany and intermountain maple) (Figure 4d).

COMMON_NAME	GENUS_SPECIES
white fir	<i>Abies concolor</i>
subalpine fir	<i>Abies lasiocarpa</i>
curlleaf mountain-mahogany	<i>Cercocarpus ledifolius</i>
Utah juniper	<i>Juniperus osteosperma</i>
Rocky Mountain juniper	<i>Juniperus scopulorum</i>
Engelmann spruce	<i>Picea engelmannii</i>
common or two-needle pinyon	<i>Pinus edulis</i>
limber pine	<i>Pinus flexilis</i>
Great Basin bristlecone pine	<i>Pinus longaeva</i>
singleleaf pinyon	<i>Pinus monophylla</i>
ponderosa pine	<i>Pinus ponderosa</i>
quaking aspen	<i>Populus tremuloides</i>
Douglas-fir	<i>Pseudotsuga menziesii</i>
Gambel oak	<i>Quercus gambelii</i>

Table 1. Common and scientific names of important tree species occurring in Iron County (Little 1971; Van Buren et al. 2011)

Pinyon-juniper woodlands occur at lower treeline between shrub-steppe and montane forests (Brown et al. 2008; Long 1994). Gambel oak can form pure woodland stands at lower elevations, it can also be a component of conifer-dominated (e.g., ponderosa pine) forests up to mid-elevations. Mountain mahogany and intermountain maple are less common than Gambel oak and for the purposes of this analysis, are included in the *Mountain woodland type*. The *Dry frequent-fire type* can include various combinations of ponderosa pine, Douglas-fir and white fir. Ponderosa pine tends to dominate at lower elevations; Douglas-fir and white fir tend to increase in importance on relatively cooler and more mesic sites (e.g., north aspects). Within the broad *Dry frequent-fire type* individual mixed-conifer stands can, depending on specific environmental conditions and disturbance history, include any of the conifer species as well as Gambel oak and aspen. In addition to being a component of mixed-conifer stands, aspen can form large (>200 ac) stands at middle and upper elevations. The upper elevation *Spruce-fir forest type* includes stands with various proportions of Engelmann spruce and subalpine fir. Limber pine, though never abundant, is often a minor component of mixed-conifer forests across a broad range of elevations. Bristlecone pine is a very long-lived, high-elevation tree typically found on dry or rocky sites (Youngblood and Mauk 1985).

Natural Disturbance Regimes:

The species composition and structure of forests and woodlands are to a considerable extent reflections of disturbance history. There is, for example, broad consensus among scientists and forest managers that for many forests in the Southwest, changes in natural fire regimes, coupled with

extended drought, are responsible for increased size and severity of both wildfires and insect outbreaks (Swetnam and Lynch 1993; Shaw et al. 2005). An understanding of natural disturbance regimes, such as the frequency and severity of wildfire, is fundamental to the creation of effective management strategies. This management approach is not about mimicking the disturbances per se. Rather, the focus is on the legacies, e.g., species composition and stand structure, associated with the natural disturbance regimes (Perera and Buse 2004; Long 2009).

Natural disturbances in forests almost invariably involve some combination of biotic (e.g., insects and disease) and abiotic (e.g., fire, wind) agents. Of these, fire and insects are the most important for the forests of Iron County. A natural disturbance regime for a particular forest type is typically characterized by the dominant type of disturbance (e.g., frequent/low severity fire in the Dry frequent-fire forest type in contrast to infrequent/high severity fire in the Spruce-fir forest type). Regardless of the dominant disturbance type, there is the potential for important interactions between different types of disturbances (e.g., DeRose and Long 2009; Jenkins et al. 2008; Jenkins et al. 2014). For example, a fire that weakens, but does not actually kill a tree, may make it susceptible to attack by bark beetles.

Natural fire regimes in the Southwest were arrayed from hot dry environments at low elevations to cool wet environments at high elevations (Figure 5). Reference regimes can be categorized along a gradient from 'fuel-limited' to 'climate-limited'. In deserts and other non-forested vegetation types with very low productivity, the frequency of return fires is limited by the long period of time necessary for fuels to accumulate. The resulting 'fuel-limited' fire regime would be characterized by very infrequent but high severity fires. At the opposite environmental extreme are high elevation forests where relatively high productivity results in fairly rapid accumulation of fuels, but weather conditions conducive to wildfire may be rare. The resulting 'climate-limited' fire regime would also be characterized by very infrequent but high severity fires. Most of the forests in Iron County have natural fire regimes intermediate between these two extremes (Brown et al. 2008; Swetnam and Baison 1996).

For this plan the emphasis will be on the potential for 'uncharacteristic' disturbance. For example, managers rely on the fire regime paradigm in a relative sense to help assess how 'characteristic' or 'uncharacteristic' a fire (or potential fire) might be (Hardy 2005). Fire hazard refers to the state of the fuels (e.g., presence or absence of fuel ladders), independent of the weather on a given day. Fire severity refers to the effect a fire has on wildland systems. Severity is not a characterization of the fire itself, but rather the fire's effect (Hardy 2005). For example, a 'high severity' fire results in the death of most overstory trees. In contrast, a 'low severity' fire might burn understory litter, grass, shrubs, and small trees, but leave most or all of the mature trees unburned.

Insects, particularly bark beetles and defoliators, can cause considerable damage in Southwestern forests. Each of the forest types represented in Iron County can have insect outbreaks but it is the conifer-dominated forests that are most likely to have substantial mortality during insect outbreaks. Currently all of the insect species causing substantial mortality of mature trees in Southwestern forests are native to the region. Under normal conditions these insects exist as endemic populations and the associated damage is limited in extent. Occasionally, during a prolonged drought for example, the population of a particular insect might transition to outbreak levels and mortality of the host tree species increases in both amount and extent. The impacts of these native insects, at both endemic and outbreak population levels, were natural parts of these forest ecosystems.

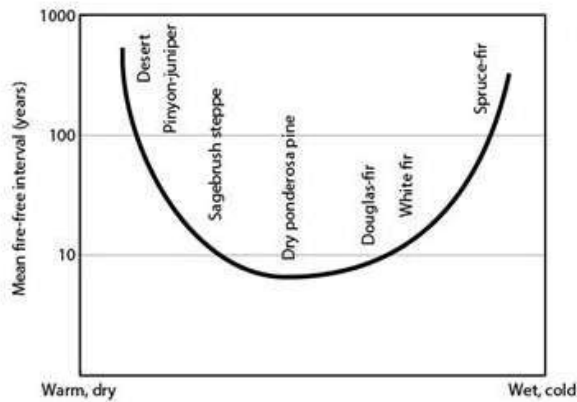


Figure 5. Infrequent/high severity natural fire regimes were characteristic of vegetation types that were either fuel-limited (e.g., deserts with low productivity) or climate-limited (e.g., high elevation spruce-fir forests with cool/wet summers). Frequent/low severity natural fire regimes were characteristic of forests that were neither fuel- nor climate-limited (e.g., ponderosa pine) (after Martin and Sapsis 1991).

There are, however, region-wide changes in the frequency, extent, and severity of insect outbreaks (Swetnam and Lynch 1993; DeRose and Long 2009). Some of these changes in insect populations are certainly related to at least short-term changes in climate (e.g., the increased survival of high-elevation spruce beetle with increased winter temperatures and the increased success of pinyon Ips in drought-stressed host trees). Changes in insect impacts are also associated with changes in the various host forest types. Important stand and landscape changes include shifts in tree species composition, increases in stand density, and decreases in age-class diversity.

Mountain Woodland Type:

This type represents a combination of Gambel oak, mountain mahogany, and intermountain maple, with Gambel oak by far the most common. Based on research done on this type in northern Utah (Wadleigh et al. 1998), the following is a likely characterization of changes in the natural fire regime of Gambel oak woodlands in Iron County. Prior to the introduction of domestic livestock and effective fire suppression, a frequent/low-severity fire would have limited the extent of, and the continuity of fuels within, Gambel oak woodlands. With fire exclusion have come fundamental changes in the fuel profile and the increased likelihood of high-severity fires (Bradley et al. 1992; Wadleigh et al. 1998). Changes in the natural fire regime (i.e., decreased frequency and increased severity) has not only altered the structure of oak woodlands, but has resulted in an increase in the abundance of Gambel oak in mixed-conifer stands of the *Dry frequent-fire forest type*.

Dry Frequent-Fire Forest Types:

The natural fire regime in this forest type is best characterized as frequent/low-severity. Across the range of environmental conditions associated with this important type would have been a range in fire frequency and severity (e.g., Korb et al. 2013; Reynolds et al. 2013). Under the warmest and driest conditions (i.e., sites where ponderosa pine is the dominant species), fires would have been very frequent (< 10 years) and low severity. Under cooler and more mesic conditions (i.e., sites where, in addition to ponderosa pine, Douglas-fir and/or white fir are potentially important stand components) fires were somewhat less frequent (e.g., <35 years) and would have included a combination of low- and mixed-severity.

An overarching theme in the Southwest and Intermountain West is the implication of long-term fire exclusion. Reasons for fire exclusion can include historic overgrazing near the turn of the last century, elimination of burning by Native Americans, and especially effective fire-suppression starting in the

middle of the last century. Fire exclusion is primarily an issue in the frequent-fire forest types, as exemplified by the Dry frequent-fire forest type in Iron County.

Long-term fire exclusion in the Dry frequent-fire forest type has had a substantial impact on stands and landscapes. Changes include shifts in species composition, increases in stand density, increases in the amount and continuity of fuels (both canopy fuels and fuel ladders) resulting in fundamental changes in fire behavior, and the nature of insect outbreaks. Changes in tree species composition have resulted where the elimination of low-severity fires has allowed the establishment of shade-tolerant Douglas-fir and white fir in stands that under the natural fire regime were almost entirely dominated by ponderosa pine.

Whereas the natural fire regime limited stand density, fire exclusion has allowed many stands to achieve relative densities associated with high competitive stress and continuity of canopy fuels. As a consequence, these stands are more susceptible to a range of insects (Fettig et al. 2007) as well as to high-severity fire (Graham et al. 2004). Changes in vertical structure, for example with the establishment of shade-tolerant Douglas-fir and white fir, represent fuel ladders via which a surface fire can transition to the upper canopy. Changes in composition and vertical structure can also make these stands more susceptible to western spruce budworm, an important defoliator of Douglas-fir and white fir (but not, ironically, spruce) (Long 1994).

Aspen Forest Type:

Commonly, aspen is more intolerant of shade than any of the conifer species with which it may be associated. In most cases, this means if aspen-dominated stands are not to be eventually displaced through succession by conifers, there must be periodic disturbance (e.g., natural high-severity fire, prescribed fire, or mechanical treatment). Aspen has some ability to regenerate from seed (Long and Mock 2012) and tremendous ability to regenerate from root suckers (Long 1994), but this regeneration capacity decreases as stand vigor declines with age. It is, therefore, important that regeneration-initiating disturbance be timely (Shepperd et al. 2015). The following photos represent the current situation across the forest when fire and vegetation management is not part of the forest management.



Photo: Right Hand Creek, above Cedar City, 1941, USU Extension Photo Retake



Photo: Right Hand Canyon above Cedar City, 2006, USU Extension Photo Retake. (Original photograph taken by Gregory (No. 1080) in 1941; retake by Charles E. Kay on July 12, 2006 - - Photo No. 5686-31. Section 6, Range 10 West, Township 37 South; UTM 322150 E, 4164700 N; elevation 9,160 ft. Original photograph held by the U.S. Geological Survey Photographic Library, Denver, CO.)

Note pinyon, juniper, Douglas fir, spruce, white fir, ponderosa pine, oakbrush, and mountain brush have all increased, while large stands of aspen have declined and are now being taken over by conifers (Reid and Holmgren, USU Extension 2017)

Spruce-Fir Forest Type:

The natural fire regime in these high-elevation, cool, moist forests is characterized by very infrequent (200+ years) high severity fires. Fire frequency is not limited by fuels, but rather by the infrequent combination of ignition (i.e., 'dry' lightning) and extreme fire weather (i.e., low fuel moisture, high temperature and high wind speed). This is an example of a 'climate-limited' fire regime. Because of the very long average fire return interval compared to the length of the fire suppression era, fire exclusion has had limited impact on composition and structure of individual stands in the Spruce-fir forest type. It is likely, however, that fire suppression has resulted in a shift in age-class distribution among spruce-fir stands within large landscapes. Even a modest reduction in the number of young stands could negatively affect landscape resilience following a spruce beetle outbreak (DeRose and Long 2014).

Under normal conditions, spruce beetle (*Dendroctonus rufipennis*) numbers occur at endemic levels. To complete their typical two-year life cycle, the beetles must find and successfully overcome the defenses of a green host tree. They do this by mass-attacking a large living, or very recently wind-thrown, tree. Under endemic conditions spruce mortality within a stand is modest and restricted to a few scattered trees or small groups of trees. The transition from endemic to epidemic population levels can result from a combination of factors including: large numbers of suitable host trees; high stand density and/or prolonged drought (both of which stress trees and weaken their defenses); large scale blowdown of mature spruce; and high temperatures (DeRose et al. 2013; Hart et al. 2014). Increases in winter and summer temperatures are particularly conducive to transition of spruce beetle populations from endemic to epidemic levels. Higher winter temperatures increase over-winter survival. Higher summer temperatures can allow larvae to mature faster resulting in a shift to a one-year life cycle from a two-year life cycle. Such a shift allows for much more rapid buildup of spruce beetles and the transition to an outbreak.

Pinyon/Juniper (PJ):

Pinyon-juniper woodlands are the most widely distributed and largest forest type community in the County. This community generally occurs on a variety of slopes and aspects, and its soils are usually coarse-texture, calcareous alluvium derived from sandstone and shale. There are significant amounts of bare ground, litter, and desert pavement at the soil surface. Estimates indicate approximately 1.06 million acres or 50% of the total land base in Iron County are comprised of PJ/shrub occupation. PJ woodlands are the dominant forest type in the County (and make up approximately 69% of all forested areas in the County (NRCS 2005, USDA 2005)

Pinyon/Juniper forests, as a result of their chemically competitive nature, inhibit grasses and forbs from germination, thereby creating and maintaining an early homogenous, sterile vegetation community. These habitat types provide very little forage opportunities to wildlife, especially big game. PJ woodland communities are increasing in the Western United States as other vegetation communities are invaded by pinyon-juniper woodland species. Utah juniper is expanding into open meadows, grasslands, sagebrush steppe communities, quaking aspen groves, riparian communities, and forestlands. The replacement of shrub steppe communities with juniper woodland has been largely attributed to the reduced role of fire, primarily facilitated by passive vegetative management and active fire suppression. The reduction of fine fuels through livestock grazing prior to the Taylor Grazing Act in 1934 may have played a role in initiating PJ encroachment, but failure to reintroduce a fire component in invasive woodlands has significantly expanded any such impact. This expansion of

pinyon-juniper woodlands has been facilitated by a combination of climatic changes/drought and the removal of understory vegetation.

Pinyon-juniper woodlands areas also include lower montane riparian woodlands. These are linear areas or patches occurring primarily in the lowest elevations. The areas are dependent on the natural hydrologic regime and flooding and are often found near wet meadows.

Pinyon-juniper woodland stands can be classified as ephemeral or persistent on a landscape. Persistent stands are those that occupy a given site for a long period and typically have little fire disturbance or very infrequent fire disturbance (fire return intervals in excess of 200 years). Ephemeral stands are those that periodically share a landscape with other vegetation types, such as sagebrush. The dynamic of area dominance has typically been controlled by the periodicity of fire on the site. Given that fire frequency on many of these sites has been altered (reduced) since pioneer times, more acres are now dominated by pinyon-juniper woodland than were historically reported, and the trees on these sites are often older than would have been expected in a pre-settlement stand.

These changes in fire occurrence and frequency incrementally modify vegetation cover, affecting wildlife habitat and overall landscape condition. Where fires in the sagebrush-steppe were once fueled primarily by herbaceous vegetation, many are now fueled by taller woody vegetation with higher fuel loads. This results in more intense fires that can be damaging to soils, creating habitat for noxious, invasive, and nonnative early successional species in the area.

In the absence of fire or mechanical treatment projects, ephemeral pinyon-juniper woodland will continue to opportunistically expand and increase in density. As tree density increases and tree canopies close, fewer resources are available for understory species. In this situation, understory species (grasses, forbs, and shrubs) will be reduced and wildlife habitat and forage production will be adversely affected. Under juniper-dominated canopies, increases in bare ground and impaired hydrological function, resulting in high levels of erosion, are additional consequences of increasing juniper dominance.

A potential exacerbating force to the spread of pinyon-juniper woodland are the effects of climate change, which could limit resistance and resilience to PJ expansion into adjacent big sagebrush shrub lands by expanding drought conditions and fire return intervals. In addition, the expanding range of pinyon-juniper woodlands will result in greater erosion and loss of wildlife habitat.

Due to increased fuel loadings and increased continuity of tree canopies, wildfires can burn readily and more intensively than historically through ephemeral pinyon-juniper woodland stands, causing both damage to the soil A-horizon and increased erosion from post-fire rains and snow runoff. The threat of canopy-burning fires at high intensities and rapid rates of spread can also impact stands of persistent pinyon-juniper woodland, ponderosa pine, and other tree species, as well as adjacent non-forest vegetation types.

Economic Considerations

Visitors from around the world, together with Utah locals, enjoy Utah's renowned forests that span the entire state. 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 Division of Forestry, Fire & State Lands 2014).

The market for forest products is very small in Iron County, with only two to three small operations (cutting and milling) active at any given time. Forest products may be harvested and sold by board feet, by volume, or by piecemeal depending upon the product and the buyer. The lack of processing plants,

distance from point of timber sale to the processing plant, and imposed restrictions/regulations on timber removal often makes timber harvesting unprofitable. Some sales are not bid on due to one or more of these issues.

The value of these forests includes much more than just wood. The majority of this region’s water comes from high-elevation forests and it can be argued that water, which plays a central role in the economy, politics and culture of the semi-arid West, is the most important forest resource. Recreation, quality wildlife habitat, and forage for domestic livestock are also exceedingly important forest resources.

The timber industry supported an estimated 222 jobs in Iron County, making up 2% of the total private employment. While this figure includes growing, harvesting, and paper mills, most (218) of the jobs came from wood product manufacturing (EPS 2017).

Desired Future Conditions

Timber Management: A characteristic of many stands in Iron County is that they are dense, and high relative densities are associated with high competitive stress and density-related mortality (Long et al. 2004). In the *Dry frequent-fire forest type* (ponderosa pine, Douglas-fir, and white fir) high relative densities potentially makes these stands susceptible to insect attack (e.g., Kolb et al. 1998; Fettig et al. 2007). It is not possible to predict with certainty when or even if a given stand will be attacked; however, once beetles enter a stand, denser stands can be expected to have greater beetle attack (Chojnack et al. 2000). About 60% of stands in this important forest type have a risk rating for beetles of moderate or higher.

Table 2. Volume of live and dead greater than 5 inches DBH (diameter at breast height) by Forest Type Group.

Forest Type Group	Volume of all live on forestland (> 5" dbh, cubic feet)	Volume of standing dead on forestland (> 5" dbh, cubic feet)
Aspen	150,542,761	30,841,360
Dry Frequent-fire	120,749,316	33,728,057
Spruce-fir	54,964,766	66,860,214

Currently many, if not most, of the remaining stands in the *Spruce-fir forest type* in the county that survived the primary attack of spruce beetle in the 1980’s and 1990’s have neither resistance nor resilience to attack by the spruce beetle (*Dendroctonus rufipennis*). Unfortunately, many of these stands also have limited resilience. In the event of what is probably the inevitable spruce beetle outbreak, the result would be the death of virtually all of the remaining mature Engelmann spruce and further conversion of the stand to subalpine fir or even non-forest (DeRose and Long 2010; Windmuller-Campione and Long 2015) (Figure 6).



*Figure 6. The spruce beetle (*Dendroctonus rufipennis*) outbreak on the Markagunt Plateau in Iron County resulted in the effective elimination of Engelmann spruce stands across an entire landscape and is indicative of the sort of damage insect outbreaks can cause in forests lacking either resistance or resilience (DeRose and Long 2014).*

An appropriate management strategy for the remaining spruce stands would be to drastically reduce relative density. This would, at least to some extent, increase resistance (Fettig et al. 2007). The reduction in stand density would also create understory condition suitable for the regeneration (natural or by planting) of Engelmann spruce seedlings (as well as other tree species). Time is of the essence for this strategy to succeed – timely treatment to enhance age and species-diversity will result in stands and watersheds that are much more resilient to a spruce beetle outbreak (**Figure 7**).



Figure 7. This Engelmann spruce stand on the boundary of Piute and Beaver Counties has high relative density and limited tree species diversity. Because of its structure and composition the stand is neither resistant nor resilient to attack by spruce beetle.

In addition, many stands currently have canopy fuel profiles (i.e., canopy bulk density and canopy base height) which make them prone to crown fires. For example, nearly 90% of stands in the *Dry frequent-fire forest type* currently have low torching and/or crowning indexes indicating that fire entering these stands, even under less than extreme wind speeds, can be a crown fire.

Proactive management can be used to create and maintain species composition and structure in *Dry frequent-fire forest type* stands resistance to, and resilience from, disturbance (DeRose and Long 2014). The following example illustrates the potential for active management to create stand conditions where high severity fire would be unlikely. Figure 8a is a representative mixed-conifer stand from the FIA database. This stand is typical in that fire exclusion has resulted in moderate to high relative density and the development of fuel ladders. With this canopy fuels profile, fire entering the stand in extreme fire weather would be exceedingly destructive (Figure 8b). The Forest Vegetation Simulator and Fire and Fuels Extension (Dixon 2002; Rebaun 2010) were used to simulate a thinning and fuels treatment in the stand and to model pre- and post-treatment fire behavior under severe weather conditions.

Thinning can be used to fundamentally alter stand structure and species composition (Figure 8c). Thinning can eliminate fuel ladders and favor the retention of large fire-resistant ponderosa pine and Douglas-fir. With this altered canopy fuels profile fire entering the stand even in extreme fire weather would be a low-severity surface fire (Figure 8d). Many of the large trees retained in the post-thinning stand would survive such a fire.

16

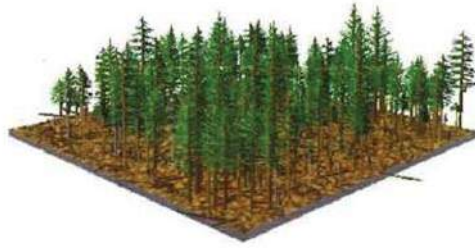
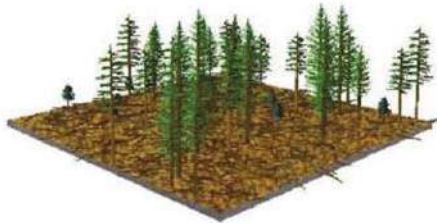


Figure 8. A representative mixed-conifer stand in the dry frequent-fire forest type.

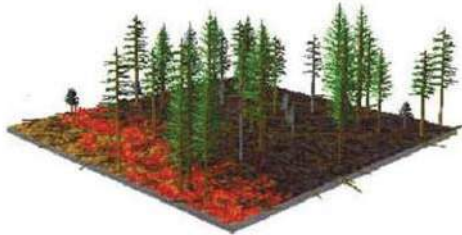
A) With fire exclusion, there has been an increase in shade-tolerant species like white fir and an increase in fuel ladders.



B) Under severe weather conditions, fire behavior is likely to be extreme.



C) Simulated thinning and fuels treatment shows the reduction in stand density and fuel ladders and shifts species composition toward large, fire-resistance ponderosa pine and Douglas-fir.



D) Fire behavior in the treated stand is unlikely to be extreme even under severe weather conditions.

Inventoried Roadless Areas (IRA): The 2001 Roadless Rule establishes prohibitions on road construction, road reconstruction, and timber harvesting on 58.5 million acres of inventoried roadless areas on National Forest System lands. The intent of the 2001 Roadless Rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management. The Forest Service under the previous Obama Administration has indicated that most projects in inventoried roadless areas must be approved by the Secretary of Agriculture (Congressional Research Service 2011). On the Dixie National Forest there are approximately 776,000 acres of IRA as indicated in the following Map:

As a result of the IRAs designations on the DNF, private property communities and watersheds have been placed at risk due to poor forest health and lack of proper management.

Relevant Existing Policies (Iron County General Plan):

Goal LU5: Protect timber resources promoting the continuation of a sustainable wood products industry.

Pol. LUS. 1: Promote sale sizes that provide opportunities for a wide spectrum of producers and that allow for local entrepreneurship.

Pol. LUS.2: Maintain timber harvest profitability and explore market and incentive systems to reduce administrative and harvest cost on federal and state lands.

Pol. LUS.3: Encourage continued private use of timber products for citizens in terms of woodfuel, Christmas trees, and other woodland production under the existing permit system.

Pol. LUS.4: Encourage sustainable timberlands for the production of timber and related resources as well as for their scenic values.

Goal EC1: Encourage a balanced mix of economic activity, including but not limited to: agriculture; agri-business; mining; timber and wood products; manufacturing; commercial; retail; cultural; entertainment; service industry; and government service uses which result in a diversified, stable, and environmentally sound local economic base.

Desired Management Condition

Issue 1. Forest Health – A number of strategies will be required to prevent catastrophic fires.		
GOAL	OBJECTIVE	POLICY
Create and maintain fire-resilient forests.	<p>Wildland urban interface, culinary watersheds, and backcountry lands be actively managed to maintain structure and tree species composition consistent with low severity fires, when these are secured, move.</p> <p>Use combination of tools (thinning, mechanical treatments, and prescribed fire) to achieve forests which are resistant and resilient to a broad range of environmental challenges.</p>	<p>Support wildland urban interface and culinary watershed forest management as a priority to acquire proper tree species composition consistent with low severity fires.</p> <p>Iron County supports use of a combination of tools to achieve resilient and fire resistant on the DNF.</p> <p>Iron County be involved in development and review of the forest plan revision through coordination, as a cooperative agency in the planning process, etc.</p>

Include these objectives in upcoming Forest Plan Revision.

Issue 2. Timber (vegetation treatment) sales: Some timber sales, as proposed by the FS, are not being bid by timber companies due to many factors that make them unprofitable. Such factors include:

- Helicopter removal requirements are outdated and make extraction too costly.
- Timber appraisals too high for companies to make a profit especially for low value stands, areas requiring high infrastructure needs, low volume or yield, etc.
- Sales do not take into account the needs and capabilities of timber companies.
- Sale of low value timber not feasible without some type of augmentation (stewardship sales, integrated service contracts, or agreement sales, etc).
- Deck sales often have been setting for years and become rotten and not marketable.

GOAL	OBJECTIVE	POLICY
<p>Encourage consideration of new and upcoming technologies for timber extraction.</p> <p>Ensure appraisals for timber sales are consistent with stand value.</p> <p>Establish a variety in timber sales to meet the needs of local companies.</p> <p>Increase profitability of sales through augmentation with other programs.</p> <p>Move deck wood through the system faster.</p>	<p>Become familiar with new technologies that make it possible to extract timber from steep slopes without the use of helicopters.</p> <p>Work with timber companies, prior to advertising bids, to determine the sale is feasible for companies to consider.</p> <p>Design sales to meet large, medium, and small companies' capabilities.</p> <p>Prior to designing sale, meet with the companies to discuss ways to make sale more attractive.</p> <p>Use other programs to augment timber sales and make them more attractive through stewardships, Service Contracts, and Agreements.</p> <p>FS to be timely in getting deck sales prepared through the NEPA process. Decks should not sit for more than 2 years.</p>	<p>Iron County supports timber sales for forest health and benefit to the community through proper planning that makes the timber sales attractive to local companies.</p>

Issue 3. Management for forest health in Inventoried Roadless Areas (IRA) – Forests in IRAs areas are in poor condition and are a fire hazard surrounding communities, watersheds, and forests. The Secretary of Agriculture must approve projects, such as timber harvests, revegetation, etc. in IRAs. As a result forest personnel are reluctant and avoid even considering projects in IRAs.

GOAL	OBJECTIVE	POLICY
<p>Make management in IRAs more flexible to meet forest health standards.</p>	<p>Encouraging Secretary of Agriculture to give project approval authority to District Ranger level.</p> <p>Explore vegetation treatment strategies in roadless areas that promote flexibility through use of fire and mechanical methods and identifying current policies and guidelines that prohibit flexibility.</p>	<p>Work with DNF to explore management of roadless areas options by identifying current policies and guidelines that hamper or prohibit management, and working towards options that allow for proper management.</p>

Issue 4. DNF Travel Management Plan: Now that the DNF TMP has been in place for a few years, many feel it is time for a review to identify changes that may be necessary to accommodate the public’s interests in travel.

GOAL	OBJECTIVE	POLICY
<p>Ensure DNF TMP adequately addresses public needs for transportation on DNF.</p>	<p>Form a committee to review TMP and identify needed changes</p>	<p>Iron County supports formation of a local committee to review the DNF TMP and recommendations to the DNF changes.</p>

Issue 5. Grazing management and monitoring: Lack of adaptive management (flexibility) for grazing on DNF, for example on-off dates of grazing.

GOAL	OBJECTIVE	POLICY
<p>Implement adaptive management policies on all allotments.</p> <p>Protect riparian areas from overgrazing, and leaving large portions of the allotment under-grazed.</p>	<p>Public land agencies: Allow flexibility to dictate on and off dates for livestock on allotments, (above normal precipitation, drought, timing of precipitation, range conditions, etc.)</p> <p>Protect riparian areas through fencing and water development projects throughout allotments where possible.</p>	<p>Iron County recommends FS explore adaptive management to allow for flexibility according to current conditions.</p> <p>Iron County recommends FS addresses alternatives for water development projects in the allotment plans.</p>

Issue 6. Restore Suspended AUMs - Very few if any AUMs are increased on allotments as a result of fire rehabilitation or vegetation projects that increases forage.

GOAL	OBJECTIVE	POLICY
<p>Allow flexibility to adjust AUMs based on current years conditions</p>	<p>Annual discuss current conditions on forest allotments during Annual Operating Plan discussion. Adjust AUMs based on conditions</p> <p>During mid-grazing seasons, revisit current conditions and allow extension of grazing dates, or reduced grazing time period based on current conditions – adaptive management.</p>	<p>Encourage adaptive management to adjust grazing intensity during grazing season.</p>

Issue 7. Pinyon Juniper Encroachment: Encroaching P/J continually deteriorate ranges, choking out desirable plants and communities, placing more stress on the fragile ecosystem. Old vegetation projects have not been maintained for over 40 years, allowing rabbitbrush and P/J to invade.

GOAL	OBJECTIVE	POLICY
<p>Reduce P/J stands where feasible for grazing and wildlife habitat improvement.</p> <p>Land managers maximize desirable native and non-native vegetative cover to optimize use of water resources.</p>	<p>Public land agencies identify class II and Class III stands and establish annual goals of removal.</p> <p>Use mechanical and controlled burns for improvements</p> <p>Reseed where necessary to restore desired plant communities</p> <p>Evaluate increased forage for livestock grazing and wildlife habitat.</p>	<p>Iron County supports P/J removal plans to increase forage for livestock and wildlife, increase water and overall health of range.</p> <p>Iron County supports the WRI program to establish partnership funding for such projects.</p> <p>Iron County encourages more P/J removal and maintenance programs in wild horse areas to reduce negative impacts they are having on range.</p>

Issue 8. Project Planning: NEPA requirement for project planning are too cumbersome and take years in most cases to come to a decision.

GOAL	OBJECTIVE	POLICY
Allow for more efficient planning processes.	Identify processes that can be streamlined and made less cumbersome on proposed projects. Coordination with County to help identify resources needed for such planning.	Iron County supports streamlined efforts when completing NEPA on proposed projects through identifying cumbersome processes and exploring ways to reduce.

Issue 9. Multiple-Use in Special Designated Areas – The principle and emphasis of multiple-use in custom and culture plan discussions seems to have gotten lost or watered down in land-use planning, especially when an area is considered for or designated as special use.

GOAL	OBJECTIVE	POLICY
Intensive management of noxious weeds after a wildfire event.	Manage noxious weeds through, but not limited to, livestock grazing, chemical, and other mechanical control	Iron County supports control of noxious weeds after a wildfire event to protect ecosystem health.

Issue 10. Insect Outbreaks – Insect outbreaks can be devastating to forest for decades, killing vast areas of the forest and creating a severe fire hazard.

GOAL	OBJECTIVE	POLICY
Rapid response to bark beetle infestations to minimize impacts.	Treat insect outbreaks as an emergency, thereby activating immediate treatments.	Iron County supports immediate control of insect outbreaks to avoid large landscape type damage.

References

Full works cited page available [here](#)

Irrigation, Ditches & Canals

Related Resources

Land Use, Agriculture, Wilderness, Water Rights + Quality & Hydrology, Forest Management, Predator Control, Noxious Weeds, Livestock and Grazing, Wetlands, Riparian Areas + Wetlands, Fisheries, Recreation & Tourism, Wild and Scenic Rivers, Wildlife + Threatened and Endangered Species, Fire Management

Overview & History

Overview

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. Water delivery is an essential component of agricultural production and is relied upon for urban landscape watering and gardens. Many of the canals and ditches remain open, but over time some have been lined or piped to improve operational efficiency. Dams, canals, ditches, 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. 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.

Custom + Culture

Iron County was settled based on the availability of water. "Iron County's pioneer settlements were established wherever water was available from mountain streams or free-flowing springs. The streams which cut the canyons and carry water off the Markagunt Plateau are Little Creek, Red Creek, Center Creek, Summit Creek, Johnson Creek, Fiddlers Creek, Coal Creek, Shirts Creek, Kanarra Creek, and Spring Creek, from north to south. The first communities were located on Center Creek (Parowan) and Coal Creek (Cedar City) because they drain the largest watersheds and carry the most water" (Seegmiller 1998).

"The Federal Reclamation Act of 1902, designed to increase farm production through large-scale water projects, brought about the New Castle Reclamation Project, which proposed to reclaim land on the Escalante Desert with water diverted from the Colorado River drainage in the Pine Valley Mountains to Pinto Creek in the Great Basin. . .Key structures of the project were an irrigation dam on Grass Valley Creek, a 6,500-foot canal to reverse the natural drainage of the Grass Valley Basin, and a tunnel through the mountain to Pinto Creek. . .A feeder canal built in 1914 by Japanese laborers transferred water from a tributary of the Santa Clara River to the reservoir for storage. A 135-foot tunnel joined the reservoir to Pinto Creek" (Seegmiller 1998).

To sustain early farmers and settlers, canals and ditches were constructed throughout Utah making agriculture possible despite the semi-arid climate. Subsequent development of agriculture brought further expansion of ditches and canals. Traditionally, irrigation water has been distributed via a network of canals and ditches from streams; but with time and change in technology, some have been piped. Communities along the Hurricane Cliffs (east side of Cedar and Parowan Valley's) and the New Castle area that use creeks for irrigation have dealt with floods from snowmelt and cloudbursts since the valleys were settled. The systems of ditches and canals in each valley help divert water during these threats to minimize damage caused by flooding.

According to a 2008 survey, 71.5% of residents in Iron and Washington counties ranked the importance of water resources for irrigating crops and pastures as "very important" for the overall quality of life for their community (Krannich 2008). "Water for irrigation was diverted under the policy established by Brigham Young that said all water belonged to the people in general, with each farmer or household granted a water right for the amount that could be used beneficially. Since land was divided equally into five- or ten-acre lots, each farmer had essentially the same water needs" (Seegmiller 1998).

"The first wells were dug late in the nineteenth century by a new generation of farmers who were moving away from their parents' irrigated farms to establish themselves. They selected areas beyond the range of irrigation water. Consequently, they sought water from wells or tried to produce crops by dry farming. When electricity became available, wells for irrigation became possible due to electric motors to drive the pumps. The biggest push to drill wells came during the drought of 1933 and 1934. State drought-relief committees drilled and equipped six large irrigation wells in Cedar Valley. Each well could produce 600 gallons of water per minute, or approximately 100 acre-feet of water every day" (Seegmiller 1998). In the late 1960's and 1970's farm practices started using sprinkler irrigation systems that greatly improved water delivery to crops and used less water than traditional flood irrigation. It also increased the acres under cultivation.

Current Conditions & Programs

Irrigation

As of 2012, Iron County had 532,464 acres of land in farms, with 42.6% of that land being irrigated and sub-irrigated (USDA 2012). Croplands and irrigated pastures exist mostly in lower elevations. Irrigated lands utilize water from mountain stream runoff or from underground aquifers (NRCS 2005). Iron County is intersected by five hydrologic sub basins: Escalante, Cedar, Parowan, Milford, and Beaver, in order from largest to smallest area inside the county, although for all practical purposes only uses the three major aquifers (Parowan, Cedar, and Escalante) for irrigation purposes. Each of these areas has their own topography, soils, precipitation patterns, and groundwater interactions. The Utah state water plan outlines best management practices for each of these areas. Making more efficient use of existing water supplies increases the availability for future demands. This can be accomplished by increasing use efficiency, water conservation and protection of existing supplies (Utah Division of Water Resources 1995).

As farmers have turned more and more to sprinkler irrigation systems, a major drawback is the amount of water that permeates the soil to recharge the groundwater is far less than with traditional use of surface water to flood irrigate. As more demand has been put on groundwater, aquifers have, overtime, started to recede. Such depletion has caused concern and the State Water Engineer requested the Escalante Valley to propose a water conservation management plan in 2003 (completed in 2012) to reduce the amount of water being extracted from groundwater

sources. The State Engineer has recently requested Cedar Valley to draft a similar plan and is expected to make the same request to Parowan Valley (see Water Rights section of CRMP). At present the US Geological Survey monitors groundwater through observation wells and to determine water quality and quantity, and groundwater levels in each aquifer.

Enterprise and Iron Conservation District (E&ICD)

The E&ICD is trusted by private property owners and uniquely positioned to deliver technical and financial assistance available from various state and federal agencies for soil and water conservation. They serve as a clearinghouse for those interested in or requesting financial assistance for irrigation systems improvements, crop storage, water quality, conservation of rangelands for livestock and wildlife, etc.

Canals and Ditches

Canal/ditches and irrigation companies are outside of the County's control but could be influenced by private shareholders. According to the Utah Division of Water Rights (2014), there are 17 companies in Iron County that provide surface water for irrigation via ditch, canals and pipelines. Unfortunately, subdivisions have been erected over some of the ditches, creating obstacles if severe flooding were to occur. No rights-of-way for the ditches and canals have been recorded.

In 2014 the Utah Legislature passed House Bill 370 directing the Division of Water Rights to create and maintain an inventory of all canals in the state by July 1, 2017. The following attributes of all open flow conveyances with a minimum design capacity of 5 CFS are to be captured:

- Canal alignment
- Contact information for the canal owner
- Maximum flow capacity
- Is the canal used for flood or stormwater management
- Date of adoption of a safety management plan, if one has been completed

HB 370 also made funding available to assist canal owners and irrigation companies develop a safety management plan as described in Utah Code Section 73-10-33 for their systems.

Economic Considerations

Population expectations the Cedar Valley area (includes 92.7% of Iron County's population) are projected to reach 180,000 by 2080 (Central Iron County Conservancy Water District (CICWCD), 2017). The supply of water to both agricultural and urban centers will be a key economic issue in the coming decades and planning will be paramount to ensuring agriculture will remain a viable component of the County as development occurs. Projects are being considered by the CICCWD that will focus on groundwater recharge, finding new sources of water, and water conservation through wise use (see Water Rights and Water & Hydrology Plan).

Relevant Existing Policies

Goal LU2: Protect water resources and quality which are essential to short and long term economic, recreational, and cultural viability.

Pol. LU2.1: Carefully consider transfers in water use, acquisition of new water, creation of conservancy districts, development of water markets, the promotion of water conservation and

alternative uses of water brought on by new water demands and needs in relationship to the history, traditions, and culture of Iron County.

Pol. LU2.3: Initiate a process for establishing a geologic, hydrologic, and biologic data base within the County. The County shall acquire, develop, and synthesize alone or in coordination with other governmental agencies information as pertaining to these database needs.

Pol. LU2.5 Notify, consult and otherwise involve the general public of all changes in water use development or restrictions in Iron County.

Pol. LU2.6 The County shall identify municipal watersheds important for domestic water production and flood control and work with owners of those watersheds to manage and protect those watersheds for the production of quality water and the prevention of soil erosion and flooding.

Existing policies were copied from the 1995 Iron County General Plan.

Desired Future Conditions

Stakeholders identified issues, goals, objectives and policies pertinent to irrigation which were in-line with the existing policies in the Iron County General Plan. In addition to reaffirming the existing policies, the following issue was identified. Also refer to the Water Rights and Water & Hydrology Plan contains goals, objectives and policies pertinent to this issue.

Issue 1. Protect Established Ditches and Canals – Some ditches have been obscured by development (subdivision) and needs to be identified for future use and to avert flooding.		
GOAL	OBJECTIVE	POLICY
Identify and protect all ditches and canals owned by irrigation companies.	Use HB 370 to identify and map ditches and canals.	Recognize and support protecting ditches and canals in the county. In situations where the ditch or canal crosses federal lands, work with federal land agency to secure rights-of-way.

References

1. A History of Iron County (1998)
2. USU Cooperative Extension: Iron County Resource Assessment
3. Utah State Water Plan Cedar/Beaver Basin (1995)
4. https://www.waterrights.utah.gov/canalinfo/canal_owners.asp Utah Division of Water Rights: Canal Companies
5. US Census of Agriculture (2012)
6. “Public Lands and Utah Communities: A Statewide Survey...” (2008)
7. Beryl Enterprise Groundwater Management Plan (2012)

Full works cited page available [here](#)

Land Access

Related Resources

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

Overview and History

Overview

Access to federal and state lands in Iron County offers passage, and egress to all the above defined activities associated with access in Iron County. Many access issues in the County deal with roads and rights-of-way as well as undefined routes associated with general foot or walk-in ingress, passage, and egress. The state and counties have passed ordinances to identify and provide guidance for rights-of-way and easements across private lands. Rights-of-way across federal lands were created under Revised Statute 2477 (R.S. 2477), which allowed the public to create roads across unreserved federal lands. In 1976 this authorization was repealed in the Federal Lands Policy Management Act; valid R.S. 2477 rights-of-way were grandfathered in, but new roads can only be created with “valid existing permits” on BLM lands and is discussed below. On May 23, 2011 Iron County Commissioners adopted the Iron County Interim Transportation Map which identified roads the County considered for public access. The map is interim until a county transportation plan can be completed along with a more thorough analysis of roads.

Iron County is closely tied to the use and development of public land resources. To utilize and protect these resources, adequate and feasible access is required. Travel throughout Iron County occurs in many forms. Motorized travel includes both on-highway and off-highway vehicles (OHVs). All OHVs must be registered with Utah Division of Motor Vehicles and display current (annual) Utah OHV registration stickers. OHVs include motorcycles, dirt bikes, three-wheelers, all-terrain vehicles (ATVs), side-by-side’s, and dune buggies. Iron County ordinance 2010-8, Use of Off-Highway Vehicles on County Roads provides that all OHVs can travel on any county road as long as they are registered through the state. Title 41, Chapter 22, Section 10.3(4) provides that as long as an OHV is “street legal” in accordance with section 41-6a-1509, it can operate on state highways, except interstates.

Iron County land ownership pattern is largely federal land with state lands checker-boarded within. Tribal and private lands tend to be in chunks. Concerns arise where hunters and recreational users once had access but now do not, or where land owned by an entity is surrounded by or accessible only by crossing land owned by a different entity.

Access to land for recreational traveling is especially important. Motorized and non-motorized vehicle access, as well as pedestrian and equestrian access is an issue on and between, private, State, and federal lands.

Custom + Culture

Access to lands is undoubtedly essential to their utilization. A History of Iron County (1998) explains the major importance of roads since the County’s settlement. “Roads into the mountains were for getting to dairy homesteads, ranches, and mines. These narrow, dirt wagon roads wound up the canyons in

unimproved condition for decades. Impetus for improvement came when a few individuals grasped the potential of southern Utah as a scenic tourist mecca as automobiles and busses replaced wagons. . . Gradually, work was done by wagon road users to make the roads passable for automobiles. The first 'circle' tours to the parks were made on these improved wagon roads, as the Parry brothers (Gronway, Chauncey, and Whitney) offered a ten-day round-trip excursion in a touring car or small bus from Cedar City to Zion Park, the Kaibab Forest, North Rim of the Grand Canyon, and Bryce Canyon, returning via Panguitch and Paragonah.”

“An 1851 ordinance decreed that every able-bodied male over eighteen with three months' residence in the territory should furnish one day's labor yearly on the roads and that all taxable property within the state should be liable for taxation for road purposes” (Seegmiller 1998).

It is the custom and culture of Iron County to support and protect private property rights, including access to public and private lands for landowners and recreational uses. Historically, and today, Iron County feels strongly that state and federal landscape and amenities should be accessible by multiple modes of transportation, be inclusive to all persons with disabilities and follow relevant accessibility guidelines.

Current Conditions & Programs

R.S. 2477 Roads

In 1866 the Revised Statute 2477 (commonly known as RS 2477) was enacted by the United States Congress. This revised statute encouraged the development of a highway network to facilitate western settlement. This formerly self-executed statute did not require a record of the roadway. Under the Federal Land Policy and Management Act (FLPMA) RS 2477 was repealed in 1976 subject to “valid existing rights”.

“The uncertainty surrounding R.S. 2477 rights-of-way continues today and has implications for a wide range of entities, including Interior and other federal agencies as well as state and local governments who assert title to R.S. 2477 rights-of-way, and those who favor or oppose continued use of these rights-of-way” (Department of Interior 2010).

Best Management Practices (BMPs)

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.

US Bureau of Land Management (BLM): The BLM manages ROWs through travel management plans as authorized in the most current Resource Management Plan (RMP). In Iron County no travel management plan exists, however the 1987 Beaver River Resource Area Off Road Vehicle Implementation Plan does limit travel in several areas such as riparian areas and seasonal restrictions, such as in crucial deer winter range. The BLM Cedar City Field Office RMP for Iron and Beaver counties is currently being revised and will include travel management. The travel management plan will inventory all roads on BLM lands and determine if they will remain open, limited, or closed based on a number of factors. Cross-country access without a permit only be allowed in designated areas.

US Forest Service Roads (USFS): Right of ways on USFS lands are also managed through travel management plans, similar to BLM. The Dixie National Forest completed a travel management plan in 2010 that determined which roads were open or closed, and for what purposes (motor vehicle, hiking, OHV, etc).

State of Utah School and Institutional Trust Lands Administration (SITLA): SITLA is mandated by state law to maximize financial gain from their properties through sale, lease, or exchange. Such lands were originally allocated to western states upon statehood by the federal government to support state institutions like schools. Utah was given sections 2, 16, 32, and 36 in each township. The resulting checkerboard pattern of ownership means many SITLA parcels are surrounded by federal lands with limited or no access. Land transfers are a solution to this situation. SITLA has a successful track record of working with the BLM, US Forest Service, and private landholders to enable mutually beneficial consolidations of property.

Private Property: Counties can establish new ROWs through private lands in three ways. First, for developing lands, counties can identify ROWs on the transportation component of the General Plan. With ROW's identified, counties can work with developers to construct ROWs as the land develops over time. Second, counties can work with willing landowners to negotiate a mutually beneficial solution to purchase a public ROW or easement across property. Finally, in cases where landowners do not want a public ROW or easement across their property, counties can use eminent domain to condemn private property. State law enables the right of eminent domain for roadways for public vehicles but not for recreational uses (78B-6-501 3f). The Office of the Property Rights Ombudsman provides further guidance:

Easements: There are two types of easements relating to property rights-of-way in Utah. First, an "Appurtenant Easement" belongs to and benefits a particular parcel of land. Such easements are part of the property rights of the dominant estate, and are transferred along with the property. A roadway for access to a parcel is an example of an appurtenant estate. Second, An "Easement in Gross" is a personal right to use land, but is not attached to any particular parcel. In general, an easement in gross is not transferrable. Hunting rights on private property is an example of an easement in gross. The right may be exercised even if the easement owner does not own land (Utah Department of Commerce 2017).

Prescriptive Road Statute: The Prescriptive Road Statute is found in § 72-5-104 of the Utah Code. It is also referred to as the "road by use" statute. Essentially, the statute provides that a road crossing private property becomes a public right-of-way if it is used by the public continuously for at least 10 years. The statute was originally adopted by the Territorial Legislature, and has existed in basically the same form since approximately 1880. The purpose of the statute is to encourage economic and resource development by allowing the public to use roads located on private property that have been established through long-term use. If public use is interrupted or stopped before a period of ten continuous years has passed, the roadway cannot be claimed as a public right-of-way. A property owner may stop or interrupt public use by an action that is intended to disrupt use by the public, and is reasonably calculated to do so. For example, blocking the roadway or closing a gate, along with signs indicating that the roadway is privately owned would probably be sufficient to interrupt public use, if the ten continuous years have not passed (Utah Department of Commerce 2017).

In addition, RS-2477 roads can be on private lands if the ROW was created before the roads were transferred from federal ownership to private.

Control & Influence

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

Economic Considerations

Iron County's economy is closely tied to accessing public lands for resource utilization and recreation. Physical access via roadways, especially for motorized vehicles, is required for the development and utilization of energy, mineral, recreation areas, or other resources. Of special concern are state inholdings managed by SITLA, and private lands surrounded by BLM properties.

Relevant Existing Policies

From Iron County General Plan.

Goal LU8 Maintain and improve the valid existing rights-of-way a cross public and private lands in accordance with appropriate safety standards and public need.

Pol. LU8.1 Optimize accessibility within the County.

Pol. LU8.2 Minimize cost and environmental degradation from movement between communities and across public lands.

Pol. LU8.3 Provide adequate routes to transport natural resources, livestock, manufactured goods, and services produced or provided within or outside the County.

Pol. LU8.4 Provide for adequate roadways to serve tourist related industry.

Pol. LU8.5 Iron County shall actively defend the right to maintain and control all existing paths, roads, and trails, which traverse Federal and State lands, as County Rights-Of-Way under the provisions of RS 2477.

Objectives and positions were copied from the Iron County Proposed Wilderness Regions Interim Resource Management Plan. For more information, see the Wilderness section of this CRMP, in addition these objectives and positions are also applicable to non-wilderness areas.

1. Multiple-Use Management

a. meet the recreational needs and the personal and business-related transportation needs of the citizens of Iron County by providing access throughout the county;

2. "Wilderness Characteristics" management

a. Iron County recognizes that it is technically feasible to access mineral and energy resources while preserving or, as necessary, restoring non-mineral and non-energy resources.

3. Maintain and improve traditional motorized access to outdoor recreational opportunities available in the Proposed Wilderness Regions:

. Traditionally, citizens of Iron County and visitors have enjoyed many forms of outdoor recreation in the Proposed Wilderness Regions, such as hunting, wood gathering, hiking, family and group reunions, family and group campouts and campfires, pine nut gathering, rockhounding, OHV travel, geological exploring, pioneering, parking their RV, or just touring in their personal vehicles. Such activities are important to preserve the character and tradition of Iron County.

- a. Public land access in the Proposed Wilderness Regions should not discriminate in favor of one particular mode of recreation or access to the exclusion of others. Traditionally, outdoor recreational opportunities in the Proposed Wilderness Regions have been open and accessible to working class families, families with small children, the sick and disabled, the middle aged and elderly, persons of different cultures and nations, the economically disadvantaged and underprivileged, and many others, for whom a “primitive solitary hike” may not be the preferred form of recreating, or even a reasonable alternative. All users should not be forced to participate in a “solitude experience” or a “primitive experience” as the only, or primary, mode of outdoor recreation in the Proposed Wilderness Regions. Any segment of society that wants to recreate in the Proposed Wilderness Regions should have access to that recreation opportunity if they desire it, which access would include motorized and all other traditional forms of access to outdoor recreation, where such historical access existed in the past.
- b. Iron County calls for continued public access, including motorized or mechanized access, to all traditional outdoor recreational destinations in the Proposed Wilderness Regions for all segments of the public. Iron County specifically opposes restricting outdoor recreation destinations in the Proposed Wilderness Regions to just one form of access (i.e. hiking) in order to create a “solitude wilderness experience”, as doing such creates unnecessary limitations and discriminatory policies against those segments of society that are unable to participate in such physical activity.
- c. All roads in the Proposed Wilderness Regions that are part of Iron County’s transportation system, as depicted on the accompanying map, shall remain open to motorized travel. None of these roads shall be closed other than by action of Iron County or the State of Utah. Iron County shall have the continued ability to maintain and repair those roads, and where reasonably necessary, make improvements thereon. All trails in the Proposed Wilderness Regions that have been open to OHV use shall continue to remain open to such use. Traditional levels of wildlife hunting and fishing should be allowed to continue, consistent with sustainability of the resource at verified historical levels. Traditional levels of group camping, group day use, and all other traditional forms of outdoor recreation, both motorized and non-motorized, should continue.
- d. Furthermore, additional roads and trails may be needed in the Proposed Wilderness Regions from time to time to facilitate reasonable access to a broad range of resources and opportunities throughout the Proposed Wilderness Regions, including but not limited to livestock operations and improvements; solid, fluid and gaseous mineral operations; recreational opportunities and operations; search and rescue needs; other public safety needs; access to public lands for people with disabilities and the elderly; and, access to Utah School and Institutional Trust Lands.

Desired Future Conditions

Iron County reaffirms existing goals, objectives and policy statements in the Iron County General Plan and the Iron County Proposed Wilderness Regions Interim Resource Management Plan stated above. The following are also goals, objectives and policies regarding Land Access:

Issue 1. Access to Minerals – Future land use plans may not provide adequate access to minerals due to special designations.		
GOAL	OBJECTIVE	POLICY
Provide access to minerals.	Ensure proper wording in any land use plan or special designation so as to allow extraction of minerals.	Support extraction of minerals from federal lands.

Issue 2. Road Inventories – concern that road inventories for transportation plans, special designations, etc. will not take into account RS-2477 claims.

GOAL	OBJECTIVE	POLICY
RS-2477 claimed roads be so designated in road inventory processes and not suggested for closure.	Involve the County in road inventories for planning purposes.	Support RS-2477 roads to be designated as open in agency land use plans, unless County Commissioners agree to limited closures on a case-by-case basis and due to special circumstances.

Issue 3. Access for Recreational Activities – concern that recreational activities will be restricted due to transportation management planning.

GOAL	OBJECTIVE	POLICY
Ensure Adequate recreational activities exist.	Ensure that the County is involved in transportation management process via cooperating agency and coordination with commissioners and agency leadership.	Have a reasonable transportation plan that address each user group needs and minimizes impacts.

References

1. A History of Iron County
2. Revised Statute 2477
3. PLPCO website
4. Iron County Proposed Wilderness Regions Interim Resource Management Plan
5. Office of Property Rights Ombudsman, Utah Department of Commerce
6. Iron County Interim Transportation Map, 5/23/2011

Land Use

The purpose of this section is to outline the legal frameworks and county's positions associated with resource management planning and public lands issues. This section of the County's Resource Management Plan is intended to provide a broad outline of the parameters for influence and should not be considered an exhaustive dissertation of all possibilities.

Related Resources

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

Overview and History

Overview

Land use is defined as the designation, modification and management of land for agricultural, environmental, industrial, recreational, residential, or any other purposes.

The majority of Iron County includes vast areas of “public” lands. These lands and the associated resources are managed by federal agencies including the U.S. Forest Service (USFS), Bureau of Land Management (BLM), Bureau of Reclamation (BOR), U.S. Fish and Wildlife Service (FWS), and National Park Service (NPS). Traditionally, the residents of the County have used public lands and resources for economic growth and stability. These local associations with, and dependence on, public lands continues today. Specifically, local use of public lands and resources include, but are not limited to minerals, recreation, oil and gas, timber, water, agriculture, fisheries and wildlife.

Due to the dependence of Iron County on public lands and resources, decisions made by public land management agencies directly impact local interests and economy. It is a priority for Iron County to maintain relationships with federal land managers and participation in agency planning and decision-making processes.

The Resource Management Plans (RMPs) developed by the BLM and the USFS Land and Resource Management Plans (LRMPs) are the basis for nearly all natural resource management policy and decision-making activities that affect federal lands. Because the Federal Land Policy and Management Act (FLPMA) mandates that these RMPs are to be consistent with state and local plans “to the maximum extent...consistent with federal law...,” it is essential that counties develop their own resource management plans to reflect local perspectives and positions regarding these interests.

Custom & Culture

Before the first white settlers arrived in Iron County in the 1800's, native peoples used the land for hunting, gathering, and possibly, agriculture. The first white settlers farmed and ranched, bringing livestock to the valley for grazing. The land was soon utilized, not only for agriculture, but for mineral extraction. The discovery of usable coal and extensive iron deposits brought an increase in population, which influenced land development patterns. Today the County still relies on agriculture, mining, and

grazing to sustain the residents' economic needs. All of these land uses and more are part of the custom and culture of Iron County. Multiple uses for lands are more than a tradition, but are a necessity for sustaining growth and community development.

“From the journals of Escalante to the Mormon pioneers, early records tell of the attraction of the land. Isaac C. Haight wrote in 1850, ‘I shall leave this place [Little Salt Lake Valley] with regret. It is one of the most lovely places in the Great Basin. On the east high towering mountains covered with evergreen forests and one of the most beautiful creeks running from them, on the west and south a large valley of the most beautiful lands.’ A midwestern farmer and his wife endured jackrabbits, wolves, bobcats, other creatures, wind, and blowing sand in proving up a homestead on the Escalante Desert. Years later she recalled, ‘Some days, however, the weather was perfect, the water was wonderful, and the country grew on you until by the time we had proved up on our claim, we loved it there and did not want to leave.’” (Seegmiller 1998).

Current Conditions & Programs

Control and Influence

Private Property: Private lands are regulated by land use ordinances and zoning districts, as approved by local and county governments. Zoning districts, and the regulations established within the zoning districts, are authorized by Utah Code § [17-27a-505](#) and municipalities [10-9a-505](#). Land use ordinance and zoning maps are legislative decisions and are established through planning processes open to public discussion and adopted by county and city councils.

Iron County: Utah Code § [17-27a-401](#) requires counties to create a general plan that includes findings, objectives, and policy statements for the resources within its boundaries. It also allows Iron County to “define the county's local customs, local culture, and the components necessary for the county's economic stability.”

US Bureau of Land Management (BLM): The Cedar City Field Office administers lands within Iron County. Land use decisions for all BLM lands are made according to mandates defined by the Federal Land Policy and Management Act (FLPMA) of 1976. FLPMA requires the BLM to manage lands for multiple-use and sustained-yield. A component of FLPMA is the requirement for an open and public land use planning process in the development of resource management plans (RMP). Each BLM Field Office must develop a RMP to guide future land use activities on public lands. The RMP defines goals, objectives, and rules for commercial and extractives industries, transportation, recreation, and conservation. To complete an RMP, the BLM follows planning procedures outlined at 43 Code of Federal Regulations 1600.

US Forest Service (USFS): The US Forest Service (USFS) manages land use decisions by developing forest plans under the National Forest Management Act of 1976 (P.L. 94-588). Forest plans provide strategic direction for management of all resources on a National Forest for ten to fifteen years. Forest plans require consideration of alternatives and public input under the National Environmental Policy Act (NEPA) process. Forest plans describe the desired conditions and provide guidance for projects. They do not make site-specific decisions or require any specific actions, but all projects conducted on a National Forest must be consistent with the strategic direction in its forest plan.

National Park Service (NPS): The National Park Service prepares a variety of planning and environmental documents to help guide management of park resources, visitor use, and activity. Most plans follow planning procedures outlined in the National Environmental Policy Act (NEPA).

State Institutional Trust Lands Administration (SITLA): Trust lands are parcels of land throughout our state that were granted by Congress to Utah at the time of statehood. Although trust lands support select public institutions, they are not public lands. Trust lands were allocated specifically to generate revenue to support designated state institutions, including public schools, hospitals, teaching colleges, and universities. In most cases where trust lands are surrounded by public lands, SITLA allows the public land agency to manage these lands per agreement and based on the surrounding practices of the neighboring federal lands.

Broadband Internet

As high speed Internet connections become an increasingly critical asset for economic development, education, healthcare, public safety, and general quality of life, the tech industry and governments must work collaboratively to prepare for the growing need. Zoning laws, right-of-ways, preferred corridors and infrastructure requirements, and coordination with federal land agencies will likely all need to be analyzed in the coming years to maximize this utility. The Utah Broadband Outreach Center in the Governor’s Office of Economic Development is a state program focused on mapping available broadband services and promoting the development of additional infrastructure in Utah (K. Cole, Governor’s Office of Economic Development, unpublished report).

Economic Considerations

“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.

Iron County has two distinct economic regions. The urban corridor is centered by Cedar City and the rest is rural. The urban region has a robust diversified economy and the rural region has a natural resource base economy.

The industries in Iron County are dependent upon the natural resources in the County especially water. The dependence on natural resources in the rural areas may be from the direct use of resources or service of public lands, the indirect use or service by supplying goods and services to those who directly use the resources or services, or from the induced effects of the money generated in the county by direct, indirect and other induced economic activities.

“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).

In 2014, Iron County received \$3,626,459 in federal land payments. 88.3% of this was made available as unrestricted county funds, and the rest was designated for improvement of schools and roads (Headwaters Economics 2016).

Desired Future Conditions

The desired future condition is to remain with relevant existing policies.

a. **Coordination and Consistency with State, Local and Tribal Plans**

- 1) Both the BLM and the Forest Service are required to coordinate their land and natural resources planning efforts with those of the state, local, and tribal jurisdictions. Specifically, Iron County is “authorized to furnish advice to the [BLM] with respect to the development and revision of land use plans...guidelines, ...rules and ...regulations for the public lands.” (43 U.S.C. §1712 (b)(9)). This is significant to Iron County because land use plans adopted by the BLM are required to “be consistent with State and local plans to the maximum extent consistent with Federal law and the purposes of [FLPMA].” (43 U.S.C. §1712(b)(9)). The County asserts that the duly adopted regulations of the BLM further define this consistency requirement by requiring that the BLM resource management plans shall be “consistent with officially approved or adopted resource related plans, and the policies and programs contained therein, of... State and local governments and Indian tribes, so long as the guidance and resource management plans are also consistent with the purpose, policies and programs of Federal laws and regulations applicable to public lands.”(43 U.S.C. §1610.3-2(a)). The term “consistent” is defined to mean that the duly adopted BLM plans for the natural resource within the county “will adhere to the terms, conditions, and decisions of officially approved and adopted resource related plans” of local and state governments. (43 C.F.R. §1610.3-1).
- 2) BLM regulations also provide that “in the absence of officially approved or adopted resource management plans of ...State and local governments...[Federal] resource management plans shall, to the maximum extent practical, be consistent with officially approved and adopted resource related policies and programs of...State and local governments.” However, as before, the consistency only applies to the extent the policies and programs are “consistent with the policies, programs and provisions of the Federal laws and regulations applicable to the public lands” (43 C.F.R. §1610.3-2(b)).
- 3) The Forest Service is required to coordinate “with the land and resource management planning processes of State and Local governments.”(16 U.S.C. §1604(a)) The Forest Service’s planning regulations state that the “Responsible [Forest Service] Official must provide opportunities for the coordination of Forest Service planning efforts...with those of other resource management agencies.” Furthermore, the agency’s planning regulations provide that “the Responsible Official shall seek assistance, where appropriate from other state and local governments...to help address management issues or opportunities.” (36 C.F.R §219.9). Although there is no explicit parallel requirements for consistency of Forest Service plans with plans of state, local, and tribal governments as that contained within FLPMA for the BLM Resource Management Plans, the Forest Service is required to “discuss any inconsistency” between the proposed plan’s provision and “any approved State or local plan and laws.” Further, if any inconsistencies exist, the plan must “describe the extent to which the [Forest Service] would reconcile its proposed action with the plan or law.” (40 C.F.R. §1506.2(d))

b. **Multiple Use and Sustained Yield**

- 1) Iron County asserts that both the Forest Service and the BLM are required to manage the lands under their jurisdiction pursuant to the principles of “multiple-use” and “sustained yield.” These

terms have been defined within the provisions of FLPMA for the BLM and within the provisions of the Multiple-Use Sustained Yield Act of 1960 for the Forest Service.

- 2) Iron County holds that these definitions state that multiple-use is to be considered in the context of the best combination of land use that meet the present and future needs of the nation with respect to “recreation, range, timber, minerals, watershed, wildlife and fish, and natural, scenic, scientific, and historical values.” Furthermore, it states that these resources are to be managed in a “harmonious and coordinated” manner that does not lead to “permanent impairment of the productivity of the land and the quality of the environment.” Finally, multiple use does not, by definition, mean the “greatest economic return or the greatest unit output.” (43 U.S.C §1702(c)). See also 16 U.S.C. §531(a)). For the Forest Service, the “establishment and maintenance of areas of wilderness” is specifically determined to be consistent with the principle of multiple use. (16 U.S.C. §529).
- 3) The term “sustained yield” is defined to mean the achievement of “a high level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple-use.” (43 U.S.C. §1702(h). See also 16 U.S.C. §531(b)).

c. National Environmental Policy Act (NEPA) and Cooperating Agency Status

- 1) Iron County recognizes that preparation of land and natural resource management plans by the BLM and the Forest Service is a major federal action requiring the preparation of an Environmental Impact Statement (EIS) under the provision of the National Environmental Policy Act (NEPA). (42.U.S.C. § 4231 et. seq.) NEPA requires federal agencies to fully disclose the nature and condition of the environment within the area of interest. Under NEPA, agencies must formulate various alternatives for future management and compare those alternatives to a “no-action” alternative of continuing the current management scheme. NEPA specifically requires the agency preparing the EIS to seek decisions that, among other things, “attain the widest range of beneficial uses of the environment without degradation...preserve important historic cultural, and natural aspects of our national heritage... and ...achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities.” (42 U.S.C. §4331(b)).
- 2) The development of an EIS by a federal agency as part of the process to prepare a resource management plan or proposed action includes a number of steps. Each of these steps provides an opportunity for comment by local governments based on their plans and policies. These steps, in general, are:
 1. “Scoping” of the issues;
 2. preparation of the various “Alternatives” with the associated necessary management scenarios and conditions;
 3. issuance of a “Draft EIS” for public comment; and,
 4. issuance of a Final EIS and a Record of Decision which lays out terms and conditions for management of the lands and natural resources for the life of the plan or for the specific project.
- 3) Issuance of the Record of Decision is followed by an administrative remedy period for interested parties, which, upon resolution (if any), is followed by implementation of the decision.
- 4) In many cases, Environmental Assessments are used by the federal agency to determine if a project or federal action requires or warrants an EIS. The EA is not as detailed as an EIS and does not require the degree of public involvement as does an EIS, however, the decision document is required to go through a public comment process and can be challenged as identified by the agency’s regulations required by the federal Council on Environmental Quality. If the decision document following an EA does not warrant further consideration via an EIS, the decision document becomes final and the project can move forward.
- 5) Iron County recognizes the value of the Governor’s Consistency Review authority. For RMP prepared by the BLM, the Governor of the state is given an opportunity for a “consistency

review” immediately following the issuance of the Proposed RMP. The BLM is required to “identify any known inconsistencies with the State or local plans, policies, or programs,” and to “assist in resolving, the extent practical, inconsistencies between Federal and non-Federal Governments’ plans.” The Governor is given 60 days to “identify inconsistencies and provide recommendations in writing” in response. The BLM must accept the recommendations of the Governor if the BLM State Director determines that the recommendations “provide for a reasonable balance between the national interest and the state’s interest.” (43 U.S.C. §1712(b)(9) and 43 C.F.R. §1610.3-2(e). See also 40 C.F.R. §1506.2(d)).

- 6) Iron County recognizes that the federal Council on Environmental Quality has issued specific regulations relating to the implementation of NEPA provisions. One of these directives provide for the elimination of duplication with state and local processes. This regulation requires federal agencies to “cooperate with state and local agencies to the fullest extent possible to reduce duplication between NEPA and state and local requirements.” This cooperation specifically includes, but is not limited to:
 1. joint planning processes,
 2. joint environmental research and studies,
 3. joint public hearings, and
 4. joint environmental assessments (40 C.F.R. §1506.2(b))
- 7) The Council of Environmental Quality also supports inviting state and local governments to become “cooperating agencies” in the preparation of federal land and natural resource management plans and the associated EISs. The invitation to become a cooperating agency is not based on the fact that state or local governments are entities that may be affected by the outcome of the process. Instead, cooperating agency status is specifically based on the state of local government’s position as professionals having jurisdiction by law in the planning area or as professionals holding special expertise in an issue to be addressed in the analysis or decision. (Memo from James Connaughton, Chairman of the CEQ) This status does not relieve the federal agency of the responsibility as the decision-maker, and does not guarantee a decision that the cooperating agency may necessarily favor. Cooperating agency status allows cooperators to participate in the scoping process, the inventory of data and analysis of current situation process, the preparation of alternatives, the impact analysis, and in the preparation of the draft and final EISs. Participation as a cooperating agency in federal planning efforts will specifically require the cooperators to respect the timing and confidentiality inherent in the federal process. Failure to adhere to these conditions may lead to revocation of cooperating agency status. BLM has proposed a regulatory rule change which would solidify the cooperating agency concept in BLM planning, stating that a “cooperating agency relationship” would complement the requirement under FLPMA to coordinate with state and local governments. (69 F.R §43378.)

b. Proposed Positions

viii. The following positions were copied from the 2011 Iron County Proposed Wilderness Regions Interim Resource Management Plan

ix. Multiple Use Management. Multiple use and sustained-yield management principles shall be applied in public land use and natural resource planning and management in Iron County. Multiple-use and sustained-yield management means that landowners and land management agencies should develop and implement management plans and make other resource-use decisions that:

1. achieve and maintain in perpetuity a high-level annual or regular periodic output of agricultural, mineral, and various other resources from public lands in Iron County,
2. support valid existing transportation, mineral, and grazing privileges in Iron County at the highest reasonably sustainable levels;
3. are designed to produce and provide the desired vegetation for the watersheds, timber, food, fiber, livestock forage, and wildlife forage, and minerals that are necessary to

- meet present needs and future economic growth and community expansion in Iron County without permanent impairment of the productivity of the land;
4. meet the recreational and the personal and business-related transportation needs of the citizens of Iron County by providing access throughout the county;
 5. meet the needs of wildlife, provided wildlife populations are kept at a reasonable minimum so as to not interfere with originally permitted AUM levels under the Taylor Grazing Act;
 6. protect against direct and substantial impacts to nationally recognized cultural resources, both historical and archaeological;
 7. meet the needs of economic development;
 8. meet the needs of community development; and
 9. provide for the protection of water rights and reasonable development of additional water rights;

Issue 1. Access to Minerals – Future land use plans may not provide adequate access to minerals due to special designations.

GOAL	OBJECTIVE	POLICY
<p>The County's jurisdictional authority and expertise concerning land use, planning, zoning, site specific conditions, habitat, socio-economics, cultural impacts and other subjects is recognized, accepted and acknowledged by other levels governments.</p> <p>Land managers include Iron County as cooperating agencies in major NEPA decisions and processes, and coordinate activities via the bi-annual coordination meetings.</p>	<p>Hold biannual coordination meetings with land agencies to discuss current and upcoming projects, issues and concerns, and potential controversial situations.</p> <p>Iron County serve as cooperating agency on major land use decision development such as land use plans, environmental impacts statements, etc.</p>	<p>Iron County will be involved in major land use planning as a cooperative agency early in the planning stage and as preparation processes begin such as resource assessments and inventories.</p> <p>Iron County will sponsor at least two coordination meeting with land use agencies per year to discuss projects, issues and concerns, etc.</p> <p>Iron County will provide comments on minor land use planning projects and be represented on field trips, specific meetings, open houses, etc.</p>

References

1. Appendix B - Maps (If any)

Law Enforcement

Related Resources

Recreation and Tourism, Land Use, Land Access, Fire Management, Water Rights + Quality and Hydrology

Overview and History

Overview

The office of Sheriff is a constitutionally-created office with duties prescribed by the Utah legislature. The sheriff is the chief law enforcement officer for the county. The sheriff has countywide jurisdiction, but in practice, mostly concentrates activities outside city limits where municipal officers cannot operate.

The mission of the Sheriff's Office is to protect the lives, property, and rights of all people, to maintain order, and to enforce the law. This mission is achieved through the efforts of experienced and well trained officers and staff of the Iron County Sheriff's Office who strive to improve and maintain the quality of life enjoyed in the County and make it a safe place to live, work, and visit.

Iron County's powers as a political subdivision of the State of Utah derive from the United States and Utah Constitutions, the Utah Code, the common law, and Iron County ordinances and resolutions.

The State of Utah, of which Iron County is a part, has general powers of jurisdiction unless expressly assigned to the government of the United States in the United States Constitution

The Sheriff has been charged with the responsibility to maintain the public peace and protecting life and property of all citizens of Iron County. Obligations and responsibilities have continuously grown throughout the years.

The government of the United States, on the other hand, has only those powers expressly delegated to it in the United States Constitution, as expressly exercised by the Congress of the United States.

Planning and zoning authority for all lands within its borders is a prerogative of Iron County as expressed through its duly appointed planning and zoning commission and elected board of county commissioners.

Law enforcement authority for all lands within its borders is a prerogative of Iron County as expressed through its duly elected Sheriff and duly hired and appointed and contracted deputy law enforcement agents.

Law enforcement agents and other officials of federal land management agencies such as the BLM and the US Forest Service, have no authority, right or permission to enforce state and local criminal and civil laws except as authorized by and consistent with the Federal Assimilative Crimes Act, 18 U.S.C. § 7(3).

The Federal Assimilative Crimes Act permits federal officers to enforce state and local laws by reference (assimilation) only on federal lands that are under either exclusive U.S. jurisdiction or concurrent U.S./State jurisdiction.

On federal lands under mere federal proprietary jurisdiction, which is virtually all BLM and Forest Service lands in Utah, federal agents may not rely on the Federal Assimilative Crimes Act as a basis to enforce state or local laws.

In Iron County, all BLM and Forest Service lands are mere proprietary jurisdiction lands, not concurrent or exclusive jurisdiction lands. Therefore, federal agents are NOT permitted by the Federal Assimilative Crimes Act to enforce state and local laws on those lands.

Current Conditions & Programs

The duties of the Sheriff's Office have increased as administrative procedures, court decisions, and requirements of the laws have brought about sophisticated and technical advancements to Law Enforcement.

The Sheriff's Office is comprised of several divisions which perform the varied duties required by Utah Law, the Criminal Justice System, and the public need. The Iron County Sheriff's Office provides law enforcement services to all areas of Iron County and contract cities, as well as co-operative support services to local, state and federal law enforcement agencies and organizations.

Volunteer Services

The following volunteer services are provided by private individuals and organizations as requested by the Iron County Sheriff:

Animal Shelter

Several volunteers help make the Iron County Sheriff's Office Animal Control Shelter run smoothly on a daily basis. Volunteers helping with adoptions, make sure the dogs are taken care of properly and maintain the facility. The shelter is a no kill shelter, which in turn requires several hours a week working with dog rescue groups and citizens wishing to adopt a dog. A major focus is to make sure the dogs being adopted are going off to good homes with responsible owners.

Search and Rescue

The Iron County Sheriff's Search and Rescue has been serving Iron County citizens and visitors for over five decades. The Search and Rescue Team is staffed entirely by volunteers who live and work in the local communities. Presently, there are over 30 volunteers providing this vital service to Iron County. Members of Search and Rescue are on call 24 hours a day, 7 days a week, and on a moment's notice to look for and rescue individuals who are lost or injured in the backcountry or in the cities.

VIPS (Volunteer in Police Service)

The Iron County Sheriff's Office oversees a very successful and effective VIPS program. In 2011 the Iron County Sheriff's Office implemented the VIPS program. Volunteers work closely with the Sheriff's Office on special events, crowd control, traffic control, patrol functions, crime scene protection, equipment repair and maintenance, and any other area where extra personnel may be needed. Every volunteer in the VIPS have many years of experience and talents they bring to the table.

Ropes Rescue

The Ropes Rescue team is made up of full time Sheriff’s Office employees and volunteers. They are on call 24 hours a day, 7 days a week. This team responds to any emergency situation that requires a technical rope rescue. These situations include falls and accidents in the back country, mountain climbing accidents, confined space rescues, vehicle accidents or any other situation that requires this type of rescue.

Relevant Existing Policies

Goal PS1: Work with utility and other service providers to encourage adequate and safe public infrastructure and public services for residents, including upgrading and expansion of existing deficient systems.

- Pol. PS1.8: Maintain law enforcement and fire protection personnel and service standards to ensure that all residents, businesses, and visitors to the County are protected.
- Pol . PS1.9: Support public safety education programs and neighborhood organizations to prevent crime and fire hazards.

Goal PS4: Work to provide emergency services for all present and future County residents and visitors where possible.

- Pol. PS4.1: Maintain adequate fire protection which provides fire and hazardous materials control and extrication services.
- Pol . PS4.2: Maintain adequate EMT and ambulance services.
- Pol . PS4.3: Maintain an adequate Sheriff’s Department which provides jeep patrol, law enforcement, school security, awareness programs, juvenile and state prisoner transport and domestic violence monitoring.
- Pol. PS4.4: Allow for the location of any necessary emergency service facilities within any zone in the County.
- Pol. PS4.5: Adopt an ordinance which requires the location of address numbers on all structures which are given an address to facilitate the response of emergency vehicles and personnel.

Desired Future Conditions

<p>Issue 1. Human Safety on Public Lands: With designated road closures on Forest Service lands and future consideration being given to road usage on BLM, concern that local law enforcement authorities may not have access to closed roads during emergency situations.</p>		
GOAL	OBJECTIVE	POLICY
<p>Allow for local law enforcement authorities to gain access to closed areas on federal lands during times of emergency.</p>	<p>In federal land use plans the federal agencies recognize the need for immediate access by local law enforcement authorities in emergency situations.</p>	<p>Iron County Sheriff and other local law enforcement authorities have needed access to all public lands when emergencies arise.</p>

Issue 2. Federal Enforcement of local laws – Concern exists that federal agents may attempt to enforce state or local criminal or civil laws on lands in Iron County.

GOAL	OBJECTIVE	POLICY
<p>Enforcement of state and local laws by Iron County Sheriff’s Department</p>	<p>County Sheriff and County Commissioners assert local authority in enforcing state or local criminal or civil laws in the County on all lands.</p>	<p>It is the policy of Iron County, in the interest of the health, safety and welfare of its citizens, to not recognize any attempt by a federal agent to try to enforce state or local criminal or civil laws on any lands in Iron County, including any BLM and Forest Service lands in Iron County, and to declare that all criminal and civil state and local laws shall be enforced in Iron County, only by the Sheriff and Board of County Commissioners. This applies to all lands within the boundaries of Iron County.</p> <p>Iron County serves notice of full reliance upon and integrity with House Bills 67, 147, 149 and 225, 2014 Utah General Legislative Session as codified in Utah Code, Sections 11-51-102 through 104, 63-13-106, 63-13-106.1 through 106.10, and 17-22-31.</p>

References

1. A History of Iron County
2. 2015 Utah Counties Fact Book: Iron County
3. The Spectrum: “Old Iron County courthouse gets face lift”

Livestock and Grazing

Related Resources

Land use, agriculture, water rights + quality and hydrology, wilderness, forest management, predator control, wild horses, wildlife + threatened endangered and sensitive species, and noxious weeds.

Overview and History

The livestock industry in Iron County started with the arrival of the first European settlers in the 1850's.

Information from "Livestock by the Numbers" (Chad Reid, USU Extension) provides a historical overview of livestock in Iron County.

- J.M Palmer stated "the original settlers of cedar who arrived in the fall of 1851 brought with them some well-bred, shorthorn, dual-purpose type cattle. They were good beef producers as well as good milking cows."
- William R. Palmer reported that "sheep were first brought to Cedar City in November 1852 by the Wallden Family who later moved to Beaver. They had ten head, but as fast as people could get hold of them, every family acquired one of two or more to produce the wool that was needed to spin the family clothing." By 1869 Palmer reports the Coop Sheep Company, at that time the only users of open range, had built up to 5,000 head of sheep.
- Settlers quickly found that Cedar Mountain was an ideal place to raise livestock (particularly sheep), which resulted large rise in animal numbers. In 1910, the first Agriculture Census for the State was published and reported 7,504 cattle, which included 1,002 dairy animals and 190,953 sheep and lambs in Iron County. The 1925 Census of Agriculture reported cattle numbers had risen to 13,577 which included 1,042 dairy cattle. Total sheep numbers had fallen to 154,725.
- By the 1950's sheep numbers dropped in half. The decline was due to the ranchers learning proper stocking rates, creation of Forest Reserves, and passage of the Taylor Grazing Act in 1935 establishing set grazing allotments and grazing numbers allowed to graze on public lands.
- Sheep numbers fluctuated in the early 1900's due to market conditions. Numbers were increased during the two world wars as ranchers were asked to increase their production to support the war effort. Currently numbers have stabilized at approximately 25,000 head.
- Dairy cow numbers in Iron County were fairly consistent in the 1,000 head range from 1910 until 2000. In the last few years several large dairies have been built greatly increasing the numbers. A good climate and high quality alfalfa hay and corn supplies makes Iron County attractive to dairying.
- Hogs and dairy cattle have increased dramatically. Commercial hog rearing facilities in the northcentral portion of the county is the single largest contributor to the increase, while new technologies and high quality food availability have made dairy production profitable.

Table 1. AUMs of livestock grazing licensed by the BLM and the state of Utah (1940-2008)

YEAR	CATTLE AND HORSE AUMs LICENSED BY BLM	SHEEP AND GOAT AUMs LICENSED BY THE BLM	TOTAL AUMs LICENSED BY THE BLM
1940	891,000	1,858,000	2,749,000
1945	945,000	1,562,000	2,507,000
1950	1,085,000	1,276,000	2,361,000
1955	1,047,000	1,055,000	2,102,000
1960	811,000	949,000	1,760,000
1965	706,821	699,955	1,406,776
1970	684,540	587,992	1,272,532
1975	677,661	418,681	1,096,342
1980	564,025	249,575	813,600
1985	691,049	284,998	976,047
1990	482,754	218,658	701,412
1995	666,555	201,608	868,163
2000	674,394	159,321	833,715
2005	503,701	118,785	622,486
2008	548,926	126,596	675,522

Sources: BLM n.d.; BLM 2017; Godfrey 2008

Unregulated grazing that took place before enactment of the Taylor Grazing Act resulted in unintended damage to soil, plants, streams, and springs. As a result, grazing management was initially designed to increase productivity and reduce soil erosion by controlling grazing through fencing and water projects and by conducting forage surveys to balance forage demands with the land’s productivity/carrying capacity. These initial improvements in livestock management arrested the degradation of public rangelands while improving watersheds, and were successful in restoring acceptable conditions.

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 (mainly cattle and sheep) has declined more than two-thirds over time. 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.”

By the 1960s and 1970s, regulation of public lands and unrealistic expectations for their management through restrictive federal policies rose to a new level, as made clear by congressional passage of such laws as the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, the National Forest Management Act of 1976, and the Federal Land Policy and Management Act of 1976. Consequently, federal agencies moved away from managing natural resources, vegetation and grazing and toward lengthy studies, litigation and altered fire regimes that have resulted in proliferation of

invasive species, loss of wildlife and a landslide of bureaucratic delay. In general, regulations were intended to provide better management or protection of specific rangeland resources, such as riparian areas, threatened and endangered species, sensitive plant species, and cultural or historical objects. However, a backlog of litigation, environmental studies and regulation has hampered land management activities aimed at production and healthy ecosystems. Consistent with this enhanced regulatory role, federal agencies developed or modified the terms and conditions of grazing permits and leases and implemented new policies which have delayed range improvement projects which address specific resource issues and which have prevented continued improvement of public rangeland conditions.

Livestock grazing in the county is a very strong enterprise deeply rooted on public lands. Good rangeland conditions are paramount to maintaining a viable livestock industry. Today's challenges include proper rangeland management (PJ encroachment, water developments, grazing practices, etc.) competing with or complementing other resource uses (wildlife, recreation, etc.) and sensible guidelines and implementation strategies from the public land agencies.

Current Conditions/Programs

This section describes current livestock grazing in the county, placing special emphasis on public lands and attempts to describe what is working, what is not working, and what is missing. Since wild horse management is a huge issue that impacts all the livestock producers in the western portion of the county, it will be a separate section and will tie to this section in terms of proper rangeland management.

In spite of ongoing improvements in livestock management and federal, state and local recognition of its importance, inflexible federal regulations, altered fire regimes, encroachment of undesirable vegetation (Pinyon/Juniper, rabbitbrush, etc.), and non-government organization efforts to eliminate public land grazing put the industry at significant risk.

Grazing, one of the earliest and longest uses of public land, continues to be an important activity for those same lands today. Livestock grazing now competes with more uses than it did in the past, as other industries and the general public look to the public lands as sources of both conventional and renewable energy and as places for outdoor recreation, including primitive and motorized use. Among the key issues that face land managers today are drought, severe wildfires, invasive plants, and dramatic increases in recreation.

Modern, well-managed grazing provides numerous environmental benefits. For example, well-managed grazing can be used to control undesirable vegetation. Intensively managed "targeted" grazing can control some invasive plant species or reduce the fuels that contribute to severe wildfires. Besides providing such traditional products as meat and fiber, well-managed rangelands support healthy watersheds, carbon sequestration, recreational opportunities, and wildlife habitat. Livestock grazing on public lands helps maintain the private ranches that, in turn, preserve the open spaces that have helped write Iron County's history and will continue to shape this region's character in the years to come.

Economic Considerations

Livestock and grazing in Iron County is important for the cultural, social, and economic benefits it provides. Livestock and grazing successfully balances those benefits and continues to be a valuable source of jobs and income locally. In Iron County, agriculture provides jobs, local tax base, scenic beauty, food and fiber for human use, and fuels management. The practices of raising livestock and grazing animals are considered part of agriculture (refer to the Agriculture section of this Resource Plan for more information).

The USDA 2012 Census of Agriculture lists the top inventory of livestock in Iron County as follows:

1. Cattle – 41,442
2. Sheep – 36,097
3. Horses – 1,484
4. Hogs (withheld)

A recent report published through Utah State University (2016) showed that agriculture contributes more than 15% of the state's total economic output. "Agriculture processing and production sectors combine to account for \$21.2 billion in total economic output in Utah after adjusting for multiplier effects (compared to \$15.2B in 2008)" (Ward and Salisbury 2016). In terms of employment and taxes, the study found, "A total of 79,573 jobs are agriculture related generating compensation \$3.5 billion (compared to 66,500 jobs in 2008)," and that "The agriculture production and processing sectors generate \$497 million in state and local taxes (compared to \$350 million in 2008)" (Ward and Salisbury 2016).

Rural Utah Economic Survival - Federal Land Grazing (1991) explains that in 1991 the primary and secondary values of grazing per AUM and total for federal lands were estimated to be \$59,946,877. "An annual value of about \$60 million in economic activity should be important to more Utahans than the livestock industry. There is a real opportunity cost of shifting federal lands out of grazing to other uses" (Neilson 1991). However, that only considers the products of the livestock industry up to weaning time.

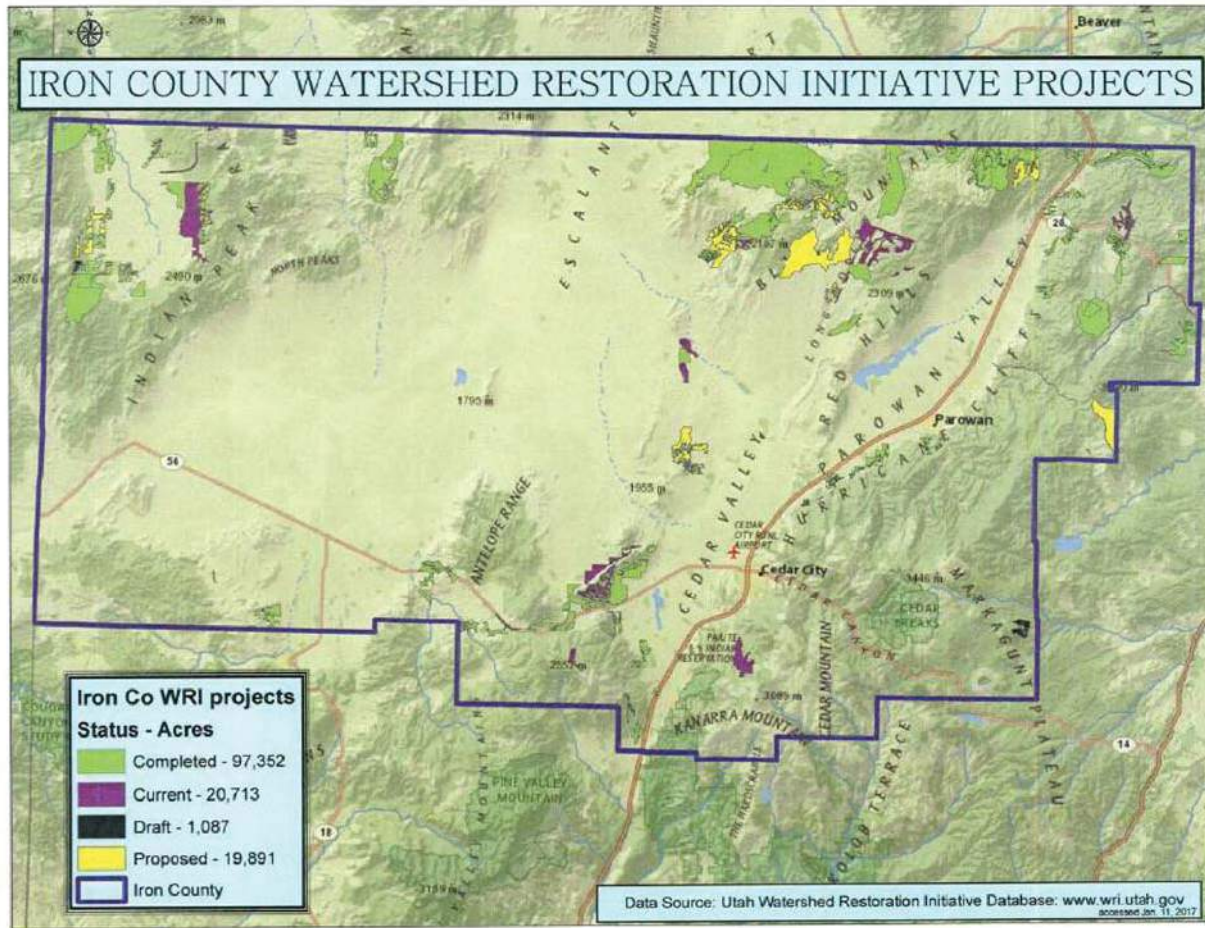
The Livestock Grazing in Utah: History and Status (2008) report explains, "...livestock production is essentially synonymous with agricultural production in Utah: Utah agriculture is dominated by livestock production." As in the State of Utah, livestock and grazing is important to the agricultural production in Iron County.

According to the USDA National Agricultural Statistics Service, the top livestock inventory items in Iron County are cattle and calves, as well as sheep and lambs. The market value of livestock sales in the County was over \$83 million in 2012, accounting for 61% of all agricultural products sold. The average market value of products sold per farm (including crop sales) was \$268,659 in 2012.

Watershed Restoration Initiative (WRI)

The Watershed Restoration Initiative is a partnership-based program designed to improve high priority watersheds throughout Utah. Since 2006, WRI partners have completed nearly 1,500 projects, treating nearly 1.5 million acres statewide. Restoring watersheds protect and rehabilitate vital habitat for wildlife; reduces catastrophic wildfire risks in treated areas; increases water quality and quantity; increases forage for sustainable agriculture and provides economic benefits for local communities. Most projects directly impact grazing in Iron County. The following map shows projects completed, currently planned, draft (in planning phase), and proposed with acres.

Map 1. WRI Projects in Iron County



Grazing on Private Lands

Private lands used for grazing are mostly fenced pasture type settings and can be irrigated or non-irrigated lands. It is unclear exactly how much of these types of private lands are grazed but estimated to be around 90% (verbal conversation with Stakeholders, 2017). Many of the larger livestock producers who graze public lands have established annual grazing patterns and utilize private lands during certain times of the year. The Escalante Desert is a good example. The area is mainly private holdings speckled with BLM and SITLA lands. Cattle primarily graze this area in the winter once they are moved from the mountain ranges. Most operations calf in this area in the late winter and early spring, so private lands are a critical component of the livestock industry in Iron County. The smaller livestock owners depend entirely on fenced private land pastures, both irrigated and dry pasture lands. These types of livestock typically stay in the valley's, but some move to small private mountain pastures during summer months.

Grazing on SITLA Lands

SITLA lands account for approximately 141,184 acres or 6.7% of the lands in the County. Sections of SITLA lands are interspersed throughout the county and for the most part SITLA relies on the BLM and Forest Service to manage grazing per agreements. The BLM and Forest Service set AUMs, establish on-off dates, conduct monitoring, etc. on SITLA lands as they do on surrounding public lands. All this is done according to federal guidelines. Livestock producers pay the same grazing fee to SITLA based on

AUMs as they do on surrounding federal lands. The major difference of SITLA lands over federal lands is range improvements. Grazing permittees can request improvements directly to SITLA for such things as wells, pipelines, corrals, fencing, etc. without going through the cumbersome NEPA process required on federal lands. As a result, the SITLA parcels within federal grazing allotments are very important to the public land grazers.

Grazing on Public Lands

Today federal agencies and permittees manage livestock grazing in a manner aimed at achieving and maintaining health of the land and sustaining resources. To achieve desired conditions, the agencies use forest and rangeland health standards and guidelines, which were generally developed in the 1990s with input from citizen-based Resource Advisory Councils across the West. Standards describe specific conditions needed for long term sustainability, such as the presence of stream bank vegetation and adequate canopy and ground cover. Guidelines are the management techniques designed to achieve or maintain healthy public lands, as defined by the standards. These techniques include such methods as seed dissemination, periodic rest or deferment from grazing in specific allotments during critical growth periods, water development, and land treatments aimed at making the land more productive.

Currently, grazing on public lands is relatively stable. Except for a few isolated locations, problems from the early 1900s have been largely corrected as designed by the Taylor Grazing Act. Forest and rangeland health has improved over the past few decades, and there is continual effort on the part of federal agencies and permittees to maintain healthy conditions. Because grazing management differs among agencies, this plan will address each separately.

Bureau of Land Management:

In Iron County, the BLM administered lands account for approximately 957,731 acres or 57.5% of the total land ownership in the county. Much of the lower desert lands are winter ranges, while the higher ranges are grazed during spring/fall/winter months. The Taylor Grazing Act of 1934 provides for the regulation of grazing on the public lands (excluding Alaska) to improve rangeland conditions and regulate their use. The Act created the Grazing Service, which eventually became the Bureau of Land Management, through local grazing advisory boards, who created an adjudication process to determine where, when, and what type of livestock grazing could occur on public rangelands. To receive an allotment through this process, the stockman had to have (1) “commensurate base property” on which he could graze his livestock when they were not using the federal lands, (2) have an economically viable livestock operation, and (3) be members of the local community and support the local stability of the community.

Grazing permits are provided to qualified stockmen and fees are collected based on AUMs, and the permit cannot exceed 10 years but is renewable. Grazing permits are considered by the permittee as rights, and as such are regularly used as assets to secure loans for grazing operations, or can be sold as part of a ranch operation when the ranch changes ownership. However, public land agencies would argue that the grazing is simply a permitted activity on public lands and carries no rights.

Livestock grazing in the region has decreased substantially from the peak, which occurred in the early part of the last century. The decline in livestock grazing is attributed to reducing livestock use to a level more consistent with the range’s carrying capacity. This reduction in livestock use helped improve rangeland health.

Drought conditions have been and will continue to be an issue of concern throughout the County and in many parts of the western United States. The County experienced extreme drought conditions from 2002 through 2004, and reductions to livestock numbers mandated. Drought conditions could require annual adjustments in livestock numbers in the future to provide for the sustainability of the vegetative community.

Current authorized grazing levels were formally established from 1940 to 1965, during which time the BLM completed livestock forage inventories to establish estimated grazing capacity (AUMs and grazing schedules). These levels have been adjusted to accommodate differences in production capabilities and use by other species. The number of AUMs available each year to graze under normal conditions is known as the “Active Preference” or the amount of AUMs available in the allotment. However, due to conditions such as drought, fire, temperatures that alter forage, etc. sometimes the AUM’s are reduced and the permittee pays for only those AUMs they can use. This is known as the “Licensed Livestock Use”. In most cases the active preferences are generally less due to that year’s conditions. The average licensed use of AUMs from 1996 through 2010 is about 60% of the active preference. Another cause for underutilization of AUMs is voluntary non-use for a variety of reasons and is at the discretion of the grazing permittee.

There are 131 grazing allotments on BLM lands that are totally and partially within the Iron County boundaries. The allotments are depicted on **Map 1.0**, and **Table 2.0** summarizes the number of public land acres, AUMs, and livestock class being grazed on BLM and Forest administered lands. Acres grazed differ from what is actually available in the county due to some allotments being shared with the adjoining counties.

Forest Service Grazing:

Iron County has parts of two Ranger Districts – the Cedar City Ranger District (CCRD) and the Pine Valley Ranger District (PVRD). There are 26 allotments on Dixie National Forest in Iron County and that are also shared with adjoining counties (see **Map 1** and **Table 2.0**)

The permit requirements to graze on Forest Service lands are basically the same as on BLM. Monitoring is based on utilization surveys. The intent of utilization monitoring is to restrict use of key or identified forage species by grazing animals at or below established levels to allow achievement of desired ecological condition. Stocking capacity, as determined from animal months allowed to graze to reach proper use, is used to make management adjustments in annual operating plans and for making necessary adjustments in stocking rates, in order to achieve resource objectives and desired conditions (Forest Service Handbook 2209.21).

Land	Acres	Days	AUMs		
			Sheep	Cattle	Horses
BLM	1,064,525	20,873	60,639	8,853	96
Forest	429,721	2,551	16,233	7,005	
Total	1,494,246	23,424	76,872	15,858	96
Source: Cedar City Field Office BLM and Dixie National Forest, 2017					
NOTE: Some allotments are shared with adjoining counties, therefore acres and AUMs will differ than what is actually grazed within the county boundaries.					

Relevant Existing Goals

The following goals and policies were taken from the Iron County General Plan.

1. Continue to allow opportunities for grazing livestock on federal, state and private lands at levels consistent with proper range management, standards and guidelines, custom, culture and the protection of equitable property rights by developing incentives for improving grazing lands and promoting good stewardship.
2. Explore market and incentive systems to reduce administrative and grazing costs on federal and state lands.
3. Promote efficient multiple use management of the range resources in Iron County.
4. Recognize the right of stockmen to move livestock, by trail drives or the use of trucks, along existing county roads, state roads, and established livestock trails and to protect the safe passage of the livestock through retention or replacement of interrupted fence lines due to development.
5. Protect grazing land and promote the continuation of grazing permits

Desired Future Conditions

In addition to reaffirming current policies in the Iron County General Plan, the following issues and concerns were identified by stakeholders, and the goals, objectives and policies are being included in this plan based on those concerns.

<p>Issue 1. Importance of SITLA lands within grazing allotments – most grazing allotments have at least one section of SITLA lands within its boundaries. Unlike BLM and FS lands that require extensive review and planning for range improvements, the process for such improvements on SITLA lands is very efficient and less time consuming. Grazers are fearful that SITLA and the County may desire to sell or trade such parcels for other purposes.</p>		
GOAL	OBJECTIVE	POLICY
<p>Keep and maintain SITLA Lands within grazing allotments.</p>	<p>Discourage sale, of SITLA parcel especially where range improvements have been made and are integral to the livestock operation, or where SITLA parcel is conducive to range improvements.</p> <p>Notification of sale to grazing permittee.</p> <p>If sold, range improvements revert back to permittee.</p> <p>If sold, buyer should have livestock and a plan for grazing.</p>	<p>Iron County discourages sale of SITLA parcels related to livestock grazing, especially where range improvement has been made and are a necessary part of the livestock operation.</p> <p>SITLA to coordinate with Iron County Commissioners prior to sale of SITLA parcels of land.</p> <p>Iron County encourages SITLA to only accept bids for sale of property from buyers with plans to graze livestock.</p>

Issue 2. Impacts on Increasing Elk Populations – Elk populations are increasing and DWR seems not to take into account current range conditions when proposing increases in numbers

GOAL	OBJECTIVE	POLICY
<p>Maintain set grazing distribution of AUMs with wildlife for allotments.</p>	<p>Elk populations stay within current wildlife management objectives as specified by UDWR, unless forage has increased due to vegetation treatment projects increases to AUMs should be based on current ration.</p>	<p>Iron County supports elk numbers stay within current unit objectives and only increase where there is additional forage made available and where increased forage is shared at the current ratio with livestock AUMs.</p>

Issue 3. Adaptive Management for Grazing – BLM and FS need to be flexible in grazing patterns beyond what is called for in annual grazing plans – specifically on/off dates.

GOAL	OBJECTIVE	POLICY
<p>Livestock grazing management flexibility.</p>	<p>Public land agencies: Allow flexibility to dictate shoulder grazing (on and off dates) for livestock on allotments, (above normal precipitation, drought, timing of precipitation, range conditions, etc.) by addressing adaptive management in the planning process and allowing for decision that support conditions throughout the grazing period.</p> <p>Allow for decisions to be made for shoulder grazing at lowest level possible, at least to District Ranger or Field Office Manager level.</p>	<p>Iron County strongly recommends that public land agencies not use set on/off dates in annual grazing plans, but use dates as targets and base actual on/off dates on current year conditions through adaptive management.</p> <p>Step down decisions on shoulder grazing to at least District Ranger or Field Office Manager level.</p>

Issue 4. AUM Changes – When AUMs are suspended or changed due drought or other emergency conditions, once the drought or condition has subsided, not all AUMs are restored. In addition, when vegetation treatment projects produce in an increase in available forage, the BLM and FS has seemed unfavorable to increasing AUMs based on increased forage.

GOAL	OBJECTIVE	POLICY
<p>Restore all AUMs once a condition that caused the reduction has subsided.</p> <p>Increase AUMs when vegetation projects are completed and are successful.</p>	<p>BLM evaluate conditions that caused a decrease in AUMS and restore the AUMS once the threat is gone.</p> <p>When vegetation treatment projects are completed and successful, increase AUMs according to forage availability.</p>	<p>Iron County supports a no-net-loss of AUMs.</p> <p>Iron County supports restoring AUMs once a threat is addressed, and supports increased AUMs when range conditions improve.</p>

Issue 5. Change in Allotment Permittee – When grazing allotments change hands from one permittee to another, AUM should reflect historic AUM and not be reduced.

GOAL	OBJECTIVE	POLICY
<p>AUM remain constant when change in permittee occurs.</p>	<p>During allotment permittee change, AUMS should be accounted for through historic records and remain constant during such changes.</p>	<p>Iron County supports consistency in AUM when allotments change permittees.</p>

Issue 6. Enabling Legislation of Forest Service to Coordinate – Enabling legislation in FLPMA for the FS to coordinate with local governments is vague and does require full consideration of local plans in their planning processes as does the BLM.

GOAL	OBJECTIVE	POLICY
<p>Consistency in public lands coordination and use of local resource plans.</p>	<p>Have consistent enabling legislative language for BLM and FS to utilize local resource plans in planning processes, using current BLM language as model.</p>	<p>Iron County encourages Congress to revisit the FS consistency clause in NFMA to match the BLM requirement.</p>

Issue 7. County Involvement in NEPA – Too often the County is left out in the planning and decision making process, even though NFMA requires it. Iron County sees involvement to mean at the assessment phase of planning through to implementation.

GOAL	OBJECTIVE	POLICY
Iron County become involved preplanning, planning and post planning NEPA processes.	County involvement in initial assessment analysis of resources prior to the formal NEPA analysis. Agencies meet with Iron County to coordinate planning, identify concerns and issues, and provide periodic updates throughout preplanning, planning, and post planning (implementation).	Iron County requires coordination with federal agencies during all phases of the planning processes.

Issue 8. Vegetation Projects Increase Forage – Vegetation projects greatly improve forage for livestock, however, by the time the federal land agency gets NEPA done to consider if AUMs can be increased based on forage availability, the area has already started to be invaded by invasive plants.

GOAL	OBJECTIVE	POLICY
Streamline NEPA analyses to take advantage of vegetation projects intent of increased forage, and management with grazing.	When initial vegetation projects are analyzed, complete adaptive management strategies that sets parameters for quicker increased grazing after projects are complete.	Iron County supports adaptive management to streamline NEPA processes in grazing, timber management, travel management, etc.

References

1. US Dept. Interior, Taylor Grazing Act of 1934
2. US Forest Service; “The 1905 Use Book”
3. http://www.foresthistory.org/ASPNET/Publications/1905_Use_Book/use_intro.aspx
4. US Forest Service, Land and Resource Management Plan, Dixie National Forest 1986
5. US Forest Service Rangeland Resources Planning Act, 1974
6. US Forest Service, National Forest Management Act of 1976
7. USU Extension, “Livestock by the Numbers” Chad Reid, USU Extension Agent, 2016
8. Iron County General Plan (1995)
9. A History of Iron County (1998)
10. Livestock Grazing in Utah: History and Status (2008)
11. Grazing allotments on federal land

12. History of grazing in Utah
13. Rural Utah Economic Survival, Federal Land Grazing
14. Utah Grazing Improvement Program Principles of Grazing Management
15. Resource management plan alternative development for livestock grazing
16. Greater sage-grouse and range management insight
17. Utah State University County Agricultural Profiles
18. Future of America's Forest and Rangelands, USDA, R&D, Gen. Tech. Rep. WO-94, 2016
https://www.fs.fed.us/research/publications/gtr/gtr_wo94.pdf

Mining and Mineral Resources

Related Resources

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

Overview and History

Overview

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. Mineral resource types in the County include locatable (e.g., copper, gold, iron, and silver), mineral materials (e.g., sand, gravel, and building stone), solid leasable minerals (e.g. coal and potassium minerals), and fluid minerals (e.g., oil and gas and geothermal resources). The sections below describe these resources, their existing conditions, forecasts for development, and key features; and are based on federal definitions:

Locatable Minerals

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. Locatable minerals in Iron County with most potential include iron, gold, silver, and alunite.

Leasable Minerals

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). Leasable minerals in Iron County are comprised of coal, oil and natural gas, and geothermal resources.

Saleable Minerals

This category also 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.

Custom + Culture

“Iron County obtained its name from the iron resources found west of Cedar City, in the Iron Springs and Pinto Mining Districts, which represent the largest known iron ore resource in the continental United States west of the Mississippi River” (BLM 2013).

“Without question, Iron County is accurately named. Within its borders lie the richest and most accessible iron ore bodies in the western United States. The mining district is three miles wide and twenty-three miles long, occupying only sixty-nine of the county's 3,300 square miles. However, economically and historically, its impact has eclipsed that of any other facet of the natural landscape” (Seegmiller 1998).

“Iron County became the second wealthiest county in Utah in the 1950s when its iron mines were producing millions of tons of ore for steel plants in northern Utah, California, and Colorado” (Seegmiller 1998).

“For a few years, as mining flourished at Stateline and Gold Springs, small towns grew in the hills beyond the Escalante desert. Mining camps were made up mostly of single men, but enough families lived at Stateline in 1900 for a school to be started. As ore values dropped and the mining camp dwindled, nearby Hamlin Valley was opened for homesteading. The mines seldom completely closed down, and some mining continued at both locations through the mid-1930s” (Seegmiller 1998). Gold Springs restarted gold mining operations in 2015 and continues today.

Over 69% of residents in Iron and Washington County believe that mineral exploration and extraction activities should either be maintained or increased on Utah's public lands (Krannich 2008). Utah's growing population requires ever-increasing supplies of affordable industrial minerals for construction, agricultural, and industrial uses to maintain the present quality of life.

Current Conditions & Programs

Locatable Minerals in Iron County

Map 1.0 in Appendix 2 illustrates the mining district potential of locatable minerals found in Iron County.

This section will only cover the minerals that have potential for mining in the future. Other minerals of lesser quantities or qualities will not be discussed. The major emphasis is to allow for mineral extraction in the future with as few restrictions as possible, while adequately protecting the environment, as demand and technology advances.

Iron

“Utah ranked fifth in the nation in iron ore production (Eppinger and others, 1990). The only significant iron resources in the County occur in the northeast-trending Iron Axis mineral belt, extending over 100 km (60 mi) through Iron County from Iron Peak on the northeast, through the Iron Springs mining district” (BLM 2013) (see Map 1.0). The Iron Springs mining district is the most productive iron district in the western United States (about 90 million tons of iron ore) and hosts significant untapped iron resources. The CML open-pit was the latest operation, producing at a rate of approximately 166,000 (tons) of high-grade (+53% iron) direct shipping ore per month (BLM 2013). However, in 2015 the mine shut-down due to instability in the iron market. Currently, there is no iron ore being mined in the County.

Development of iron in the County has historically been confined to private holdings, although surrounding BLM lands in the mining district have deposits of iron. Cumbersome federal regulations and low ore prices will probably confine mining on private lands. However, there is a possibility that future development specifically associated with the Rex Deposit, could significantly impact federal lands west and southwest of Iron Mountain (BLM 2013)

Gold & Silver

“Iron County has...produced substantial quantities of silver from the Escalante District and lesser amounts of gold from the Stateline and Gold Springs Districts” (BLM 2013).

“The Gold Spring mining district is located in extreme western Iron County, southwestern Utah. The district is a small historic low-sulfidation, epithermal, gold-silver quartzadularia-calcitevein/stockwork district. High Desert Gold Corporation controls a 6000-acre block of ground in the Gold Springs district. High Desert Gold announced an initial inferred resource on the Jumbo gold-silver stockwork of 10,353,079 tons at 0.57 ppm gold and 12.90 ppm silver (Katsura and Armitage 2012). A follow-up four- to eight-hole reverse-circulation drilling program on the Jumbo zone was scheduled to begin in April 2013” (University of Utah, Bureau of Economic and Business Research 2014)

The Antelope Range (Silver), Confidence, Stateline, Modena Area, and Escalante mining districts all overlap with Iron County and have economically significant veins of gold and/or silver (BLM 2013).

Other

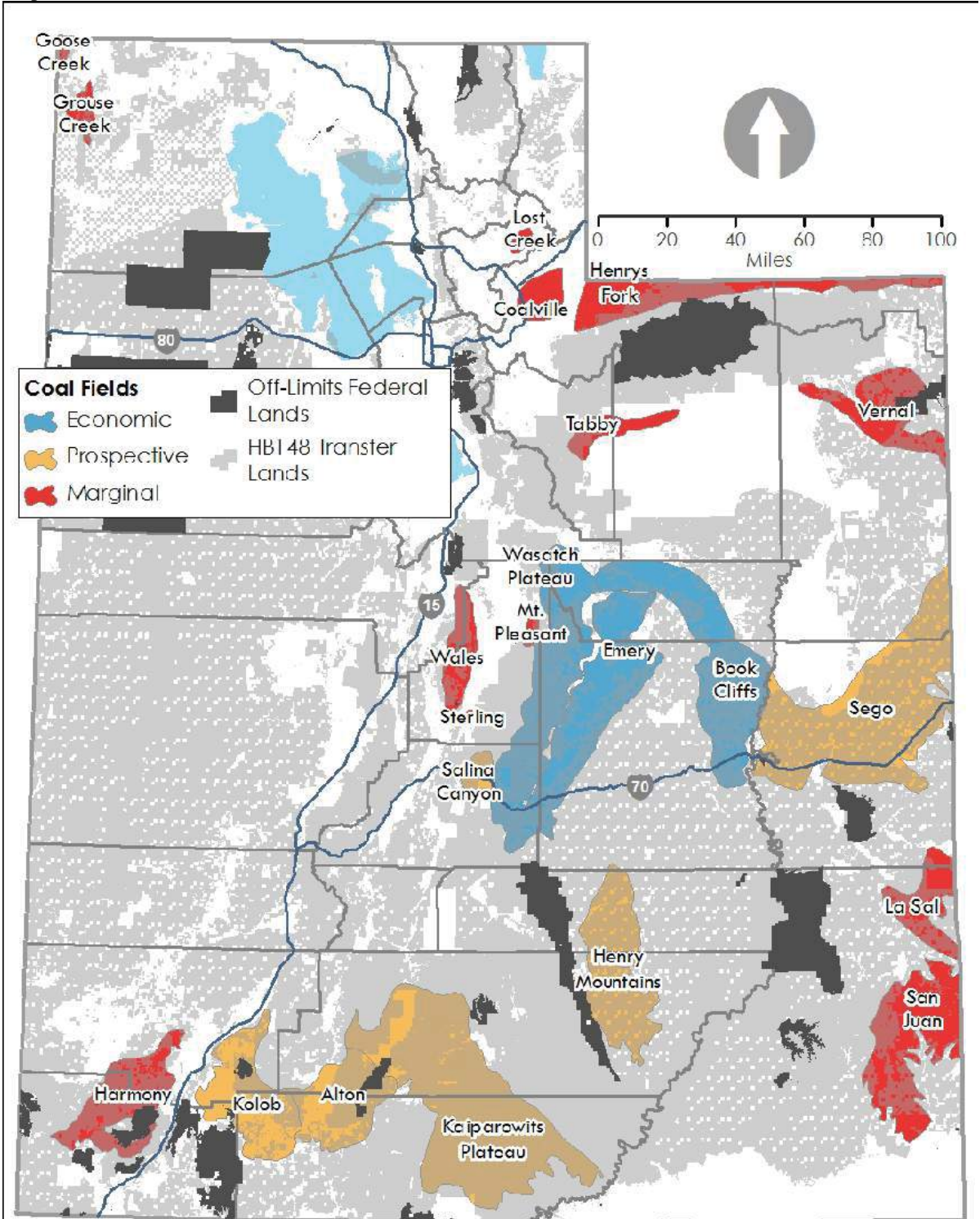
Other locatable minerals in the Iron County include barite, fluorite/fluorspar, high-calcium limestone and high-magnesium dolomite, gypsum, uranium, sulfur, mercury, and molybdenum. These mineral resources are present, and several have been mined historically in Iron County. However, either because they occur in limited quantities or are difficult to extract, or due to other current market forces, they are unlikely candidates for commercial development. These resources could be produced on a small scale or for local uses.

Historically, the economics of locatable mineral resources, particularly the base metals, have been cyclical, reflecting periods of strong demand and limited supplies followed by oversupply and weaker demand. Renewable energy components and electronic devices are driving the rare earth mineral demand worldwide. Demand and prices for precious metals, like gold and silver, is enhanced by periods of general social, political, and economic uncertainties and unrest. Most locatable mineral commodities trade in the worldwide marketplace, so price and demand can be dictated by world events. At present, a substantial marketplace factor is the economic expansion of China and its enormous demand for a wide variety of mineral commodities. This economic growth is forecast to continue to control demand for all of the base metals (BLM 2016).

Beginning in 2005, strong demand allowed the reopening of the magnetite mine operations on Iron Mountain. Known resource bases are adequate for iron resources to allow for continued development and expansion over the next several years, provided market prices remain firm or continue to escalate. As of August 2016, iron-ore prices had fallen to a five-year low and the Iron Mountain magnetite operation has been idled (BLM 2016).

Leasable Minerals in Iron County

Map 2.0 Coal Fields



Map by John Downen, BEBR | June 2014

Note: "Off-Limits Federal Lands" comprise designated wilderness areas, national parks, Golden Spike National Historic Site, national monuments other than Grand Staircase-Escalante, and Department of Defense military lands.

Source: Utah Geological Survey and State of Utah, SGID.

Coal

The majority of coal found in Iron County is southeast of Cedar City in what is known as the Kolob Coal Field. The Kolob Coal field is shared with Kane County and stretches from the Hurricane Cliffs east to the Alton Coal field. It is estimated to contain a recoverable resource of 802 million tons. Federal land ownership is 20%, State ownership is 7% and private ownership is 73%, while mineral ownership is 59% BLM, 11% state, and 10% private (USGS, Utah Energy and Mineral Statistics). The Harmony Coal Field stretches into the southcentral from Harmony Mountain Wilderness Area in Washington County to include much of the Chloride range in Iron County. However, it is an area underlain by coal-bearing rocks (UGS Map 68, 1983) and desirable under current circumstances. Map 2.0 shows the coal deposits in Utah, which include the Kolob and Harmony fields.

Oil and Gas

Several wells were drilled in Iron County between 1947 and 2015. One well and 1 test of the Permo-Triassic play were drilled in the County (west of Parowan), and the others were drilled in the Basin and Range part of the County. The most active drilling periods include 1945 through 1950 (three wells), 1971 through 1985 (nine wells), and 2007 through 2010 (four wells). No oil and gas (including coalbed natural gas) has ever been produced in the County, although there have been shows of oil from historical exploratory drilling.

Although there are no active oil and gas wells in the County, as technology advances and extraction from deeper levels is made available, there is expected to be more interest. For example, the Parowan Oil Prospect offers a structural and stratigraphic combination for potential large scale oil and gas discovery. The Parowan Prospect is located on the west side of the Hurricane Fault, in Cedar Valley about 7 miles north of Cedar City. For the Parowan Prospect the prospective 1,200-foot thick Triassic Navajo Sandstone lies at a depth of 8,000-12,000 feet. Other deeper sandstone and carbonate horizons extending to the 20,000 feet in depth, offer reservoirs units with the potential for large reserves of hydrocarbons (Peek 2013).

Potash

The Pine Valley deposit inside Iron County contains alunite, which can be processed to create potassium, a necessary product in fertilizer (BLM 2013). One deposit on the Steamboat Mountain is of particular interest, but demand may delay extraction efforts for many years.

Saleable Minerals in Iron County

Salable minerals known to be present in the County include common-variety deposits of sand, gravel, aggregate, and lesser amounts of building stones. Rock used for crushed stone is present at many locations throughout the Iron County and dominates all other mineral material sales. Iron County has access to the iron mine tailings that were previously crushed for road base. This material is used primarily for road county road construction and repair. Numerous private companies own and operate sand and gravel pits mainly in the Cedar City area. Given the abundance of sand and gravel resources, accessibility and proximity to end use is the primary driver of the location of development. In addition to the iron mine tailings, the County has access to 21 additional pits located on public lands scattered throughout the County. [Table 2.0](#) lists each pit, location, and material type.

Table 2.0 Source Material Sites

Site Name	Land Status	Material Type
Lund Road East	BLM	Sand and Gravel
Lund Road West	BLM	Fill and Road Base
Rush Lake	BLM	Cinders
Lund Middle Bald Hills	BLM	Gravel
Parowan Gap	BLM	Sand and Gravel
Little Creek Road	BLM	Aggregate
Summit Cinder	BLM	Cinder
Vermillion Castle (Bowery Creek)	BLM	Flood Deposited Gravel
Jackson Wash Road West	BLM	Sand and Gravel
Jackson Wash Road East	BLM	Sand and Gravel
Lund	BLM	Sand and Gravel
Lower Bear Valley	BLM	Sand and Gravel
Little Creek Canyon	BLM	Sand and Gravel
Mud Springs Road	BLM	Sand and Gravel
Horse Hollow road	BLM	Sand and Gravel
Websters Flat	FS	Fill and Road Base
Acoma	FS	Sand and Gravel
Half-Way Hollow	FS	Sand and Gravel
Duncan Canyon I, II & III	FS	Sand and Gravel
Dry Wash	FS	Sand and Gravel

Source: BLM and Forest Service 2017

Crushed rock for landscaping is abundant from existing gravel pits and to some extent, the iron mine tailings. Common clay resources and lapidary material are also present in the County, but the development potential for these resources is generally low, and there has been limited to no historical mining of these resources. Building-stone resources (decorative rock) is commonly used for landscaping and other decorative purposes, are present in the County with small mining operations scattered throughout the County and to a much lesser extent than sand and gravel resources (Map 4). Common clay resources and lapidary material are also present in the planning area, but the quality and development potential for these resources is low, and there has been limited to no historical mining of these resources (Map 5).

Control and Influence

The Utah Legislature has assigned the Utah Division of Oil, Gas, and Mining (DOGGM) responsibility for regulating mineral exploration, development, extraction, and reclamation on "all lands in the state of Utah lawfully subject to its police power. No political subdivision of this state shall enact laws, regulations, or ordinances which are inconsistent with this act." This includes federal, state, and private lands, but it does not include land on Indian Reservations (P. Baker, DOGM, personal communication). These regulations are spelled out by The Mined Land Reclamation Act (1975). The BLM and Forest Service have their own regulations which may vary slightly from those of the state. On public land, mineral surveying and extraction is subject to "dual regulation," meaning both DOGM regulations, and the regulations set by the BLM or Forest Service must be followed.

The state of Utah, the Forest Service, and the BLM require land reclamation bonds on mining operations. The purpose of these bonds is to create a financial surety that the state or land management agency can use to reclaim the land if the operator is unable or unwilling to do so. Disturbances caused by the mining operation must be rehabilitated to either the original state, or a degree agreed upon by the company and the agency. Mining operations on public land need a bond which may be held by either the federal agency or the state (P. Baker, DOGM, personal communication).

Economic Considerations

All mineral resources have a large impact on our economy. State and Federal Government have control over the majority of these minerals, so how they manage them can affect the economy.

Locatable Minerals

“Historically, the economics of locatable mineral resources, particularly the base metals, have been cyclical, reflecting periods of strong demand and limited supplies followed by oversupply and weaker demand. Renewable energy components are driving the rare earth mineral demand worldwide. Demand and prices for precious metals, like gold and silver, is enhanced by periods of general social, political, and economic uncertainties and unrest. Most locatable mineral commodities trade in the worldwide marketplace, so price and demand can be dictated by world events. At present, the single most important marketplace factor is the economic expansion of China and its enormous demand for a wide variety of mineral commodities. This economic growth is forecast to continue to put upward price pressure on all of the base metals. In the last 5 years (prior to 2013), this strong demand has allowed the reopening of the magnetite mine operations on Iron Mountain in Iron County” (BLM 2013).

“Known resource bases are adequate for iron resources in Iron County...to allow for continued development and expansion during the planning period, provided market prices remain firm or continue to escalate. Historically, the price trends of locatable minerals have been cyclical, which affects the supply growth of these commodities” (BLM 2013).

“Industrial-minerals production, with an estimated value of \$955 million was the second-largest contributor to the value of minerals produced [in Utah] in 2009. . . Industrial-mineral values have grown substantially over the past 10 years, increasing from \$500 million in 2000 to a record high of \$1053 million in 2008, a 97% increase. Commodities or commodity groups that have realized the majority of these gains include sand and gravel and crushed stone; Portland cement and lime; salines, including salt, magnesium chloride, potash (potassium chloride), and sulfate of potash (SOP); and phosphate rock. These commodities account for about 90% of the total value of Utah’s industrial-minerals production” (Bon and Krahulec 2010).

Leasable Minerals (BLM 2016)

Continued leasing and exploration interest in Iron County is expected due to the geologic potential for undiscovered resources. Improved technology for finding oil and gas, better understanding of petroleum systems, higher energy prices, and dwindling domestic supplies could promote more industry interest in exploring the County. However, interest in drilling exploratory wells is expected to remain low until there is a discovery. If a new field is discovered, there would be higher levels of drilling and disturbance, which would require more development potential in the County.

The Utah Geological Survey estimates that over the next 20 years, Iron County could see drilling of 15 or so new wildcat wells for oil and gas, and the acquisition of up to 1,500 miles of seismic data. A considerable number of seismic surveys have been performed in the County since the 1970s. Additional future seismic surveys are anticipated when exploration interest in this area returns due to a nearby oil and gas discovery, increased oil and gas demand, or increased interest in wildcat exploration in the oil and gas industry.

Current authorized leases are roughly concentrated in a corridor bounded by Interstate 15 on the east and the Union Pacific Railroad on the west. Interest in this corridor is likely to continue, based on similar geologic setting to recent exploration and development in the Sevier Frontal play in Sevier County.

In 2014, Utah produced 1.8% of the coal in the United States, 30% of that production was shipped out of the state (U.S. Energy Information Administration 2016). Employment in mining especially has changed in recent year; as of March 2016, 9,500 miners are employed in Utah, this is down 12.8% from March 2015 (Department of Workforce Services 2016).

Saleable Minerals

“Market demand for mineral materials in general mirrors the overall economic well-being and growth of the local and regional economies. The low unit value of mineral material commodities typically makes their cost-effective extraction dependent on transportation costs, resulting in localized supply of demand; certain markets, such as the railroad, with ready transportation, allow for sales into a regional market. In the immediate future, the demand for mineral materials will likely remain soft, reflecting the general depressed conditions for infrastructure, commercial, and residential growth in southwestern Utah. However, longer term requirements could expand with the local economies” (BLM 2013).

Relevant Existing Policies

Goal LU7: Develop policies that provide for the long term availability and responsible development of the County's mineral, hydrothermal, and hydrocarbon resources by ordinance.

Pol.LU7.1: Adopt a County mineral, hydrothermal, and hydrocarbon resources ordinance.

Desired Future Conditions

Iron County feels that oil and gas will become a valuable resource in the County over the next several years. Once oil and gas reserves have been identified, the development and associated demands will undoubtedly occur. At the onset of such discovery, Iron County encourages the BLM to utilize the 2010 Master Lease Program (MLP) through the Oil and Gas Leasing Reform Act. MLPs promotes a proactive approach to planning for oil and gas development and recognize that additional planning and analysis may be necessary in some areas prior to new oil and gas leasing because of changing circumstances, updated policies, and new information. Leasing reform allows the BLM to conduct a more in depth review for areas that are or may be opened to leasing at the planning level through master leasing plans. The purpose of an MLP is to plan for oil and gas development at the land-use plan level in a defined area containing a high-level of potential resource concerns. The two main components of MLPs are:

1. Develop goals for maintaining or improving the condition of natural resource values in the area.

2. Identify resource protection measures and best management practices that may be adopted as lease stipulations in the agency’s Resource Management Plan. An MLP is not a special designation but rather it delineates a planning area in which there is analysis of decisions related to oil and gas leasing and development within a district geographic area.

The following are examples of planning decision that may be considered through the MLP process with appropriate supporting NEPA analysis:

- Phased leasing
- Phased development
- Requirements to reduce or capture emissions
- Multiple wells on a single pad
- Additional mitigation stipulations

Iron County reaffirms the existing goal and policies in the Iron County General Plan, and identifies the following goals, objectives and policies for mining.

Issue 1. Mineral Access – Concern that if areas with locatable minerals are designated under Wilderness, WSA, or other special designations, restrictions may not allow extraction.		
GOAL	OBJECTIVE	POLICY
Access to mineral extraction remain open.	If and when areas within the county are designated under special designations, plans for such designations should ensure that minerals can be extracted in the future.	Open all federal lands shown to have reasonable mineral potential leasing with stipulations and conditions that will protect resource values.

Issue 2. Reclamation Seeding – Seed mix for reclamation may be a source for noxious weeds		
GOAL	OBJECTIVE	POLICY
Prevent the spread of noxious weeds.	Develop proper seed mix for reclamation activities that is compatible with existing area vegetation and uses.	Develop site-specific seed mixes for reclamation of disturbed sites to maximize diversity of high quality forage available for livestock, wildlife, and to maintain rangeland health.

Issue 3. Mitigation – Concern that mitigation measures may go too far or some may not be necessary.		
GOAL	OBJECTIVE	POLICY
Ensure County involvement in mitigation.	Prior to mitigation measures being issued, federal agency meet with county commissioners to discuss.	The County should be involved in any initiative, mitigation, or compensatory mitigation programs or studies.

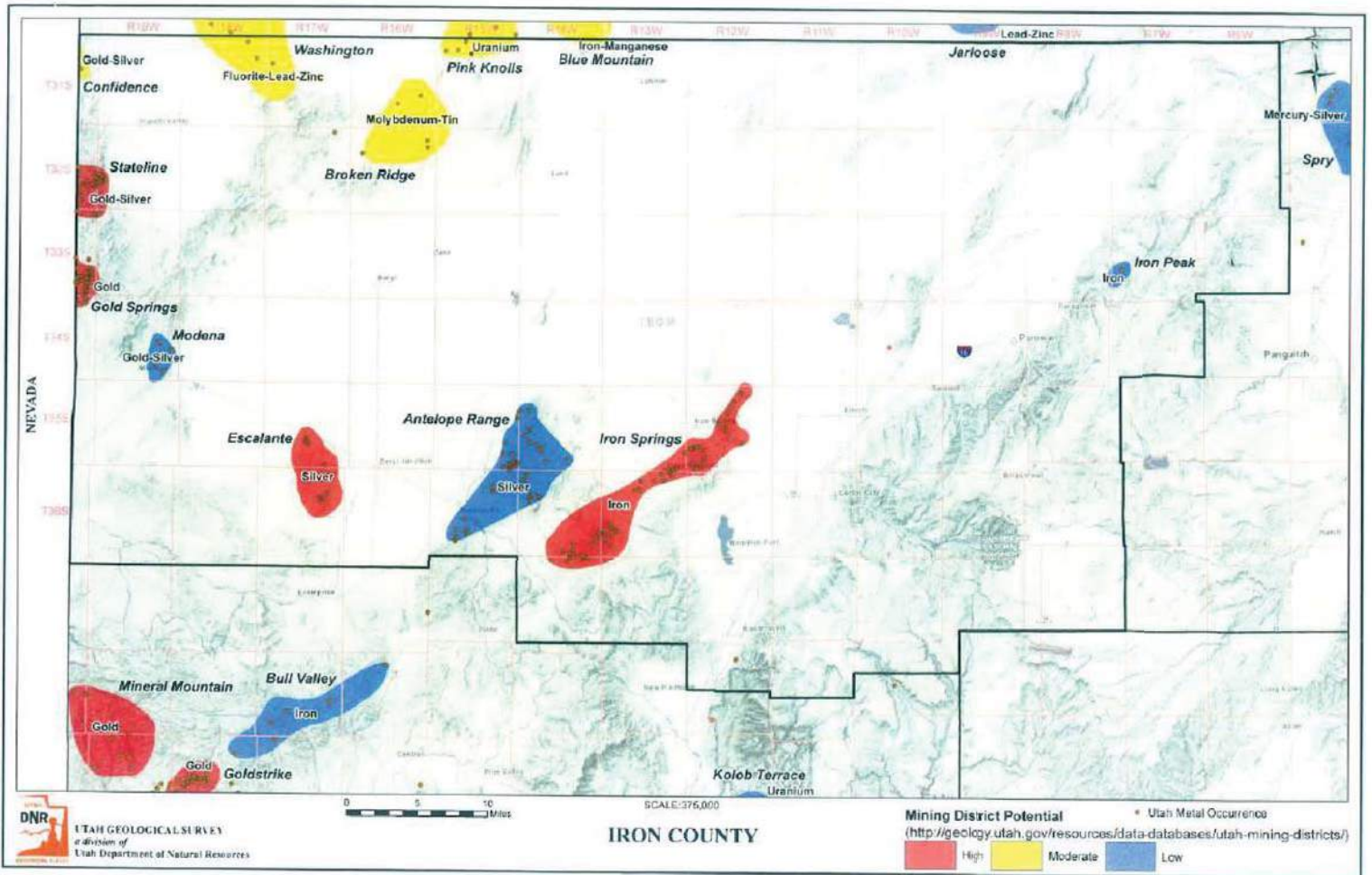
Issue 4. Streamline Regulations – Whenever various agencies are involved in a permitting process, it seems to get bogged down in who does what and when.

GOAL	OBJECTIVE	POLICY
Streamline permitting regulations	Develop agreements between various permitting agencies to streamline processes	Streamline regulations to decrease overlap and contradictions between various permitting agencies.

References

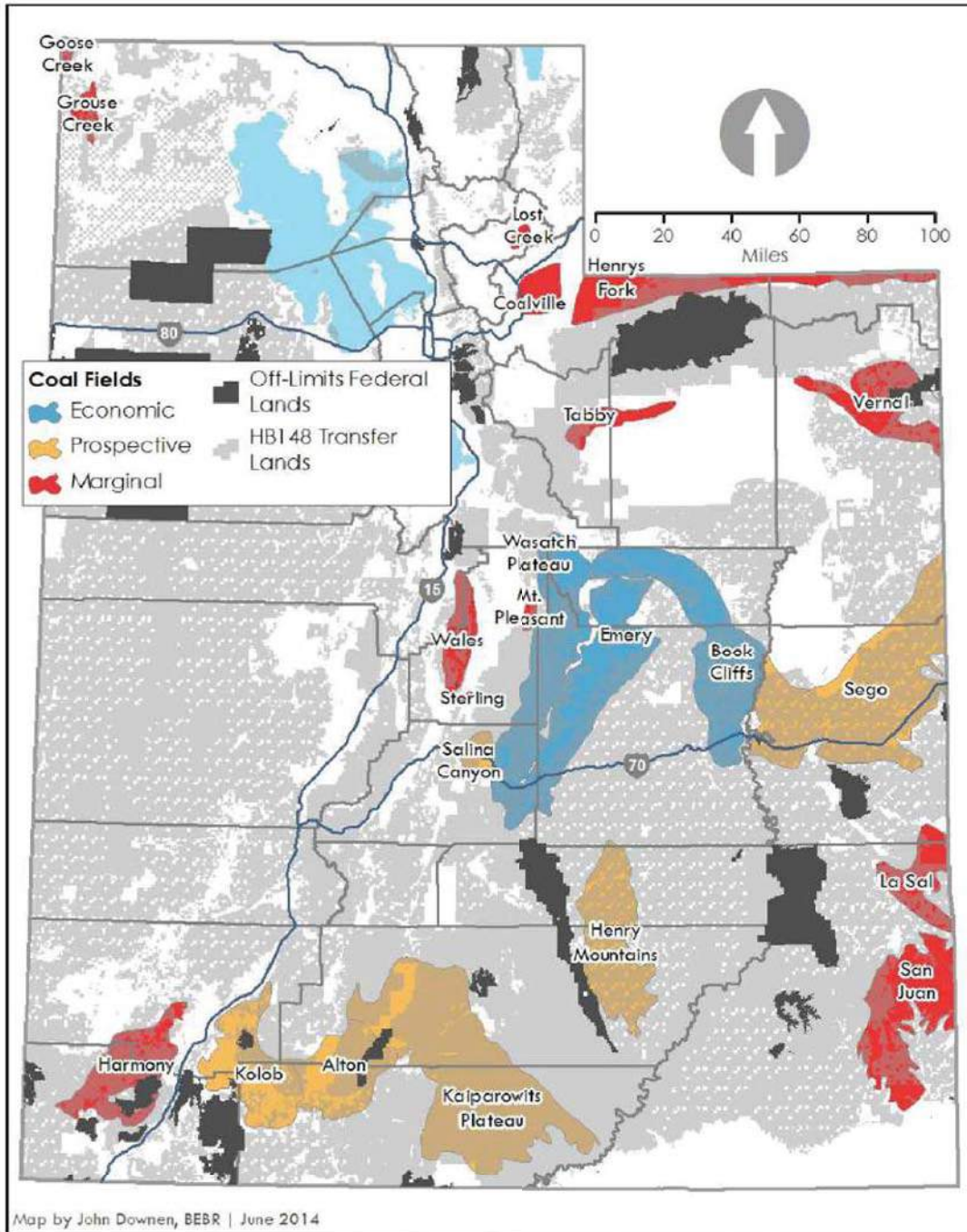
1. Utah’s Extractive Resource Industries 2014
2. A History of Iron County
3. Utah CRMP Toolkit
4. BLM Cedar City Planning Area: Mineral Potential Report (2012)
5. BLM Cedar City Office: “Analysis of the Management Situation” (2013)
6. Public Lands and Utah Communities: A Statewide Survey of Utah Residents 2008
7. An Analysis of a Transfer of Federal Lands to the State of Utah (2014)
8. Peek, Bradely C., Parowan Oil Prospect, Central Utah Thrust Belt, Iron County USA, 2013

Map 1. Iron County Mining District Potential (Utah Geological Survey 2012)



Map 2. Coal Potential (University of Utah, Bureau of Economic and Business Research 2014)

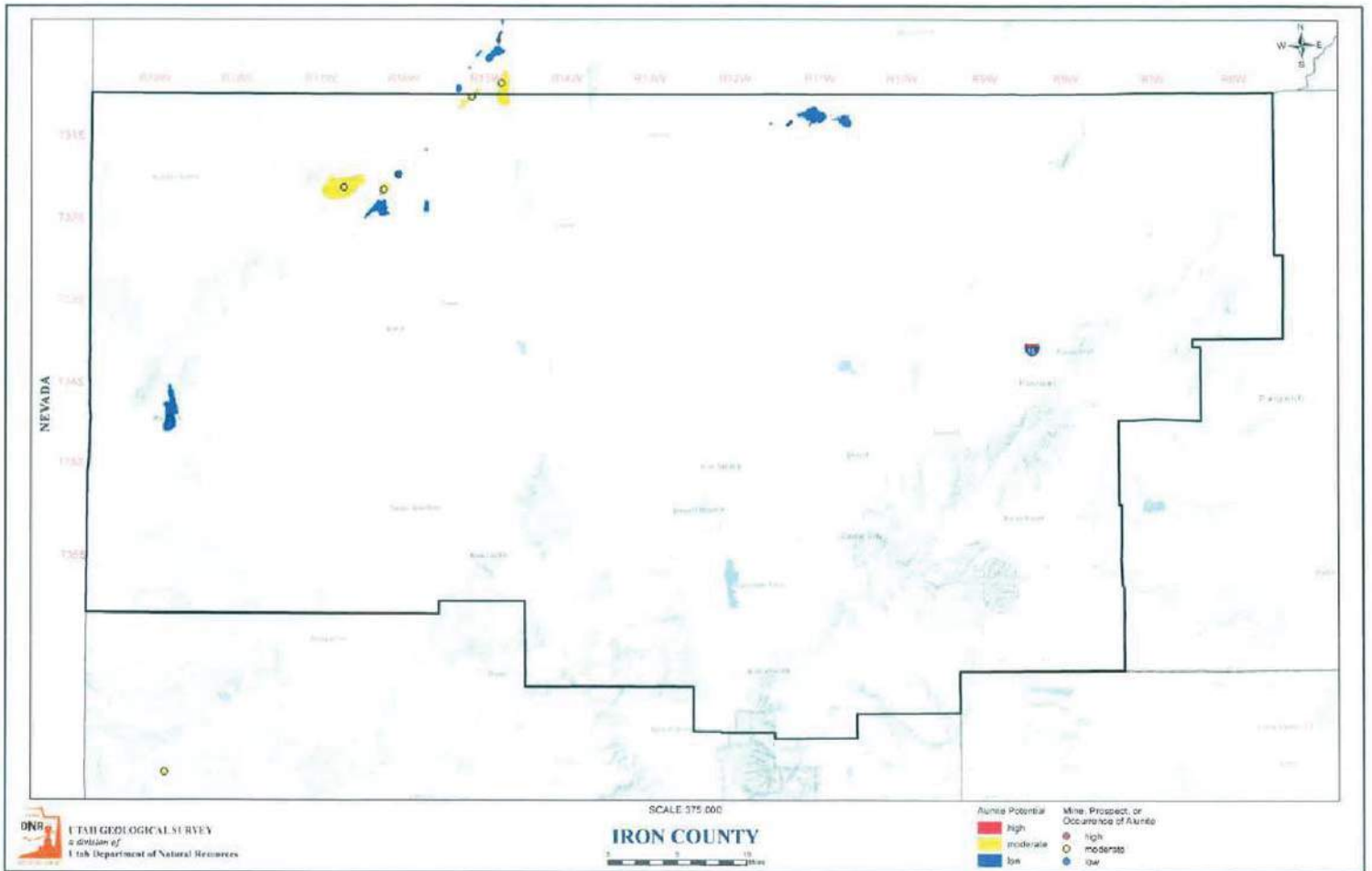
Coal Fields and Federal Transfer Lands



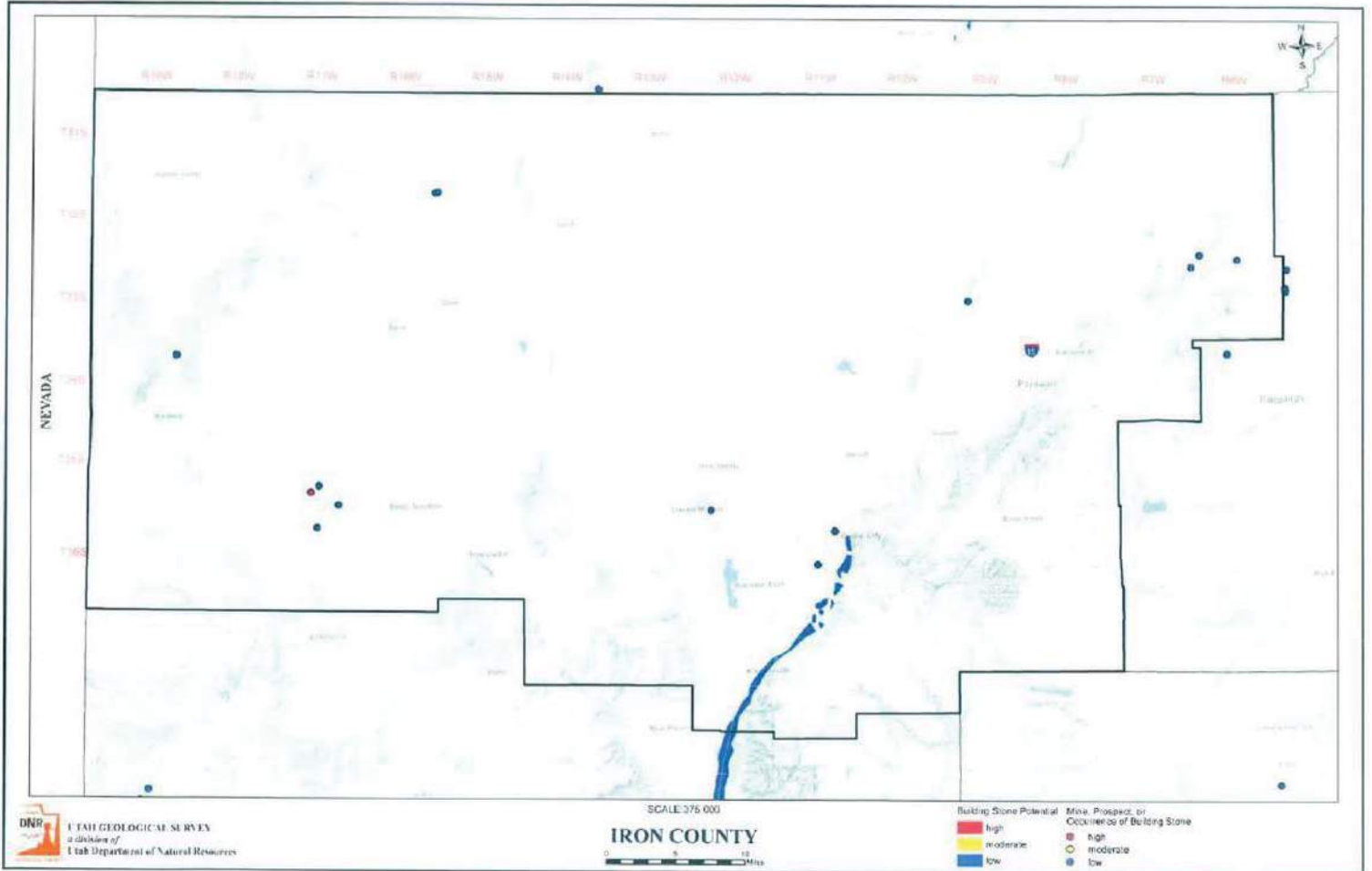
Note: "Off-Limits Federal Lands" comprise designated wilderness areas, national parks, Golden Spike National Historic Site, national monuments other than Grand Staircase-Escalante, and Department of Defense military lands.

Source: Utah Geological Survey and State of Utah, SGID.

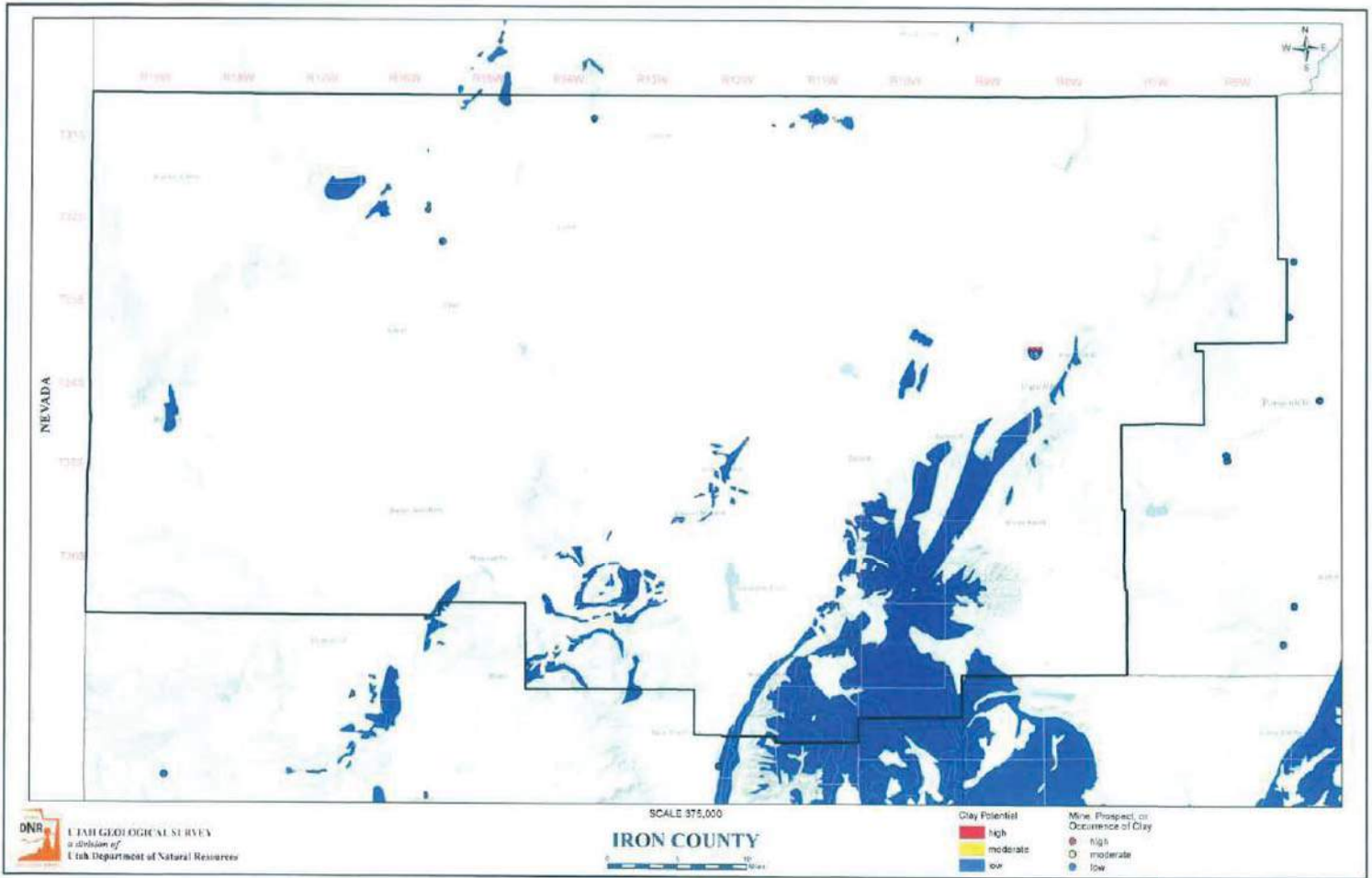
Map 3. Alunite Potential



Map 4. Building Stone Map



Map 5. Clay Potential



Noxious Weeds

Related Resources

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

Overview and History

Overview

Invasive species are plants that have adaptive characteristics such as high seed production; are aggressive and difficult to manage; are capable of invading native habitats; and can often substantially change vegetation communities and affect ecological relationships. Noxious weeds are a subset of invasive plant species. They are legally designated by state or federal law to have these characteristics and require prevention and control measures to help contain or eradicate them.

Invasive plant and noxious weed species are present at various locations in the County and occur along waterways, roads, recreation sites, rangeland, infrastructure ROW, and livestock/wild horse/wildlife use areas (e.g., trails, watering areas, feeding areas, and corrals). Different species of invasive plants and noxious weeds have the capacity to invade any almost any natural vegetative habitat. Invasive plants and noxious weeds are pioneer species, establishing quickly following ground-disturbing activities such wildland or prescribed fire, ground disturbing construction projects, off-road OHV use, wild horses and big game overgrazing, and to a lesser degree, livestock grazing. Once invasive plants and noxious weeds populate a disturbed area, they can outcompete desirable, native, or naturalized vegetation.

There are many species of exotic and invasive weeds in the Utah. Some species, however, have more potential to be “injurious to public health, crops, livestock, land, or other property”. The Utah Noxious Weed Act of 2008 defined 28 noxious weed species in three prioritization categories. In 2015 the official State Noxious Weed list was updated to include 54 species and prioritization categories were modified.

The management of natural resources of 75% of the landmass is done by federal agencies. Therefore, how these agencies operate is a major determinate of invasive plants and noxious weeds control and management in the county. The other 25% fall under Utah Department of Agriculture and Food and county government.

Current Conditions & Programs

Management of invasive plants and noxious weeds in Iron County is aimed at reducing the spread of undesirable species and protecting the integrity of native and desirable non-native/naturalized plant communities. Each year, funds are pooled together from the County, federal agencies, municipalities, SITLA, and private individuals to fund weed management activities. The County practices and supports an integrated management approach to controlling invasive plants and noxious weeds through close coordination and cooperation with other federal, state, local entities, and private landowners.

The State of Utah, through the Commissioner of Agriculture and Food under the Utah Noxious Weed Act has published a list of designated noxious weed species. Utah’s noxious weeds are classified below. Technical names may be obtained from the [Utah Department of Agriculture and Food website](#).

Class 1A: Early Detection Rapid Response (EDRR) Watch List Declared noxious and invasive weeds not native to the state of Utah and not known to exist in the State that pose a serious threat to the state and should be considered as a very high priority.

Class 1A: Early Detection Rapid Response (EDRR) Weeds	
Common crupina	African rue
Small bugloss	Mediterranean sage
Spring millet Syrian beancaper	Ventenata (North Africa grass)
Plumeless thistle	Malta starthistle

Class 1B: Early Detection Rapid Response (EDRR) Declared noxious and invasive weeds not native to the State of Utah that are known to exist in the state in very limited populations and pose a serious threat to the state and should be considered as a very high priority.

Class 1B: Early Detection Rapid Response (EDRR) Weeds	
Camelthorn	Japanese knotweed
Garlic mustard	Blueweed (Vipers bugloss)
Purple starthistle	Elongated mustard
Goatsrue	Common St. Johnswort
African mustard	Oxeye daisy
Giant reed	Cutleaf vipergrass

Class 2: Control Declared noxious and invasive weeds not native to the state of Utah, that pose a threat to the state and should be considered a high priority for control. Weeds listed in the control list are known to exist in varying populations throughout the state. The concentration of these weeds is at a level where control or eradication may be possible.

Class 2: Control Weeds	
Leafy spurge	Dyers woad
Medusahead	Yellow starthistle
Rush skeletonweed	Yellow toadflax
Spotted knapweed	Diffuse knapweed
Purple loosestrife	Black henbane
Squarrose knapweed	Dalmatian toadflax

Class 3: Containment Declared noxious and invasive weeds not native to the State of Utah that are widely spread. Weeds listed in the containment noxious weeds list are known to exist in various populations throughout the state. Weed control efforts may be directed at reducing or eliminating new or expanding weed populations. Known and established weed populations, as determined by the weed

control authority, may be managed by any approved weed control methodology, as determined by the weed control authority. These weeds pose a threat to the agricultural industry and agricultural products.

Class 3: Containment Weeds	
Russian knapweed	Quackgrass
Houndstounge	Jointed goatgrass
Perennial pepperweed (Tall whitetop)	Bermudagrass
Phragmites (Common reed)	Perennial Sorghum spp.: Johnson Grass
Tamarisk (Saltcedar)	Sorghum almum
Hoary cress.	Scotch thistle (Cotton thistle)
Canada thistle	Field bindweed (Wild Morning-glory).
Poison hemlock	Puncturevine (Goathead)
Musk thistle	

Class 4: Prohibited Declared noxious and invasive weeds, not native to the state of Utah, that pose a threat to the state through the retail sale or propagation in the nursery and greenhouse industry. Prohibited noxious weeds are annual, biennial, or perennial plants that the commissioner designates as having the potential or are known to be detrimental to human or animal health, the environment, public roads, crops, or other property.

Class 4: Prohibited Weeds	
Cogongrass (Japanese blood grass)	Scotch broom
Myrtle spurge	Russian olive
Dames Rocket	

Each county in Utah may have different priorities regarding specific State designated Noxious Weeds and is therefore able to re-prioritize these weeds for their own needs. Counties may also designate noxious weeds for their specific County. In addition to the above list, Iron County has designated Western Whorled Milkweed and Bull Thistle as noxious weeds.

The County Weed Specialist coordinates weed control activities among the county weed organizations and the agricultural field representatives. Surveys of serious weed infestations are conducted and control programs are developed through the county weed supervisor, county weed board, and various land managing agencies. The weed specialist continually works with extension and research personnel in encouraging the use of the most effective methods to control the more serious weeds.

Certain weed eradication methods, such as herbicide spraying, must be consistent with federal and state laws governing the use of chemicals. Federal agencies may also be under additional regulations regarding vegetation treatments and the use of herbicides on federal lands. The use of certified weed-free hay is a common guideline implemented to control the spread of noxious weeds and is consistent with the Forest Service's and BLM's rangeland health standards.

For vegetative purposes, the use and perpetuation of native species is often cited as a priority. However, naturalized and non-intrusive, non-native species are often more economically feasible and provide greater resource optimization and benefit. In all cases, the use of weed-free seed in reclamation and rehabilitation projects is standard practice.

Current Weed Programs

The following are current weed programs Iron County is working on or cooperating with other entities:

1. Cooperative Management Weed Area, located in the southern portion of the county (New Harmony Valley area) to control Scotch thistle, whitetop, and musk thistle.
2. Kane Springs, located 10 miles north of Parowan to control houndstongue.
3. Fremont Canyon area located in the northeast portion of the county to control houndstongue.

Economic Considerations

The benefits of efforts to eliminate or control the spread of invasive plants and noxious weeds are not easily calculated. The reason is the benefits take place over a much longer time period and over a large diverse population of beneficiaries that are difficult to identify each and every one.

Massive financial cost and countless hours of manual labor are necessary to manage and prevent the spread of noxious and invasive weeds each year. If not maintained, these weeds can quickly dominate a landscape and reduce forage for animals and decrease soil health, as well as increase fire risk, resulting in destroyed ecosystems (Enterprise & Iron Conservation Districts 2014). 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 rangelands 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 (USU 2009).

“Weeds create significant economic impacts... Annual economic losses in the United States from weeds are over \$20 billion. It is estimated that, without the use of herbicides, revenue losses to the agricultural sector would increase by about 500%” (Rangeland Resources of Utah, 2009). “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” (USU 2009).

Weeds can reduce range carrying capacity for livestock and grazing, negatively affecting livestock production. For example, Dyers Woad infestations can spread 14% per year and reduce range carrying capacity by 38%. The BLM has estimated costs in the western United States for weed control and lost production at \$100,000,000 per year. Wildland fire could also have heavy economic consequences. Contiguous patches of weeds pose significant fire risks, and seeding after wildfire is a necessity to recruit native species rather than weeds. Agriculture may be negatively impacted by uncontrolled noxious weeds. Costs include direct control costs, crop and seed contamination, and equipment cleaning costs.

Relevant Existing Policies (Iron County General Plan)

Goal EN8: Work to control noxious weeds

Pol. EN8.1: Continue spray efforts to control noxious weeds.

Desired Future Conditions

The weed control program in Iron County get good support from the county commissioners, public land agencies, and private individuals. The following issues, goals, objectives and policies were identified through the planning process:

Issue 1. Inconsistency Among Municipalities – The municipalities are inconsistent regarding their level of support for the weed control program. A lot depends on current leadership and how knowledgeable they are on weed control. As a result, municipalities are one of the main concerns for weed banks.

GOAL	OBJECTIVE	POLICY
To have a consistent weed control program throughout the County	Adoption of similar weed ordinances by municipalities and the County Consider funding for spraying private lands Encourage enforcement of existing weed control ordinances.	Iron County supports an active weed control program that allows spraying wherever noxious weeds are deemed to be a problem or have the potential of becoming a problem. Continue working with BLM and Forest Service to secure more funding avenues for weed control.

Issue 2. Absentee Landowners – Under the current program when the weed specialist identifies problem areas on private lands, many times it is owned by an absentee landowner and is difficult and time consuming to get permission to spray on their property, and in many cases by the time the landowner is tracked down, the weed has headed out and went to seed.

GOAL	OBJECTIVE	POLICY
Weed Control program address absentee landowners.	Review current program and consider provisions to treat private lands where the landowner cannot be contacted in a reasonable amount of time.	Iron County supports an active weed control program that allows spraying wherever noxious weeds are deemed to be a problem or have the potential of becoming a problem. All noxious weed infestations on federal lands be identified and mapped prior to January 2020.

Issue 3. Weed Control on SITLA Parcels – Although SITLA does not mind weed control on their parcels of land, funding for such properties is not adequate to control problem areas.

GOAL	OBJECTIVE	POLICY
Develop a strategy with SITLA to identify and control problem areas.	Work with SITLA to draft strategy for weed control that identifies problem areas and funding needs.	Iron County supports an aggressive noxious weed control program on SITLA lands.

Issue 4. Weed Control on Railroads – Railroad does not provide adequate support for weed control, especially where frequent disturbances along the tracks are continual problem areas.

GOAL	OBJECTIVE	POLICY
Develop a strategy with Railroad to identify and control problem areas.	Work with Railroad to draft strategy for weed control that identifies problem areas and funding needs.	Iron County supports an aggressive noxious weed control program on Railroad tracks.

References

1. Rangeland Resources of Utah (2009)
2. A History of Iron County
3. Iron County Website
4. BLM: Analysis of Management Situation (2013)

Predator Control

Related Resources

Agriculture, Livestock and Grazing, Wildlife + Threatened Endangered and Sensitive Species, and Land Use

Overview and History

Livestock Protection: When the pioneers arrived in Utah, wildlife represented both a benefit and problem. Fish became a significant part of the pioneer diet, particularly when crop failures occurred. At other times, hunting parties were formed to rid the early settlers of “pest” species. One such hunting company reported the killing of 2 bears, 2 wolverines, 2 wild cats (bobcat), 783 wolves (probably both coyotes and wolves), 400 foxes, 31 mink, 9 eagles, 530 magpies, hawks, owls, and 1,626 ravens (Powell 1994). Two 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. Utah History Encyclopedia - Wildlife Management. Hunting and predator management has always been a way of life in Iron County. Early pioneers and Native Americans hunted predators for various reasons. This custom and culture is continued today as codified within State regulations. Predators in Utah include raptors, mountain lions, bears, wolves, coyotes, foxes, weasels, and snakes. The primary focus of predator control in Utah is 1) protecting livestock from coyotes, black bear and mountain lion, and 2) protecting mule deer and other wildlife (T&E and other species) from coyotes, raptors, and small mammalian predators.

The primary agent for predator control to protect livestock from predation is the Utah Department of Agriculture in cooperation with the U.S. Department of Agriculture, Animal Plant Health Inspection Service, Wildlife Service’s (WS) (USDA 2015). This cooperative program protects livestock from coyotes, and in cooperation with Utah Division of Wildlife Resources (UDWR), includes mountain lion and black bear caused damage to livestock. Protecting wildlife species or property damaged by big game is the responsibility of the UDWR. These types of predator damage are mostly managed through hunting permits and reimbursement for crop damage. The UDWR pays hunters to take coyotes from deer winter and fawning ranges as discussed below.

Current Conditions/Programs

Predators in Utah include raptors, mountain lions, bears, wolves, coyotes, foxes, weasels, and snakes. The strategies and practices to control the actions of predators include bringing into natural ecological balance predator populations, or reduce the number of conflicts with predatory animals. The two programs are discussed below:

Livestock Protection Program

In Utah, livestock protection from predators rests with the Utah Department of Agriculture and Food (UDAF) as explained in the Utah Agriculture Animal Damage Prevention Act (ADPA). The UDAF cooperates with the USDA, APHIS, Wildlife Service (WS) in carrying out predator management programs impacting livestock. The UDAF Animal Damage Prevention Board, created by the ADPA oversees the State role in predator damage management. Although WS supervises and manages the program, 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 (APHIS 2016). 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 being preyed upon by other wildlife as requested by 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 are under the authority of UDAF. WS reports all big game (mountain lion and black bear) and other UDWR managed wildlife taken as a result of livestock protection to UDWR (UDAF 2015).

The livestock protection program in Iron County operates in the following manner:

- WS' supervises day-to-day livestock protection operations via agreement with the UDAF and makes available one full-time trapper in the county, and one volunteer trapper split with Beaver County.
- WS' supplies the aircraft for aerial hunting purposes with trained pilots and crew members. Funding for aerial hunting is derived from local livestock groups and the county, with both funds being matched by UDAF. Authority for WS' to hunt coyotes from aircraft comes from the federal Airborne Hunting Act of 1971.

The most common tools used in the county for livestock protection include:

- Foothold traps
- Snares
- Ground Shooting
- Aerial shooting
- Trained Dogs
- Denning

Livestock producer predator management practices consist primarily of non-lethal preventive methods such as animal husbandry, habitat modification, and animal behavior modification. Livestock husbandry and other management techniques are implemented by the livestock producer and include: herders, range riders, season, and location of lambing and calving areas, behavior selection of livestock, guarding animals, fencing, night penning, noise devices, lights, and harassment. Livestock producers are encouraged to use these methods, based on the level of risk, need, and practicality.

Wildlife Damage Program

Deer Protection from Coyotes: In 2012, the State established the Mule Deer Protection Act which pays hunters a bounty fee for coyotes that are harvested. Predators can also be a significant threat to endangered species, and counties often support open hunting and taking predators by other means as a support to other protection efforts.

Big Game Crop Damage: R657-44 (Utah Code) outlines the State's responsibilities when big game damage cultivated crops on cleared and planted land, or fences or irrigation equipment on private land. In short, when such damage occurs and is verified by UDWR, depredating animals will be removed, or a wildlife mitigation plan will be developed to resolve the conflict.

Black Bear and Mountain Lion Depredation: Frequently, black bears and mountain lion prey on livestock, and in some cases, threaten human safety. The UDWR manages these two species and works cooperatively with UDFA and WS' to remove the offending animals.

Greater Sage-Grouse (see the Wildlife + Threatened & Endangered and Sensitive Species Plan): The greater sage grouse is listed as a species of special concern in Utah, and as such it has a statewide management plan that provides conservation measures that must be followed. Sage-grouse are susceptible to predation by ravens, and to a lesser degree, coyotes, fox, raptors, and small predators. The management plan specifies the following in assessing and managing predation on this species:

- Monitor predator composition and depredation rates through research projects. Apply habitat management practices (e.g., grazing management, vegetation treatments) that decrease the effectiveness of predators.
- Develop strategies for active short-term predator control based on biological assessments appropriate to local conditions. This includes placement of treated toxic eggs at or near leks and nesting areas to control corvids, removal of perches near leks, reducing the post size on fences or placement of barriers to discourage perching, removal of mammalian predators, etc.
- Monitor effects of predator control to determine causal connections with greater sage-grouse survivability and modify control strategies accordingly.

All over the West, crows and ravens have affected sage-grouse populations by finding their nests and preying on their chicks. “Direct effects of nest predation on nesting productivity of birds are widely recognized, and even in high-quality sage-grouse habitat, most sage-grouse nests are lost to predators” (Dinkins et al. 2012). “An effort is underway to remove ravens from the Migratory Bird Treaty Act, which bans harming or killing the birds” (Gurrister 2014).

Economic Considerations

Livestock production contributes significantly to the economy of the counties and communities throughout the state. Agriculture generated \$1.838 billion in cash receipts in Utah in 2013 (UDAF 2015). Livestock production, including cattle, domestic turkeys, and sheep, are the primary agricultural industries, and accounted for 72% of all agricultural cash receipts statewide in 2013 (UDAF 2015).

The 2015 Utah breeding sheep inventory, including replacement lambs, totaled 280,000 head (UDAF 2015). The adult sheep inventory in 2015 was 230,000 head, and ewes for breeding, one-year-old and older totaled 220,000 head. The 2014 lamb crop was 235,000 head (UDAF 2015), and lambs for breeding replacement were estimated at 40,000 head in 2015, and rams one-year-old and older totaled 10,000 head (UDAF 2015). Market sheep and lambs were estimated at 20,000 head (UDAF 2015), Utah cattle and calf inventory, as of January 1, 2015 totaled 780,000 head (UDAF 2015). Beef cow replacement heifers were estimated at 78,000 head and other heifers not intended for replacement totaled 64,000 in 2015. The January 1, 2015 inventory of steers weighing 500 pounds or more was 78,000 head. Calves weighing less than 500 pounds as of January 1, 2015 totaled 70,000 head and the 2014 calf crop was 385,000 (UDAF 2015).

Because the livestock herds are migratory and use federal, state, and private lands, the numbers of livestock fluctuate by county and time of year.

Table 1. Sheep and Lamb Predation Loss in Utah in 2014

Species	Lambs before docking	Lambs after docking	Adult Sheep
Bear	100	1,700	800
Bobcat	200	200	0
Coyote	5,200	8,500	3,200
Dog	100	200	400
Fox	400	0	200
Mountain Lion	500	1,700	900
Ravens	300	0	0
Eagle	700	300	100
Other	100	400	300

Utah sheep ranchers lost 43,500 sheep and lambs to all causes during 2014 (UDAF 2015). The largest single cause of death in lambs before docking was from coyotes, which killed 5,200 head accounting for about 68.0% of all lamb losses before docking from predators in 2014. Coyotes also accounted for the largest number of lambs killed after docking, totaling 8,500 head or about 70% of the after docking losses from predators (Table 1) (UDAF 2015). Losses of sheep one-year-old and older to coyotes were 2,800 head and the single largest cause at 54% of all losses to predators. Total losses to coyotes in FY14 were 16,500 head which was 66% of all losses of sheep and lambs in Utah (UDAF 2015).

Current Policies

- a. Coordinate with UDWR to encourage continued use of predator control regulations (Iron County General Plan).
- b. In 2012 Iron County passed Resolution 2012-1 that encourages delisting gray wolves in the state, and prohibits translocation of Mexican wolves in the county.

Desired Future Conditions

In addition to reaffirming existing policies, the following are goals, objectives and policies identified by the County:

Issue 1. Crop and Livestock Damage Compensation – Crop damage caused by big game can be costly and the UDWR Big Game compensation program is important to farmers and ranchers.		
GOAL	OBJECTIVE	POLICY
Have a fair and equitable program to compensate farmers and ranchers for crop and livestock damage caused by big game.	Support existing compensation programs when black bear and mountain lion prey on livestock. As crop types change, allow for damage assessments that show the true value of damage.	Work with UDWR in reviewing the crop and livestock damage compensation policies and to ensure assessments are fair, and continue to support said policies.

Issue 2. Sage Grouse Protection – Predator control to protect sage-grouse is sometimes late and not adequate due to the increasing number of ravens across the sage-grouse areas.

GOAL	OBJECTIVE	POLICY
<p>Allow for predator control to protect sage grouse from harassment at lekking sites and nesting areas just prior to and during critical lekking and nesting seasons.</p> <p>Allow for hunting seasons of ravens.</p>	<p>Support programs such as placement of DRC-1339 treated eggs for raven and crow control, habitat modification to reduce raptor perching activities, trapping and shooting programs to reduce predators in critical areas, etc.</p> <p>Removal of protections from ravens in Utah and establish hunting seasons.</p>	<p>Iron County supports controlling predators (ravens, badgers, coyotes and red fox) preying on sage grouse through placement of treated eggs, trapping, and shooting.</p> <p>Iron County encourages the removal of protected status from ravens.</p>

Issue 3. Continuation of Utah's Coyote Bounty – Concern that UDWR or special interest groups may want to discontinue the current bounty and aerial hunting of coyotes to protect deer herds.

GOAL	OBJECTIVE	POLICY
<p>Allow for bounty and aerial hunting programs in the state to protect deer herds and livestock from coyotes.</p>	<p>Support the current state bounty program and aerial hunting to protect deer herds against coyotes at the request of DWR.</p> <p>Discourage any attempts to remove or diminish the coyote bounty program.</p>	<p>Iron County supports protection of deer from coyotes through the current bounty system established by the Utah legislature. Iron County to work with Utah Legislature to discourage attempts to diminish the current bounty system.</p>

Issue 4. Human Health and Safety – Concern from attacks of predators on humans, or threats of disease transmission from wildlife species as wildlife become more and more accustomed to living near humans.

GOAL	OBJECTIVE	POLICY
<p>Protect human health and safety from predators and other wildlife.</p>	<p>Reviewing current policies for human health and safety concerns with wildlife to insure adequacy.</p>	<p>Iron County encourages UDWR to promptly address situations where wildlife threaten or cause harm to humans through attacks or disease.</p>

Issue 5. Support Livestock Protection – Predator control for protection of livestock is controversial and continually under attack by special interest groups.

GOAL	OBJECTIVE	POLICY
<p>Ensure there is an adequate predator management program to protect livestock in the county</p>	<p>Local and state policies to reflect and support specific needs in predator control such as use of tools, flexible rules, and regulations to allow for adequate protection</p> <p>Discourage any attempts to make coyotes a protected species in Utah such as furbearers or placement of restriction on take.</p>	<p>Iron County supports the current livestock protection program as managed by the UDAF and WS, and use of existing management tools as listed in this document.</p> <p>Iron County supports state classification of coyotes being nuisance predators and managed by the UDA when causing damage to livestock and human safety</p>

References

1. 2015 Predator Program Summary (UDWR)
2. Utah History Encyclopedia - Wildlife Management
3. Final Environmental Assessment Predator Damage Management in Utah EA
<https://www.regulations.gov/document?D=APHIS-2016-0080-0001>
4. Utah Agriculture and Wildlife Damage Prevention Act
<https://le.utah.gov/xcode/Title4/Chapter23/4-23.html>
5. Utah Code R657-44, Big Game Depredation

Recreation & Tourism

Related Resources

Land Access, Land Use, and Wilderness

Overview and History

“The coming of the railroad to Cedar City in 1923 exposed Utah’s national parks to the world of tourism, and Cedar City was promoted as the ‘gateway to the parks’. Iron County is fortunate to be midway between Los Angeles and the metropolitan areas of Salt Lake City and Denver, centrally located among four scenic national parks, and to have become a tourist destination in its own right. It is situated in the center of a circle encompassing Grand Canyon, Zion, Bryce Canyon, and Great Basin national parks, some of which have more than 3 million visitors a year, and Iron County has its own natural scenic wonder in Cedar Breaks National Monument. In 2016 some 900,000 tourists visited Cedar Breaks, while the Utah Shakespearean Festival, American Folk Ballet, Utah Summer Games, Dixie National Forest, and Brian Head Resort host over 400,000 visitors each year. Development of these tourist opportunities required the same characteristics of vision, ingenuity, perseverance, and sacrifice that mark other achievements in the county's history” (Seegmiller 1998).

“Cedar Breaks, a spectacular multicolored fan-shaped basin on the Markagunt Plateau, began receiving attention while it was still part of the Dixie National Forest. Cedar Breaks is a natural amphitheater, stretching across 3 miles, with a depth of over 2,000 feet. The elevation of the rim of the amphitheater is over 10,000 feet above sea level. The rocks of the eroded canyon contain iron and manganese in various combinations, providing brilliant colors that led Indians to call it the Circle of Painted Cliffs. Iron oxides provide the reds, oranges and yellows, while manganese oxides provide shades of purple. The area is a form of badlands—canyons, spires, walls, and cliffs so steep and confusing that the lands, while of great aesthetic value, are of little utilitarian worth. Early settlers called them badlands or breaks and created its current name by combining breaks with cedar for the many juniper trees (often incorrectly called cedars) that grow in the area. To increase tourist travel to Cedar Breaks, Iron County spent \$12,000 in 1921 improving the Parowan Canyon road. A dirt road was built in 1920 into Cedar Breaks from the Cedar-Long Valley road to the south, allowing access from Cedar City (Seegmiller 1998). In 2014, Cedar Breaks National Monument reported 762,907 recreation visits (up 64% from 2013 and up 21% from 2012) and Iron County’s Frontier Homestead State Park reported 5,527 visitors during the first nine months of FY2015, up 16% from the same period in FY2014 (Kem C. Gardner Policy Institute 2016).

It is clear that the abundance and diversity of recreational opportunities and stunning landscapes on Iron County’s public lands are a critical component of citizens of the County and visitors alike, and have helped establish outdoor recreation as a vital component of Iron County economic vitality (BLM 2016). The County can influence recreation by partnering with the BLM, Forest Service and National Park Service to provide adequate recreation opportunities that co-exist with other resource uses such as grazing, forest health, water, etc.

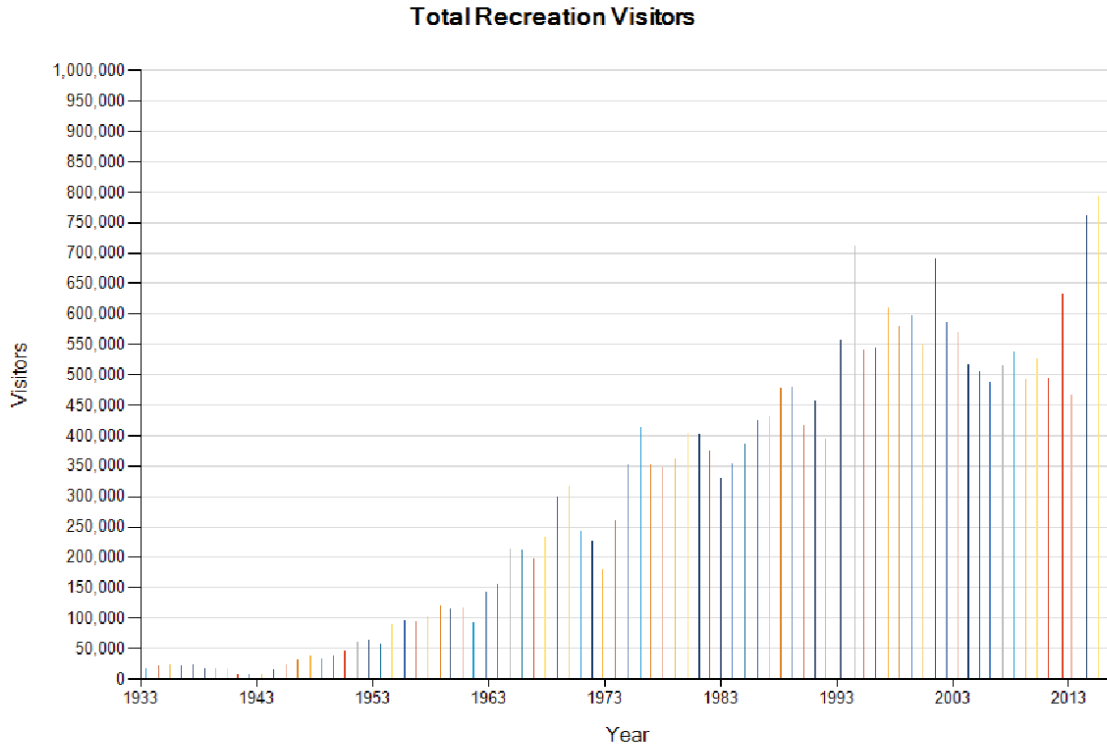
Current Conditions

There are several areas that offer citizens and visitors hiking, viewing, biking, camping, etc., opportunities in Iron County. A few of the most popular are:

Cedar Breaks National Monument

Cedar Breaks National Monument was designated a national monument in 1933 by President Franklin D. Roosevelt. It offers various recreational opportunities to visitors. During summer months hiking and sightseeing is very popular. Improved trails along the rim allow easy hikes and impressive vistas of the red rock formations below. Early summer flowers and fall colors of the aspen trees are the favorites of those visiting the monument. Star gazing at Cedar Breaks has become very popular during the past few years due to the elevation and lack of light pollution.

Figure 1. Cedar Breaks National Monument Visitors 1934 – 2016 (Source: NPS 2016)



Three Peaks Recreation Area

Iron County and the Bureau of Land Management (BLM) have teamed-up in a cooperative effort to develop and maintain the 6,500 acre Three Peaks Recreational Complex. The Iron County portion of Three Peaks is great for group gatherings, rock crawling, picnicking, camping, remote control aircraft, equestrian, and OHV opportunities. Two pavilions with fire grills in the picnicking area are available for reservations. Table 1.0 indicates the number of visitors the area received from 2008 thru 2015.

YEAR	VEHICLE VISITS
2008	20,570
2009	NA
2010	14,236
2011	31,099
2012	31,050
2013	47,880
2014	40,591
2015	41,905

Table 1.0. Vehicle Visits per year at 3 Peaks
(Source: BLM TrafX Counts)

Parowan Gap

Parowan Gap is a canyon and passage through the Red Hills west of Parowan Valley. When the first Mormon Pioneers came there in 1849, Chief Wakara, a widely revered and greatly respected Paiute tribal leader, told them that Parowan Gap was "God's Own House." Recent research and observation is making both the scientist and casual visitor take this statement very seriously. There are solar and lunar events that happen there which were created by no human intervention. Phenomena occur which create a natural calendric structuring of the year's times and seasons with a kind of "Primal Logic of Nature". The pre-Columbian Fremont Peoples of the Parowan Valley noticed these yearly events and recorded them by date number and in many symbolic petroglyphic inscriptions. The Parowan Gap Petroglyphs are listed on the National Register of Historic Places signifying its importance as a cultural treasure. Today, the BLM have constructed a kiosk with information on the site for visitors. Trails to the petroglyphs are in place with plans to construct hiking trails in the canyon to allow visitors to see other attractions such as dinosaur tracks. Table 2 shows visitation numbers from 2011 through 2016.

YEAR	VEHICLE VISITS
2011	74,269
2012	62,316
2013	53,306
2014	58,028
2015	67,465
2016	76,067

Table 2. Vehicle visits per year at Parowan Gap
(Source: BLM TrafX Counts)

Hiking/Site Seeing

Hiking in scenic southern Utah is a great way to explore the region and experience the beautiful scenery off the beaten path. There is everything from arches to waterfalls, ancient forests to slot canyons and majestic overlooks. Trails range from easy walks to challenging overnight excursions. A few popular areas include Kolob Canyon/Kanarra Creek, Cedar Breaks National Monument/Brian Head Area, Parowan Gap, and Vermillion area in Parowan Canyon.

Biking

- **Cycling:** Cycling in Iron County has taken off in a big way, being an official host for the Tour of Utah “America’s toughest stage race” and shares the Western Express Bicycle Route which connects San Francisco, California to the TransAmerica Bicycle Trail in Pueblo, Colorado. Cedar City has designated several miles of bike lanes inside the city limits along major city roads and their arteries for cycling. Other municipalities are planning similar bike routes for residents and visitors alike.
- **Mountain Biking:** Mountain biking has become very popular in Iron County. Several designated biking trails exist on the Forest Service, Brian Head Resort, and BLM. The BLM is working with Cedar City and Iron County to develop trails near the city to give riders even more experiences.

Winter Sports

Winter Recreation (Skiing, Snowboarding, Snowshoeing, and Snowmobiling): Brian Head Resort was opened in the winter of 1964-1965. Ten years later, the Town of Brian Head was established in the area surrounding the Resort. The Resort grew from a one chair lift operation to a complete Resort offering skiing, snowboarding, tubing, night skiing, dining, mountain biking and hiking. An area south west of Deer Valley on State Highway 14 has been set aside exclusively for non-motorized winter activities such as cross country skiing and snowshoeing. The area from the Midway summit north to the town of Brian Head.

Off-Highway Vehicles (OHV)

Over the last few years OHV have become more and more popular with users on public lands. So much so that it has become imperative that designated OHV routes be identified for travel to minimize negative impacts to other resources, while providing travel opportunities to the public. The Forest Service has designated OHV trails and maps available to the public. The BLM does not have designated OHV trails, and until the Resource Management Plan and a Travel Management Plan are complete, the BLM lands in the county remain open to all travel. Iron County and the BLM are working together to develop an OHV travel plan that will address OHV in the future. The Color Country OHV Trail System will include five trail segments throughout the county and connect to the popular Piute Trail in Beaver County. The High Desert Trail that is being developed by Washington County to the south will become an important part of the Color Country OHV Trail system. Every OHV operated or transported in Utah must be registered. OHVs that are 1988 or newer must also be titled. Each off-highway vehicle owner must pay a registration fee at the time of initial registration and annually thereafter. All county owned roads in Iron County are designated for OHV travel. State Highway travel is prohibited by OHVs unless they are registered as “street legal” and meet the requirements of the Utah Division of Motor Vehicle.

Equestrian

Although the Three Peaks Recreation Area offers equestrian opportunities, the public lands across the county are open for riding horses. Southern Utah University, it is said, has closer ties with the horse than any institution in the nation. SUU offers an applied associate degree in Equine Studies, and since the degree’s approval by the Utah Board of Regents in 2008, demand for the program has grown each year. To accommodate the program’s expansion, the university began a fundraising campaign in 2010 to build an indoor equestrian teaching facility. The Dixie National Forest has identified horse riding available trails across the forest that riders can use (U.S. Forest Service 2017).

Camping

Camping is a very popular outdoor activity for a quick get-away from the towns and cities. The Dixie National Forest is a popular retreat offering several improved camping areas (campgrounds), along with a few unimproved camping sites. Camping outside of these designated camping areas is restricted to 150 feet from any designated route to protect meadows and sensitive areas. The BLM is open to camping with few restrictions. The future RMP will limit camping to those opportunities similar in limitations on the Forest Service.

Fishing

Although limited, due to scarceness of water in Iron County, there are locations that offer great fishing opportunities which include Yankee Meadows Reservoir, Red Creek Reservoir, New Castle Reservoir, and numerous streams such as upper portions of Mammoth Creek and its tributaries, the Bowery and Second Left-Hand Canyon, Red Creek, and a few community ponds in Parowan, Brian Head, and Cedar City. Surrounding counties offer fishing opportunities enjoyed by local residents of Iron County (see the Fisheries section of the Resource Plan).

Hunting

Iron County offers world class trophy mule deer and elk hunting opportunities on public and private lands. Hunting in Iron County is a tradition among local citizens, stemming back generations to the first Mormon settlers. The Southwest desert is renowned for large bull elk, making it one of the hardest areas to draw an elk tag. Other hunting opportunities include predators, furbearers, upland game birds, turkeys, and waterfowl (see the Wildlife section of the Resource Plan).

Economic Considerations

Iron County employs an estimated 2,503 people to work in travel and tourism related industries. This makes up 22.5% of the total county employment (EPS 2017).

“Total tourism-related tax revenue grew 3.4% in 2014, due in large part to a healthy increase in resort community sales tax (Brian Head). In 2014, total leisure and hospitality taxable sales grew 10.7% with notable year-over growth in sales from April through December. Iron County’s leisure and hospitality sector experienced a 2.9% increase in jobs and an 8.9% increase in wages – an annual average wage increase higher than both Utah and the U.S. Since 2010, Iron County’s leisure and hospitality job sector has peaked in the winter (January through March). In 2014, the accommodations and food service sub-sectors added the most new jobs (69) followed by retail (10) and amusement and recreation” (Kem C. Gardner Policy Institute 2016).

Relevant Existing Policies:

The following goals policies were taken from the Iron County General Plan.

1. Goal LU6: Promote and facilitate public and private recreational, cultural, wilderness, and wildlife opportunities compatible with local custom and culture.
 - a) Pol. LU6.1: The Iron County Natural Resources Advisory Committee will monitor Federal and State Land enforcement programs as well as Wildlife Management and Natural resource enforcement programs and insure that those programs comply with all County, State, and Federal laws. The Natural Resources Advisory Committee will report periodically to the County Board of Commissioners.

- b) Pol. LU6.2: Through cooperative agreement, Iron County may designate land areas for recreational uses.
- c) Pol. LU6.3: Identify public land tracts needed for future recreational and public purpose needs and communicate that need to the Federal Management Agency for incorporation into the Federal Land Use Plan.
- 2) Goal LU9: Encourage local municipalities to provide and maintain parks with quality recreational facilities within their jurisdictions in cooperation with planned county parks and recreation facilities.
 - a) Pol. LU9.1 Pursue mechanisms, such as a joint powers agreement, by which the Cities, County, and school districts can establish standards for the improvement and maintenance of parks in a manner consistent with Iron County.
 - b) Pol. LU9.2 Encourage the development of a variety of park types and sizes (community, neighborhood) which are distributed adequately to serve all area residents and to prevent overcrowding and overuse.
 - c) Pol. LU9.3 Promote, in cooperation with other county agencies, regional recreation facilities in all areas of the County to avoid duplication and enhance opportunities.
 - d) Pol. LU9.4 Require developers to provide park and recreation facilities within individual development projects.
- 3) Goal LU12: Develop a system of parks and recreational facilities and programs which provide recreational opportunities for all segments of the community through public/private cooperation.
 - a) Pol. LU 12.1 Promote the development of a variety of park and recreation facilities which satisfy the recreational needs of all age groups and lifestyles and which satisfy the needs of the handicapped through compliance with American Disabilities Act requirements.
 - b) Pol. LU 12.2 Investigate the appropriateness of user fees and/or subsidies for specialized recreational services.
 - c) Pol. LU12.3 Encourage citizen programs which provide recreation opportunities within individual development projects.
 - d) Pol. LU 12.4 Encourage private joint-use agreements for facilities provided by non-profit agencies.
 - e) Pol. LU 12.5 Encourage cooperation between public agencies and private development regarding the reservation of adequate acreage to satisfy the park and recreational goals of this plan and the community.
 - f) Pol. LU 12.6 Promote cooperation between federal, state, and local agencies to coordinate regional park planning.

Desired Future Conditions

Three Peaks Recreation Area

<p>Issue 1. Shooting, Vandalism, and Dumping – Visitors concerned about shooting in the designated Greater Three Peaks Recreation Area (GTPRA) due to the number of people recreating in various areas; also vandalism and dumping are regular occurrences at in the area.</p>		
GOAL	OBJECTIVE	POLICY
Prohibit shooting within the GTPRA.	Place signs at entrances prohibiting shooting. More Law Enforcement	Support more LE presence at Three Peaks, especially on weekends to curb shooting and vandalism. County to make more of an effort to discourage dumping

	<p>presence, especially during peak visitation.</p> <p>Educate residences of the availability to the landfill, and how it relates to their taxes and fees.</p>	<p>and encourage use of the Landfill.</p>
--	--	---

Issue 2. Event Center to Promote and Schedule Events – Need a facility with main purpose to schedule events for the various uses at Three Peaks and decrease conflicts.

GOAL	OBJECTIVE	POLICY
<p>Event Center to schedule and promote events</p>	<p>Develop a long range plan to guide future planning of Three Peaks to include events scheduling, promotion, and conflict resolution among the various users.</p> <p>Search for means (funding and support) for an event center to schedule and promote multipurpose events</p>	<p>Iron County supports multiple recreational use at the Three Peaks Recreation Area and encourages long-range planning to promote events, reduce conflicts in scheduling, public involvement, etc.</p>

Issue 3. Designate Additional Areas for Recreation – As the Three Peak area becomes more and more popular and used by the public, the need for additional recreational opportunities increases.

GOAL	OBJECTIVE	POLICY
<p>Create more recreational opportunities in the Three Peaks area.</p>	<p>Develop a long range plan to guide future planning of Three Peaks to include events scheduling, promotion, and conflict resolution among the various users.</p> <p>Search for means (funding and support) for an event center to schedule and promote multipurpose events.</p>	<p>Iron County supports multiple recreational use at the Three Peaks Recreation Area and encourages long-range planning to promote events, reduce conflicts in scheduling, public involvement, and new recreation designated areas.</p>

Hiking & Biking

Issue 4. Travel Management Plan – The county needs to develop a Travel Management Plan to address hiking and biking issues such as dedicated trails, signage, new trails systems, law enforcement on dumping and unauthorized use, private property issues, trail maintenance, connectivity to other trail systems, and education.

GOAL	OBJECTIVE	POLICY
Develop Travel Management Plan.	With partners from the public user groups and federal agencies, develop a travel management plan to address issues and concerns.	Iron County will develop a travel management plan in consultation with federal agencies that will include hiking concerns such as multiple use conflicts, loops, restrooms, signage, search and rescue, public education, etc.

Issue 5. Kanarra Canyon – As the canyon becomes more popular with users, the resource is becoming more stressed.

GOAL	OBJECTIVE	POLICY
Keep Kanarra Canyon assessable, but work with Kanarraville City and the BLM on ways to protect the resource.	Coordinate with Kanarraville and BLM on providing an enjoyable experience to the user while protecting the canyon ecosystem by providing adequate parking, consider limiting use to avoid overcrowding, adequate trash receptacles, and public education of the area and use.	Support ways to protect Kanarraville water while keeping Kanarra Canyon assessable to the public through coordinating with Kanarraville and the BLM.

Winter Sports

Issue 6. Lack of Non-Motorized Areas – Concerns expressed by user groups that the Cedar Mountain area does not have enough areas dedicated to non-motorized winter sports (snowshoeing and cross country skiing).

GOAL	OBJECTIVE	POLICY
More non-motorized winter sports opportunities in the county.	Work with Forest Service in identifying potential winter sports areas for non-motorized recreation.	Support designating more areas in the county for non-motorized winter sports.

Off-Highway Vehicle (OHV)

Issue 7. Lack of OHV Trails – The County lacks good OHV designated trails other than on the Forest Service.

GOAL	OBJECTIVE	POLICY
Develop a Color Country OHV Trail county-wide.	<p>Iron County and BLM are working on a county wide system with two segments completed. Three more segments are scheduled for completion within the next few years. When finished, all segments will make up the Color Country OHV Trail.</p> <p>Incorporate OHV trail system into County Transportation Plan.</p>	Support the OHV trail system as is being proposed.

Camping

Issue 8. Lack of Designated Camping Areas – Visitors complain that the FS lacks designated camping sites, (un-improved camping sites) where RV and OHV users have adequate parking and access to OHV trails.

GOAL	OBJECTIVE	POLICY
More camping opportunities for RVs close to OHV trails.	<p>Work with FS in identifying more designated camping areas that are near OHV trails and have adequate RV parking.</p> <p>Include such camping sites in brochures and maps.</p>	<p>Support additional camping areas for OHV and RV users on the forest lands.</p> <p>Ensure camping sites are well marked on maps and other informational materials.</p>

Hunting and Fishing

See Wildlife Plan and Fisheries Plan

Riparian & Wetland Areas

Related Resources

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

Overview and History

Overview

Riparian/wetland areas are sensitive vegetation or physical ecosystems that develop in association with surface water or shallow groundwater. While there are no data that shows the percent riparian/wetland habitat in the County (federal, state and private lands), it is estimated that it is less than 1%, but are among the most important, productive, and diverse ecosystems on the landscape. Properly functioning riparian/wetland areas help maintain the quality and quantity of water regularly used for both culinary and agricultural purposes. Riparian/wetland areas also support habitat for migratory birds, raptors, and fish; support forage and browse for wildlife, wild horses, and livestock; and provide numerous recreation opportunities (Chambers and Miller 2011).

Riparian areas occur throughout the United States as areas of vegetation adjacent to streams, rivers, lakes, reservoirs, and other inland aquatic systems that affect or are affected by the presence of water. This vegetation contributes to unique ecosystems that perform a large variety of ecological functions (Mitsch and Gosselink 1993).

Wetland areas differ greatly in species composition, hydrologic regime, geophysical orientation, and climate. Wetland areas can generally be described as areas influenced by subsurface or surface hydrology, creating anaerobic soil conditions and hydrologic conditions suitable for the establishment of hydrophytic plant species.

For this discussion, riparian areas and wetlands are considered coincidental because (1) these community types typically occur in the County where there are similar ecological components (e.g., soil moisture, terrain, and precipitation) and (2) because the resources demonstrate similar response patterns from impacts generated by humans, livestock, and natural influences.

Custom, Culture, and History

According to a 2008 survey, 68.5% of residents in Iron and Washington counties ranked the importance of water resources that provide habitat for fish and wildlife as "very important" for the overall quality of life for their community (Krannich 2008).

Over 35% of residents in Iron and Washington County residents [the majority] believe that the amount of protection of important fish and wildlife habitat on Utah's public lands should stay the same (Krannich 2008).

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

Current Conditions & Programs

Many rivers, creeks and streams flow through Iron County, supporting riparian vegetation along their banks. The cottonwoods, willows, and other vegetation create habitat for wildlife. In Iron County, certain species identified as sensitive by the state, or federally listed, require riparian habitat. The Southwestern willow flycatcher, Mexican spotted owl, bald eagle, and Arizona toad, all rely on the riparian areas of Iron County. Additionally, fish such as the Bonneville cutthroat trout need the shade from trees along riverbanks to moderate the temperature of the stream (NRCS 2005).

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 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.

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 US Bureau of Land Management's Riparian Area Management Policy, and the BLM Utah Standards for Rangeland Health and Guidelines for Grazing Management. The Utah Division of Water Rights processes stream alteration permits in conjunction with the US Army Corps of Engineers. The following are current conditions of riparian/wetland areas in Iron County:

BLM

Current conditions of riparian/wetland areas on BLM lands in Iron County are best represented by the results of Proper Functioning Condition (PFC) assessments performed there since 1995. Riparian areas in the Iron County are primarily dominated by wetland species such as Fremont cottonwood, velvet ash, box elder, and the introduced, and undesirable, tamarisk and Russian olive. Riparian/wetland herbaceous vegetation species that are common include the following: various species of sedge (*Carex* spp.), several species of rush (*Juncus* spp.), canary reedgrass (*Phalaris arundinacea*), rabbitfoot grass (*Polypogon monspeliensis*), Kentucky bluegrass (*Poa pratensis*), monkey flower (*Mimulus guttatus*), watercress (*Nasturtium officinale*), curly dock (*Rumex crispus*), iris (*Iridaceae missouriensis*), horsetail (*Equisetum* spp.), American speedwell (*Veronica americana*), common dandelion (*Taraxacum officinale*), and spike rushes (*Eleocharis* spp.). Woody riparian vegetation includes yellow and coyote willow (*Salix lutea*, *Salix exigua*), Wood's rose (*Rosa woodsii*), currant (*Ribes* spp.), Redosier dogwood (*Cornus stolonifera*), and quaking aspen (*Populus tremuloides*) (BLM 2016).

Federal land managers assess the conditions of riparian/wetland areas through a qualitative analysis. The condition of riparian/wetland areas is a term used to describe the assessment process and define the potential functional capacity a particular riparian/wetland area can reach with appropriate management practices. This level of functionality is used as a standard quantitative measurement.

Functioning condition is rated by category to reflect ecosystem health. These are defined as follows:

- Proper Functioning Condition – When adequate vegetation, landform, or large woody debris is present to dissipate energy associated with high flow; filter sediment, capture bedload and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics; and support greater biodiversity.
- Functioning at Risk – Riparian/wetland areas that are in functioning condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.
- Nonfunctional – Riparian/wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and therefore are not reducing erosion, improving water quality, etc.
- Unknown – Riparian/wetland areas that have not been inventoried or where there is insufficient information to make any form of determination.

The BLM Utah Standards for Rangeland Health and Guidelines for Grazing Management (BLM 1997) is a document used to further determine management prescription for a given riparian/wetland area.

Forest Service

The goals of riparian habitat management are to provide healthy, self-perpetuating plant communities, meet water quality standards, provide habitat for viable populations of wildlife and fish, and provide stable stream channels and still water body shorelines through proper resource management. Forest riparian ecosystems are managed to improve wildlife and fish habitat diversity through specific silvicultural and livestock grazing objectives. Developed recreation and other facility construction for overnight use is restricted or modified within a 100-year floodplain. Dispersed recreation is managed to maintain ecological stability and visual objectives of the surrounding area.

Intensive riparian management occurs in high riparian areas or those riparian areas where intensive measures are taken to enhance or improve riparian ecosystems. This includes intensive management of resource use such as grazing to emphasize riparian area values through close monitoring and adjustments.

Economic Considerations

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.

Relevant Existing Policies

Goal LU2: Protect water resources and quality which are essential to short and long term economic, recreational, and cultural viability.

Pol. LU2.1: Carefully consider transfers in water use, acquisition of new water, creation of conservancy districts, development of water markets, the promotion of water conservation and alternative uses of water brought on by new water demands and needs in relationship to the history, traditions, and culture of Iron County.

Pol. LU2.2: Prepare needed plans for the protection of all aquatic threatened and endangered species within its boundaries.

- Pol. LU2.4 Develop Wild and Scenic River Suitability Designations and develop riparian management plans in concert and coordination with landowners, ranchers and the appropriate federal agencies.
- Pol. LU2.5: Notify, consult and otherwise involve the general public of all changes in water use development or restrictions in Iron County.

Desired Future Conditions

Iron County reaffirms the existing policies in the Iron County General Plan and supports the following policy:

Issue 1. Wetland Risk – Culinary watersheds may be in danger of catastrophic wildfire when timber is not managed properly.		
GOAL	OBJECTIVE	POLICY
Properly manage culinary watersheds to minimize risk of catastrophic wildfires.	<p>Manage forests in healthy conditions by reducing fuel loads.</p> <p>Cooperating with Forest Service, BLM, State Forestry, and County in management initiatives</p>	Iron County insists on watershed management, especially where such watershed conditions have been declared a catastrophic nuisance due to lack of management.

References

1. Utah Wildlife Action Plan 2015
2. NRCS: Iron County Resource Assessment (2005)
3. Utah Department of Environmental Quality

Water Rights, Quality, and Hydrology

Related Resources

Canals and Ditches + Irrigation, Floodplains and River Terraces, Riparian Areas + Wetlands, Wild & Scenic Rivers

Overview and History

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 Iron 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. Water rights in Utah, as in other Western states are founded on the doctrine of "prior appropriation" and are administered by the State Engineer. All waters are public property in Utah (UDWRi 2011). The State Engineer's office also directs the adjudication or re-adjudication of water rights, along with licensing of well drillers, dam safety, stream alteration, and water rights enforcement. The defining elements of a typical water right will include (UDWRi 2011):

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

The "right" to use water is obtained through an application and permit issue process through the State Engineer's office, if the basin in which a property is located is open to appropriation. Below is an overview of the steps of obtaining a water right in Utah (UDWRi 2011):

- Apply to appropriate water with the State Engineer.
- Application is advertised, protests and rebuttals are heard if any are filed.
- State Engineer evaluates application, protests, and other pertinent information and renders a decision on the application based upon principles established in State statute.
- If approved the applicant begins developing water. When fully developed the applicant files proof with the state engineer stating the details of development.
- The State Engineer after reviewing proof issues a Certificate of Appropriation.

A report published by Utah State University Cooperative Extension (Reid et al. 2008), explained the three most basic beneficial uses of water in Iron County are domestic, stockwatering, and irrigation – each with a specific annual requirement or "Duty." Other beneficial uses include municipal and industrial. Domestic use is any use of water inside the home, and requires 0.45-acre foot of water right. Stockwatering is quantified as 0.028 AF (acre feet) per ELU (equivalent livestock unit). An ELU is one horse and foal or cow and calf, or equivalent number of sheep, goats, pigs, chickens etc. The beneficial use period for these uses is generally year round, but can vary with specific needs. Irrigation is the act of applying water to any plant to obtain optimal growth and maintenance of that plant. Lawns, gardens, shrubs, pastures and non-native trees and plants are all considered as irrigation, even though not all are harvested as crops. The duty for irrigation ranges from 6.0 AF per irrigated acre in parts of the Virgin River drainage to 3.0 AF

per irrigated acre in high mountain areas. The average diversion duty is 4.0 AF per acre. This “duty” is based on the highest water consuming crop, which is alfalfa, during the growing season of the region and surface irrigation practices (Reid et al. 2008).



Photo 1. Bringing Water to Cedar City. Taken by Harvey E. Peterson, Crew Supervisor, 1911, Iron County UT Historical Photographs, Sherratt Library, Southern Utah University.

Current Conditions

The following are groundwater and surface water companies listed by the State Water Rights Office as of 2003. There are more companies since this date but are not listed in the state database. Groundwater companies obtain water from wells, and surface water is obtained from creeks and reservoirs.

Water Companies in Iron County (UDWRi 2014):

- Escalante Valley
 - Escalante Valley Water Users Association (Groundwater Irrigation)
 - New Castle Reservoir Company (Surface Irrigation)
 - New Castle Water Company (Groundwater Irrigation/Culinary)? (Keith Christensen)
- Cedar Valley
 - Bauer Irrigation Company (Surface Water Irrigation)
 - Northwest Field Irrigation Company (High Water Runoff Irrigation)
 - East Extension Irrigation Company (Surface Water Irrigation)
 - South & West Field Irrigation Company (Surface Water Irrigation)
 - Union Field Irrigation Company (Surface Water Irrigation)
 - Northfield Irrigation Company (Surface Water Irrigation)
 - Old Fort & Old Field Reservoir Irrigation Company
 - Coal Creek Irrigation Company (Surface Water Irrigation)
 - Kanarra Field Reservoir and Irrigation Company (Surface Water Irrigation)
 - Midvalley Estates Water Company (Groundwater Culinary)
 - Angus Water Company (Groundwater Culinary)
 - Fife Town Water Association (Groundwater Culinary)
 - Industrial Water Company (Groundwater Industrial)
 - Monte Vista Community & Water Company (Groundwater Culinary)
 - Linealsam Water Company, Inc. (Groundwater Culinary)
 - Midvalley Estates Water Company (Groundwater Culinary)
 - Mt. View Special Service District (Groundwater Culinary)
 - North Road Water Company, Inc. (Groundwater Culinary)
 - Old Meadows Ranchos Community & Water Company (Groundwater Culinary)
 - Ortry Water Company, Inc. (Groundwater Culinary)
 - Park West Water Company (Groundwater Culinary)
 - Rainbow Ranchos Water Company (Groundwater Culinary)
 - Spring Creek Water Users Inc. (Groundwater Culinary)
- Parowan Valley
 - Summit Irrigation Stock Company (Surface Water Irrigation)
 - Parowan Reservoir Company (Surface Irrigation)
 - Parowan North Fields Irrigation (Surface Water Irrigation)
 - Parowan West Fields Irrigation, Inc (Surface Water Irrigation)
 - Parowan South Fields Irrigation, Inc (Surface Water Irrigation)
 - Parowan Pumpers Association (Groundwater Irrigation)
 - Paragonah Irrigation Company
 - Little Creek Field & Canal Company (Surface Water Irrigation)
- Brian Head Area
 - Brian Head Town Water Company (Groundwater Culinary)

House Bill 228 (2006) provides “critical management areas”, where safe yield has been exceeded in groundwater basins and sets into place and outlines steps the State Engineer can take to bring into balance the withdrawal and recharge rates. In Iron County, water rights in the groundwater basins are critical management areas, because water being withdrawn for all purposes exceeds the amount of recharge for

the past several years. Map 1.0 depicts areas where the State of Utah does not grant new applications for groundwater use.

Map 1.0 Groundwater Policy of Appropriation Status

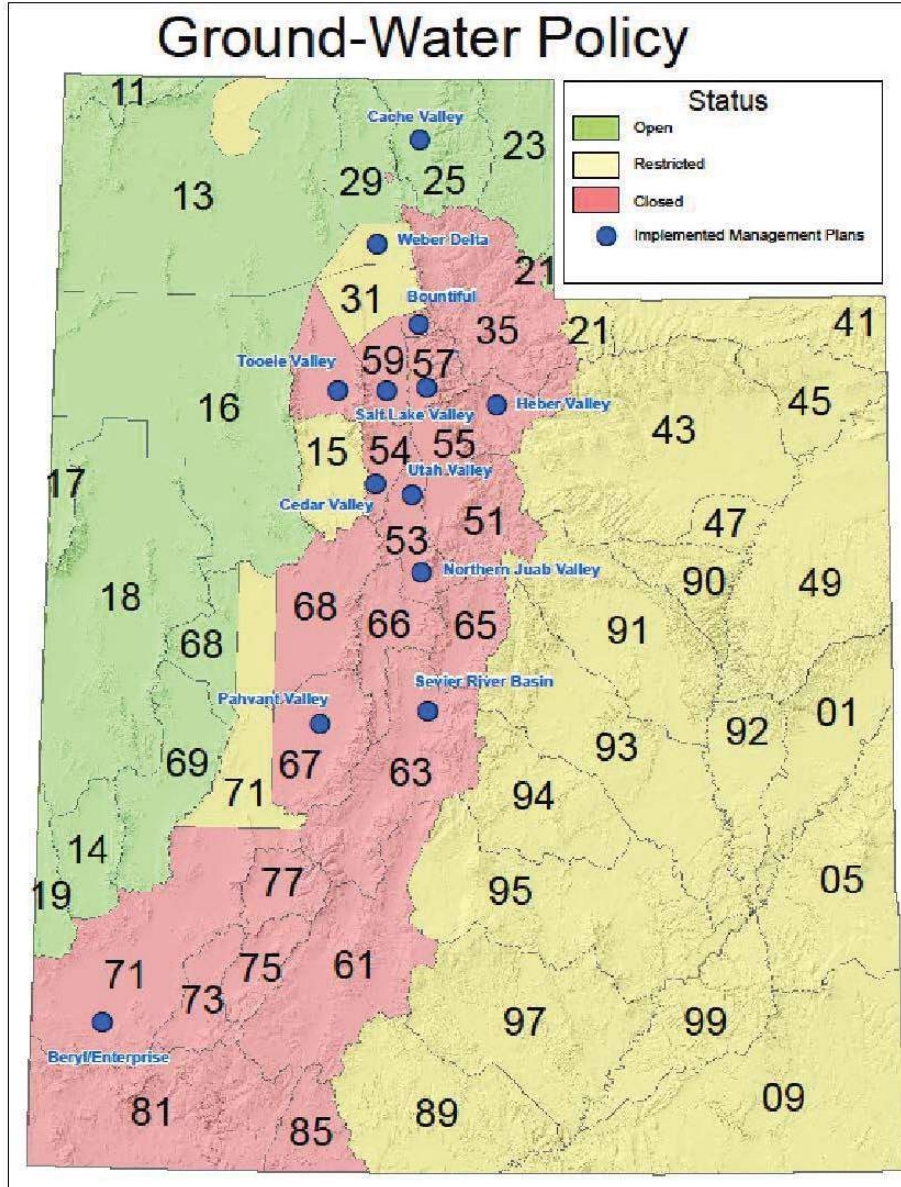


Table 1.0 Water recharge and withdrawal rates in Iron County

Groundwater Basin	Recharge Rate (Acre Feet)	Withdrawal Rate (Acre Feet)	Difference (Acre Feet)
Escalante Valley	34,000	65,000	31,000
Cedar Valley	21,000	28,000	7,600
Parowan Valley	not available		

Sources: Beryl Escalante Valley Ground Water Management Plan, 2012; and Annual Recharge Estimates for Cedar Valley, 2016;

In 2002, the Beryl/Enterprise area groundwater the State Engineer began the process to develop a groundwater management plan to bring the basin within safe yield. The State Engineer worked with local water users and the Escalante Valley Water Users Association in preparing a plan that included a percentage reduction in water over the course of several years. The plan was adopted by the State Engineer in 2012.

The State Engineer began the process to draft a groundwater management plan for the Cedar Valley to address depletion problems and propose measures that can be taken to bring water consumption within safe-yield ranges. A study by the USGS is currently being completed for the Parowan Valley water basin in preparation to initiate a groundwater management plan.

Current Recharge Efforts in Iron County

The following are efforts being taken in each water basin to recharge groundwater:

- Escalante Valley (Beryl/Enterprise Water Basin): Recharge efforts in the Escalante Valley are only natural seepage from Shoal Creek, New Castle reservoir, and small tributaries into the valley. There are no man-made structures to aid in groundwater recharge.
- Cedar Valley:
 - Union Field Irrigation Company pipeline. The Union Field Irrigation Company runs a pipeline to transfer winter water from irrigation ditches to the Enoch graben where it seeps into the groundwater.
 - Water from Coal Creek is diverted to gravel pits by the airport and a gravel extraction company. Water percolates through the sand and gravel beds to the groundwater. Once waterfowl start to migrate into the area, the water is diverted away from the gravel pits to avoid waterfowl/aircraft conflicts.
 - During high water in spring run-off, water is diverted from the Quichapa Lake canal to west of the Cedar City North Well and seeps into the ground.
 - Waste water at the Cedar City Sewage Treatment Plant is allowed to flow north of the plant to seep into the ground water.
- Parowan Valley:
 - Evans Pond west of Parowan is used to recharge the groundwater during high runoff.
 - Water is transferred through the Parowan West Field Irrigation system to one of the abandoned sewer lagoons for recharge purposes.
 - Cottonwood Creek has a pond where water is diverted during high water for recharge purposes.
 - Buckhorn Springs – flows out on the ground and seeps back into the groundwater basin.

Desired Future Conditions

Future Plans for Groundwater Recharge

The following are identified as future plans in Iron County to recharge groundwater:

- Cedar Canyon Desilting Structure – plans are underway to install a desilting area in Cedar Canyon then take water to Woodberry Split and distribute to recharge areas. The silt taken from the water would be used in sand and gravel mixtures for commercial use.
- Sewer Treatment Waste Water – waste water be pumped to south end of the valley to recharge sites. It is thought that the current site north of the treatment plan is very inefficient for recharge efforts due to the water table level and high evaporation through plants.

- West Desert Pipeline Project – The county has filed on water in the south end of Pine Valley and Wah Wah Valley in Beaver County and the State Engineer is considering granting such filings. Test wells have been drilled in Pine Valley and the water quality and quantity is promising. Plans are underway to draft plans and go through permitting processes to construct a pipeline to Iron County. It is estimated to be an 8 to 10 years process and provide approximately 24,000 acre feet of water.
- Gravel Pits Buckhorn Flat – it is thought that a portion of the UDOT gravel pit on the north end of Buckhorn Flat can be used for recharge efforts. It may be considered during times of spring run-off from the Fremont Wash area.
- Hamlin Valley – Iron County has filed on water from the north end of Hamlin, but it is several years in the future.

Issue 1. Quichapa Lake – This lake is fed solely by water from excess spring runoff and flood waters diverted when irrigation ditches structures will not handle high water quantities or when the water is too silty to utilize. Most years the lake dries up with the exception when above normal moisture in the mountains runs into the lake. Water generally sets in the lake for a few years before it evaporates. There is no recharge to the groundwater from the lake because of the heavy clay bottom. BLM owns most of the land the lake sets on, but has no water rights. The BLM in their RMP is proposing the area be used for waterfowl watching/hunting. The surface water companies have plans to withdraw the water before it reaches the lake and pump it to a recharge area. This will further reduce the amount of water reaching the lake, making the plans for the designated waterfowl area less feasible.

GOAL	OBJECTIVE	POLICY
Recharge groundwater in Cedar Valley.	Utilize water running into Quichapa Lake for recharge purpose. During years of above normal moisture, water will more than likely still flow into the lake and continue to be used by waterfowl, but to a lesser extent than what currently exists.	Due to water demands in the county, Iron County supports recharge efforts by water users.

Issue 2. Protecting Ditches and Canals – Historical ditches and canals need to be protected from development impacts as landownership uses changes or to move water throughout the county for irrigation, flooding, livestock watering, and other purposes as detailed in UC, 73, 1, 6). (See Irrigation, Ditches and Canals Plans)

GOAL	OBJECTIVE	POLICY
Protect water conveyance structures and/or systems in the County	Protect water conveyance systems through prescriptive easements as allowed for in UC, 57, 13a.	Iron County supports protecting existing water conveyance systems through prescriptive easements to move water for irrigation, flooding, recharge, and other purposes as defined in UC, 73, 1, 6.

Issue 3. Surface Water Rights Conversions – Concern is being expressed by groundwater right owners that the State Engineer is considering conversion of surface water rights to groundwater rights, thus allowing more pumping from the groundwater and placing more pressure on the already depleted water.

GOAL	OBJECTIVE	POLICY
Assure any conversion of water rights from surface to ground is fair and equitable to other right holders.	Review current policies to determine if such allowances exist Discussion with State Engineer regarding the subject	Iron County supports fair and equitable conversions of water rights if such conversions do not cause harm to other users. Iron County will review water laws on such conversions, and request to meet with the State Engineer on the subject. State and federal agencies coordinate surface water management and implementation plans with Iron County.

Issue 4. Water Transfer Across Federal Lands – Administrative and planning processes to transfer water via pipelines, canals, and ditches across federal lands is cumbersome and time consuming, taking several years to complete.

GOAL	OBJECTIVE	POLICY
Streamline processes to move water from one location to another across federal lands.	Coordinate with BLM regarding processes needed to move water across public lands and determine what is and is not necessary.	Iron County is in favor to make water transfer across federal lands as streamlined as possible to help meet water demands in the County.

Issue 5. Drilling for Water at High Elevations – Proposals have been put forth before the Iron County Commissioners to support drilling for water at higher elevations. It is unclear what such drilling impacts would have on current groundwater basins, surrounding counties and even states.

GOAL	OBJECTIVE	POLICY
Discourage drilling wells in higher elevations of the County to mine water until impacts on other water basins are known.	Issue a resolution through the County Commission to oppose such drilling until research has determined impacts on other water basins.	Iron County opposes drilling wells at high elevations to mine water until research has shown impacts on other water basins.

Issue 6. Water Preservation for Agriculture Purposes – Development for residential and commercial purposes in the County requires conversion of water from agriculture, thus reducing agricultural production. Since agriculture is identified as a cultural value important to the citizens of Iron County, there should be some mechanism to preserve water for agriculture into the future.

GOAL	OBJECTIVE	POLICY
<p>Preserve water for Agriculture purposes.</p>	<p>Establish a committee to explore possible alternatives to allow for permanent preservation of water to agriculture. Committee to include by not be limited to: State Engineer, Iron County Commissioner, Representatives from each water company in the county, Utah Farm Bureau, and a representative from municipalities.</p> <p>Present findings to Iron County Commission with recommendations.</p>	<p>Iron County will consider recommendations and move forward with best alternative.</p>

Issue 7. Water Ownership by State and Federal Agencies Ownership – Concern that State or Federal Agencies may file for claim or, as a condition of a grazing permit, to use as leverage to transfer private water holding to state or federal ownership.

GOAL	OBJECTIVE	POLICY
<p>Keep water rights in private ownership.</p>	<p>Work with State Legislature to forbid state or federal ownership of water in Utah.</p>	<p>Oppose placing water rights in the name of any state or federal agency when the water right is applied for and proved upon by a private individual or corporation, or as the condition of any permit.</p> <p>Privately-held water rights should be protected from federal encroachment and/or coerced acquisition.</p>

Issue 8. The quality and quantity of existing water resources be improved and enhanced - federal and state land managers invest in sustainable and beneficial water resources in the County.

GOAL	OBJECTIVE	POLICY
<p>Beneficial uses of water bodies in Iron County be coordinated, re-evaluated and brought into consistency with Iron County's Resource Management Plan.</p> <p>Structural and non-structural improvements are made to degraded watercourses, dry washes and ephemeral streams.</p>	<p>Land managers actively manage for increased forage production to reduce sedimentation in and hydrologic modification of Iron County's perennial, intermittent and ephemeral water resources.</p> <p>Structural and non-structural improvements are made to degraded uplands to a) replace Class II and Class III pinyon/juniper woodlands with desirable historic vegetative communities, b) reduce runoff and c) reduce the amount of bare ground.</p>	<p>Iron County will encourage land managers restore to properly functioning condition at least 1% or 10 miles of non-functioning floodplains per year.</p> <p>Transplantation of beavers are limited to areas approved by the Iron County Commission and that will not impede the free flow of water, and will be immediately removed when they move into canal and ditch structures.</p> <p>Groundwater resources are preserved, improved and developed for the use of man while supporting multiple use and sustained yield principles with community and culinary water systems as the highest priority.</p>

Issue 9. High Water Diversion Parowan Valley - Concern has been expressed that water is being lost to the Little Salt Lake as high water drains across the Gap Road and 4200W. A suggestion has been made to somehow divert the water into one of the old sewer lagoons.

GOAL	OBJECTIVE	POLICY
<p>Utilize as much excess water as possible for recharge purposes.</p>	<p>As Parowan water users develop a water conservation management plan, that this issues be discussed.</p>	<p>Iron County supports water conservation efforts and conservation planning efforts.</p>

References

1. Reid, C. R., K. H. Christensen, and R. W. Hill. 2008. Water rights in Utah. Utah State University Cooperative Extension.
<http://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=2256&context=extension_curall>. Accessed 18 Feb 2017.
2. Utah State Historical Society. 1988. Beehive history 14. Beehive History Series.
<<http://digitallibrary.utah.gov/awweb/pdfopener?sid=6CACBE98DD10262E7CF11D6B4DB0CB3A&did=33964&fl=%2Fpublications%2Farchive%2Fdc019304.pdf#toolbar=0>>. Accessed 30 Oct 2016
3. Utah Division of Water Rights [UDWRi]. 2012. Beryl enterprise groundwater management plan. Utah Department of Natural Resources.
<http://www.waterrights.utah.gov/groundwater/ManagementReports/BerylEnt/BerylEnterprise_Management_Plan.pdf>. Accessed 15 Oct 2016.
4. Utah Division of Water Rights [UDWRi]. 2016. Annual recharge estimate for Cedar City Valley. Utah Department of Natural Resources.
<<https://www.waterrights.utah.gov/groundwater/ManagementReports/CedarValley/Recharge%20Estimate%20for%20Cedar%20City%20Valley.pdf>>. Accessed 18 Apr 2017.
5. Utah Code, Title 57, Chapter 13a, Easement for Water Conveyance
<http://le.utah.gov/xcode/Title57/Chapter13A/57-13a.html>
6. Utah Code, Title 73, Chapter 1, Section 6, Water and Irrigation. <http://le.utah.gov/xcode/Title73/Chapter1/73-1.html>
7. Iron County Water Companies <http://www.waterrights.utah.gov/forms/waterCompanies.asp>

Wild & Scenic Rivers

Related Resources

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

Overview and History

Overview

The National Wild and Scenic River System (NWSRS) is a series of nationally designated rivers and their immediate environments (the land within the river corridors) that have outstandingly remarkable values preserved in a free-flowing condition. Section 5(d)(1) of the Wild and Scenic Rivers Act of 1968, as amended, directs federal agencies to consider WSR determinations during the BLM Resource Management Plan and Forest Plan revision process. National WSR designation is intended to protect outstandingly remarkable values (e.g., cultural, geological, wildlife, scenic, and recreational), tentative classification, water quality, of the river or segment (National Wild and Scenic Rivers System 2016). At present, there are no designated WSRs in Iron County, however, the BLM is studying the suitability of rivers (streams) crossing BLM lands in Iron County to determine their eligibility for inclusion in the NWSRS in the RMP that is currently being drafted. Sections of rivers that are determined to be suitable can be managed to preserve their suitability by an agency land management plan while awaiting congressional designation.

Under the Wild and Scenic Rivers Act, 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.

Designating river segments as wild, scenic, or recreational would restrict many activities related to the stream and other uses within 0.25 mile of it, and in some cases, these designations could be detrimental to users’ ability to develop and manage water resources necessary to meet future growth needs. The ability to obtain approval for water right change applications on, or upstream of, designated streams by existing water users may also be limited. Similarly, federal permits cannot be issued for uses on a stream segment that would be in conflict with the wild and scenic designation.

Designation of wild and scenic rivers may result in non-use, restricted use, or environmental impacts on public and private lands. These restrictions may prohibit future uses that are necessary to continue to assure economic prosperity or may adversely affect the operation, management, and maintenance of existing facilities.

Custom, Culture, and History

Where citizens of Iron 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 Iron 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.

1. According to a 2008 survey, 68.5% of residents in Iron and Washington counties ranked the importance of water resources that provide habitat for fish and wildlife as "very important" for the overall quality of life for their community (Krannich 2008).
2. Over 52% of residents in Iron and Washington County residents [the majority] believe that land managers should maintain the current amount of designation of wild and scenic rivers on Utah's public lands (Krannich 2008).

Current Conditions & Programs

The Bureau of Land Management has determined that segments of waterways in Iron County may be suitable for Wild and Scenic designations. In 2013 the BLM identified two potential segments along Kanarra Creek and Spring Creek. Their eligibility is based on “outstandingly remarkable value” including “This is a beautiful slot canyon,” and “critical habitat for the (federally threatened) Mexican spotted owl” (BLM 2013). The proposed eligible river segments will be fully evaluated in the RMP.

No segments were determined to be “suitable” by the Forest Service within the boundaries of Iron County itself, but they will be revising the Forest Plan within a few years.

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.

Economic Considerations

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 J., et al. 2008).

Relevant Existing Policies

(From the Iron County General Plan)

Goal LU2: Protect water resources and quality which are essential to short and long term economic, recreational, and cultural viability.

Pol. LU2.1: Carefully consider transfers in water use, acquisition of new water, creation of conservancy districts, development of water markets, the promotion of water conservation and

alternative uses of water brought on by new water demands and needs in relationship to the history, traditions, and culture of Iron County.

Pol. LU2.2: Prepare needed plans for the protection of all aquatic threatened and endangered species within its boundaries.

Pol. LU2.4 Develop Wild and Scenic River Suitability Designations and develop riparian management plans in concert and coordination with landowners, ranchers and the appropriate federal agencies.

Pol. LU2.5: Notify, consult and otherwise involve the general public of all changes in water use development or restrictions in Iron County.

Pol. LU2.6: The County shall identify municipal watersheds important for domestic water production and flood control and work with owners of those watersheds to manage and protect those watersheds for the production of quality water and the prevention of soil erosion and flooding.

Goal LU 10: Utilize streams and other bodies of water within Iron County as central recreational corridors and identify other significant natural features to be designated as open spaces, parks, and recreational opportunities.

Pol. LU 10.1: Encourage multiple uses of public easements and public lands, such as the flood inundation areas within Iron County for recreational purposes.

Pol. LU10.2: Encourage development of linear greenway systems.

Pol. LU 10.5: Provide design guidelines for the preservation of natural features.

Pol. LU 10.6: Design trail routes, trailheads, and staging areas and designate trail uses to minimize impact upon adjacent property, neighborhoods, and fragile habitats.

Pol. LU 10.7: Promote cooperation between local, state, and federal agencies in the extension and expansion of the user.

Objectives from the Iron County Wilderness Resource Plan

Including any river segment in the Proposed Wilderness Regions in the National Wild and Scenic River System would violate the National Wild and Scenic Rivers Act and related regulations, contradict the State's Public Land Policy, and contradict the plans of Iron County for managing the Proposed Wilderness Regions. It is Iron County's policy that no river segment in Iron County should be included in the National Wild and Scenic River System unless all of the following is demonstrated:

1. Water is present and flowing at all times.
2. The water-related value is considered outstandingly remarkable within a region of comparison, consisting of one of three physiographic provinces of the state, and that the rationale and justification for the conclusion are disclosed.
3. BLM fully disclaims in writing any interest in water rights with respect to the subject segment.
4. It is clearly demonstrated that including a river segment in the NWSR system will not prevent, reduce, impair, or otherwise interfere with the state and its citizen's enjoyment of complete and exclusive water rights in and to rivers of the state as determined by the laws of the state, nor interfere with or impair local, state, regional, or interstate water compacts to which the State or Iron County may be a party.
5. The rationale and justification for the proposed addition, including a comparison with protections offered by other management tools, is clearly analyzed within the multiple-use mandate, and the results disclosed.
6. It is clearly demonstrated that BLM does not intend to use such a designation to improperly impose Class I or II Visual Resource Management prescriptions.
7. It is clearly demonstrated that the proposed addition will not adversely impact the local economy, agricultural and industrial operations, outdoor recreation, water rights, water quality, water

resource planning, and access to and across river corridors in both upstream and downstream directions from the proposed river segment.

8. The foregoing is based on the wild and scenic river criteria of the State of Utah, Utah Code § 63J-4-401(8)(a).
9. There is no part of the Sevier River or any other waterways in the Proposed Wilderness Regions that meets the above criteria. Hence, no river segment in the Proposed Wilderness Regions should be included in the National Wild and Scenic River system.

Desired Future Conditions

Iron County reaffirms goals, objectives and policies in the Iron County General Plan and in the Iron County Wilderness Resource Plan.

Wild, scenic and recreational river evaluations and designations are consistent with Iron County's criteria, plans, programs and policies.

Appendices

1. Impacts of Wild and Scenic Rivers Designation - Utah State University
2. BLM Cedar City Office: Wild and Scenic River Eligibility (2013)
3. USFS: Dixie and Fishlake National Forests Suitability Evaluation Report (SER) (2008)
4. USU: Impacts of Wild and Scenic Rivers Designation

Wild Horses

Related Resources

Livestock and Grazing, Wildlife

Overview and History

Mustangs are descendants of Spanish or Iberian horses that were brought to the Americas by Spanish explorer in the 16th century. Farther west, the first known sighting of a free-roaming horse in the Great Basin was by John Bidwell near the Humboldt Sinks in Nevada, in 1841. Although John C. Fremont noted thousands of horses in California (Morin, *Honest Horses* pg.3) the only horse sign he spoke of in the Great Basin, which he named, was tracks around Pyramid Lake, and the natives he encountered there were horseless (Berger, *Wild Horses*, pg.36). In 1861, another party saw seven free-roaming horses near the Stillwater Range, Nevada (Young and Sparks “Cattle in the Cold Desert”, pg. 215).

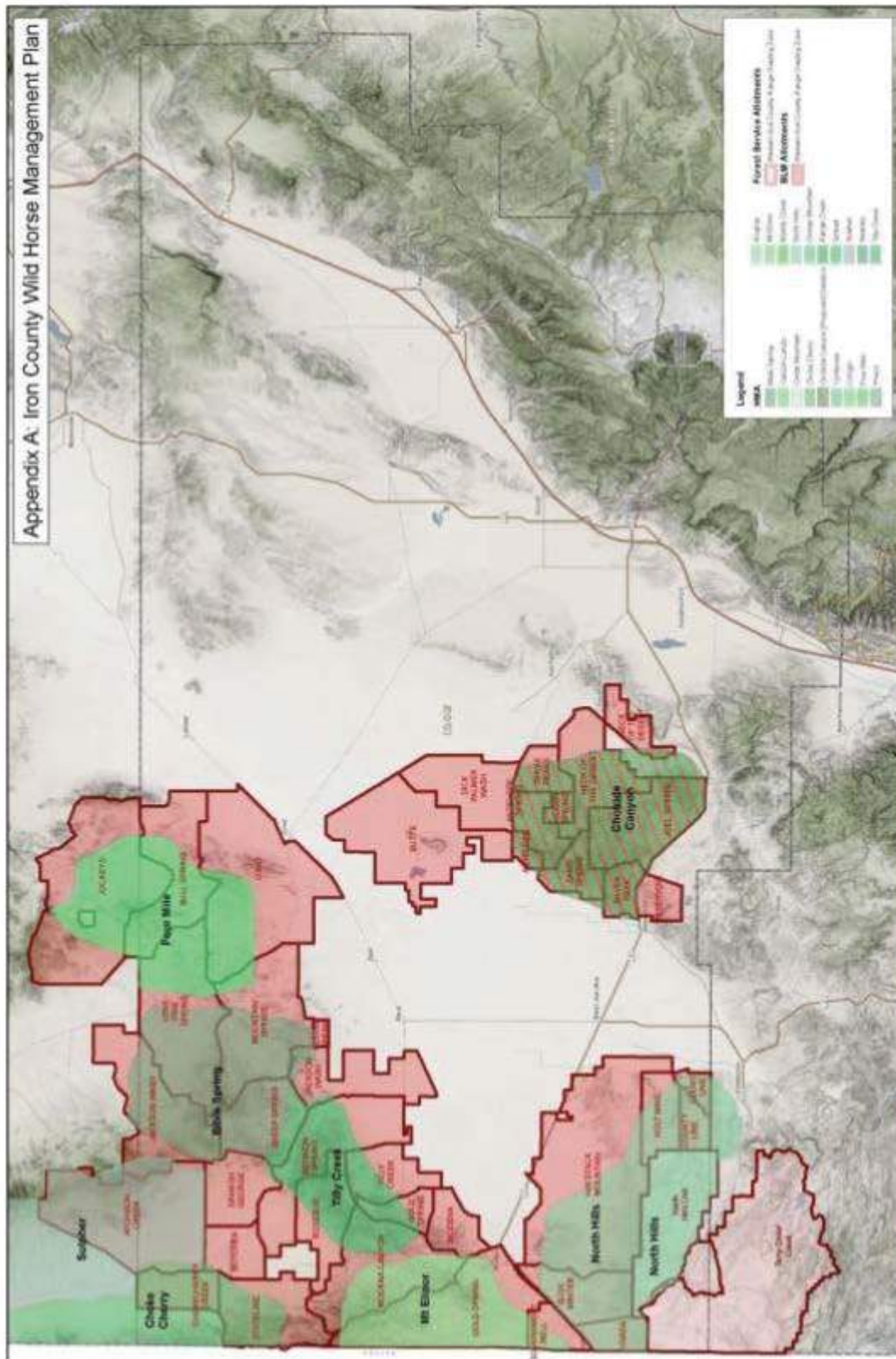
One isolated herd in the far northwest portion of Iron County, Sulphur Springs, some individual animals can be traced back to the Spanish horses and either migrated from Nevada, or escaped from Old Spanish Trail treks where thousands of horses were trailed from California to New Mexico. As pioneers began to establish settlements in Iron County, wild horses were managed for work animals, mixing domestic horses to gain desirable traits in their offspring. An annual tradition in Iron County prior to 1971 was to gather horses as a way to cull the herds and manage populations (personal communication with ranchers).

Today, large numbers of unbranded and unclaimed feral horses roam in Iron County on public lands administered by the United States Secretary of Interior through the Bureau of Land Management (BLM), the United States Secretary of Agriculture through the Forest Service (Forest Service) and State owned trust lands administered by the Utah School and Institutional Trust Lands Administration (SITLA). Wild horses, as they are now perceived, are not native to America’s rangelands; they are feral animals, but for purposes of this plan are referred to as wild free-roaming horses and burros to be consistent with 16 United States Code (“U.S.C.”) 1331(b).

The BLM and Forest Service, under the authority of the Wild Free-Roaming Horse and Burro Act (Public Law 92-195) of 1971, is responsible for the protection, management, and control of wild horses and burros on public lands in Iron County and the State of Utah. The federal agencies are responsible for data collection about the animals and their habitat to prescribe management to ensure that free-roaming populations are in balance with other uses and resources.

Following the passage of the Wild Free-Roaming Horse and Burro Act (WFRHB) (1971), the BLM inventoried wild horse populations in Iron County from 1971 to 1974. These inventories found wild horses in 8 areas, which were subsequently designated as Herd Areas. These original Herd Area designations remain in place. Through the land use planning process, 8 wild horse Herd Management Areas (HMAs) were established in the designated Herd Areas. Each HMA shares the name of the Herd Area in which it is located. The BLM and Forest Service do not manage portions of the original Herd Area outside the HMA boundaries for wild horses. Some of the Herd Area/HMA boundaries coincide with man-made (fences) or natural (e.g., cliffs and canyons) boundaries, although most do not match any

restrictive boundary and therefore allow horses unrestricted movement in and out of the areas. **Map 1** shows the locations of Herd Areas and HMAs in Iron County.



Map 1 Horse Management Areas and Grazing Allotments

Statutory Authority

- a. Despite the BLM/Forest Service management authority over wild free-roaming horses and burros in Iron County, Congress has put these agencies under the following mandates:
- i. The BLM/Forest Service shall remove excess wild free-roaming horses and burros "from an area [of public land] in order to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area (16 U.S.C. 1332(f));
 - ii. The BLM/Forest Service shall remove wild free-roaming horses or burros that stray onto privately owned land if the private land owner so informs the BLM/Forest Service in writing (16 U.S.C. 1334);
 - iii. The BLM/Forest Service shall "to the extent consistent with the laws governing the administration of the public lands [namely the Wild Free-Roaming Horses and Burros Act of 1971] coordinate the inventory, planning, and management activities [for wild free-roaming horses and burros] with the land use planning and management programs of [Iron County]" (43 U.S.C. 1712(c)(9)); and
 - iv. "Land use plans of the BLM/Forest Service [for wild free-roaming horses and burros] under this section shall be consistent with [Iron County's plan for the same animals] to the maximum extent [the Secretary of Interior/Agriculture] finds consistent with Federal Law [namely the Wild Free-Roaming Horses and Burros Act of 1971] and the purposes of this Act [meaning the Federal Land Policy and Management Act of 1976]" (43 U.S.C. 1712(c)(9)).
- b. This plan to manage wild free-roaming horses and burros is consistent in every respect with the Wild Free-Roaming Horses and Burros Act of 1971 ("WFRHBA") as amended and the Federal Land Policy Management Act of 1976 (FLPMA) as amended. Therefore, Iron County expects maximum adherence by the BLM/Forest Service to this, Iron County's plan for wild free-roaming horses and burros.
- c. The WFRHBA authorizes the BLM/Forest Service:
- i. To designate and maintain given areas for the protection and preservation of wild horses and burros to be managed "in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands;" 16 U.S.C. 1333(a); and
 - ii. To keep current inventories of wild free-roaming horses and burros in the given areas to determine:
 1. If over populations exist;
 2. Whether actions should be taken to remove excess animals;
 3. How to best achieve appropriate management levels (AML) whether through removal, destruction of excess animals, or other options such as sterilization or natural population controls. 16 U.S.C. 1333(b)(1)
- b. The WFRHBA requires the BLM/Forest Service to "immediately remove excess animals" from a given area "so as to achieve appropriate management levels" (AML) if the BLM/Forest Service determines that an overpopulation exists and action is necessary to remove excess animals in the given area. 16 U.S.C. 1333(b)(2). Such removal of excess wild free-roaming horses shall proceed in the following order and priority:
- . When necessary, euthanize old, sick or lame animals in the most humane manner possible;
 - i. Capture and remove for private maintenance such number of excess animals for which a demand exists for adoption under qualified, humane care;
 - ii. Euthanize additional excess animals in the most humane and cost efficient manner possible. 16 U.S.C. 1333(b)(2)(A)-(C).
- c. The WFRHBA also requires the BLM/Forest Service to sell without limitation all excess animals in excess of 10 years of age and all excess animals that have been offered unsuccessfully for adoption at least 3 times, until all excess animals offered are sold or the appropriate management level has been attained. 16 U.S.C. 1333(e).
- d. The WFRHBA does not expressly prohibit the BLM/Forest Service from utilizing sterilization and fertility programs for wild free-roaming horses and burros. However, the WFRHBA does not excuse the BLM/Forest Service from adhering to its capture/removal/euthanasia responsibilities under 16 U.S.C. 1333(b) and 1333(e) just because it engages in such sterilization and fertility programs.

- e. The WFRHBA requires the BLM/Forest Service to remove wild free-roaming horses or burros that stray onto privately owned land if the private land owner so informs the agency in writing. 16 U.S.C. 1334. SITLA has also entered into a Memorandum of Agreement with the BLM, dated 2/3/2016, which outlines removal of wild horses from SITLA lands.
- f. The WFRHBA authorizes the BLM/Forest Service to enter into cooperative agreements with landowners, the State of Utah, and Iron County with respect to wild free-roaming horses and burros. 16 U.S.C. 1336.
- g. The WFRHBA does not authorize the BLM/Forest Service to relocate wild free-roaming horses and burros to areas of the public lands where they do not presently exist. 16 U.S.C. 1339.

Regulatory Requirement

- a. The BLM's management of wild free-roaming horses and burros and the establishment of herd management areas ("HMAs") are done in accordance with approved BLM land use plans (43 CFR 4710.1). When HMAs are established, the BLM must inventory and monitor herd and habitat characteristics (43 CFR 4710.2), consider the AML of the herd, and prepare a herd management area plan for each HMA (43 CFR 4710.3-1). The BLM is required by rule to limit the animals' distribution to the HMAs (43 CFR 4710.4). If the Forest Service assumes management responsibilities of wild horses and burros, resource planning documents will have to be developed, and this plan will be considered through the development process.
- b. BLM by rule allows for closing or limiting certain public land areas to all or a particular kind of domestic livestock grazing if necessary to (1) provide habitat for wild free-roaming horses and burros, (2) to implement herd management actions, or (3) protect the animals from disease, harassment or injury (43 CFR 4710.5). Moreover, this provision must be applied consistent with the additional BLM rule that management for wild horse and burro values "shall be at the minimum level necessary to attain the objectives identified in approved land use plans and herd management area plans" (43 CFR 4710.4).

Current Conditions/Programs

As of February 2016, the population of wild horses is approximately 2,369 animals in 8 HMAs (**Table 1.0**). All areas in the HMAs are showing signs of over utilization of forage and water, which indicate an inability to support current populations of wild horses. In some areas the wild horses have moved outside the HMA and impact private or other federal land property, especially riparian areas or vegetation treatment areas through grazing and trampling.

Herd population management is critical in balancing herd numbers with forage resources. Studies have demonstrated that growth rates of wild horses approach 20 percent or more in many horse populations. This rapid increase in population is affecting the condition of the range in the HMAs, and leading to greater competition for resources between wild horses, cattle, and wildlife (particularly elk) due to forage requirements (BLM 2016).

The BLM and Forest Service are required by WFRHBA to manage populations in each of the HMAs within the appropriate management levels through wild horse gathers and removals. Ideally, these gathers would take place every 3 to 4 years on each HMA to meet population objectives. Excess horses are put up for adoption, but the majority are placed in pastures or permanent holding facilities and fed costing the federal government in excess of \$45 million per year. Euthanasia was allowed prior to 1980, but since this time, Congress has prohibited use of federal funds to euthanize excess horse other than those that are sick or lame.

During wild-horse management or gathers, the BLM also collects data regarding herd health and characteristics. These data include genetic tests, collection of phenotypic characteristics, body condition, age, recruitment rates, and other herd-specific information.

The 8 HMAs in the County (including portions in Beaver County) encompass approximately 690,557 acres of BLM-administered land. The Sulphur and Choke Cherry HMAs extend north into Beaver County. Likewise, the North Hills HMA slightly into Washington County on Forest Service lands. There are no wild-horse ranges designated in the County. The current total established appropriate management level for all HMAs in Iron County is between 347 to 601 animals.

Table 1.0, “Iron County Wild Horse Herd Management Area Characteristics” lists the acreage and land ownership, appropriate management level, and estimated herd size for each HMA in the planning area.

Table 1.0. Iron County Wild Horse Herd Management Area Characteristics

Herd Management Area	BLM-administered Land (acres)	Other Land (acres)	Appropriate Management Level	Estimated Herd Size (Year)*
Bible Spring	61,862	4,521	30–60	157 (2016)
Blawn Wash**	0	0	0	152 (2016)
Chloride Canyon	63,683	21,133	15–30	113 (2016)
Choke Cherry***	48,141	8,532	0–30	184 (2016)
Four Mile	61,273	7,869	30–60	175 (2016)
Mount Elinore	42,640	4,128	15–25	52 (2016)
North Hills	49,909	9,178	22–33	162 (2016)
Sulphur***	265,676	35,469	165–250	957(2016)
Tilly Creek	37,006	3,953	20–50	163 (2016)

Source: BLM 2016

*Estimated population based on most recent year for which data is available. An additional 41 wild horses are estimated to occur outside any Herd Area or HMA, but within the planning area.
 **Currently managed as a Herd Area.
 ***Shared with Beaver County

Herd Management Areas

The BLM Pinyon Management Framework Plan (MFP) includes the decisions to manage nine wild-horse HMAs (seven in Iron County). Five of the HMAs in Iron County – Bible Springs, Four Mile, Tilly Creek, Chokecherry, and Mt. Elinore – are to be managed at or below 1982 inventory levels, but not less than 1971 levels. Two other HMAs – Sulphur and North Hills – are specifically addressed in the Pinyon MFP. The CBGA RMP addresses the Chloride Canyon herd area management plan.

Bible Springs, Four Mile, and Tilly Creek

Combined, the Bible Springs, Four Mile, and Tilly Creek HMAs comprise approximately 160,141 acres of BLM-administered land. Vegetation in all three HMAs consists primarily of great basin pinyon-juniper woodland and inter-mountain basin big sagebrush shrubland. In April of 2005, following completion of an Environmental Assessment (EA), the appropriate management levels on the Bible Springs, Four Mile, and Tilly Creek HMAs were adjusted (BLM 2016). The EA also stated that when a new land use plan was created, the three HMAs could be combined into one HMA. The Bible Springs, Four Mile, and Tilly Creek HMAs would be managed as the Bible Springs Complex until completion of the new land use plan.

There are 5 grazing allotments that are partially within the Four Mile HMA, 5 partially within the Bible Springs HMA, and 6 partially within the Tilly Creek HMA (Map 1).

From 1994 to 2016, population estimates for the Bible Springs HMA have ranged between 23 and 348 individuals, and currently estimated to be 157; from 1994 to 2016, population estimates for the Four Mile HMA have ranged between 30 and 175 individuals, and currently estimated to be 175; and from 1994 to 2016, population estimates for the Tilly Creek HMA have ranged between 25 and 163 individuals, and currently estimated to be 163, making total number of wild horses in the Complex to be estimated at 495 (BLM 2016).

Wild horses move regularly between the Four Mile HMA and Bible Springs and Blawn Wash HMAs, and between the Tilly Creek, Bible Springs, and Mt. Elinore HMAs. Some exchange also occurs between the southern portion of the Sulphur HMA and the Bible Spring HMA. Genetic sampling in 2002 indicated an average genetic variation among the Tilly Creek herd, but also indicated the potential for declining genetic variation among the herd.

There are approximately 101 miles of fencing along the exterior and interior of this HMA complex. These fence lines mark portions of the exterior HMA complex boundary, and form pasture and allotment boundaries to improve management of livestock grazing. The combination of the exterior and interior fences could limit the mobility of the wild horses and restrict their free-roaming nature, however, it is frequent to find where wild horses go through fences, lean on gates and eventually break them down, or crawl under fences in washes.

North Hills

The North Hills HMA includes approximately 49,909 acres of BLM-administered land, with vegetation comprised primarily of great basin pinyon-juniper woodland and inter-mountain basin big sagebrush shrubland. The appropriate management level for the North Hills HMA and the USFS Wild Horse Territory together was established as a population range of 40 to 60 wild horses in the Pinyon MFP and the Dixie National Forest Land and Resource Management Plan. The herd area management plan associated with this HMA estimated that the wild horses use the BLM lands approximately 55 percent of the time and the USFS lands approximately 45 percent of the time (USFS and BLM 1977). The appropriate management level for is 40 to 60. The appropriate management level upper limit is the maximum number of animals that can be grazed based on detailed analysis of the available water, forage, and other multiple uses. The herd area management plan established site-specific management and monitoring objectives for the herd and its habitat. Between 1994 and 2016, population estimates for the North Hills HMA have ranged between 28 and 221 individuals, with a current estimate of 162 individuals (BLM 2016). There are 8 grazing allotments partially within the North Hills HMA, with 1 (Nephi Springs) being dedicated to wild horses (**Map 1**).

The North Hills HMA is isolated from other HMAs in Utah. The HMA is adjacent to the USFS Pine Valley Forest North Hills Wild Horse Territory. Horses from the adjacent Nevada Herd Areas do on occasion exchange with the North Hills HMA horses in winter. There is a state line fence along the western boundary of the HMA, but horses can move to the south around this fence and leave the boundaries of the Herd Areas and HMA.

There are approximately 48 miles of fencing within this HMA complex. These fence lines form a portion of the exterior HMA boundary and provide pasture and allotment boundaries to improve management of livestock grazing. The combination of the exterior and interior fences could limit the mobility of the wild horses and restrict their free-roaming nature.

The Forest Service has confined the wild horses on their lands to the Nephi Pasture - dedicated solely for wild horses. The Forest Service is in the process of developing an MOU with the BLM to manage the horse on their lands, and will draft an Environmental Assessment in the future.

Sulphur

The Sulphur HMA includes approximately 265,676 acres of BLM-administered land, but only a small portion in Iron County. Records of populations do not distinguish between Iron County and Beaver County because of free movement wild horses have in the area. Therefore, this plan will not attempt to estimate true impacts to Iron County itself and only provide information as provided by the BLM. Vegetation is comprised primarily of great basin pinyon-juniper woodland and inter-mountain basin big sagebrush shrubland. The Pinyon MFP established the population level for horses in the Sulphur HMA as not less than 135 and not more than 180. In April 1987, the Warm Springs RMP (Fillmore Field Office RMP) incorporated these same numbers. Approximately 76 percent of the horses in this HMA are in the CCFO (Sulphur South Herd) area and 24 percent are in the Fillmore Field Office area (Sulphur North Herd). The Sulphur Wild Horse Herd Management Area Plan (BLM 2010) further defined the appropriate management level as a population “which does not fall below 135 head or exceed 180 head of adult horses defined as those over two years of age.” If wild horses of all ages are included in the appropriate management level number, the appropriate management level is 165 to 250. Between 1994 and 2016, population estimates for the Sulphur HMA ranged between 230 and 1,097 individuals, with current estimates of 957 (BLM 2016). No population data were recorded for 2011. There are 2 grazing allotments that are partially within the Sulphur HMA in the County (Map 1).

After the 1995 gather in the Sulphur HMA, blood samples were taken from 118 horses from the northern part of the Sulphur HMA as a baseline data set to measure genetic drift. The report from these samples indicates that the Sulphur herd has a clear Spanish component in its ancestry. Genetic variation within the herd is high enough that there is no immediate concern.

In 2006, blood samples were taken from 68 horses (56 from Sulphur North and 12 from Sulphur South) and compared to the samples taken in 1995. Genetic variability of this herd is relatively high and appears to have been stable over a period of approximately 10 years. The values related to allelic diversity are near the average, while heterozygosity is high, which could represent a demographic effect such as a rapid change in population size or population mixing. Genetic similarity results suggest a herd with mixed ancestry but not showing close relationship to any particular group.

Current variability levels are high enough that no action is needed at this point; however, there is a fairly high percentage of variation at risk of loss, so it is important that the population size be maintained at a level required to maintain genetic diversity. This generally requires a population size of 120 or more animals to minimize the rate of variability loss, depending on the potential of genetic exchange with other populations.

In December of 2010, a Gather Treat and Release was conducted on the Sulphur HMA. The gather was performed in an attempt to slow population growth by treating captured mares with fertility control vaccine Porcine Zona Pellucida (PZP-22 or PZP). Ninety wild horses were gathered and 30 were removed. The other 60 were released back into the HMA, with the 38 mares being treated with PZP.

Wild horses move regularly between the Eagle HMA, which is located in Nevada west of the Sulphur HMA. On the south end of the Sulphur HMA there is interchange with the Bible Springs HMA. As stated in the Mt. Elmore and Chokecherry HMA section, there is some exchange there, but only when the U4 fence is down. The north end of the Sulphur HMA has a number of horses that display Spanish Barb

horse characteristics, which the BLM has tried to maintain by removing horses that move to the northern part of the Sulphur HMA from the Eagle HMA.

There are approximately 84 miles of fencing within this HMA complex. These fence lines form a portion of the exterior HMA boundary and provide pasture and allotment boundaries to improve management of livestock grazing. The combination of the exterior and interior fences could limit the mobility of the wild horses and restrict their free-roaming nature. However, it is frequent to find where wild horses go through fences, lean on gates, and eventually break them down, or crawl under fences in washes.

Mt. Elinore and Chokecherry

Combined, the Mt. Elinore and Chokecherry HMAs comprise approximately 90,781 acres of BLM-administered land. Vegetation in these HMAs consists primarily of great basin pinyon-juniper woodland and inter-mountain basin big sagebrush shrubland. Wild horses move regularly between the Mt. Elinore and Chokecherry HMAs in Utah and the Eagle HMA in Nevada. Several distinct horses from the Eagle HMA have been seen in the Mt. Elinore and Chokecherry HMAs on different occasions. Some interchange occurs with horses from the Tilly Creek and Mr. Elinore HMAs, but not as much as with the Eagle HMA. The Mt. Elinore HMA is adjacent to the Eagle HMA, with the Nevada-Utah state line separating the two HMAs. Fence (the U4 fence) separates the main portion of the Chokecherry HMA (portion with the most wild horses) from the Sulphur HMA and Mt. Elinore HMA. Horses can access the Chokecherry HMA from the Sulphur and Mt. Elinore HMA to the south and east of this fence. There are 7 grazing allotments that are partially within the Choke Cherry and Mt. Elinor HMAs in the County (Map 1).

The Chokecherry HMA has not had an adjustment in appropriate management level since the Pinyon MFP was issued. Since 1994, population estimates for the Chokecherry HMA have ranged between 15 and 220 individuals, with a current estimate of 184 horses.

There are approximately 38 miles of fencing within this HMA complex. These fence lines provide pasture and allotment boundaries to improve management of livestock grazing. The combination of the interior fences could affect the mobility of the wild horses or restrict their free-roaming nature, however, it is frequent to find where wild horses go through fences, lean on gates and eventually break them down, or crawl under fences in washes.

Population estimates for the Mt. Elinore HMA have ranged between 20 and 66 individuals between 1995 and 2016, currently there are an estimated 52 horses (BLM 2016e). There are approximately 17 miles of fencing in this HMA complex. These fence lines from pasture and allotment boundaries to improve management of livestock grazing. The combination of the interior fences could limit the mobility of the wild horses and restrict their free-roaming nature. however, it is frequent to find where wild horses go through fences, lean on gates and eventually break them down, or crawl under fences in washes.

Chloride Canyon

The eight HMA in the planning area is Chloride Canyon, which is addressed in the CBGA RMP. The Chloride Canyon HMA includes approximately 63,683 acres of BLM-administered land, with vegetation comprised primarily of great basin pinyon-juniper woodland and inter-mountain basin big sagebrush shrubland. Management actions include keeping the number of horses between 15 and 30 individuals, monitoring horses, and monitoring habitat. The BLM does not have a herd management plan for this area. There are 8 grazing allotments that are either partially or totally within the Chloride HMA (Map 1).

Between 1994 and 2016, population estimates for the Chloride Canyon HMA ranged between 36 and 113 individuals, and current estimates of horses is 113 animals (BLM 2016e). The Chloride Canyon HMA is the only HMA in the planning area that does not have any interchange of horses with another HMA. New horses enter the HMA only when horses are brought in from other HMAs to increase genetic variability (BLM 2016f).

Thirty-four wild horses were removed from the Chloride Canyon HMA the summer of 1991, the first removal on record since passage of the Wild Free-Roaming Horse and Burro Act of 1971. Some of the captured horses were nearly or completely blind and had well-developed cataracts; others were dwarf horses but were not blind. Twelve blood samples were taken from horses captured in the HMA in 1991 and sent to the University of Kentucky Equine Blood Typing Research Laboratory for analysis and study. The conclusion from Dr. Gus Cothran, as a result of this analysis, supported the hypothesis that the blindness and dwarfism were the result of inbreeding.

From 1995 to 1998, the BLM attempted to capture and evaluate all wild horses in the Chloride Canyon HMA, approximately 70 to 100 animals. Not all the animals were captured, and some wild horses from other HMAs were brought into the Chloride Canyon HMA to maintain a base management-level population of approximately 30 horses, as outlined in the CBGA RMP. Animals introduced into the area came from other HMAs with similar habitat to improve the quality and future adoptability of wild horses in the HMA. Since 1998, the only horses gathered from the HMA were removed from private property at the request of owners. This has kept the population in the HMA near the upper appropriate management level of 30 individuals until the past few years. At present, the Chloride Canyon HMA does not have any permanent water sources on BLM-administered public lands. All permanent water sources are on private and state lands in and adjacent to the HMA, resulting in horses having to be gathered off private lands in or near the HMA.

There are approximately 43 miles of fencing within this HMA complex. These fence lines provide pasture and allotment boundaries to improve management of livestock grazing. The combination of the interior fences could limit the mobility of the wild horses and restrict their free-roaming nature. However, it is frequent to find where wild horses go through fences, lean on gates and eventually break them down, or crawl under fences in washes.

Trends

Population trends for wild-horse herds in the planning area continue to move upward because annual reproduction and recruitment considerably outnumber mortality and animals removed during gathers. The BLM and Forest Service have not been able to keep the animals at AML due to restraints placed on them from Congress and Washington DC leadership. Only young animals (2 years old and younger) are adopted by the public with few exceptions. The rest of the excess wild horses are placed in contract holding corrals or large pastures costing the federal government over \$45 million per year. These facilities are now overflowing, causing the BLM to seek more places to put excess horses, and has created a vicious cycle that does an injustice to the wild horses.

As herd population numbers have increased, the condition of grazed vegetation and water resources in HMAs have decreased due to the non-selective feeding nature of wild horses which has negatively impacted the fragile ecosystem. During drought years grazing permittees are requested to reduce AUMs due to shortage of forage, and to compensate for the overpopulation of wild horses. Horses are known to drive away competing livestock and wildlife from springs during drought years. This trend will only escalate as wild horses are allowed to increase without interference.

Forecast

Based on existing trends, wild horses will continue to encroach in areas outside the designated HMAs. The continued growth and expansion of resident herds managed in the planning area will create increased stress on rangeland vegetation conditions, and impact overall herd health through reductions in viable forage areas. Persistent drought conditions will reduce water, forage availability, and habitat for wild horses, depleting the already stressed range.

Long-term wild horse management objectives are designed to maintain wild horse populations within appropriate management levels, while providing for the health of the wild horses and a healthy ecological balance with other resources. However, as long as Congress prohibits the federal agencies from using federal funds to euthanize excess horses that cannot be adopted, places to keep excess horses will be limited and the wild horse population will continue to grow unchecked. Under current conditions wild horses are dying on the range from thirst and starvation. Permitted livestock will continue to be removed to make room for more wild horses, while the range is destroyed.

Key Features

In response to herd population increases and lack of viable holding facilities, the BLM has attempted to slow natural reproduction in some areas by inoculating mares with an immunocontraceptive (PZP-22 or PZP) that lasts 22 months. Research continues for the development and testing of an effective multi-year vaccine that could lower herd recruitment rates to a more desirable level. New research of population growth suppression is beginning and will continue.

Management challenges for wild horses in the County include controlling herd populations to maintain herd and rangeland health. Since 1973, when the horse and burro adoption program began, the three legal means of disposing of excess, gathered animals have been through public adoptions, sales, and euthanasia. Some animals, especially older studs, lack the physical appeal and disposition that attract adopters. Those animals not adopted or sold are held in short-term (large corrals) or long-term (large free-roaming pastures) holding. It is Iron County's opinion that the immunocontraceptives are best suited as a maintenance control mechanism once the wild horses are brought within appropriate management levels in the HMAs. Until Congress allows for euthanasia to occur to and manages wild horse HMAs to be within the established appropriate management levels, populations will continue to grow and expand into other areas outside the herd areas.

Economic Considerations

The overall goal is to bring the wild horses in each Horse Management Area to appropriate management levels as identified for each HMA. It is evident that current management policies are failing and wild horse populations have escalated out of control. Until Congress allows funds to be spent to euthanize excess animals that are unadoptable, wild horse populations will continue to increase at 20% per year and the range depleted to the point where it will take years and millions of dollars to restore.

The environmental impacts of the excess horses are serious and increasing over time. These impacts include but are not limited to: decreased biodiversity in both plants and animals found within the management areas; decreased water yield and water quality of the watersheds; increase encroachment of woody and non-edible plants such as pinyon and juniper; increased erosion from both wind and water; decreased air quality through dust particles in the air; scarce water supplies will be made unavailable for other wildlife due to excess horses.

Direct monetary cost of the excess horses includes but are not limited to: restoration costs of rangeland treatments and re-seeding under arid and semi-arid conditions; ranchers with grazing permits in these areas are in jeopardy of having AUMs reduced or suspended to give more forage to the excess wild horses causing their ranching operations to be less sustainable; communities are affected because of reduced incomes to ranchers and those they do business with.

Table 2.0 shows the average economic loss to permittees and the greater Iron-Beaver Counties Economic Region if the aums that the excess horses ate had been eaten by cattle in a standard operation. The Cedar Livestock Auction November average price from 2012 to 2016 for feeder steer calves 500 to 550 pounds, feeder heifer calves 450 to 500 pounds, feeder heifers 800 to 850 pounds for culled replacement heifers, cutter cow prices, and slaughter bulls 1750 to 2000 pounds were used in the analysis. The model uses a 85% weaned calf rate per cow, a 2% death rate for replacement heifers, a 2% death lost for cows, and ten year average productive live for cows, a cow to bull ratio of 20 cows to 1 bull, bulls are replaced every two years.

HERD MANAGEMENT AREA NAME	MAX AML IN MP	BLM ESTIMATED POPULATION	AML OVER MP	AML OVER MP RQRD AUMs	VALUE PER AUM LOW	TOTAL AUM VALUE LOW	OUTPUT VALUE LOST IRON BEAVER
BIBLE SPRING	60	157	97	1164	\$ 100	\$ 116,400	\$ 229,308
CHLORIDE CANYON	30	113	83	996	\$ 100	\$ 99,600	\$ 196,212
CHOKECHERRY	30	184	154	1848	\$ 100	\$ 184,800	\$ 364,056
FOUR MILE	60	175	115	1380	\$ 100	\$ 138,000	\$ 271,860
FRISCO	60	244	184	2208	\$ 100	\$ 220,800	\$ 434,976
MT ELINORE	25	52	27	324	\$ 100	\$ 32,400	\$ 63,828
NORTH HILLS	36	162	126	1512	\$ 100	\$ 151,200	\$ 297,864
SULPHUR	250	957	707	8484	\$ 100	\$ 848,400	\$ 1,671,348
TILLY CREEK	50	163	113	1356	\$ 100	\$ 135,600	\$ 267,132
TOTAL	601	2207	1606	19272		\$ 1,927,200	\$ 3,796,584
HERD AREA NAME							
BLAWN WASH	0	152	152	1824	\$ 100	\$ 182,400	\$ 359,328
HARVEYS FEAR	0	25	25	300	\$ 100	\$ 30,000	\$ 59,100
MOODY-WAGON BOX MESA	0	0	0	0	\$ 100	\$ 0	\$ 0
TOTAL	0	177	177	2124		\$ 212,400	\$ 418,428
FOREST SERVICE/BLM							
NORTH HILLS	24	108	84	1008	\$ 100	\$ 100,800	\$ 198,576
TOTAL	625	2492	1867	22404		\$2,240,400	\$4,413,588

Table 2.0 Estimated AUM Output Value Loss (G. D. Miller, Economic Associates of Utah, Inc., personal communication)

The analysis demonstrates the average economic losses to both permittees and the general Iron-Beaver Counties Economic Region is about a million dollars for the permittees and 2 million dollars for the Region annually for the past 5 years.

The conclusion from the analysis is that the current failure to follow the Wild Horse Management Plan is costly to the environment, the rangelands, the permittees, and the general economy. Prompt action to adhere to the Management Plan is essential for the health of the environment, the wild horses, the permittees, and the general economy.

Desired Future Conditions

Given the dire existing condition in the western portion of the County due to non-management of wild horses, there are some things that can be done to help manage wild horses to a small degree as listed below:

A. Initial Large Gather Outside of HMAs. Following needed NEPA review if any, the BLM/Forest Service during the first field season after implementation of this plan conduct a county wide gather to remove all wild free-roaming horses found on public lands in Iron County outside of the HMAs. Animals captured during this gather generally should not be returned to HMAs but rather processed as excess animals according to the requirements of the WFRHBA and applicable BLM/Forest Service rules, stated above. Small exceptions to this general provision could be allowed to introduce new animals into different HMAs for reasons of maintaining genetic diversity of an HMA herd, and such introductions be within the AMLs of impacted HMAs.

B. Subsequent Biennial Gathers Outside of HMAs. Following needed NEPA if any, the BLM/Forest Service, during subsequent alternating field seasons (or more frequently if livestock grazers or other stakeholders determine the need arises) conduct county-wide gathers to remove all wild free-roaming horses found on public lands in Iron County outside of the HMAs. Animals captured during such gathers generally should not be returned to HMAs but rather be processed as excess animals according to the requirements of the WFRHBA and applicable BLM/Forest Service rules, stated above. Small exceptions to this general provision could be allowed to introduce new animals into different HMAs for reasons of maintaining genetic diversity of an HMA herd, and such introductions should be within the AMLs of impacted HMAs.

C. Initial Gather In HMAs. Following any needed NEPA, and upon completing an updated inventory count wild free-roaming horses in each HMA in Iron County, the BLM/Forest Service during the initial field season following implementation of this plan conduct gathers in all HMAs where the number of animals is found to equal or exceed the upper AML, removing enough animals to bring the herd number down to lower AML. Animals captured during such gathers be processed according to the requirements of the WFRHBA and applicable BLM/Forest Service rules, stated above.

D. Subsequent Annual Gathers In HMAs. Following any needed NEPA, and upon completing an updated inventory count of the wild free-roaming horses in each HMA in Iron County, the BLM/Forest Service annually during each subsequent field season conduct gathers in all HMAs where the number of animals is found to equal or exceed the upper AML, removing enough animals to bring the herd number down to lower AML. Animals captured during such gathers be processed according to the requirements of the WFRHBA and applicable BLM/Forest Service rules, stated above.

E. Gathers on Private Lands. BLM/Forest Service conduct private land gathers of wild free-roaming horses promptly upon proper notice from the landowner. The landowner notice to the BLM/Forest Service be in writing and include: location of gather (legal description), number and description of animals proposed to be gathered, and a statement indicating desire for the BLM/Forest Service to remove the animals. Wild horses captured during such gathers be processed according to the requirements of the WFRHBA and applicable BLM/Forest Service rules, stated above.

F. Interim Small Maintenance Gathers at Water Sites and Other Determined Baiting Areas. Small periodic maintenance gathers of 5 to 30 wild horses may be possible around water sources and other appropriate baiting areas, without the use of helicopters and large round-up crews, and thus better help to maintain horse numbers below upper AML. All capture pens used for such gathers shall meet the BLM/Forest Service standards. Animals captured during such gathers be processed according to the requirements of the WFRHBA and applicable BLM/Forest Service rules, stated above. Additional details for such small gathers are as follows:

- In HMAs and on other public lands outside HMAs: Small periodic maintenance gathers at water sites and other determined baiting areas may, where appropriate, utilize catching pens around water monitored by livestock operators and BLM/Forest Service officials to determine optimum time to close the pens according to the animals' becoming accustomed to the pens and when they are utilizing water. In these cases, the livestock operator, the BLM/Forest Service and Iron County personnel may cooperate and share responsibilities for loading and transporting captured animals to temporary holding facilities, providing feed, and providing personnel to feed and water the animals until they reach the destined holding facility.

- On private lands: Same as the preceding paragraph with the following modifications: The BLM/Forest Service and/or the County to supply and erect the pen panels. The land owner to monitor the wild horses' use of the pens and notify the BLM/Forest Service and County when to catch. The BLM/Forest Service oversee loading, transport and unloading of the animals with assistance from landowners as required. Feeding arrangements to be worked out with the BLM/Forest Service and County on a case-by-case basis.
 - Decisions to conduct any of the wild horse gathers referenced in the preceding paragraphs should not depend on the vacancy rate at pastures and other holding facilities with which the BLM/Forest Service contracts to keep captured and removed animals. Rather, such decisions should depend solely on whether the number of animals in an HMA has at least reached the upper AML number, and for private land gathers whether the landowner has given the BLM/Forest Service appropriate notice.
 - For all BLM/Forest Service grazing allotments in Iron County whether in HMAs or outside of HMAs, the BLM/Forest Service systematically review for all instances where it has ever ordered or required reductions of active livestock grazing AUMs due to over populations of wild free-roaming horses, perceived or real, present or anticipated. BLM/Forest Service reverse all such reductions and restore any such reduced AUMs to active use.
 - Following appropriate inventory of HMA range conditions and any NEPA review if needed, BLM/Forest Service implement revegetation maintenance programs to properly manage existing and planned treatment areas to reclaim the damage caused by over populations of wild free-roaming horses, and encroachment of undesirable and/or invasive plant species.
- G. The BLM/Forest Service reform its policies and guidelines as follows:
- Put aged and unadoptable animals up for sale or euthanasia as legally required, not hold contracted pasture or other holding facilities for the rest of their lives at the taxpayers' expense;
 - Accept and internalize the fact that the rate for adopting wild horses is low and declining further due to high feed costs and selective demand for young workable horses or horses of the old Spanish barbed lineage;
 - Follow sound fiscal practices to avoid the inhumane holding of over 50 thousand wild horses, costing the over \$45 million annually to care for and feed;
 - Eliminate the attitude of reducing established grazing levels first, and rather remove excess wild free-roaming horses in order to preserve natural thriving ecological balance and multiple-use relationships;
 - Set realistic and reasonable funding priorities to provide for the legally required wild horse gathers outlined in the paragraphs above;
 - No longer put off wild horse gather decisions based on vacancy of perennial holding facilities and pastures. Rather base gather decisions on when actual wild free-roaming horse numbers reach upper AML for each HMA, and when they are found outside of HMAs; and
 - Give back to state and local BLM/Forest Service officials the authority and leeway to make timely wild horse management decisions on when to gather, where to take captured horses, and how to dispose of unadoptable horses, rather than keep that authority bottled up at the Washington level.
 - Iron County will work with the congressional delegates representing the State of Utah to remove language from the Interior Appropriations budget prohibiting the BLM from properly managing excess wild horses.

The goals, objectives, and policies will consider first, those things on a national level that needs to be achieved, and second those goals and objectives that can be done in the interim of congressional changes.

General Policy Statement

Iron County is supportive of having wild horses in existing Herd Management Areas at the appropriate management level that was decided for each HMA per the Wild and Free Roaming Horse and Burro Act, as they add to the local culture. However, wild horse populations must be managed to stay within the defined appropriate management levels for health of the environment, compatibility with other uses (livestock grazing, and wildlife), and health of the herds. Excess wild horses that exceed appropriate management levels must be removed to keep the fragile balance with other uses.

Issue 1. Congressional language in the Interior Appropriations Bill – This language prohibits federal funds from being used to euthanize excess wild horses and burros except for the lame and sick. Excess wild horses and burros that are not adopted are placed in long term holding facilities or pastures costing the federal government more than \$45 million per year.

GOAL	OBJECTIVE	POLICY
Restore euthanasia as a means to remove excess horses that cannot be adopted.	Work with Congressional delegates to remove the language prohibiting use of federal funds to euthanize wild horses and burros.	Support efforts to remove the Congressional language prohibiting use of federal funds to euthanize wild horses and burros.

Issue 2. Wild Horses are Feral – Recognize that wild horses are not native to America and are in fact feral animals.

GOAL	OBJECTIVE	POLICY
n/a	n/a	n/a

Issue 3. HMA Boundary Changes – Existing HMA boundaries are not consistent with existing allotment or pasture fences and make it difficult, if not impossible to manage wild horses within an HMA.

GOAL	OBJECTIVE	POLICY
Make HMA areas more manageable.	<p>Move HMA boundaries to coincide with existing allotment/pasture fences.</p> <p>No net increase in area (acres) of any HMA should occur as a result of the boundary change.</p> <p>Reduction of HMA boundaries should also result in reduced wild horses AMLs.</p>	Iron County supports moving the boundaries to coincide with allotment and pasture fences as long as the HMA does not increase in size, and as long as reduced size in HMAs results in reduced numbers of wild horse AMLs.

Issue 4. Manage Land for Healthy Ecosystem – BLM currently not effectively managing for a healthy ecosystem.

GOAL	OBJECTIVE	POLICY
Manage wild horses according to WFRHBA, RMPs, plans, and EAs.	Bring management in compliance with laws and plans.	Feral horses within Iron County HMAs should be managed for viable, healthy herd that will result in the thriving natural ecological balance (including standards and guidelines for rangeland health) and multiple-use relationships in that area as required by the WFRHBA, existing land use plans, resource management plans, or environmental assessments completed for HMAs.

Issue 5. Removal of Wild Horses from Private Lands – As feral horse populations grow encroachment onto private lands occurs.

GOAL	OBJECTIVE	POLICY
Remove wild horses from private lands as expeditious as possible.	As private landowners request, BLM to be responsive to requests and remove wild horses from private lands.	Immediately remove wild horses from private lands when notified of their presence as defined through the WFRHB Act. Immediate removal should be conducted in such a manner so that the horses will not return to the private land or placed within County boundaries as long as the BLM is out of compliance with AMLs.

Issue 6. Removal of Wild Horses from HMA or HA Boundaries – As wild horses are left unmanaged, they have expanded beyond the HMA and HA boundaries and pose new threats to livestock and wildlife.

GOAL	OBJECTIVE	POLICY
Remove wild horses from areas outside HMAs and HAs as expeditious as possible.	BLM to perform gathers in these areas as soon as possible.	Immediate removal of all feral horses with in Iron County that are found outside the HMAs and HAs.

Issue 7. Long Term Fertility – Long term fertility used to control wild horse populations should be goal. Short term fertility control (every two years) questionable.

GOAL	OBJECTIVE	POLICY
Develop long term fertility control mechanisms.	Continue research in long term fertility control agents, as short term control makes it hard to recapture horses for retreatment.	Iron County supports the use of long-term fertility control such as spaying of mares or PZP, but only if the numbers are within AML.

Issue 8. Reduced AUMs – Livestock permittees concerned that once feral horses are brought to be within AML, their reduced AUMs will not be restored.

GOAL	OBJECTIVE	POLICY
Restore AUMs as feral horses numbers are brought to be within AML.	Once excess wild horses are removed from areas where livestock grazing permittees have taken reductions in AUMs, livestock grazing AUMs shall be reinstated.	Iron County supports restoring AUMs to livestock.

Issue 9. Release of Equine Animals by Private Individuals – Released animals from private individuals may be considered as protected under the WFRHBA.

GOAL	OBJECTIVE	POLICY
Remove any unauthorized branded horse from the range.	Removal of unauthorized branded or otherwise recognizable domestic horse from the range either through BLM or the County Sheriff's office.	Any equine animal released from private individuals tribes, or neighboring lands onto public lands after 1971 is considered as stray as defined by the Utah Code, Title 4, chapter 25 and dealt with accordingly.

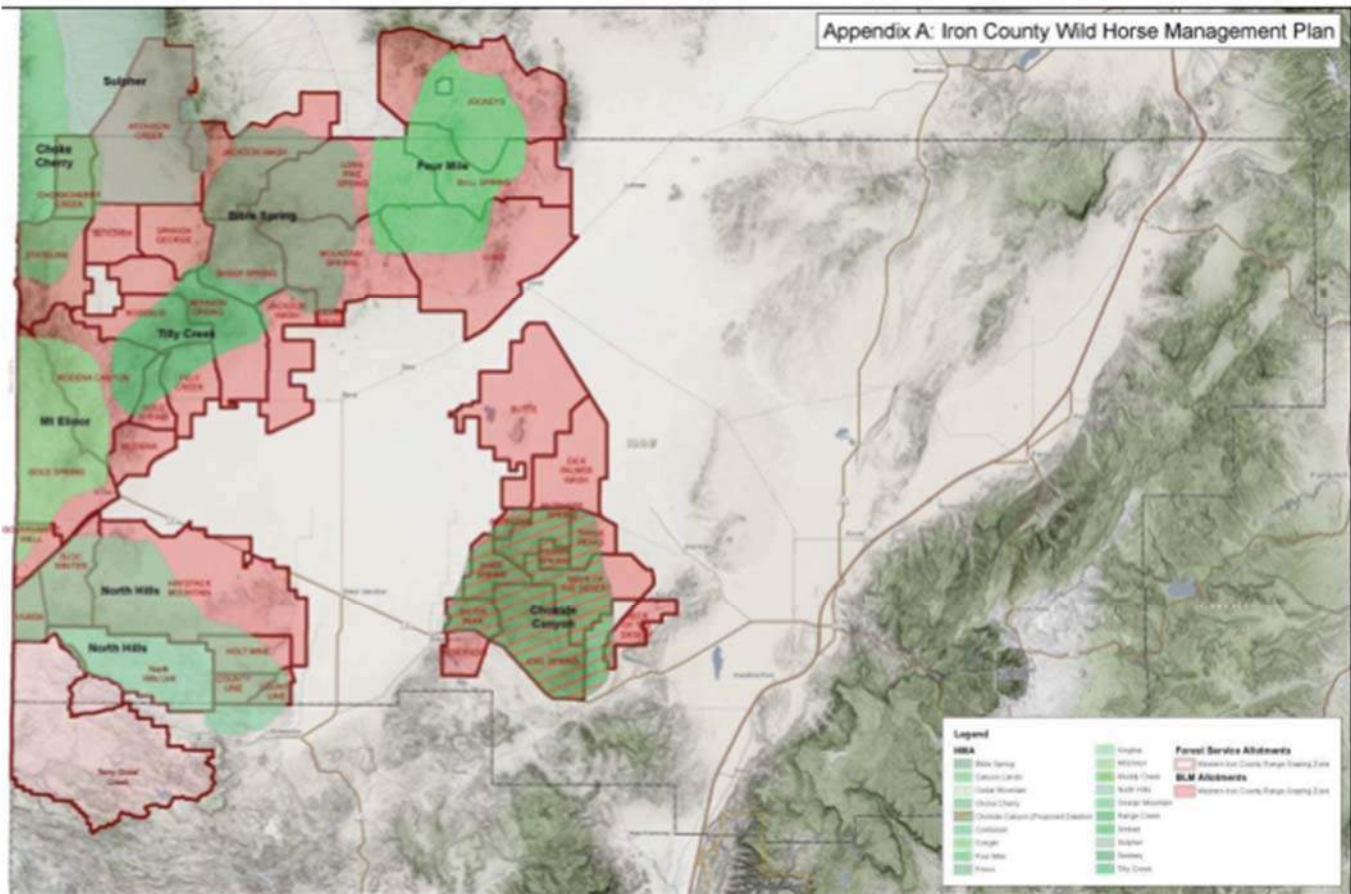
Issue 10. Removal of Chloride Canyon HA - The Chloride Canyon HA is isolated from other HAs making natural recruitment from other HAs impossible and promoting disease and inbreeding.

GOAL	OBJECTIVE	POLICY
Dissolve the Chloride Canyon HA.	Remove all wild horses from the area and dissolve HA.	Removal of all wild horses from the Chloride Canyon HA.

References

1. BLM 2016

Map 1 - Iron County Wild Horse HMA and Grazing Allotments



Wilderness & Lands with Special Designations

Related Resources

Forest Management, Fire Management, Noxious Weeds, and Recreation and Tourism, Land Access

Overview and History

Overview

The Wilderness Act of 1964 established the National Wilderness Preservation System to be managed by the USFS, National Park Service (NPS), and the FWS. The passage of FLPMA in 1976 added the BLM as a wilderness management authority to the Wilderness Act. Wilderness areas must have “wilderness character” as explained in the Current Conditions and Programs section.

Special designation areas are lands in the County designated to protect and preserve areas of unique values and/or uses. To preserve and protect the unique values and uses, special designation areas require different management from areas. The types of special designations include Areas of Critical Environmental Concerns (ACECs), Wilderness Study Areas (WSAs), National Historic Trails (NHTs), Lands with Wilderness Characteristics (LWC), Wild and Scenic Rivers, and other special designations such as National Scenic Byways and Backways.

Custom, Culture, and History

Part of Iron County’s culture is outdoor oriented with residents recreating in a variety of ways, this includes the use of motorized all-terrain vehicles where appropriate. Managing lands and providing adequate access for multiple uses has historically been, and continues to be, a tradition based on accommodating persons with disabilities and facilitating a diverse range of local values.

Current Conditions & Programs

The following are current designation and conditions in Iron County:

Wilderness Areas

Wilderness areas are special places where the earth and interconnected communities of life have been left relatively undisturbed. According to the Wilderness Act, federal lands must have four qualities to be considered by Congress for wilderness preservation:

- They must be in a **generally natural condition**. The area should be protected and managed to preserve its natural conditions and should be as free as possible from the effects of modern civilization. If any ecosystem processes were managed by humans, they must be allowed to return to their natural condition.

- They must have **outstanding opportunities for solitude** or a primitive and unconfined type of recreation. People should be able to experience natural sights and sounds, remote and secluded places, and the physical and emotional challenges of self-discovery and self-reliance.
- They must be **at least 5,000 acres** or large enough to preserve and use as wilderness. The area must be undeveloped. No human structures or installations, no motor vehicles or mechanical transport, or any other item that increases man's ability to occupy the environment can be present.
- The area must be **untrammelled by man**. Untrammelled refers to wilderness as an area unhindered and free from modern human control and manipulation. Human activities or actions of these lands impairs this quality. They may also contain ecological, geological, or other features of scientific, scenic, or historical value.

The Ashdown Gorge Wilderness is the only designated wilderness area within Iron County. The wilderness is within the Dixie National Forest adjacent to Cedar Breaks National Monument and characterized by extremely steep-walled canyons cut through the west rim of the Markagunt Plateau. It is 7,043 acres in size and was designated by Congress in 1984. The gorge is administered by the Dixie National Forest.

Other areas have been proposed by special interest groups and over the years have come to be known as the "Proposed Red Rock Wilderness Area", however they were never designated by Congress.\

USFS Roadless Areas (Forest Service)

In January 2001, the Roadless Area Conservation Rule was adopted into regulation by the USFS. It has been the subject of litigation for more than a decade, but it is still in effect as of this writing. In 2001, states were given the opportunity to draft their own Roadless Rule and Utah chose not to. Utah is under the 2001 Roadless Rule and subsequent memorandums issued by the Secretary of Agriculture delegating authority to approve road construction and timber harvesting. See **Map 1**.

Wilderness Study Area (BLM)

WSAs are established three different ways. 1) WSAs were identified by the wilderness review as required by Section 603 of FLPMA. 2) They may be identified during the land use planning process under Section 202 of FLPMA. 3) Finally, they may be established by Congress. There is only one WSA contained within Iron County, Spring Creek Canyon, encompassing 4,294 acres.

Section 603(c) of the FLMPA requires that WSAs be managed in a manner that does not impair the suitability of such areas for preservation as wilderness. However, the Act also requires that mining, livestock grazing and mineral leasing (e.g., grandfathered uses) continue in the manner and degree as they were being conducted in 1976. Thus, to the extent that grazing was allowed in the wilderness prior to 1976, its use, specifically including allowing the same number of livestock as existed in 1976, should be continued. Grandfathered uses are protected and must be maintained in the same manner and degree as they were being conducted on October 21, 1976, even if they impair wilderness characteristics. *Rocky Mountain Oil and Gas Association v. Watt*, 696 F.2d 734, 749 (10th Cir. 1982). This requirement includes the authority to develop livestock related improvements. *Utah v. Andrus*, 486 F. Supp. 995 (D.Utah 1979) (quoting and adopting provisions of a solicitors' opinion dated Sept 5, 1978).

Spring Creek Canyon WSA

There are two major canyons – Spring Creek and Kanarra – in this WSA. Spring Creek Canyon is in southeastern Iron County, approximately 7 miles southwest of Cedar City. The canyon mouth includes a portion of the Hurricane Cliffs, a west-facing escarpment that extends from north of Cedar City into northwestern Arizona. After about a mile, it narrows into a narrow red rock slot canyon. The WSA has scenic values similar to those found in contiguous Zion National Park. Approximately 73 percent of the WSA is rated as outstanding for scenic quality. It receives steady use for hiking and horseback riding. The WSA might be habitat for, or be visited by, bald eagles, peregrine falcons, California condors, 13 animal species, critical habitat for the Mexican spotted owl, and 4 plant species that are considered sensitive. The Spring Creek hiking area has a road and parking area at the mouth of the WSA. The first mile has been bladed in the past (BLM 2016).

Kanarra Canyon is a separate canyon just north of Spring Creek Canyon. There is a water tank owned by the city of Kanarraville near the head of the canyon. A road continues to and past this tank for about a mile, before the boundary of the WSA. There is a water line ROW that runs adjacent to the road, used for the water supply of Kanarraville. At the end of the road used by OHVs, the canyon narrows and visitors must walk in the creek to continue. This canyon receives a large amount of visitor use year-round. There is an obvious trail and people hike the river in the slot canyon. The road to the water tank is closed to vehicle traffic, except for administrative use. Parking is permitted on private land at the mouth of the canyon and the BLM is currently considering purchasing this parcel of land (BLM 2016).

Lands with Wilderness Characteristics

Section 201 of FLPMA requires BLM to maintain an inventory of all public lands with wilderness characteristics. The inventory is completed using the methods in BLM Manual 6310 – Conducting Wilderness Characteristics Inventory on BLM Lands. The inventory is not supposed to change or prevent change of the management or use of public lands. Areas determined to have wilderness characteristics must be over 5,000 acres of roadless, contiguous BLM-managed lands. Areas less than 5,000 acres may qualify if they are adjacent to lands already determined to have wilderness or potential wilderness value, Wilderness Areas (WAs), or WSAs. Lands must appear to be affected primarily by the forces of nature and any work of humans must be substantially unnoticeable. Fences or water troughs may often be considered substantially unnoticeable. Lands must offer outstanding opportunities for solitude or primitive, unconfined recreation. Finally, if size, naturalness, and outstanding opportunities criteria are met, then other features or values (ecological, geological, and historical) may be noted but are not required (BLM 2012).

As the BLM Resource Management Plan for the Cedar City Field Office is being drafted at present writing, lands are being inventoried and considered in the planning document. Once the document is made available to the public, Iron County will consider proposed designations of LWCs for inventory integrity to insure they meet the required criteria.

Areas of Critical Environmental Concern (ACEC)

ACECs are defined in FLPMA Section 103(a) as “areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.” BLM regulations (43 CFR 1610.7-2) and ACEC guidance (43 CFR 1601.0-5 (a)) address the identification and designation of areas as ACECs. An ACEC’s management is determined at the time of its designation and serves to protect and manage the relevant and importance values, resources, processes,

systems, or hazards (collectively, values). Activities in designated ACECs are also managed through the prescriptions in 43 CFR 3809.1-4(b)(3), which require an approved Plan of Operations for locatable mineral activities under the mining laws that exceed casual use (BLM 2016).

While there are no ACECs currently designated in Iron County, there are several that are being considered by the Cedar City Field Office of the BLM in the RMP. ACECs are used to designate and protect areas that contain important historic, cultural, scenic, and natural values. In 2016, Iron County Commissioners adopted the Iron County ACEC Resource Plan (**Appendix 2**) that provides Iron County position on ACECs. The plan outlines concerns in the inventory process, and requires the agency to consider current regulations (federal laws), guidelines, and requirements to any area being considered for an ACEC. It also requires the agency to outline what significant added protection an ACEC designation would provide to the resources that is above and beyond current management strategies.

National Historic Trails

NHTs are extended trails that closely follow a historic trail or route of travel of national significance. Designation identifies and protects historic routes, historic remnants, and artifacts for public use and enjoyment. The BLM is one of several agencies responsible for management of NHTs, which are designated by Congress. In accordance with BLM Manual 6280, the BLM manages NHTs “to recognize the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail” (BLM 2012). There is only one designated historic trail in Iron County – The Old Spanish Trail.

The Old Spanish National Historic Trail

The Old Spanish NHT is approximately 2,700 mile long trail extending from Santa Fe, New Mexico, to Los Angeles, California, that served as a major trade route between 1829 and 1848. The congressionally designated trail was created by the National Trails System Act in 2009. About 75 miles of the trail cross through Iron County, with four segments totaling about 20 miles on public land (**Map 2**) and the rest on private lands. All segments on BLM lands are being treated as High Potential Route Segments or High Potential Historic Sites (BLM 2016).

Other Special Designations

This section describes other special designations in Iron County. The following discussion addresses National Scenic Byways, BLM Back Country Byways, Utah State Scenic Byways, and Utah State Scenic Backways. Designation and management of scenic byways can occur at local, state, or national levels. Because of the number of visitors to the state and national parks and monuments, the popularity of these roadways has resulted in issues that public land management can address.

National Scenic Byways and BLM Back Country Byways

National Scenic Byways Program recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. For a highway to be considered for inclusion in the National Scenic Byway Program, it must provide safe passage for passenger cars year-round, it must be designated a State Scenic Byway, and it must have a current corridor management plan in place. The Patchwork Parkway Scenic Byway – Highway 143 is the only National Scenic Byway in the Iron County; This 55-mile byway extends from Parowan to Panguitch. Highway 143 ascends to an elevation of 10,000 feet through Parowan Canyon, the location of Brian Head Ski Resort and Cedar Breaks National Monument. Highway 143 enters the Dixie National Forest as it

descends through the southeastern border of the County. Parowan Gap is also considered part of this National Scenic Byway designation.

Utah Scenic Byways

Similar to National Scenic Byways, Utah State Scenic Byways are paved highways that have been designated by official state declaration for their scenic, historical, recreational, cultural, archaeological, or natural qualities. The byways are paved roads that are generally safe year-round for passenger cars. Installation of off-site outdoor advertising is currently not permitted along byways.

Markagunt High Plateau Byway

(State Route 14 from Cedar City to U.S. Highway 89)

The Markagunt High Plateau Byway is the only Utah state scenic byway in the County. This 40-mile byway is noted as one of the most traveled areas in Southern Utah. From Interstate 15 at Cedar City, this route ascends southeast as it winds through a narrow canyon past some of the most varied scenery in Utah, including Cedar Breaks National Monument, the Ashdown Gorge, and the Zion Overlook. From the summit of the Plateau, the byway continues southeast into Dixie National Forest toward Cedar Mountain and several points of interest, including Navajo Lake. The Markagunt High Plateau Byway is recognized for its cultural, historical, natural, recreational, and scenic attractions.

Utah Scenic Backways

Utah Scenic Backways are roads that do not generally meet federal safety standards for safe year-round travel by passenger cars, and have been designated by official state declaration for their scenic, historic, and recreational qualities. These backways often require use of four-wheel drive, and road conditions vary with factors such as season and weather. There are two Utah State Scenic Backways in Iron County.

Dry Lakes/High Mountain Backway

This backway is a 19-mile-long route that provides sweeping views of Parowan Canyon, Sugarloaf Mountain, High Mountain, and Cedar Breaks National Monument. This backway is also the access to road to Twisted Forest hiking trail and Ashdown Gorge Wilderness area. The road begins 8 miles up State Route 143 from Parowan, just outside Dixie National Forest. This route is considered a good gravel road with very steep grade coming off the High Mountain toward Summit Township.

Kolob Reservoir Scenic Backway

This backway is a 45-mile-long route that travels through thick aspen forest toward Kolob Reservoir and winds through grassy meadows to the red and white back-country of Zion National Park. The route begins 5 miles east of Cedar City, off State Route 14, and ends at State Route 9.

Viewsheds

BLM Visual Resource Management (VRM) is a system to identify scenic (visual) values and manage for protecting the quality of the visual values by minimizing visual impacts to the public landscape's naturalistic character. The VRM system process involves inventorying scenic values, establishing management, objectives for those values, and evaluating proposed activities to analyze effects and develop mitigation measures to meet established VRM objectives.

BLM manual H-8410-1, Visual Resource Inventory (VRI) describes the visual resource inventory process on BLM-administered lands. The inventory consists of a scenic quality evaluation, sensitivity level analysis, and a delineation of disturbance zones. Based on these three factors, the lands are placed into one of the following visual resource inventory classes which represent the degree of acceptable visual change within the characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective:

- Class I – highest Value.
 - Preserves the existing character of the landscape
 - Provides for natural ecological changes only
 - Does not preclude very limited management activity
 - Allows only an extremely low level of change in the characteristic landscape that must not attract attention
 - Includes primitive areas, wilderness study areas, some natural areas, some Wild and Scenic Rivers, and other similar areas where landscape modification activities should be restricted.
- Class II – high Value.
 - Retains the existing character of the landscape
 - Allows management activities to be seen; however, activities should not attract the attention of the casual observer
 - Requires changes to repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape
 - Requires modifications to a proposal if the proposed change cannot be adequately mitigated to retain the character of the landscape.
- Class III – moderate value.
 - Partially retains the existing character of the landscape
 - Requires that areas where management activity causes changes in the basic elements (form, line, color, or texture) do not dominate the view of the casual observer
 - Requires that changes remain subordinate to the visual strength of the existing character.
- Class IV – least value.
 - Allows management activities to dominate the view and remain the major focus of the viewer attention
 - Allows areas where changes are subordinate to the original composition and character, however, these changes should reflect what could be a natural occurrence within the characteristic landscape

The inventory classes provide the basis for considering visual values in the RMP process. A new VRI was performed in 2010 that included Iron and Beaver counties (OTAK, Inc.), however, this information will not be available until the RMP is out in draft form (BLM 2017).

Control and Influence

WSA

The only way for counties to influence current WSAs is to engage with congressional legislators. The BLM is bound by its charge to manage WSAs the same way as wilderness, until a decision is made by congress.

Other Designations

Counties can have greater influence with regards to other designations such as LWCs, ACECs, VRMs, etc. where an inventory process is mandatory and certain criteria must be met before an area is considered. These lands have multiple-use, but may be managed for recreation, riparian zones, sage grouse, etc. BLM has flexibility in managing these “natural areas” and must work with the county to identify Iron County’s priority areas for open spaces, recreation areas, trails, etc.

Land Exchange

Contiguous land parcels are helpful for cities, counties, and the BLM manage resources of all kinds. Exchanging fragmented SITLA land for BLM land can help all stakeholders draw boundaries that make sense. Identifying parcels of land that cities need to expand into, that are currently owned by the BLM, is the first step in initiating these exchanges.

Iron County can exert its influence on public land management decisions by holding coordination meetings, becoming a cooperative agency in NEPA planning processes, attending planning meetings, entering into a Memorandum of Understanding, and identifying specific desired land use areas.

Economic Considerations

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 debate over the economic impact of designating wilderness areas continues in Utah. An unpublished report from Utah State University in 2010 investigated contradictory claims about the economic impact of designating wilderness areas in Utah (Yonk et al. 2010).

Economic considerations of wilderness designation should include:

- Mineral and energy development potential
- Logging and forest products
- Grazing restrictions - grazing is allowed in wilderness areas but must meet wilderness guidelines.
- Private and State land inholdings
- Land transfers
- Motorized recreational uses

Wilderness designation on public lands has positive effects on:

- non-motorized recreation
- wildlife habitat
- drinking water source protection
- watershed protection

“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).

Very little information exists on the economic impacts of other special designations.

Relevant Existing Policies

Iron County recognizes the value for wilderness areas within the county. A portion of land within the county is designated as wilderness-those areas being Zion National Park, Cedar Breaks National Monument and Ashdown Gorge. These existing areas satisfy wilderness needs within the county.

The following are goals and policies identified in the Iron County General Plan:

Goal LU6: Promote and facilitate public and private recreational, cultural, wilderness and wildlife opportunities compatible with local custom and culture.

Pol. LU6.1: The Iron County Natural Resources Advisory Committee will monitor Federal and State Land enforcement programs as well as Wildlife Management and Natural resource enforcement programs and insure that those programs comply with all County, State, and Federal laws. The Natural Resources Advisory Committee will report periodically to the County Board of Commissioners.

Pol. LU6.2: Through cooperative agreement, Iron County may designate land areas for recreational uses.

Pol. LU6.3: Identify public land tracts needed for future recreational and public purpose needs and communicate that need to the Federal Management Agency for incorporation into the Federal Land Use Plan.

Desired Future Conditions

Iron County reaffirms the goals and policies specified in the Iron County General Plan, and those identified in the Iron County Wilderness Plan and the Iron County ACEC Resource Plan. The following goals, objectives and policies are in addition to those mentioned above:

Issue 1. Special Designations Managed as Wilderness – Concern that land designations outside of designated Wilderness Areas may lead to lands being managed as wilderness areas.		
GOAL	OBJECTIVE	POLICY
Federal agencies coordinate with Iron Commission prior to special designations.	Hold regular coordination meetings with federal agencies. When disagreement, work to come to compromise.	Iron County opposes designations without federal agencies first consulting and coordinating with the County Commissioners.

Issue 2. Consistency with Multiple Use – Agencies may place more stringent policies or land use requirement that what is actually required by laws, guidelines, or regulations.

GOAL	OBJECTIVE	POLICY
Support multiple-use principles in areas with special designations.	Ensure that multiple principles are used in creating special designations.	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.

Issue 3. Designating ACECs – When designating ACECs, BLM not considering existing laws, guidelines, or regulations that already give the resources and area protections, and fail to identify added value of such designations.

GOAL	OBJECTIVE	POLICY
Ensure all existing laws, guidelines, and regulations are considered in designations.	Reviewing and specifying how current resources are being protected by laws, guidelines, and regulations.	Support reviews of current management strategies to determine worthiness of designating an area an ACEC.

Issue 4. Range Improvements – Access to water developments, fences, or other infrastructures may be limited due to designations.

GOAL	OBJECTIVE	POLICY
Retain access to range improvements.	Review and identify all range improvement in an area to be designated and outline how they will be accessed by permitted users.	<p>No change in access to water developments, fences, or other infrastructure located within designated wilderness, wilderness study areas, ACECs, roadless, and other special status areas should be allowed.</p> <p>Support and encourage accurate, on-the-ground mapping of roads, fences, rangeland improvement and any other anthropogenic influence in lands under consideration for LWCs or WSA designations.</p>

Issue 5. Duplicative Land Use Designations – areas may be considered or designated for more than one special designation, compounding restrictions that may not support multiple use.

GOAL	OBJECTIVE	POLICY
Ensure streamlined designations.	Evaluate current designations along with proposed designations to ensure they are not duplicative.	Remove duplicative land use classifications (e.g., determine if an area should be ACEC or LWC).

Issue 6. Land Access – Access may be limited or has already been limited due to special designations.

GOAL	OBJECTIVE	POLICY
Historic access to special designated areas, with the exception of Wilderness Areas.	When determining access to specially designated areas, ensure historic uses are allowed.	Support valid and existing rights of access are included in any designation.

Issue 7. Buffer Zones – Buffer zone may be created around a designated area.

GOAL	OBJECTIVE	POLICY
Limit buffer zones.	Buffer zones should be used to protect an area only when it is mandated by the law establishing designation of such areas. Agencies should follow and ensure such laws are followed and not added-to.	No actual or de facto buffer zones should be established around special designation areas.

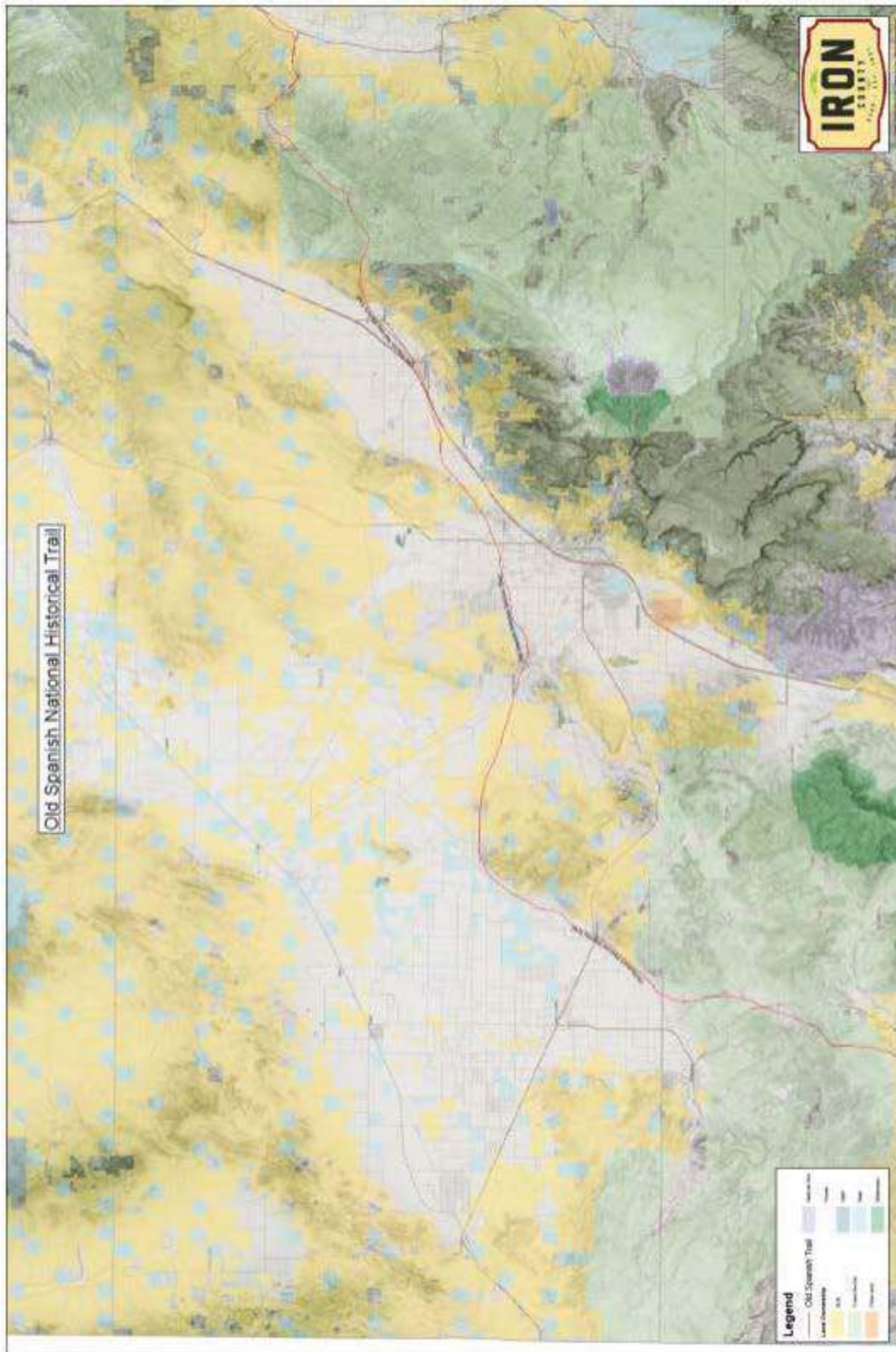
Issue 8. Viewsheds – Concern that viewsheds may impact private property use, and multiple uses on BLM and FS lands.

GOAL	OBJECTIVE	POLICY
Viewsheds do not impact private property or multiple use.	During establishment of viewsheds, analyze impacts they will have on private property and multiple use already taking place.	Viewsheds should not impact the use of private property. Viewshed boundary designations should not adversely impact the multiple uses of BLM and USFS lands.

References

1. Wilderness Act of 1964
2. [The Local Impact of Wilderness: An Overtime Analysis of Wilderness Designation](#)
3. Iron County ACEC Resource Plan, 2016
4. Iron County Proposed Wilderness Regions Interim Resource Management Plan
5. Map 1.0 Dixie National Forest, Inventoried Roadless Areas

Map 2.0 Old Spanish National Historical Trail



Wildlife, T&E, and Sensitive Species

Related Resources

Predator Control, Agriculture, Livestock and Grazing, Land Use, Fisheries, Forest Management, Recreation and Tourism

Overview and History

The Public Trust Doctrine (PTD), with its origin in Roman civil law, is an essential element of North American wildlife law. The Doctrine establishes a trustee relationship of government to hold and manage wildlife, fish, and waterways for the benefit of the resources and the public. Fundamental to the concept is the notion that natural resources are deemed universally important in the lives of people, and that the public should have an opportunity to access these resources for purposes that traditionally include fishing, hunting, trapping, and travel routes (e.g., the use of rivers for navigation and commerce) (The Wildlife Society 2010). Wildlife in Utah are managed by the Utah Division of Wildlife Resources (UDWR) with a mission “...to serve the people of Utah as trustee and guardian of the state’s wildlife.” To this end, the State of Utah has established a structure to guide management of wildlife in the state through the Utah Wildlife Board and several Regional Advisory Committees. UDWR has established goals and objectives to help keep focused on their mission (UDWR n.d). While UDWR is responsible for wildlife management, the public land agencies (BLM, Forest Service, and State Institutional Trust Lands Administration) are responsible to manage habitat and do so under close partnerships with UDWR. The exception being the National Park Service who has wildlife management authority within park boundaries.

It is believed the first inhabitants of the Iron County region hunted animals and gathered edible plants. Pictographs of bighorn sheep, elk, deer, and other animals show their importance to indigenous cultures. Mormon settlers lived off the land and hunted for food, fiber or clothing, predator or nuisance control, and sport. These traditions are part of the custom and culture of Iron County and are honored today.

Places in the County have been named after certain animals. “Buckhorn Springs was a well-known watering place along the old California wagon road and was also a favorite waterhole for desert bighorn sheep, antelope, mule deer, and other wildlife” (Seegmiller 1998).

“There are many stories of early settlers fighting rabbits. One favorite method was a competitive daylong community rabbit hunt which pitted hunters from the west side of town against those from the east, or perhaps the north against the south, with the losing side providing dinner and a dance for the winners” (Seegmiller 1998).

Pitman and Robertson Act of 1934

The Pittman–Robertson Act took over a pre-existing 11% excise tax on firearms and ammunition. Instead of going into the U.S. Treasury as it had done in the past, the money is kept separate and is given to the Secretary of the Interior to distribute to the States. The Secretary determines how much to give to each state based on a formula that takes into account both the area of the state and its number of licensed hunters. States must fulfill certain requirements to use the money apportioned to them. None of the money

from their hunting license sales may be used by anyone other than the state's fish and game department. Plans for what to do with the money must be submitted to and approved by the Secretary of the Interior. Acceptable options include research, surveys, management of wildlife and/or habitat, and acquisition or lease of land. Once a plan has been approved, the state must pay the full cost and is later reimbursed for up to 75% of that cost through P-R funds. The 25% of the cost that the state must pay generally comes from its hunting license sales. If, for whatever reason, any of the federal money does not get spent, after two years that money is then reallocated to the Migratory Bird Conservation Act. In the 1970s, amendments created a 10% tax on handguns and their ammunition and accessories as well as an 11% tax on archery equipment. It was also mandated for half of the money from each of the new taxes to be used to educate and train hunters by the creation and maintenance of hunter safety classes and shooting/target ranges.

Endangered Species Act (ESA) of 1973

The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. It is administered by the U.S. Fish and Wildlife Service and the Commerce Department's National Marine Fisheries Service (NMFS). The FWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon. Under the ESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened. For the purposes of the ESA, Congress defined species to include subspecies, varieties and, for vertebrates, distinct population segments.

"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 more rare 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.).

Current Conditions/Programs

Primary authority for wildlife management and planning rests with the State of Utah. The Utah Division of Wildlife Resources develops management plans for species of wildlife, and coordinates objectives with federal agencies. The federal land agencies manage habitat for wildlife and closely coordinates with DWR and the USFWS to ensure management prescriptions are compatible with the wildlife.

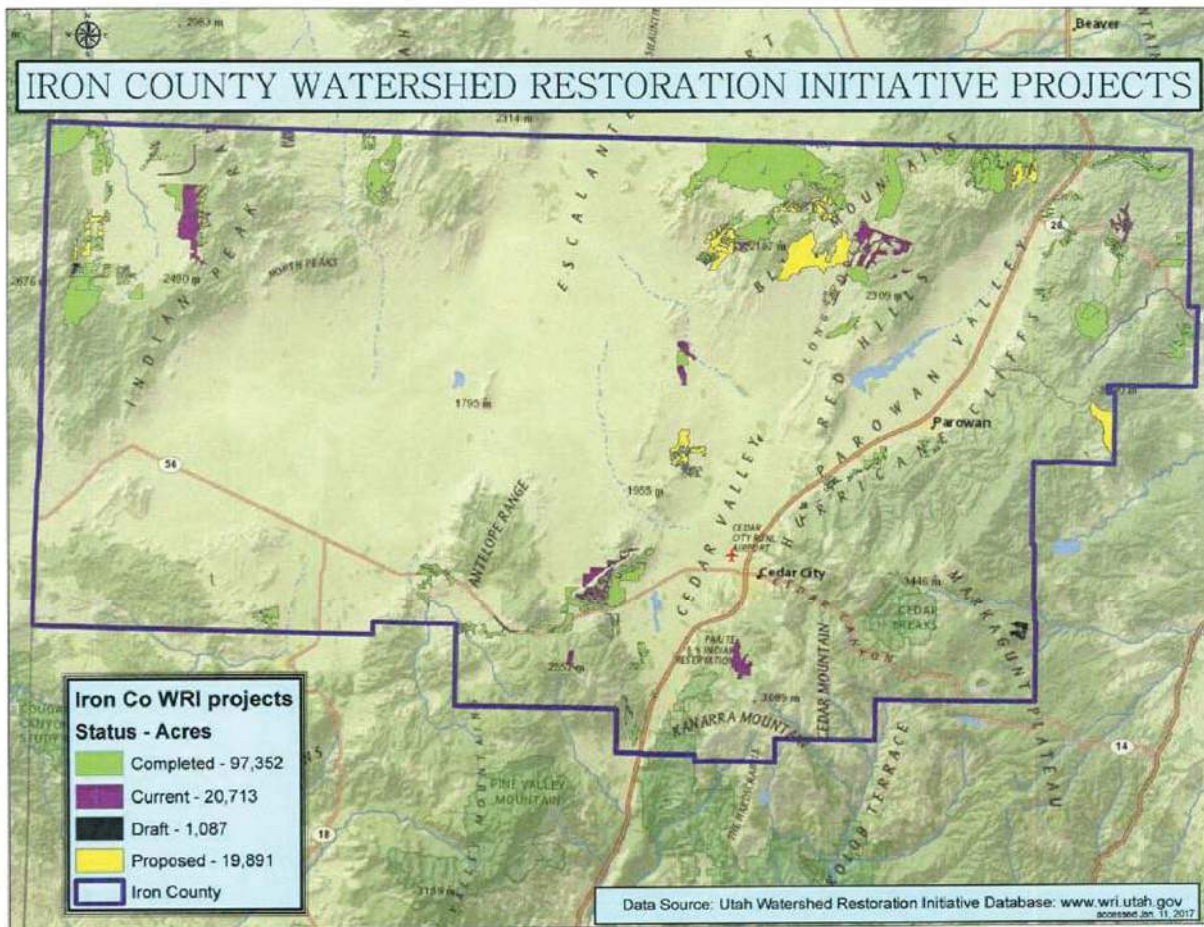
There are many aspects of wildlife management in Iron County due to the number of species and diverse nature of the county. Issues to consider are development and human population growth, habitat types (lush mountains vs dry deserts), changing habitats (encroaching plant communities), status of crucial ranges, migration, impacts of predation, etc. Populations of many species of wildlife have declined over the past 30 years due to a variety of factors. Adequate measures are needed to recover and conserve species populations and habitats of concern or some of these species may become federally listed in the future. Best management practices for wildlife focus on principles and actions that allow people and wildlife to coexist, and are creating or maintaining healthy wildlife populations and habitat. UDWR, in conjunction with local sportsmen groups and interested parties have developed species management plans

to provide guidance and direction for number of species in the State and County. These plans are taken through a public process to gather input from interested constituents and presented to the Utah Wildlife Board for approval. Species in Iron County covered by these plans include wild turkey, chukar, greater sage-grouse, mule deer, elk pronghorn, Utah prairie dog, beaver, black bear, cougar, bobcat, and wolf. A few important programs that provided funding and partnerships to properly manage habitat and wildlife include:

Watershed Restoration Initiative

To help improve wildlife habitat and range conditions, the Watershed Restoration Initiative is a partnership driven effort driven to conserve, restore, and manage ecosystems in priority areas across the state to enhance wildlife and biological diversity, water quality and yield for all uses, and opportunities for sustainable uses. It is a Utah Partners for Conservation and Development sponsored initiative that serves as a clearinghouse to coordinate and share participants' conservation concerns and priorities, discuss and implement solutions, and promote an atmosphere of collaboration among landowners, private organizations, and state and federal agencies. Examples of projects in Iron County that have benefited from this initiative are:

Figure 1. WRI Iron County Projects.



Source: Utah Watershed Restoration Initiative 2017

Utah Conservation Permit Program

Utah's Conservation Permit Program provides benefits to all Utah hunters. What started in the early 1980s as a creative approach to raise needed funds for wildlife conservation has blossomed into a well-regulated program that raises millions of dollars each year. Those dollars are then invested back into wildlife conservation. This novel approach to funding conservation has allowed the Utah Division of Wildlife Resources (DWR) to seize opportunities, grow the state's wildlife populations and improve wildlife management. Conservation permits represent only a small percentage of total permits issued, but they can produce big results. The program is regulated by Administrative Rule R-657-41, which limits conservation permits to approximately five percent of the number of permits issued to the public and allows a maximum of eight conservation permits per hunt. After the Utah Wildlife Board approves specific permits and numbers, the DWR partners with wildlife conservation organizations to sell the permits. Conservation organizations that currently participate in the program include Mule Deer Foundation (MDF), National Wild Turkey Federation (NWTf), Rocky Mountain Elk Foundation (RMEF), Safari Club International (SCI), Sportsmen for Fish and Wildlife (SFW), Utah Bowmen's Association (UBA) and Utah Foundation for North American Wild Sheep (Utah FNAWS), who then utilize the funds for conservation related projects such as wildlife guzzlers, vegetation restoration, p/j removal, trap and translocations, etc. In 2016 an estimated \$2.25 million were spent on conservation projects in Utah (Utah's Conservation Permit Program, Fiscal Year 2016 Annual Report).

Pittman and Robertson Funds

In 1937, Congress passed the Pittman-Robertson Wildlife Restoration Act. The Pittman-Robertson Wildlife Restoration grant programs, including Section 4(c) Hunter Education and Safety program (Basic Hunter Education), and Section 10 Enhanced Firearm and Bowhunter Education and Safety Program (Enhanced Hunter Education), are key components of the nation's cooperative conservation efforts for wildlife and their habitats. These programs not only help to meet hunter education, safety and shooting sports goals, but also support the Department's Resource Protection Strategy to "sustain biological communities on managed and influenced lands and waters" by providing financial and technical assistance to states, commonwealths, and territories (states) for:

- Restoration, conservation, management, and enhancement of wild bird and mammal populations;
- Acquiring and managing wildlife habitats;
- Providing public use that benefit from wildlife resources;
- Educating hunters on conservation ethics and safety; and
- Constructing, operating, and managing recreational firearm shooting and archery ranges.

Through a permanent-indefinite appropriation, states (including commonwealths and territories) receive funds, provided they pass legislation to ensure that hunting license fees are used only for administration of the state fish and wildlife agency (assent legislation). The Pittman-Robertson Wildlife Restoration Act includes an apportionment formula that distributes program funds to States based on the area of the state (50%) and the number of paid hunting license holders (50%). No state may receive more than 5 percent, or less than one-half of one percent of the total apportionment. In 2012 Utah received over \$6.6 million from PR funds. Table 1 are the license sales over a 12 year period.

Table 1. Income from Sales of Licences

LICENSE	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
COMBINATION FISHING HUNTER ED HUNTING ONE DAY FISHING SEVEN DAY FISHING THREE DAY FISHING	\$52,623	\$59,299	\$86,016	\$142,404	\$150,255	\$152,220	\$151,464	\$153,403	\$159,871	\$164,607	\$170,861	\$172,899
	\$208,914	\$247,443	\$231,802	\$208,063	\$213,833	\$210,372	\$204,011	\$215,009	\$213,145	\$225,634	\$220,604	\$217,055
			\$7,331	\$11,318	\$12,233	\$12,137	\$11,614	\$11,686	\$12,065	\$12,441	\$10,948	\$11,304
	\$22,813	\$22,433	\$21,601	\$38,024	\$33,896	\$31,442	\$28,756	\$28,243	\$32,087	\$32,931	\$32,594	\$33,436
	\$107,193	\$104,204	\$101,991	\$92,123	\$97,766	\$95,465	\$91,192	\$93,122	\$92,232	\$38,608		
	\$43,922	\$42,741	\$42,801	\$40,639	\$41,545	\$40,467	\$38,846	\$39,722	\$39,764	\$26,474	\$15,922	\$15,935
										\$51,910	\$85,845	\$87,149
Grand Total	\$435,465	\$476,120	\$491,542	\$532,571	\$549,528	\$542,103	\$525,883	\$541,185	\$549,114	\$552,605	\$536,774	\$537,778

Source: UDWR 2017

Dedicated Hunter Program

In 1995 the state of Utah implemented the Dedicated Hunter Program. The program began as an experimental project offering hunters the opportunity to hunt deer during the archery, rifle and muzzleloader seasons. In return participants of the program would provide service hours, attend RAC meetings and agree to only harvest two deer during their three-year participation in the program. For many sportsmen this was the program they had been looking for. It would provide them with their yearly hunting and outdoor needs, while at the same time helping the Division of Wildlife with many projects that were costing taxpayers thousands of dollars. The program is available to both residents and non-residents who join at least a week or so before the Bucks, Bulls, and Once-in-a-lifetime draw results are posted. Upon joining the program each participant must attend a game management and associated ethics course. Each participant of the program must donate eight hours per year for service projects throughout the state. Projects may include, seeding, tree planting, building bird traps, helping kids on free fishing day, etc.

Wildlife Species & Management

Wildlife species found in Iron County include big game, upland game, migratory birds, raptors, small mammals, predators, and some special designation species. Agencies categorize important habitats with terms such as “critical”, “crucial” or “priority”. Federal law defines “critical habitat” under the Endangered Species Act as “a specific geographical area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection”. Critical habitat may include areas that are not currently occupied but will be necessary for the recovery of the species. “Crucial habitat” has no regulatory or legal meaning, nevertheless, agencies frequently assign this moniker to high value areas used by a species in part or all of its natural life cycle, such as “crucial deer winter range”. If “crucial” habitat is lost, those individuals living in that location may be displaced or die off, but regionally the species is unaffected. “Priority Habitat” is neither critical nor crucial, but agencies have given special management prescriptions to those lands where important species may live, impairing all other uses of that land which may be deemed impactful to the species in question. All these habitat designations have been used in the management of public lands in ways

detrimental to other species, the principle of multiple use, granted ROW's, private property rights, land access, and historic use of that land. These prescriptive areas are notoriously imprecise, inaccurately mapped and/or broadly defined which has consequential impacts on nearby uses and assets. Buffer zones are frequently applied to important habitat features which may include areas completely unnecessary, unused, or inconsequential to the survival of that species, yet heavily impacting other important uses.

Game Animals

Mule Deer

Mule deer are the most abundant big game animal and can be found in a variety of habitats throughout Iron County. Mule deer feed on forbs, grasses, and shrubs. Shrubs are the primary food source during the fall and winter months. They are generally migratory, moving between high elevation summer and low elevation winter ranges.

Deer are managed by the UDWR via a statewide management plan and herd unit plans. Each of these unit plans have been reviewed and approved by the Utah Wildlife Board. In many cases, herd unit plans have been revised multiple times since their initial development in the mid-1990s. The plans establish target herd-size objectives for each herd unit, which DWR and the Utah Wildlife Board then strive to meet through harvest adjustment and other mechanisms. Habitat needs and other local management considerations are also addressed in these unit plans.

Iron County has a draft plan to assist in management of crucial deer wintering range along the Hurricane Cliffs portion the Panguitch Lake Management Unit deer herd. Mule deer winter ranges stretches along the I-15 corridor. Fencing along the highway has fragmented their winter range, so the DWR and BLM have worked to enhance and protect the remaining deer winter ranges in the area. The focus of this plan is to identify opportunities where Iron County can be of assistance to the agencies (Iron County 2011). The Wildlife CRMP adopts the goals and policies of this plan as identified later in this report.

Pronghorn

Pronghorn are also common in Iron County on open and flat terrain. Pronghorn feed primarily on forbs during spring and summer months and shrubs during winter.

Rocky Mountain Elk

Elk are present in Iron County year round. Large concentrations are found in the western part of the county and in the Cedar Mountain/Panguitch Lake areas. Elk are adept at traveling significant distances and will move from one mountain range to another causing population swings which require constant adaptive management.

Bighorn Sheep

Bighorn sheep were once abundant throughout the state as evidenced by their prevalence in ancient rock art, but were nearly extirpated after the arrival of early white settlers. Iron County has no populations of wild sheep. There are few areas suitable as sheep habitat, characterized by rugged mountains with steep talus slopes and remote canyons, but not all suitable habitats are good potential transplant locations due to human encroachment, domestic livestock grazing, and other factors.

Black Bear

Black bears are native to and common in the eastern portion of Iron County. Black bear observations usually occur at elevations between 7,000 and 10,000 feet. Black bears are omnivores and hibernate for 5 to 7 months over winter.

Cougars

Cougars, or mountain lions, are found all over Iron County, but rarely observed. Their movements typically mirror those of mule deer, their primary prey. Cougar populations are closely monitored and are hunted on a limited basis.

Furbearers

A host of small mammals can be found in Iron County including furbearer species like the gray fox, kit fox, red fox, bobcat, raccoon, badger, ringtail, spotted skunk, striped skunk, American marten, weasels, mink, and beaver. Furbearer populations are managed pursuant to state regulations.

Upland Game Birds

Upland game birds found in Iron County include the greater sage-grouse, dusky grouse, mourning dove, ring-necked pheasant, Rio Grande and Merriam's wild turkey, and chukar partridge. Habitat conditions and population fluctuation for these species is dependent on annual climate patterns. Warm, dry spring weather correlates to increases in populations while cold wet weather may depress population numbers. The DWR has placed several bird guzzlers to augment habitat in the dry desert ranges. The greater sage grouse is a sensitive species in Utah and discussed elsewhere in this report.

Raptors

Iron County is home to a few species of raptors including hawks, eagles, owls, and falcons. These raptors are protected species under the Migratory Bird Act. Raptors serve as an indicator of environmental quality because of their position at the top of their respective food chain. There are a variety of suitable raptor habitats throughout Iron County

Miscellaneous Migratory Birds

Iron County is also part of the flyway pattern of a variety of migratory bird species, including numerous hunt-able species of waterfowl. Human development in Iron County has not had a significant impact on the migratory routes or habitats of these species, and in fact, human water developments are the primary source of waterfowl habitat in the county.

Primary Sensitive Species of Utah found in Iron County

Greater Sage-Grouse

The Greater Sage-Grouse Conservation Plan in Utah (DWR 2013a) was developed to help eliminate threats facing the greater sage-grouse while balancing the economic and social needs of Utahans through a coordinated program that provides for 1) voluntary programs for private, local government, and SITLA lands; and 2) cooperative regulatory programs on other state and federally managed lands. Iron County has developed its own greater sage-grouse management plan (IC Plan) patterned after the state plan to protect, maintain, and enhance the existing habitat, as well as to encourage opportunities to increase habitat. The IC Plan is designed to minimize the

threats facing the sage-grouse while balancing the economic and social needs of the residents of Iron County through coordinated programs with the State and Federal officials. The major emphasis of the IC Plan is to encourage an incentive-based program for private, county, and School and Institutional Trust Lands Administration (SITLA) lands, and reasonable and cooperative regulatory programs on other state and federally managed lands.

Iron County is the extreme south-most boundary for sage grouse. “There are three defined Sage-grouse Management Areas (SGMA) in the county – Hamlin Valley, Bald Hills, and Panguitch. The IC Plan is anchored around efforts to conserve the species within three specifically identified SGMAs. The SGMAs represent the best opportunity for high-value and focused conservation efforts for the species in Iron County” (Iron County 2013).

Federally Listed Threatened or Endangered Species

Utah Prairie Dog (UPD)

The Utah prairie dogs are a federally listed threatened species under the federal Endangered Species Act. The UPD was listed as an endangered species in 1973, and reclassified as threatened in 1984 due to an expanding population. Authority to manage UPDs rests with the U.S. Fish and Wildlife Service. Recent Utah prairie dog population trends appear to be stable to increasing. Threats include habitat loss and fragmentation, plague, unauthorized take, and disturbance from recreational and economic land uses (U.S. Fish and Wildlife Service 2012). The USFWS is currently working on a new plan general conservation plan that will incorporate and use many of the stipulations of the state plan.

Mexican Wolf

There are no areas designated in southern Utah for Mexican wolves at this time, however, the USFWS has proposed enlarging the habitat boundaries to include parts of the eastern part of the county. The state has a wolf management plan that states their position to remove any gray or Mexican wolves that move into the state outside of recovery areas. Iron County is in agreement with this state plan.

California Condor

The California condor is the largest North American land bird. It became extinct in the wild in 1987 (all remaining wild individuals were captured), but the species has been reintroduced as an experimental population to northern Arizona and southern Utah (including the Grand Canyon area and Zion National Park), the coastal mountains of central and southern California, and northern Baja California. The species is listed as critically endangered. It has been spotted in the extreme southeastern portion of the County. Management of the condor is under the USFWS who have developed recovery plans that provide guidance to federal and state agencies.

Mexican Spotted Owl

This owl has been listed as a threatened species under the Endangered Species Act since 1993. Efforts to recover the owl and ultimately remove it from the threatened list include maintaining and increasing habitat across the range, maintaining population numbers and developing a long range management plan. The critical habitat identified in Iron County includes the area east of Kanarrville, mainly in the sandstone canyon regions.

Southwestern Willow Fly Catcher

The southwestern willow flycatcher is a small insect eating bird that requires deciduous thickets, especially willows to breed. It was listed as endangered under the ESA in 1995. The only area in Iron County declared as critical habitat is the Duncan Creek drainage between Cedar City and New Castle. The major recovery effort is to insure adequate willows are available along the streams.

A complete list of sensitive species in Iron County is found in Appendix 1. It contains the species, designation, and habitat occurrence.

Economic Considerations

Iron County is fortunate to have two premiere elk hunting units in the nation, the Southwest Desert unit and the Panguitch Lake unit. The hunting permits are sought after by hunters often waiting up to 20 years to draw a permit. Deer hunting in the County in all units is also known for its trophy sized mule deer, and the “deer hunt” has evolved into a local tradition where family and friends camp in favorite areas and enjoy hunting and comradery. The following table demonstrates the economic benefits from hunting in the County:

Table E-1. The 2011 Economic Impacts of Fishing, Hunting and Watchable Wildlife Recreation

	Retail Sales	Output	Salaries and Wages	Jobs	State and Local Tax Revenue	Federal Tax Revenue
Freshwater Fishing:	\$531,463,428	\$865,095,283	\$268,032,327	7,690	\$53,944,520	\$59,869,713
Residents Only:	\$454,528,553	\$736,093,907	\$225,104,521	6,420	\$44,478,213	\$50,194,979
Non-Residents Only:	*\$76,934,875	*\$129,001,376	*\$42,927,806	*1,270	*\$9,466,307	*\$9,674,734
Hunting:	\$603,643,848	\$1,021,837,098	\$343,199,258	11,496	\$69,780,417	\$78,164,744
Residents Only:	\$436,943,592	\$736,425,703	\$238,774,252	8,341	\$49,394,108	\$55,021,819
Non-Residents Only:	*\$166,700,257	*\$285,411,395	*\$104,425,006	*3,156	*\$20,386,309	*\$23,142,925
Wildlife Viewing:	\$585,405,471	\$1,001,246,953	\$321,700,679	9,779	\$59,216,596	\$72,123,553
Residents Only:	\$319,662,801	\$541,654,111	\$169,161,801	4,902	\$32,311,408	\$38,369,676
Non-Residents Only:	\$265,742,669	\$459,592,842	\$152,538,878	4,877	\$26,905,188	\$33,753,877
Total:	\$1,720,512,747	\$2,888,179,334	\$932,932,264	28,965	\$182,941,533	\$210,158,010
Residents Only:	\$1,211,134,946	\$2,014,173,721	\$633,040,574	19,662	\$126,183,729	\$143,586,474
Non-Residents Only:	\$509,377,801	\$874,005,613	\$299,891,690	9,303	\$56,757,804	\$66,571,536

* = Sample size is small and results should be interpreted with caution.
 ** = Sample size is too small to report reliably.

- a. The US Fish and Wildlife Service found that Utah residents and non-residents spent over \$1.7 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).
- b. Revenue from hunting and other wildlife recreation is generated for Iron County through harvest permits, pursuit permits, and guide fees.

Existing Goals and Policies

- a. Goal: Promote and facilitate public and private recreational, cultural, wilderness and wildlife opportunities compatible with local custom and culture.
- b. Policy: The Iron County Natural Resources Advisory Committee will monitor Federal and State Land enforcement programs as well as Wildlife Management and Natural resource enforcement programs and insure that those programs comply with all County, State, and Federal laws. The Natural Resources Advisory Committee will report periodically to the County Board of Commissioners.
- c. Pol. LU 4.4, Iron County General Plan: Coordinate with the Division of Wildlife Resources on the maximum and minimum hunting days for big game and harvest levels.

Desired Future Conditions

The follow are issues identified by stakeholders from the sportsman’s groups, livestock grazers, agriculture producers, etc. Each issues are developed into a policy statements as follows.

Utah Prairie Dogs

Issue 1. UPDs on Private Lands Not Counted Towards Recovery – Currently ESA (as interpreted by the FWS) does not allow animals on privately owned lands to be counted towards recovery unless there is a mechanism, such as conservation easements or ordinances, in place to protect them. The UPD numbers on private lands far exceed those on protected lands and also surpasses the delisting goals currently in place, however since they are not protected with regulations, they cannot count towards delisting.

GOAL	OBJECTIVE	POLICY
Delist the UPD.	<p>Explore alternatives to manage UPDs on private lands that do not place hardships on private land owners or development, but allows continued UPD sustainability in the County.</p> <p>Seek ways to include UPDs on private lands to count towards delisting goals.</p>	<p>Iron County supports identifying viable alternatives to managing UPDS on private lands that do not require mitigation, and that allows such UPDs to be counted towards delisting goals.</p> <p>Iron County supports translocation of UPDs from private lands to public lands to support population viability.</p> <p>Support exploring ways to protect UPDs on private lands that do not post a hardship or economic threat to landowners, but meets protection criteria by the FWS to count those animals towards delisting.</p>

Deer

Issue 2. Deer Wintering Areas – Concerns are expressed that deer winter range conditions have deteriorated over the past several years leaving deer vulnerable to starvation and predation during severe winters. Some concerns expressed are inadequate range and poor range conditions, vehicles driving cross country (off road) during winter months, and lack of adequate areas.

GOAL	OBJECTIVE	POLICY
<p>Improve range conditions.</p> <p>Minimize stress on deer in crucial deer winter habitat.</p> <p>Protect crucial deer winter ranges through conservation programs.</p> <p>Expand Deer Winter Range.</p>	<p>Planning to improve decadent sagebrush conditions and P/J stands that are encroaching into winter areas through mechanical vegetation treatment projects.</p> <p>Partner with other projects such as wildland urban interface and watershed improvement.</p> <p>Limit off-road vehicle travel in crucial deer winter ranges to hunt shed antlers, and destroys important sagebrush stands.</p> <p>Limit vehicle travel in crucial deer winter areas during critical times of the year, especially near cities.</p> <p>Erect additional deer watching areas near crucial winter ranges.</p> <p>Work with UDWR to identify programs that promote conservation through easements make them available to landowners.</p> <p>When and if UDOT adds an exit between Enoch and Summit, work with them to include a deer crossing that allows more accessible access to the west side of the interstate.</p> <p>Work with landowners and DWR to address increased crop depredation if a</p>	<p>Iron County supports range improvement projects in crucial deer winter ranges to sustain viable - huntable populations.</p> <p>Iron County supports limiting off-road travel of vehicles in crucial deer winter ranges.</p> <p>Iron County supports limiting travel in crucial deer winter ranges to maintain important sagebrush stands, but allow permitted users access for livestock management.</p> <p>Iron County supports conservation programs that protect and enhance crucial deer winter ranges.</p> <p>Support efforts to expand deer wintering ranges in the County as long as other impacts can be adequately addressed.</p>

crossing is considered.

Issue 3. Highway Mortality – Vehicle/deer collisions on certain high deer use areas considered a safety hazard, especially during migration periods. More safety measures need to be considered to reduce such collisions. Sportsmen have contributed to place flashing signs to warn motorists the risk of deer collisions in affected areas. However, a maintenance program should be considered to keep signs operational. Also, excessive speed limits can also contribute to more collisions.

GOAL	OBJECTIVE	POLICY
<p>Reduce vehicle/deer collisions in deer migration and winter use areas.</p>	<p>Placement of flashing signs and maintenance of such signs to keep them operational. Partner with sportsman groups and DWR to develop a plan for placement and maintenance.</p> <p>Limit speed along high collision areas during migration seasons to reduce collisions.</p> <p>Fencing west side of I-15 from Paragonah to Buckhorn Flat with deer-proof fence. Work with DRW and UDOT.</p>	<p>Iron County supports meeting with DWR and Sportsman to identify alternatives to reduce vehicle/deer collisions in the County.</p>

Issue 4. Development in Deer Wintering Habitat – Concern that development areas may negatively impact deer winter areas and place more stress on deer during critical times of the year, and that little consideration is given to deer winter range during development planning and approval at local planning levels.

GOAL	OBJECTIVE	POLICY
<p>Allow deer movement in new developments where critical habitat is an issue.</p>	<p>Request DWR input and/or recommendations to Iron County Planning and Zoning to mitigate impacts in crucial deer winter ranges.</p> <p>Iron County and DWR develop agreement regarding consultation on proposed development projects within crucial deer winter ranges.</p>	<p>Support recommendations as specified in proposed agreement.</p>

Elk

Issue 5: Winter Range – Concern expressed regarding adequate PJ removal projects to improve and expand elk wintering areas

GOAL	OBJECTIVE	POLICY
Improve elk winter habitat through PJ removal	Develop plans in elk wintering areas to improve vegetation by treatment of PJ stands via mechanical and controlled burn methods.	Iron County supports range improvement projects in elk winter ranges to sustain viable - huntable populations.

Issue 6. Conflict between Elk and Livestock – Conflicts between elk and livestock increases as elk populations increase. Livestock owners feel the UDWR needs to adhere to herd management objectives and keep numbers of elk within established objectives through hunting. Conflict is especially noticeable during drought years or in new vegetation treated areas. The UDWR addresses this issue in the Elk Management Plan, but sometimes actions taken to move elk are too late to achieve desired results.

GOAL	OBJECTIVE	POLICY
Resolve conflicts between elk and livestock quickly and within economic constraints.	Follow options provided for in the Elk Management Plan to resolve such conflicts. Iron County to sponsor meetings with affected parties to further resolve conflicts.	Iron County supports both the livestock and wildlife community as both are very important to the economic and cultural values of the County. Iron County will sponsor conflict resolution meeting between affected parties to explore possible resolutions.

Issue 7. Adequate Water Distribution – Wild horses in the Southwest Desert hunting unit are over the established appropriate management levels and have become an extremely negative factor on the ecosystem and other wildlife. They congregate around what few water sources there are and drive off wildlife. Sportsman have expressed concern and suggest the DWR consider placing more water sources (guzzlers) scattered around the area to reduce dependency on springs and other water supplies. Guzzlers would have to have a capacity to store large volumes of water, and not be available to wild horses.

GOAL	OBJECTIVE	POLICY
Provide for adequate water supplies to elk in Southwest Desert hunting unit.	Work with UDWR and sportsmen's groups to identify more guzzler opportunities in the Southwest Desert unit in Iron County.	Iron County supports efforts for place guzzlers in the Southwest Desert unit to reduce pressures on springs and riparian areas.

Pronghorn

Issue 8. Antelope and Alternate Energy (solar) – With the advent of solar energy development in the county, sportsman have expressed a concern that continued growth may have an impact on pronghorn habitat.

GOAL	OBJECTIVE	POLICY
Minimize loss of critical habitat for pronghorn.	When considering development opportunities in the County that may impact critical wildlife habitat, Iron County will work with DWR to address issues and concerns.	Although Iron County supports development opportunities in the County that provide economic growth, when such development has the potential to negatively impact critical habitat the County will work with DWR to address those concerns.

Other

Issue 9. Hunter Access – Concern has been expressed by hunters about landowners closing roads across private lands that access public lands where they have been used by the hunters for generations.

GOAL	OBJECTIVE	POLICY
Provide guidance to public and landowners regarding prescriptive road statute.	Make known state statutes regarding public use of private roads that meet certain criteria for being considered a public road.	Iron County is required to support all state statutes including the Prescriptive Road Statute (Utah Code 72-5-104).

Issue 10. Wolves – Ensure policies are in place to support DWRs existing Wolf Management Plan, and current county resolution that encourages delisting of the gray wolves and disallowing Mexican wolves to move or be translocated into the County. (see Wildlife CRMP).

GOAL	OBJECTIVE	POLICY
Oppose movement of wolves in the County either by translocation or natural migration.	Reaffirm existing Utah Wolf Management plan and County Resolution 2012-1 Reaffirm County resolution that prohibits introduction of wolves in the County.	Reaffirm support for the Utah Wolf Management Plan and Iron County Resolution 2012-1. Oppose any federal proposal to establish populations of either Mexican wolves or gray wolves in southern Utah.

Issue 11. Predators and Human Safety - On occasion mountain lion, black bears, or coyotes pose a threat to human safety, especially in camping areas.

GOAL	OBJECTIVE	POLICY
Reduce threat potential from mountain lion, bear, and coyotes.	DWR have adequate policy and response human safety issues involving big game.	Iron County supports immediately removing mountain lions, black bears, or coyotes when posing a human safety risk.

References

1. Utah Wildlife Action Plan (A plan to keep native species off the threatened and endangered species list)
2. Utah Wildlife Action Plan
3. [Utah Pronghorn Statewide Management Plan \(2009\)](#)
4. Utah Comprehensive Wildlife Conservation Strategy
5. [Utah Prairie Dog Management Plan \(2015\)](#)
6. [Iron County Greater Sage Grouse Resource Plan \(2013\)](#)
7. [Iron County Draft Deer Winter Range Resource Plan \(2011\)](#)
8. [Iron County Wild Free-Roaming Horses and Burros Resource Plan \(2016\)](#)
9. [USFWS Utah Prairie Dog Revised Recovery Plan \(2012\)](#)
10. Public Lands and Utah Communities: A Statewide Survey of Utah Residents 2008
11. The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada, Technical Review 10-01, September 2010
12. Utah's Conservation Permit Program, Fiscal Year 2016 Annual Report, https://wildlife.utah.gov/pdf/conservation_permit_report_2016.pdf
13. The Prescriptive Road Statute, Utah Code 72-5-104, <http://propertyrights.utah.gov/the-prescriptive-road-statute/>
14. Iron County Resolution 2012-1 Wolves
15. Endangered Species Act of 1973
16. FY 2013 Budget Justification, Wildlife Restoration, USFWS

Appendix – List of Species of Special Concern

Common Name	Scientific Name	Management Designation(s)	Habitat Association	Occurrence in Planning Area
<i>Fish</i>				
Bonneville cutthroat trout	<i>Oncorhynchus clarkii utah</i>	Utah species of concern	Cool water streams	Occupied and historical habitat present; Little Creek in Iron County plus historical habitat.
Least chub	<i>Iotichthys phlegethontis</i>	Utah species of concern	Rivers, streams, springs, ponds, marshes, and swamps	Special management under conservation agreement
Southern leatherside chub	<i>Lepidomeda aliciae</i>	Utah species of concern	Pools and low-velocity runs of creeks and small- to medium-sized rivers	Sevier River drainage; occurs in Bear Creek

Mollusks				
Brian Head mountain-snail	<i>Oreohelix parawanensis</i>	Utah species of concern	High elevations near tree line	One location in Iron County.
Amphibians				
Arizona toad	<i>Bufo microscaphus</i>	Utah species of concern	A variety of water habitats	Eastern Iron County; 1997 record.
Birds				
Bald eagle	<i>Haliaeetus leucocephalus</i>	Utah species of concern	Agricultural, mixed conifer, sagebrush semi-desert, riparian	Winter populations; one breeding pair in Iron County.
Black swift	<i>Cypseloides niger</i>	Utah species of concern	Waterfalls that occur from 6,000 to 11,500 feet in elevation	Rare migrants.
Burrowing owl	<i>Athene cucularia</i>	Utah species of concern	Salt desert shrub or shrub steppe habitat with open grasslands	Documented breeding and nesting in Iron County.
California condor	<i>Gymnogyps californianus</i>	Nonessential, experimental population east of Interstate 15; federally endangered west of Interstate 15	Mountainous country, especially rocky and brushy areas with cliffs, forage over large areas	Historical habitat, currently use area for foraging.
Ferruginous hawk	<i>Buteo regalis</i>	Utah species of concern	Flat, rolling terrain in grasslands and shrub steppe regions, such as salt desert shrub, sagebrush semi-desert. Occurs only at periphery of pinyon-juniper woodlands or other forests.	Documented in Iron County; breeding, nesting, wintering.
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Utah species of concern	Sagebrush semi-desert	Documented in Iron and County; breeding, nesting, wintering.
Long-billed curlew	<i>Numenius americanus</i>	Utah species of concern	Salt desert shrub, sagebrush semi-desert	Documented in Iron and County.
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Federal threatened	Riparian, cliffs, mixed conifer	Documented in eastern Iron County.
Northern goshawk	<i>Accipiter gentilis</i>	Utah species of concern	Ponderosa pine, open riparian areas	Iron County breeding, nesting and wintering

Short-eared owl	<i>Asio flammeus</i>	Utah species of concern.	Grasslands in sagebrush semi-desert	Observed in Iron County.
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Federal endangered	Riparian	Documented in Iron County.
Spotted owl	<i>Strix occidentalis</i>	Federal endangered	Riparian, cliffs, mixed conifer	Iron County
Mammals				
Dark kangaroo mouse	<i>Microdipodops megacephalus</i>	Utah species of concern	Sandy soils in salt desert shrub, sagebrush semi-desert	Documented in Iron County.
Fringed myotis	<i>Myotis thysanodes</i>	Utah species of concern	Desert shrub, sagebrush semi desert, pinyon-juniper woodlands, mixed conifer	Iron County
Kit fox	<i>Vulpes macrotis</i>	Utah species of concern	Salt desert shrub, sagebrush semi-desert	Iron County.
Pygmy rabbit	<i>Brachylagus idahoensis</i>	Utah species of concern	Sagebrush semi-desert	Iron County.
Spotted bat	<i>Euderma maculatum</i>	Utah species of concern	Desert shrub, sagebrush semi-desert, montane	Iron County.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Utah species of concern	Sagebrush semi-desert, pinyon-juniper woodland, mountain shrub and mixed conifer	Iron County.
Utah prairie dog	<i>Cynomys parvidens</i>	Federal threatened	Open areas and grasslands in salt desert shrub, sagebrush semi-desert	Iron County.

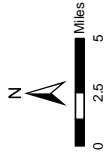
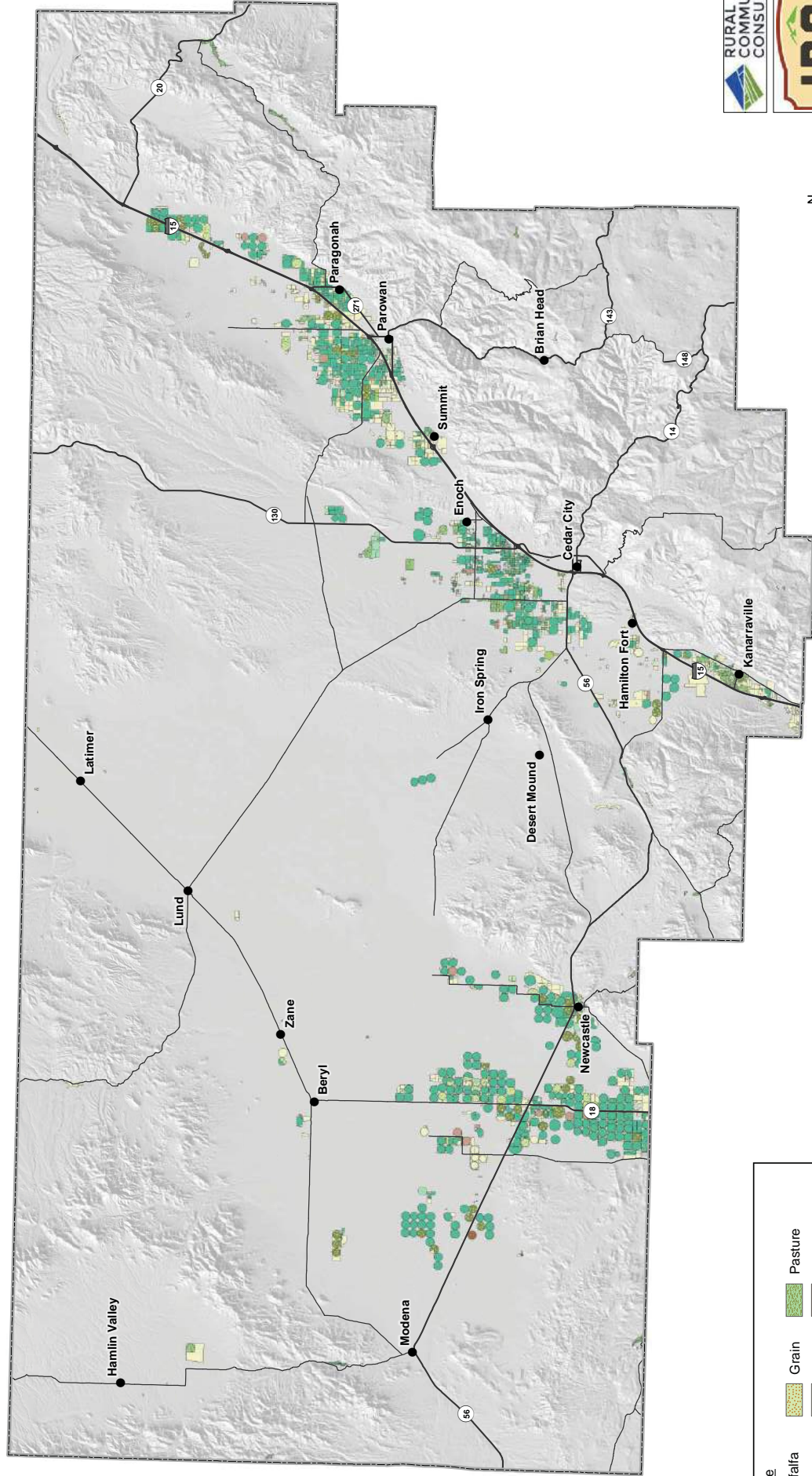
Source: BLM Draft RMP 2016

BLM Bureau of Land Management
HUC Hydrologic Unit Code

Maps

The following maps were derived from the GIS files that were provided online during the public planning process. Updated information may be available with Iron County mapping staff.

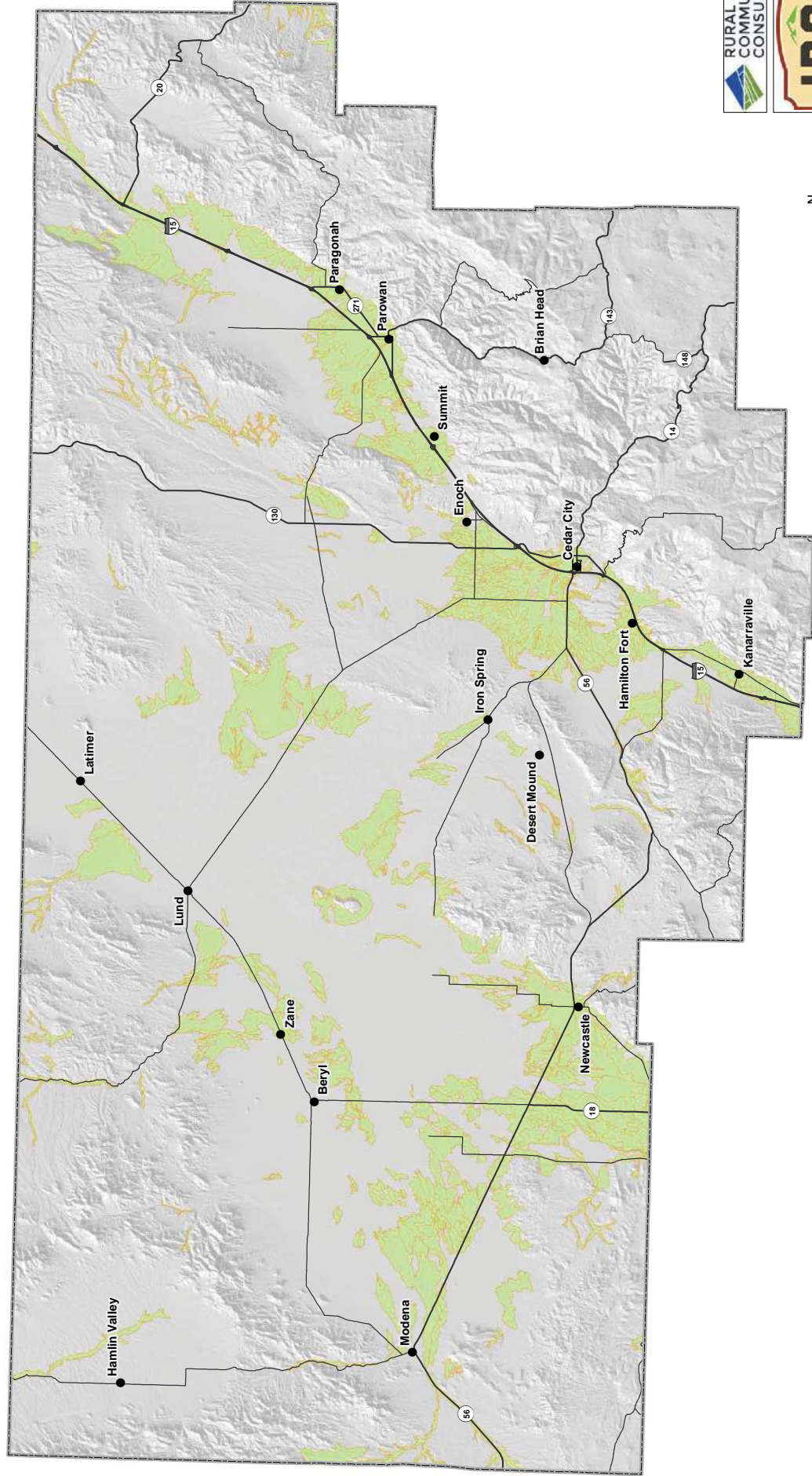
Iron County Agriculture Crop Type



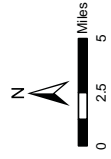
Crop Type	
Alfalfa	Pasture
Grain	Potatoes
Corn	Idle
Fallow	Oats
Grass Hay	Orchard
	Turf Farm
	Other Vegetables

Iron County Agriculture

Prime, Unique, and Important Farmland

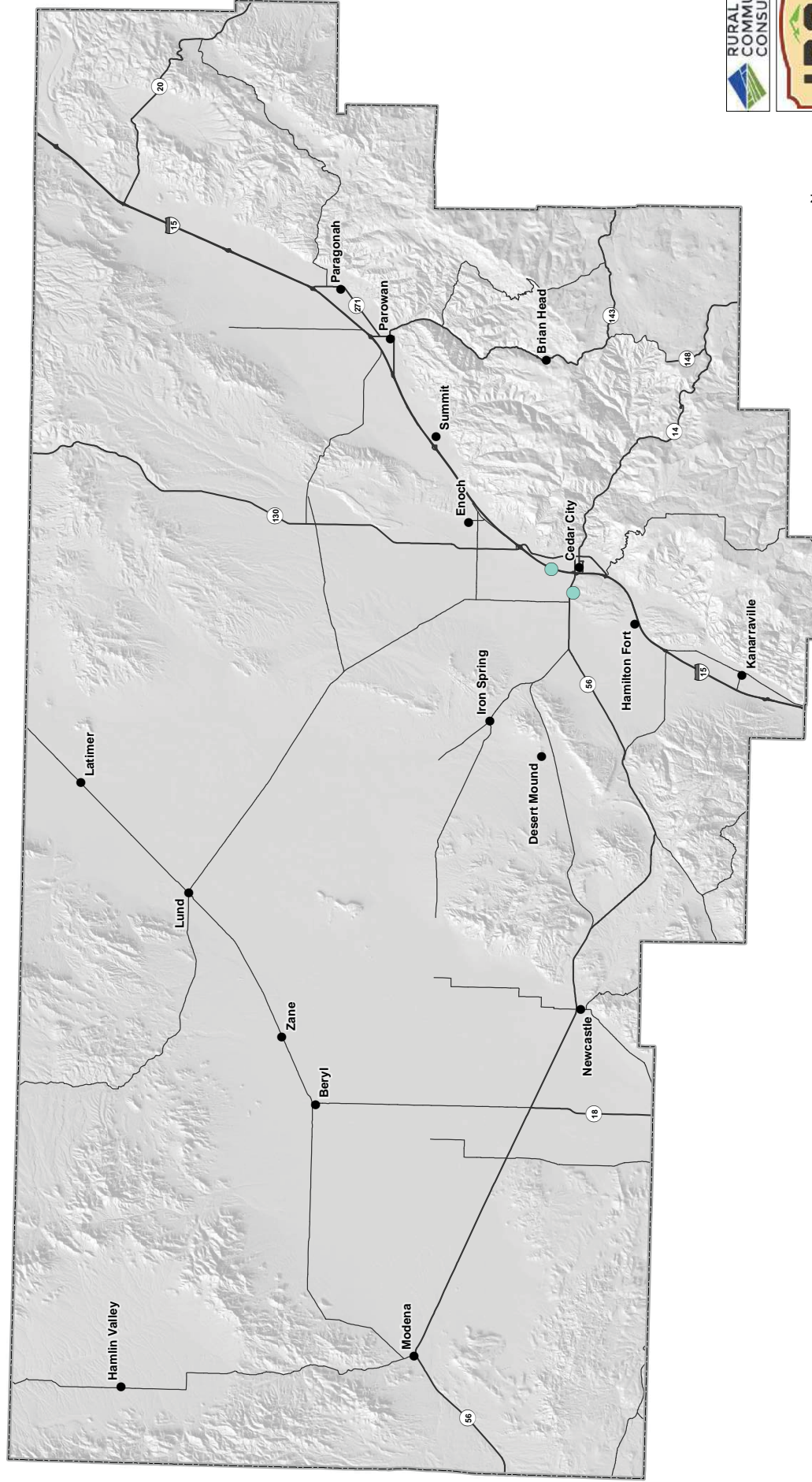


Prime, Unique, and Important Farmland

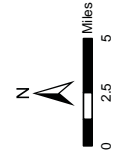


Iron County Air Quality

Air Emissions Inventory

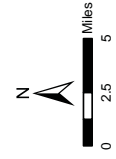
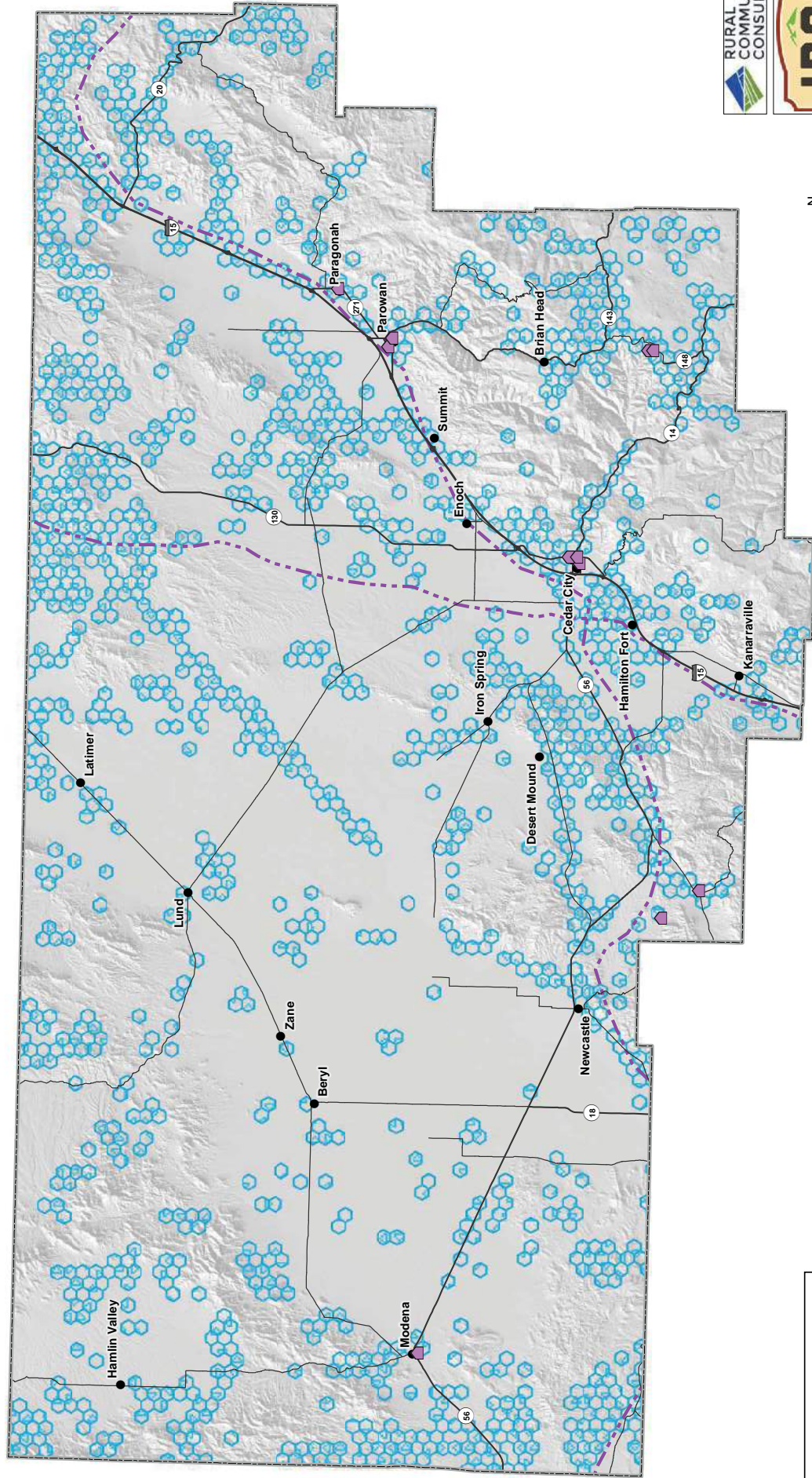


● Utah Division of Air Quality
Air Emissions Inventory



Iron County Cultural Resources

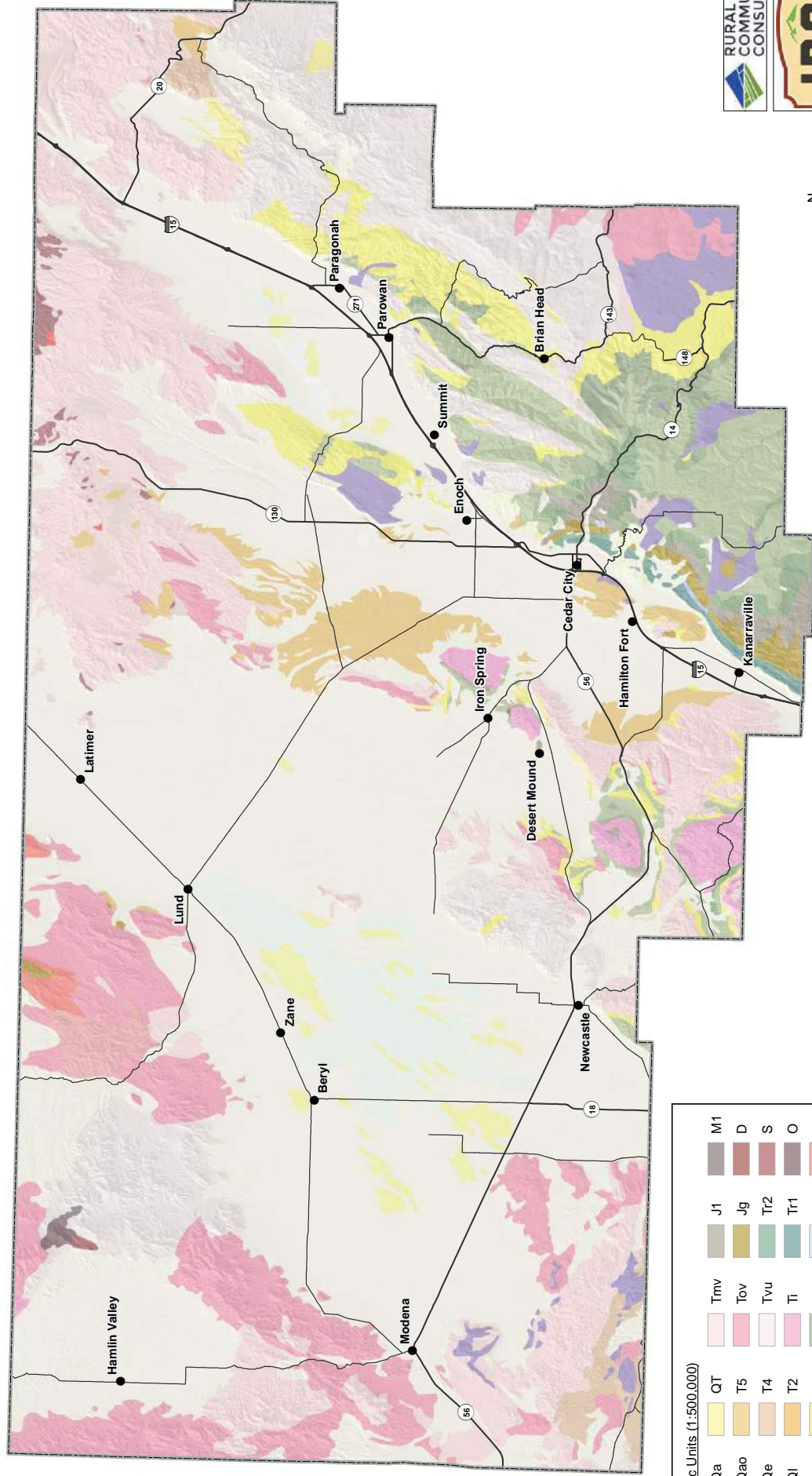
Historic Places & Archaeological Sites



- National Register of Historic Places
- Historic Trails
- Known Archaeology Sites Present

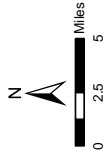
Iron County Geology

Geologic Units



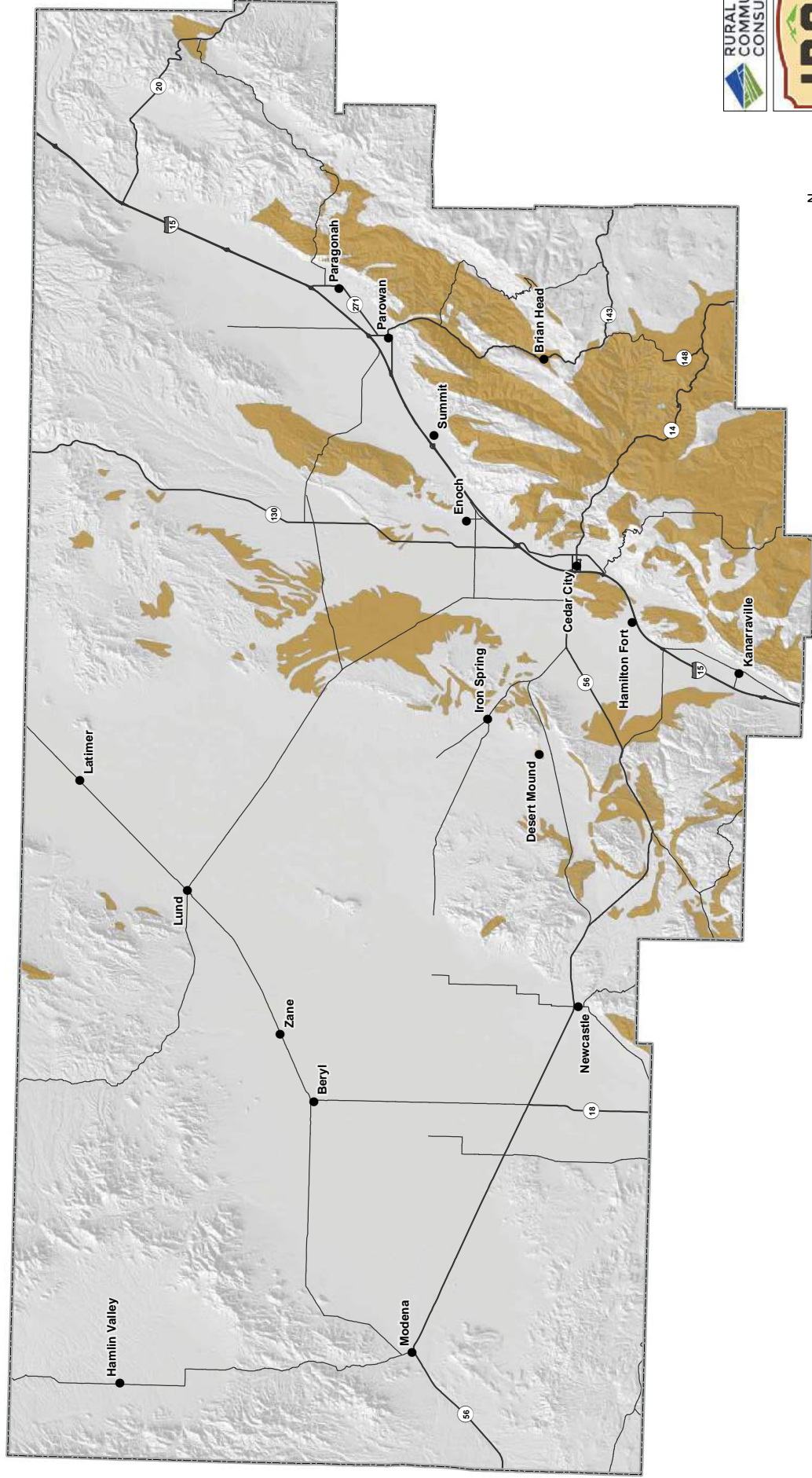
Geologic Units (1:500,000)

Qa	Qao	Qe	Ql	Qs	Qls	Qb	Qt	T5	T4	T2	T1	Tmb	Tmr	Tmv	Tov	Tvu	Ti	K3	K2	K1	J1	Jg	Tr2	Tr1	P1	PP	M2	M1	D	S	O	C3	C2
----	-----	----	----	----	-----	----	----	----	----	----	----	-----	-----	-----	-----	-----	----	----	----	----	----	----	-----	-----	----	----	----	----	---	---	---	----	----

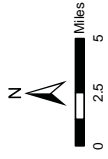


Iron County Paleontological Resources

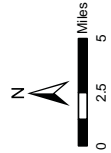
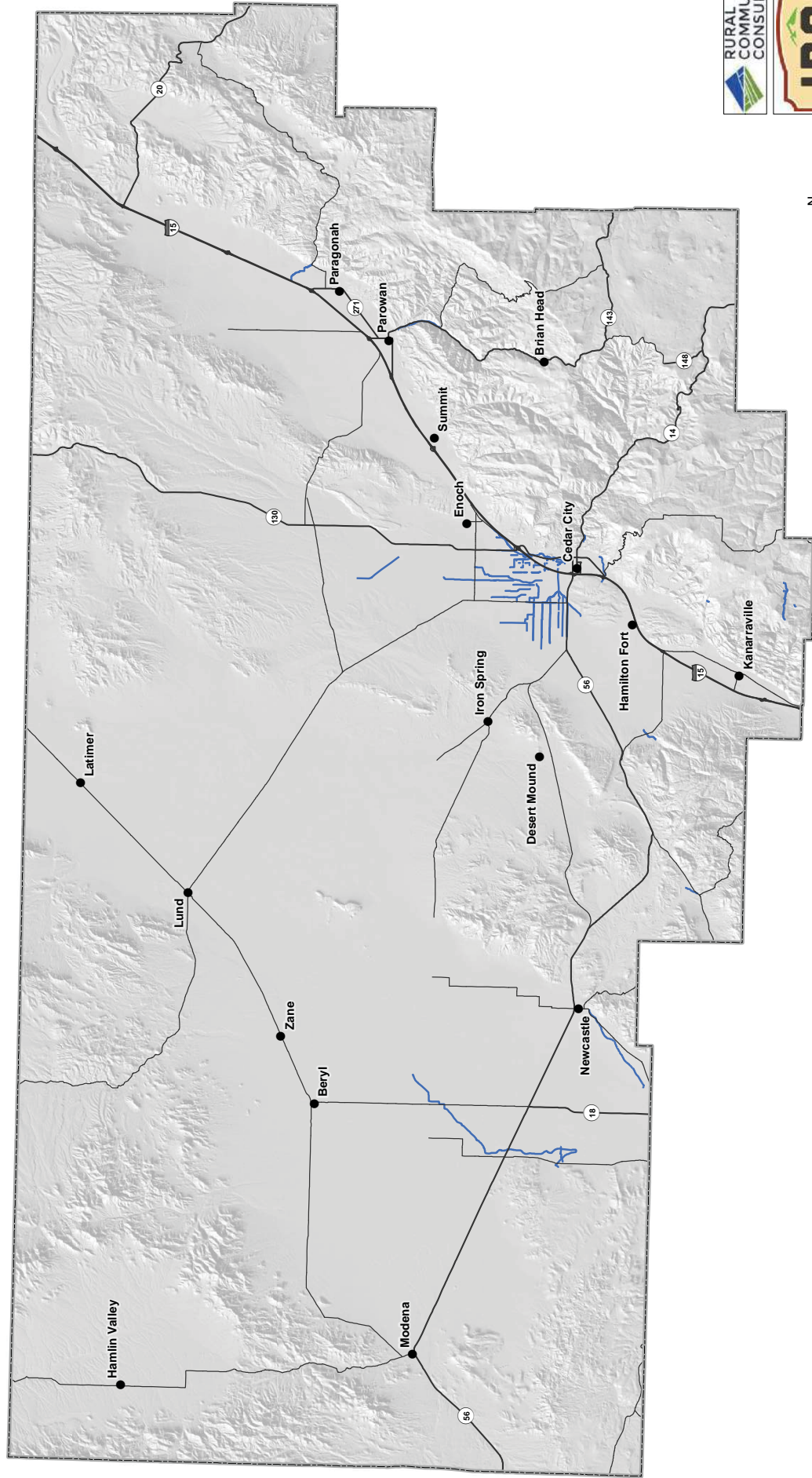
Paleontological Sensitivity



Paleontological Sensitivity

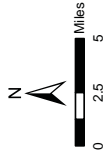
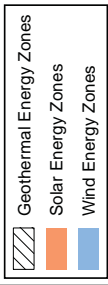
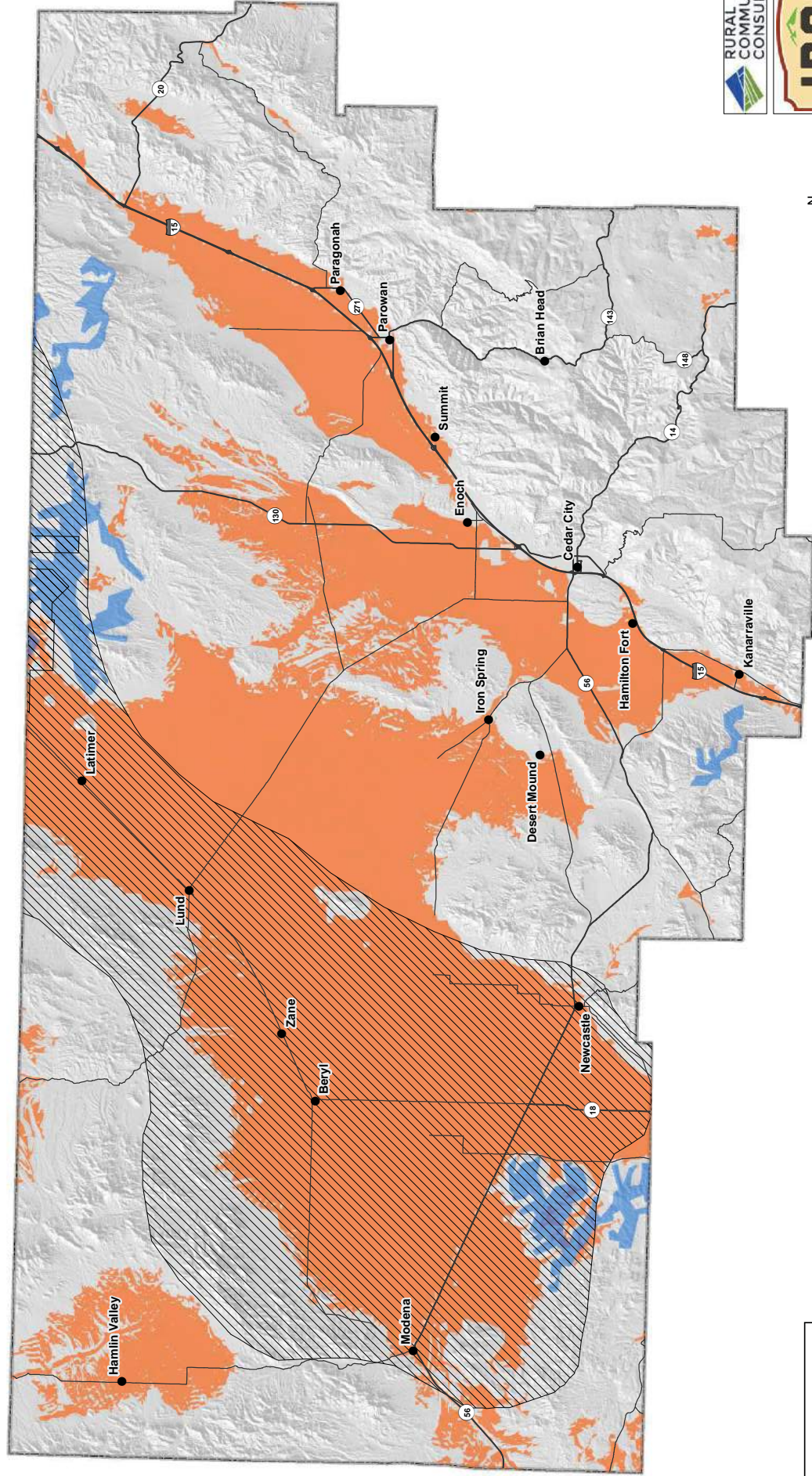


Iron County Ditches and Canals



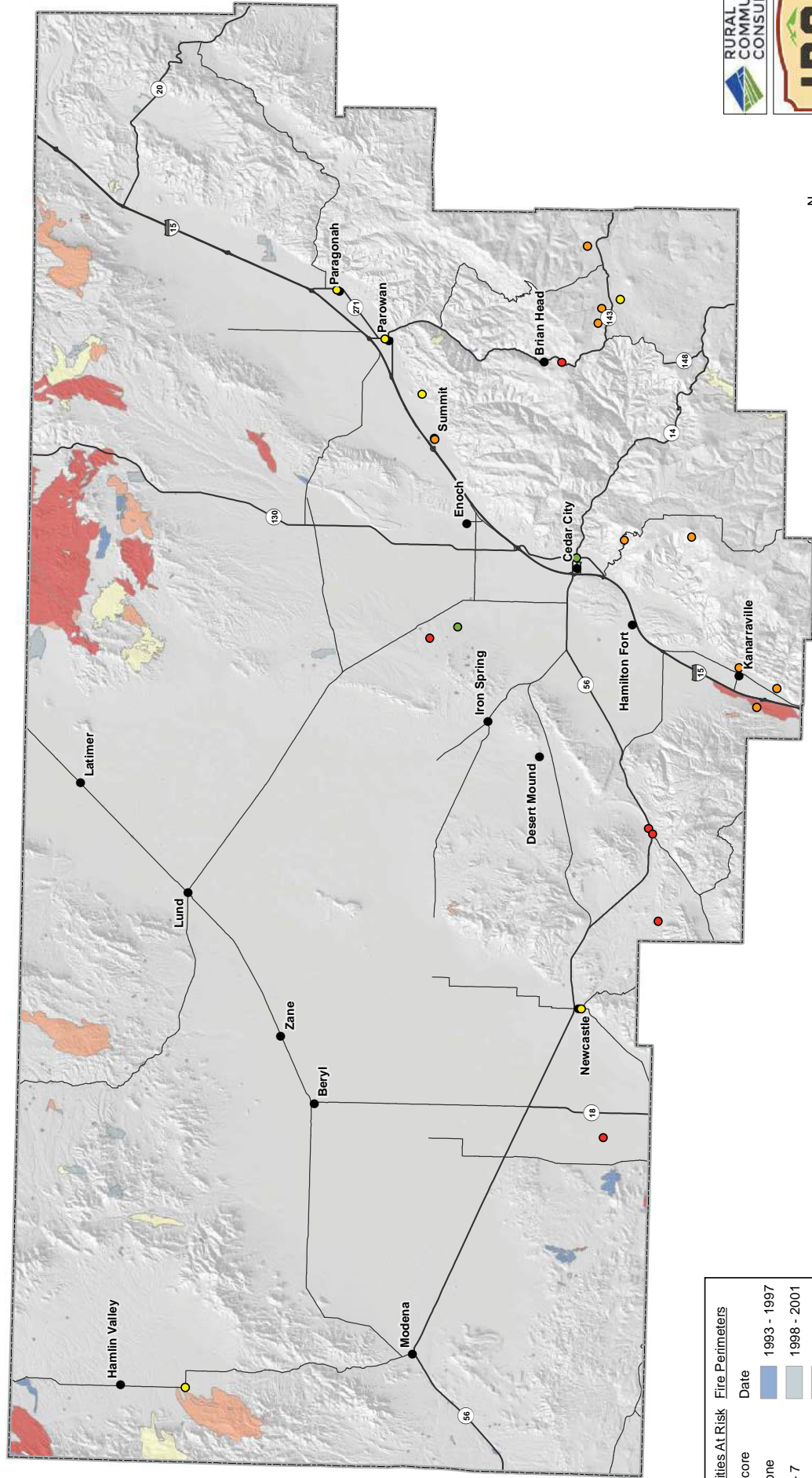
— Ditches and Canals

Iron County Energy Renewable Energy Resources



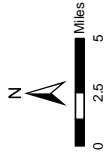
Iron County Fire Management

Fire Perimeters and Risk Areas



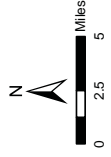
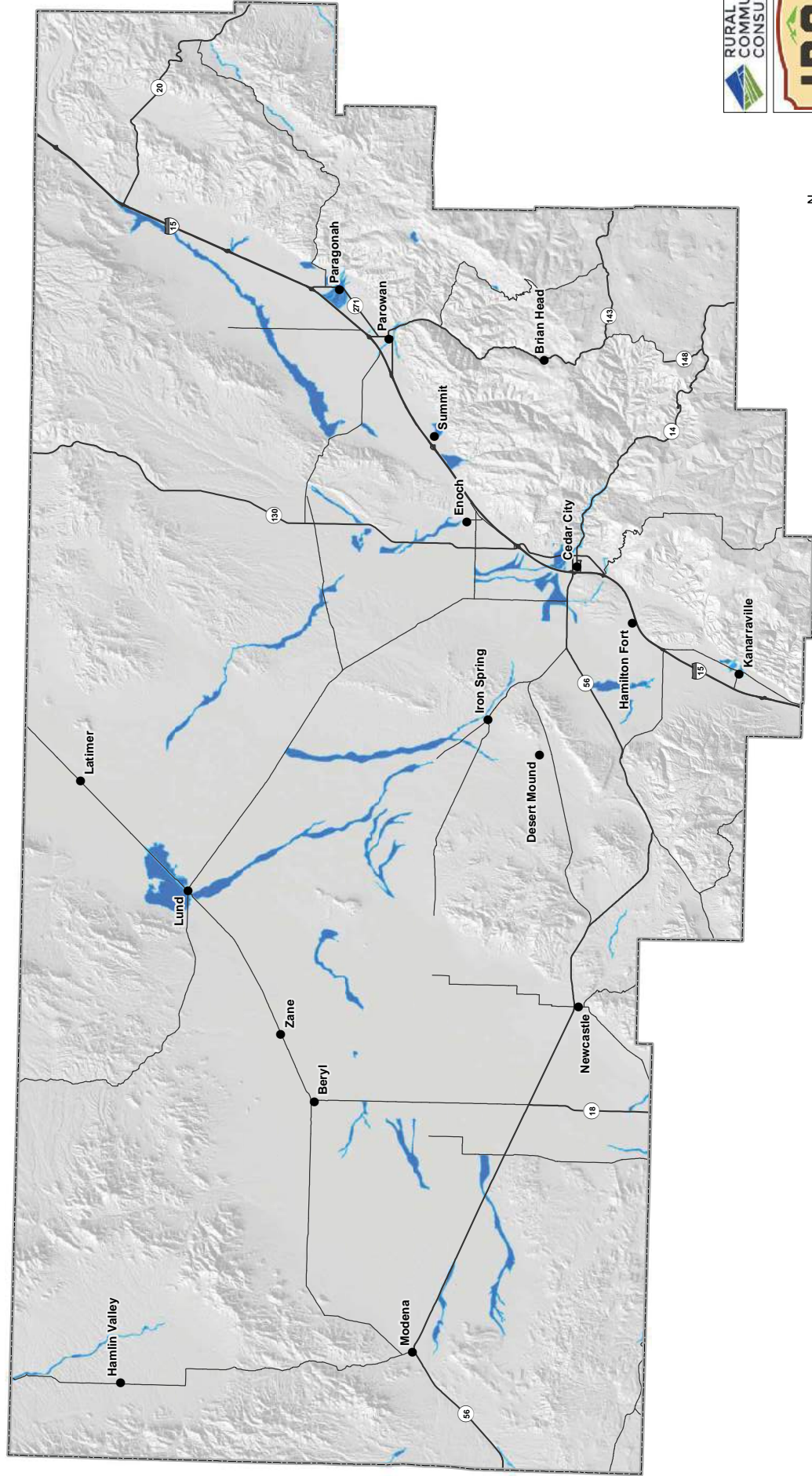
Communities At Risk

Overall Score	Date
● None	1993 - 1997
● 0 - 7	1998 - 2001
● 7 - 8	2002 - 2005
● 8 - 10	2006 - 2009
● 10 - 12	2010 - 2015



Iron County Floodplains

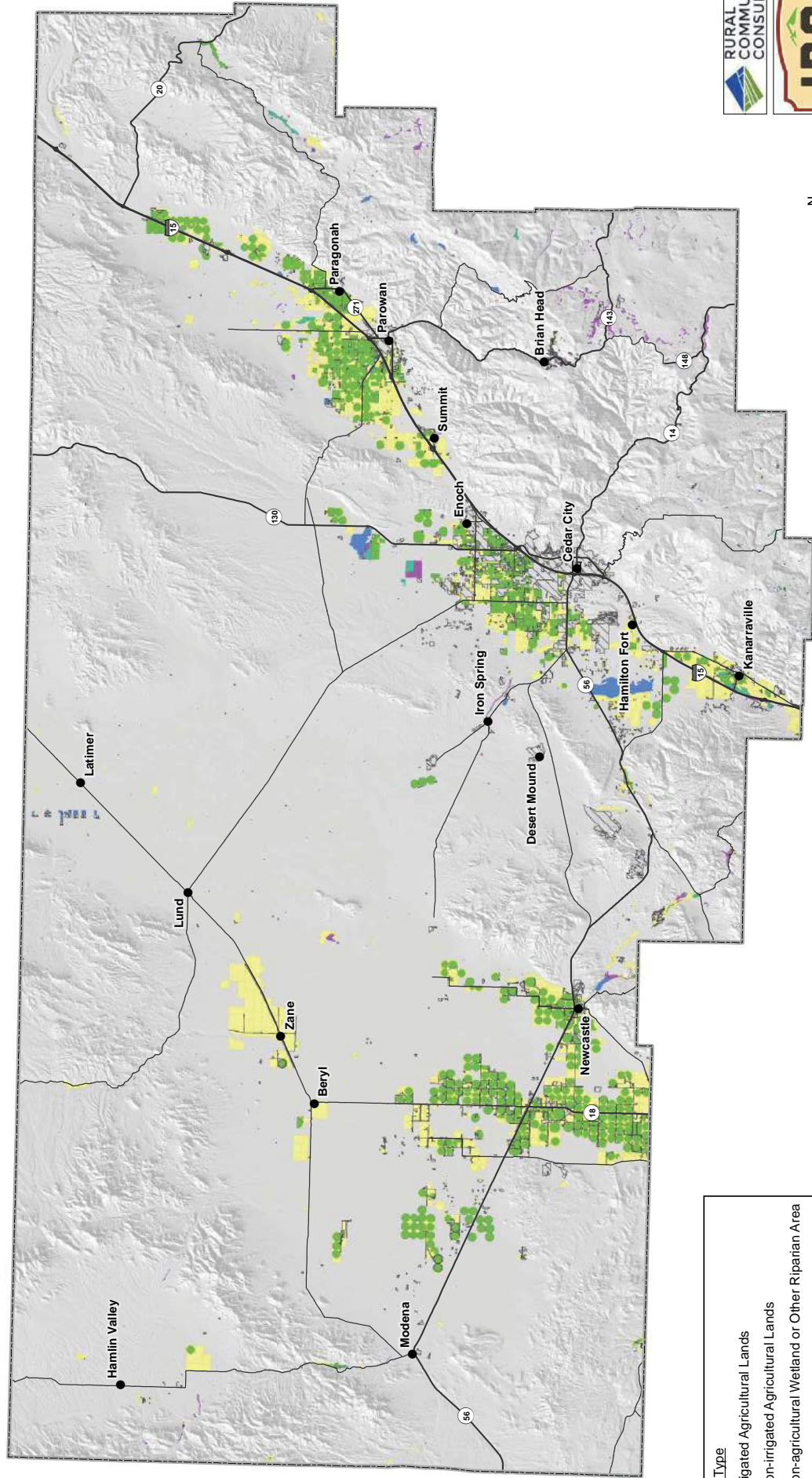
Flood Hazard Areas



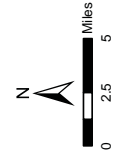
Flood Hazard Areas (FEMA 1986 FIRM)

Iron County Irrigation

Irrigation Type

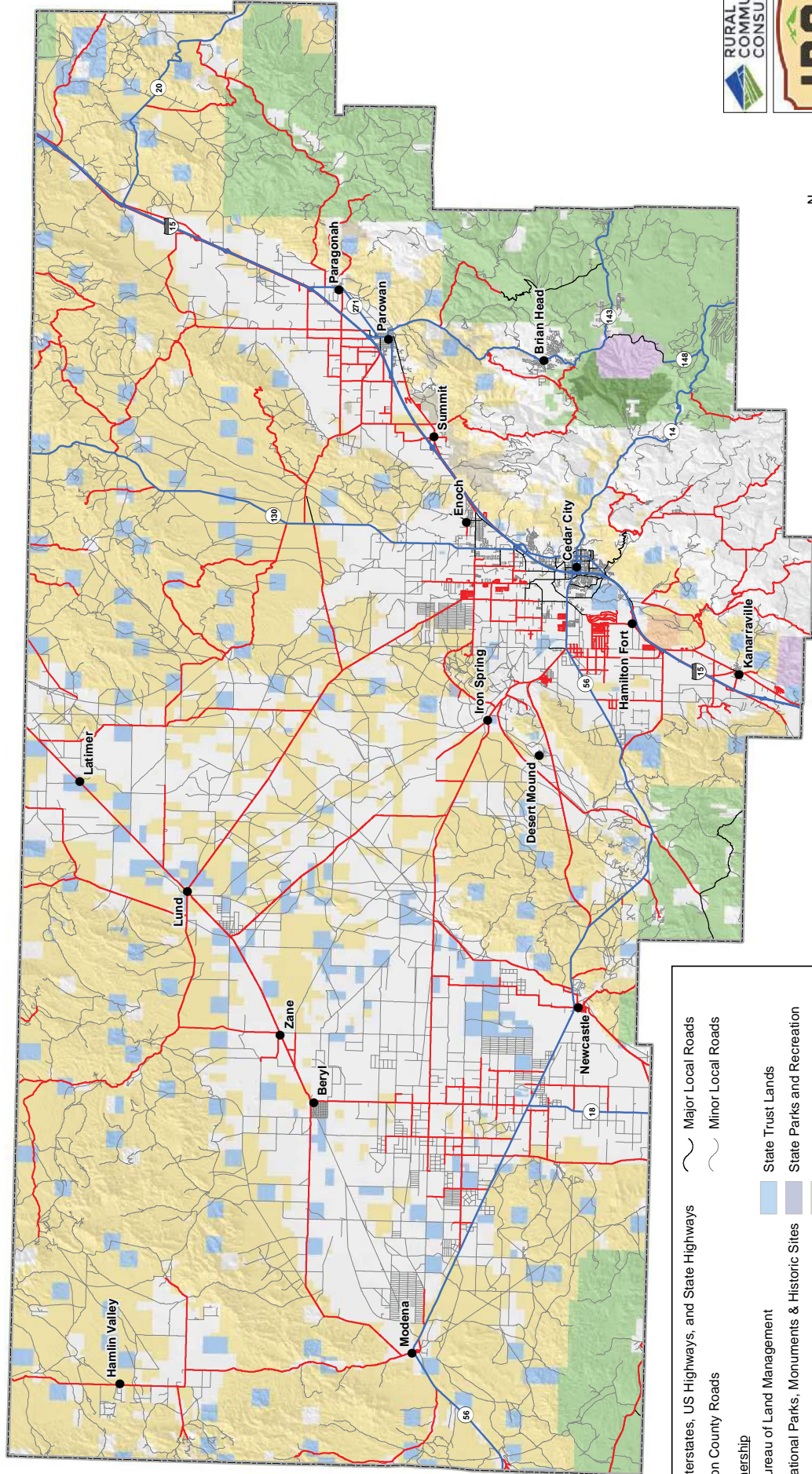


- Irrigation Type**
- Irrigated Agricultural Lands
 - Non-irrigated Agricultural Lands
 - Non-agricultural Wetland or Other Riparian Area
 - Naturally Irrigated Agricultural Land
 - Urban
 - Open Water

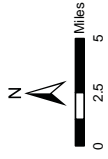


Iron County Land Access

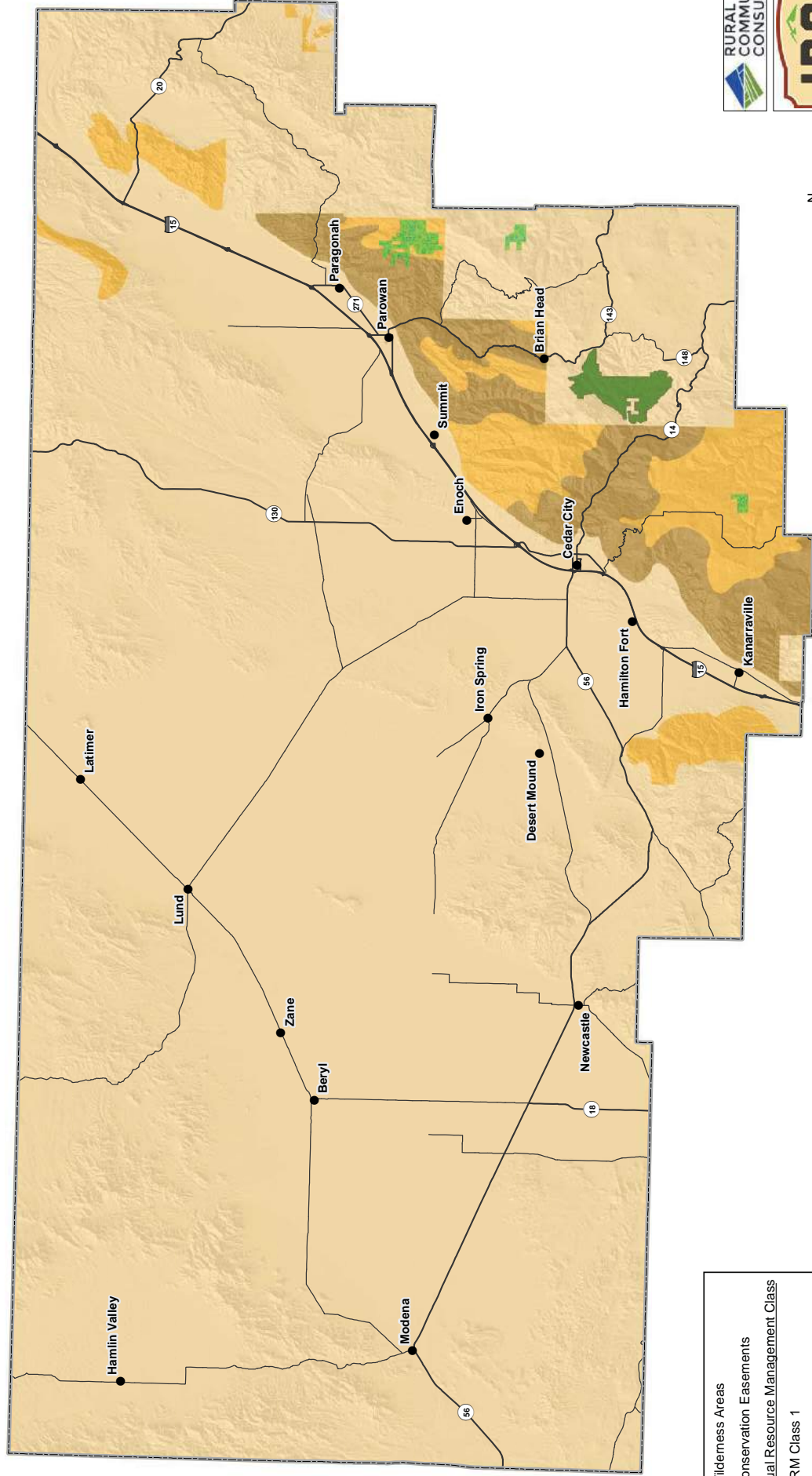
Roads



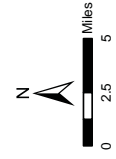
	Interstates, US Highways, and State Highways		Major Local Roads
	Iron County Roads		Minor Local Roads
	Bureau of Land Management		State Trust Lands
	National Parks, Monuments & Historic Sites		State Parks and Recreation
	National Forest		State Wildlife Management Area
	National Wilderness Area		Tribal Lands
	Private		



Iron County Land Use Conservation

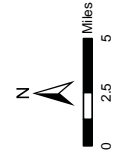
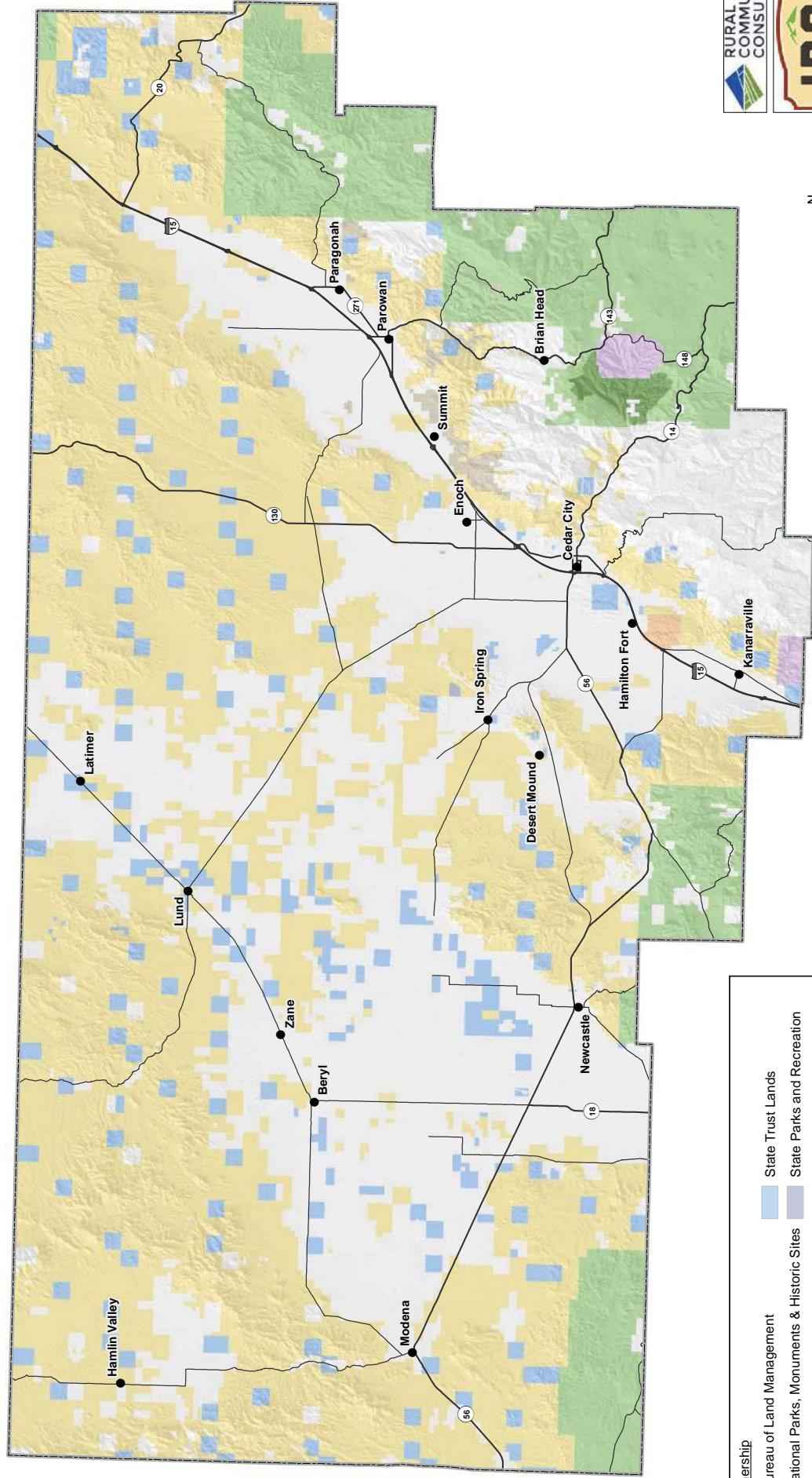


- Wilderness Areas
- Conservation Easements
- BLM Visual Resource Management Class**
- VRM Class 1
- VRM Class 2
- VRM Class 3
- VRM Class 4



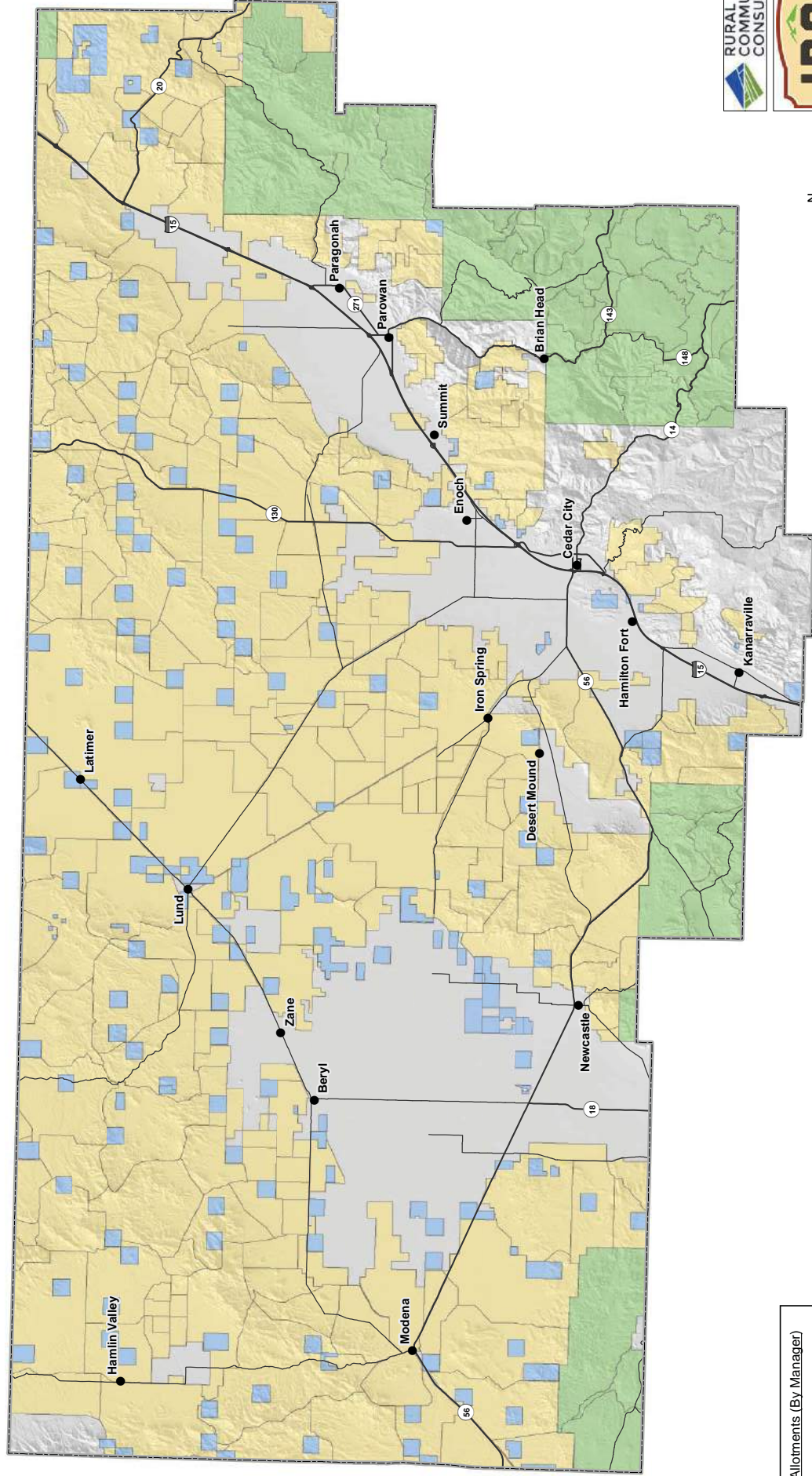
Iron County Land Use

Landownership



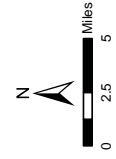
Landownership	
	Bureau of Land Management
	National Parks, Monuments & Historic Sites
	National Forest
	National Wilderness Area
	Private
	State Trust Lands
	State Parks and Recreation
	State Wildlife Management Area
	Tribal Lands

Iron County Livestock and Grazing Grazing Allotments



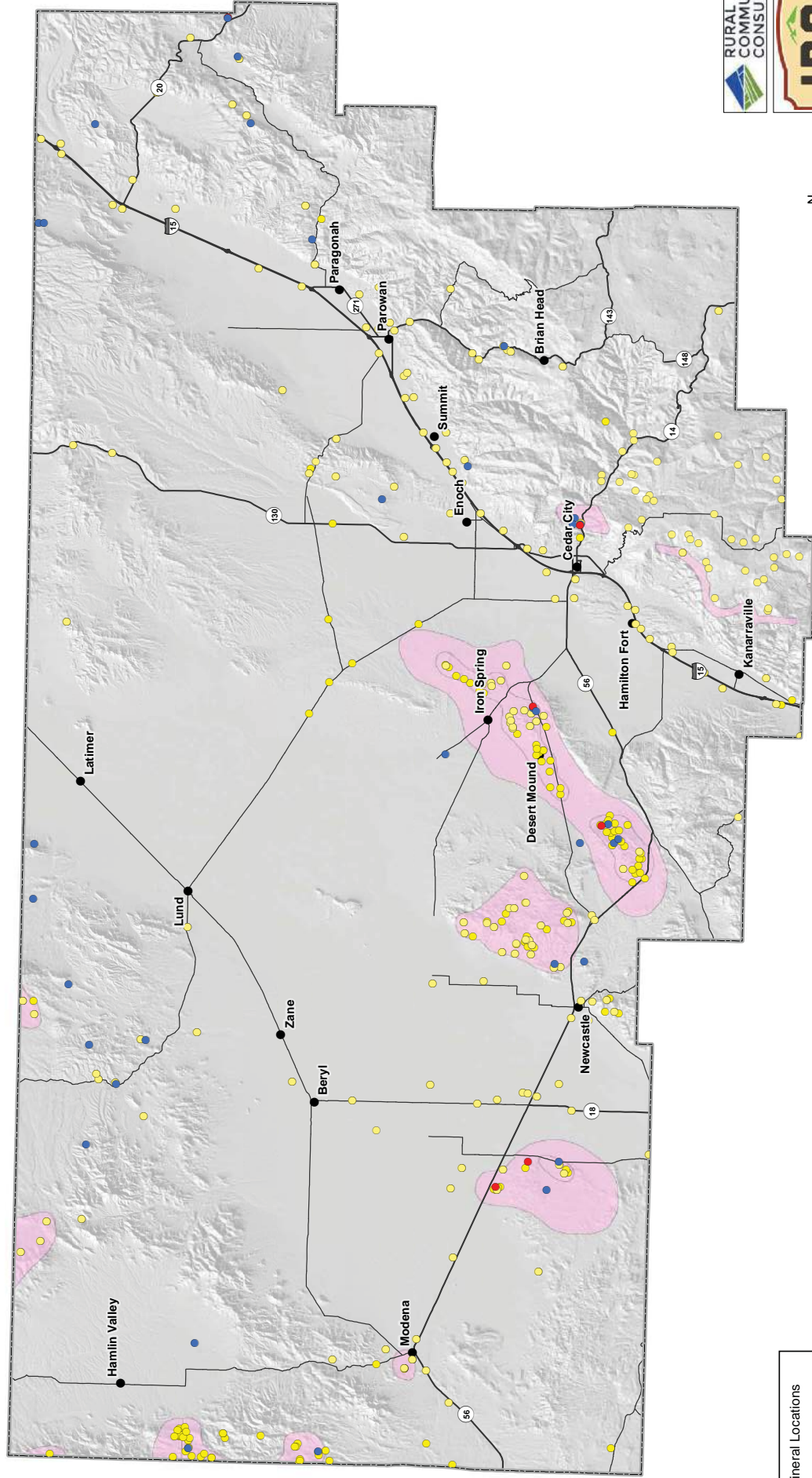
Grazing Allotments (By Manager)

- Bureau of Land Management
- State Trust Lands
- US Forest Service

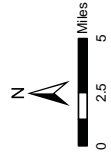


Iron County Mining and Minerals

Mine and Mineral Locations

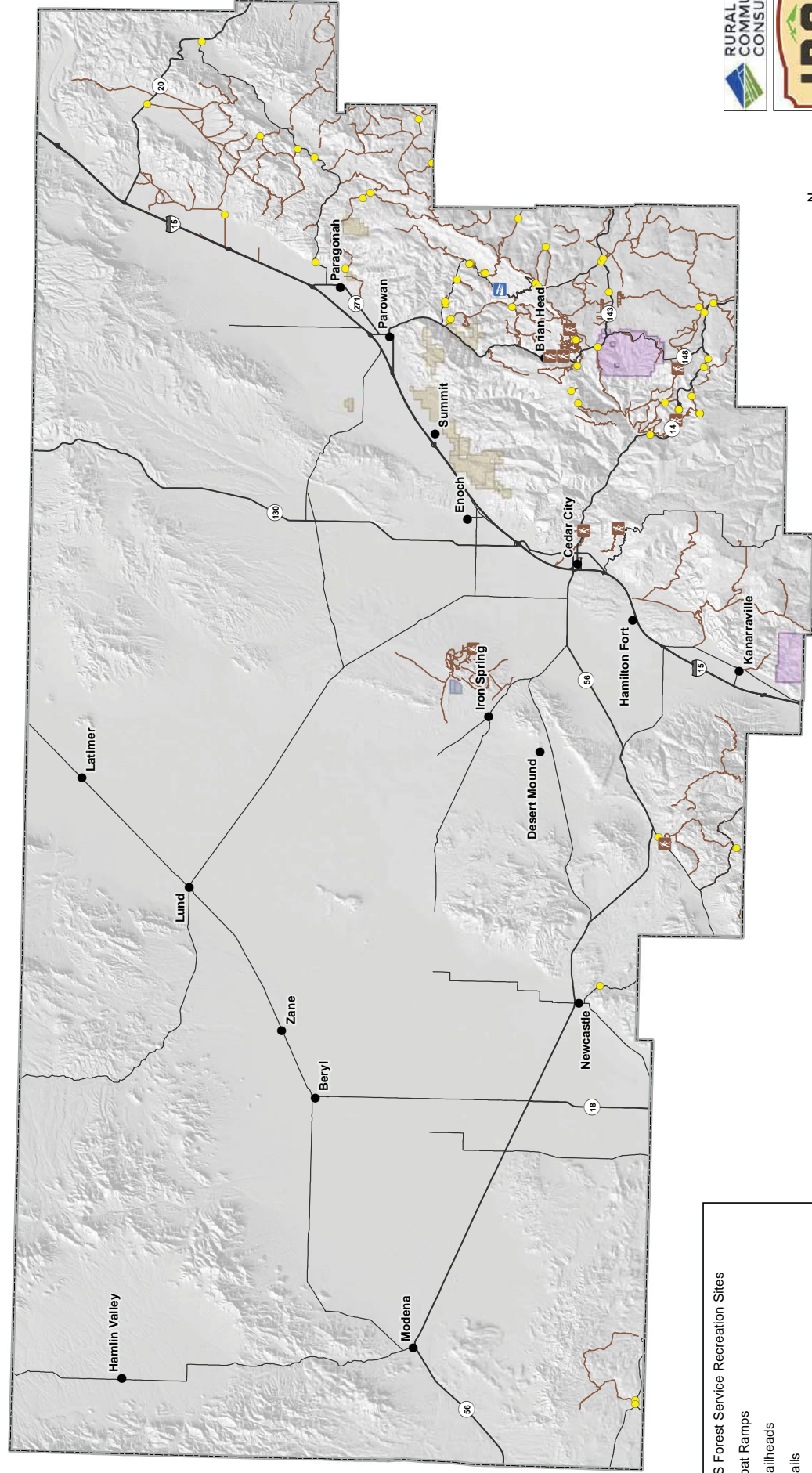


- Mineral Locations
- Active Mineral Mines
- Retired Mineral Mines
- Mineral Deposits

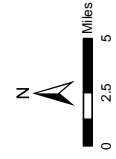


Iron County Recreation

Recreation Points and Areas of Interest

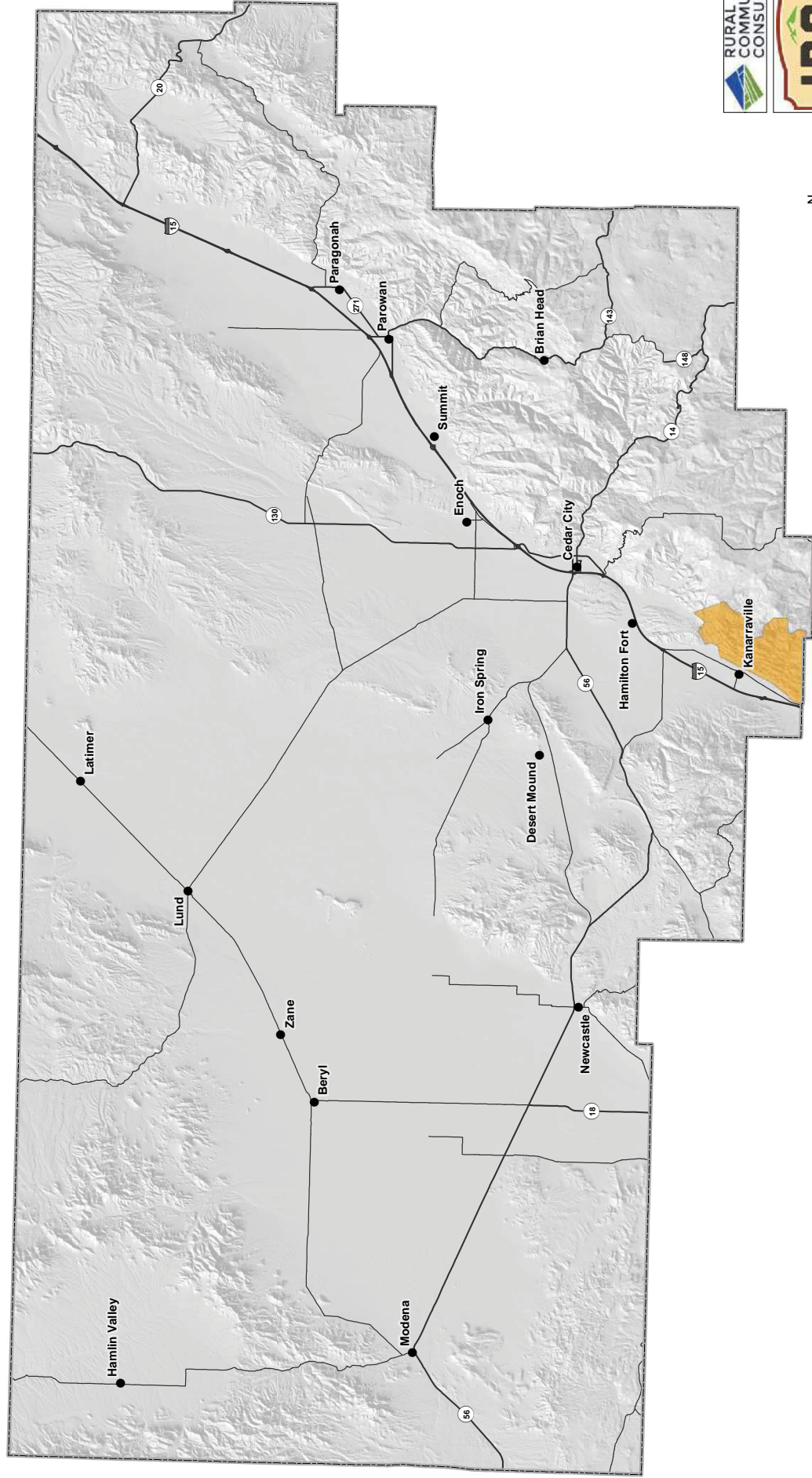


- US Forest Service Recreation Sites
-  Boat Ramps
-  Trailheads
-  Trails
-  National Parks, Monuments and Historic Sites
-  State Parks and Recreation
-  State Wildlife Management Area

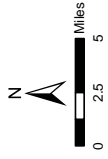


Iron County Wildlife

Listed and Sensitive Species

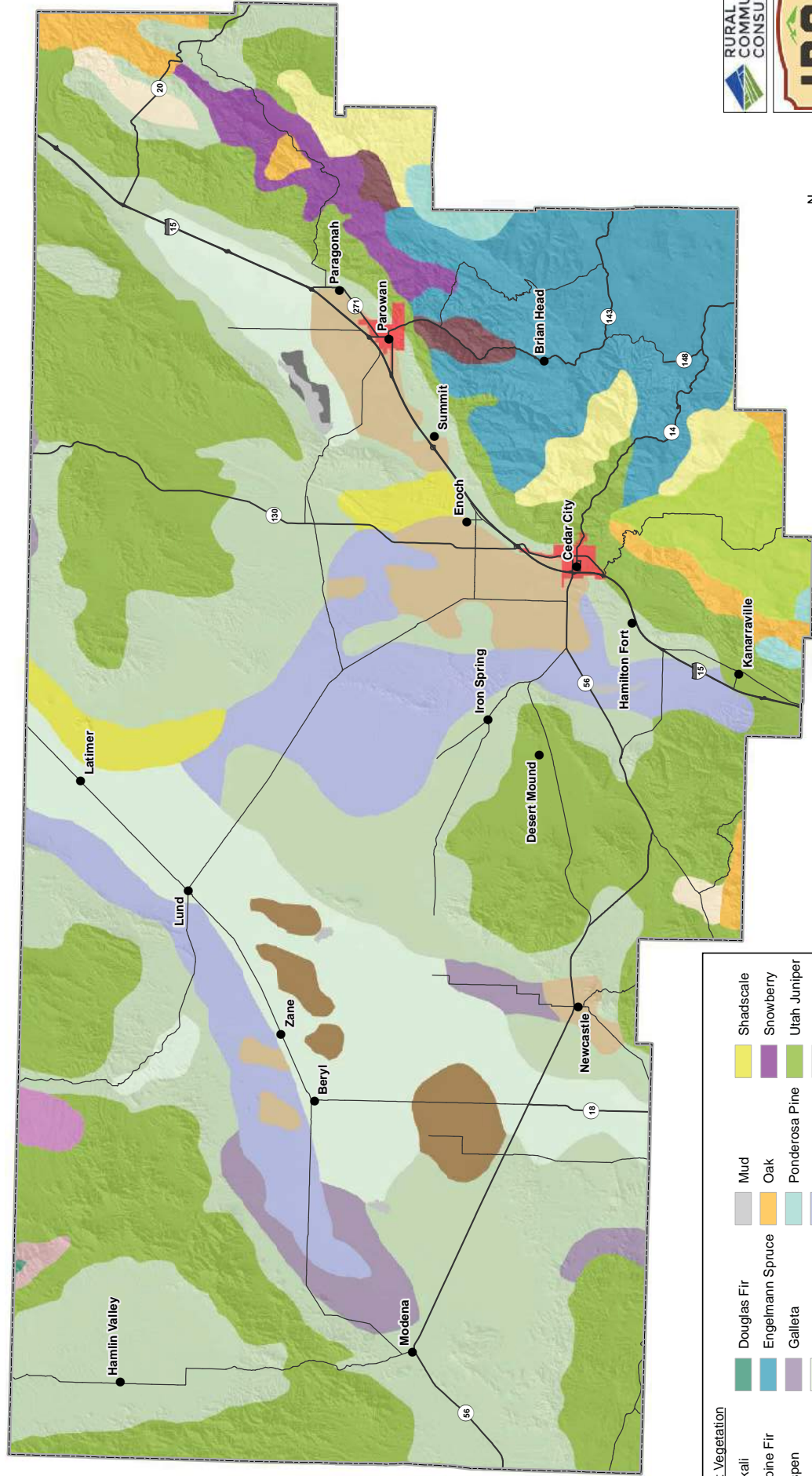


Mexican Spotted Owl Critical Habitat

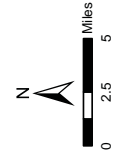


Iron County Vegetation

Dominant Vegetation

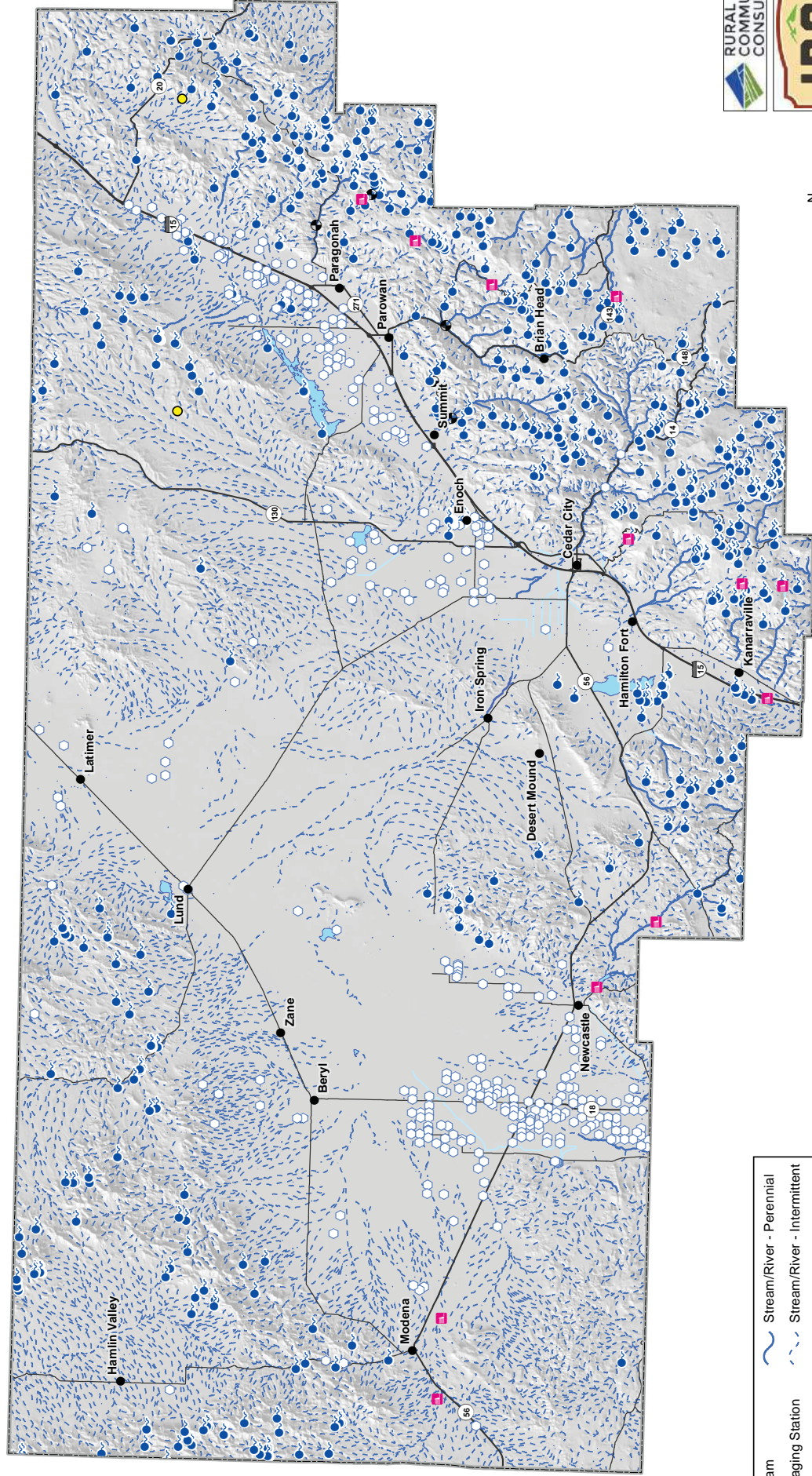


Dominant Vegetation	
Alkali	Shadscale
Alpine Fir	Snowberry
Aspen	Utah Juniper
Cities	Wheatgrass
Crested Wheat	Winterfat
Cultivated Land	Mud
	Oak
	Ponderosa Pine
	Rabbit Brush
	Sagebrush
	Sand
Douglas Fir	
Engelmann Spruce	
Galleta	
Greasewood	
Maple	
Mt. Mahogany	

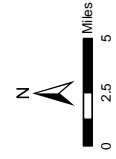


Iron County Water Resources

Hydrology

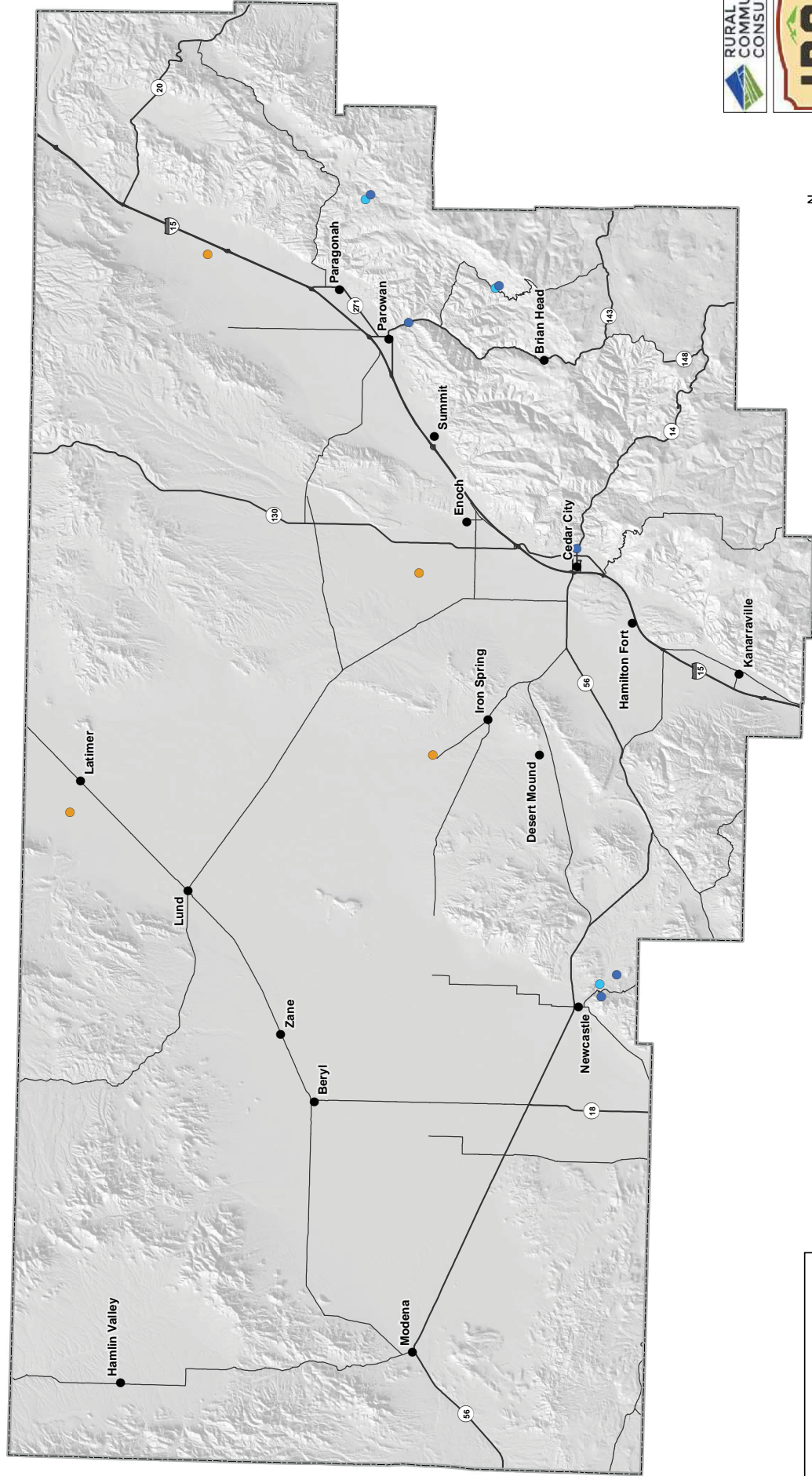


- Dam
- Gaging Station
- Sink Rise
- Spring/Seep
- Well
- Stream/River - Perennial
- - - Stream/River - Intermittent
- Canal
- Lake

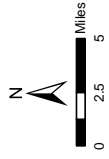


Iron County Water Resources

Water Quality

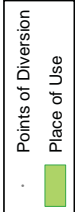
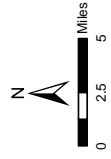
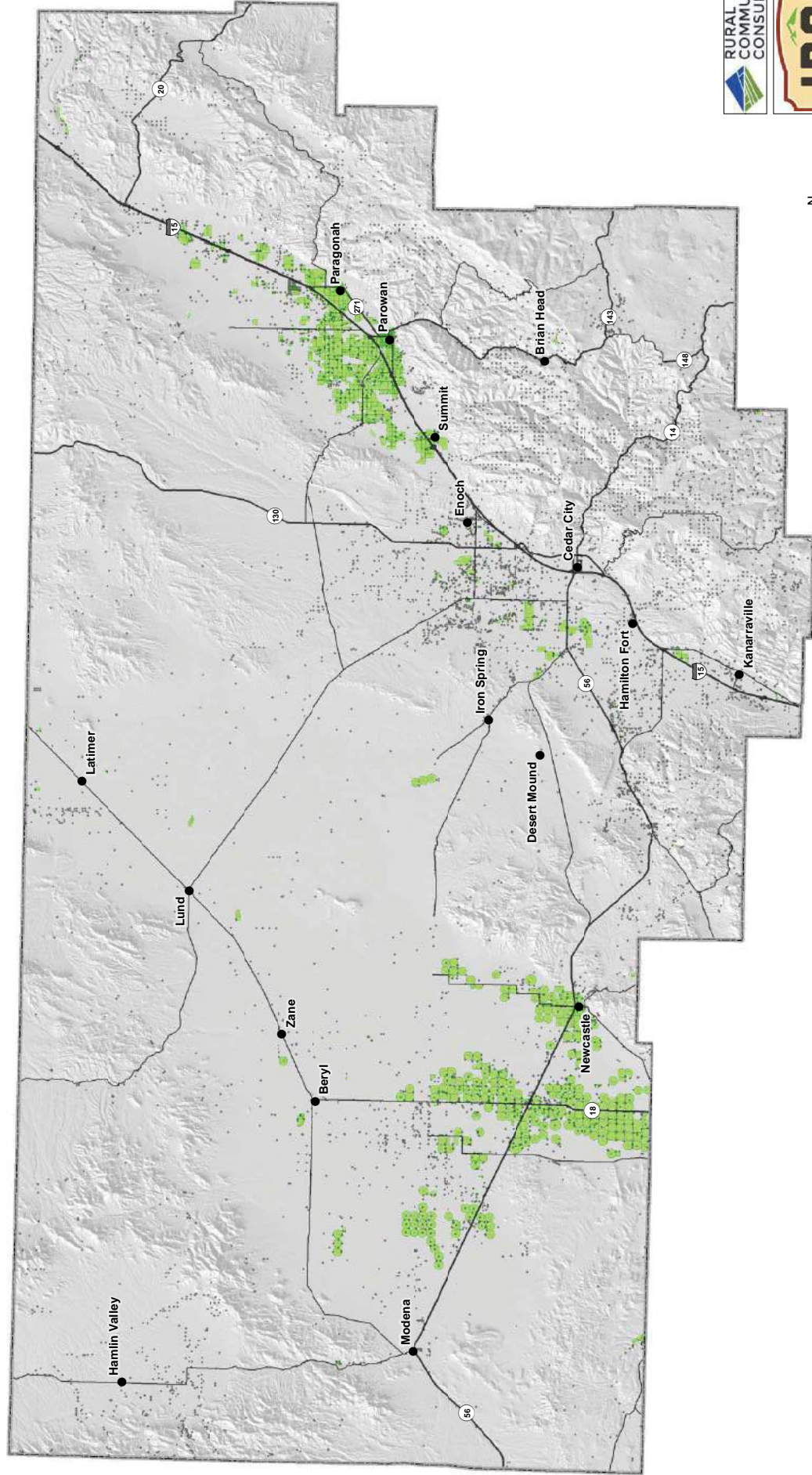


- Stream Water Quality Monitoring Sites
- DWQ Monitored Lakes
- DWQ Groundwater Permits

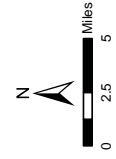
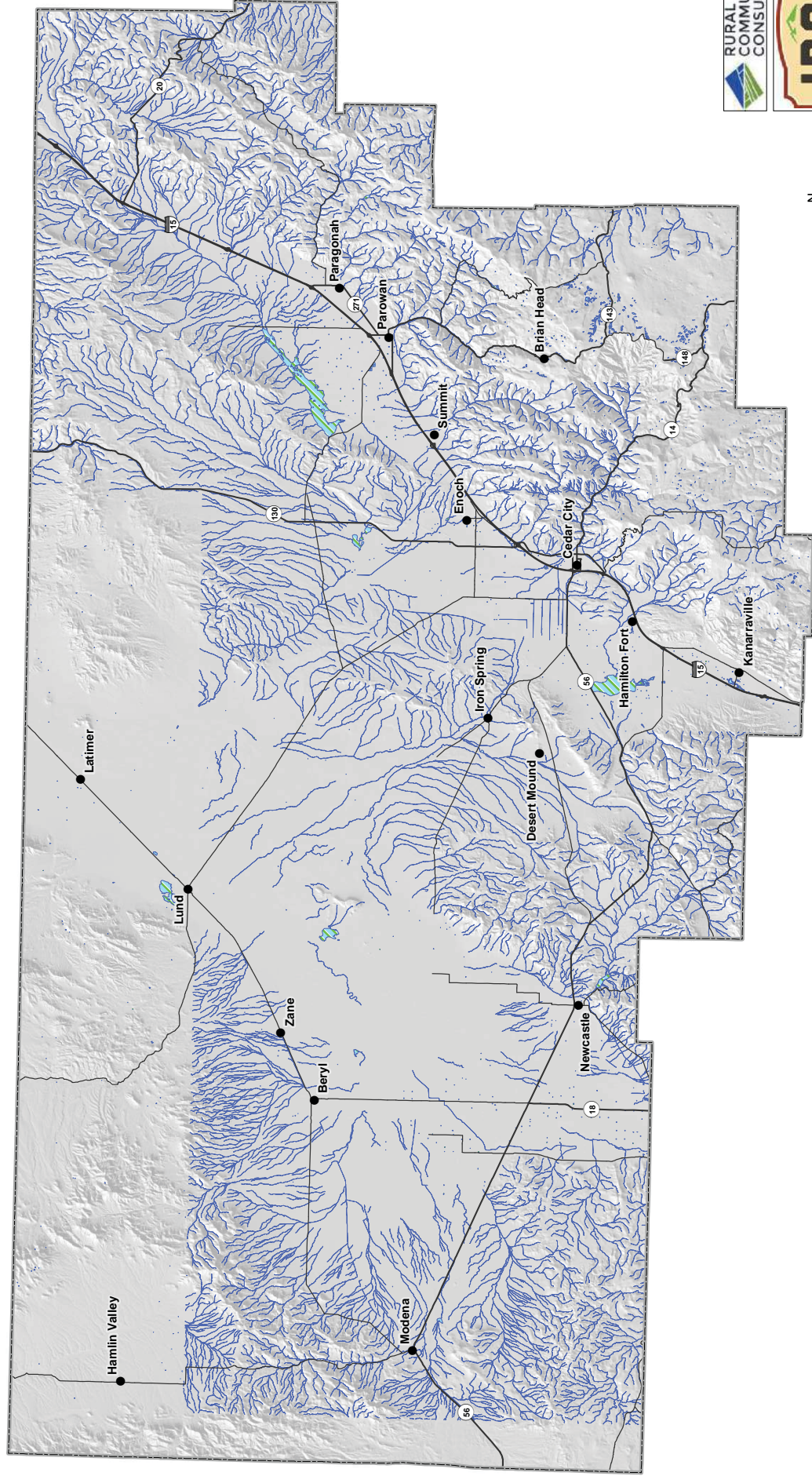


Iron County Water Resources

Water Rights

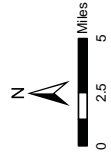
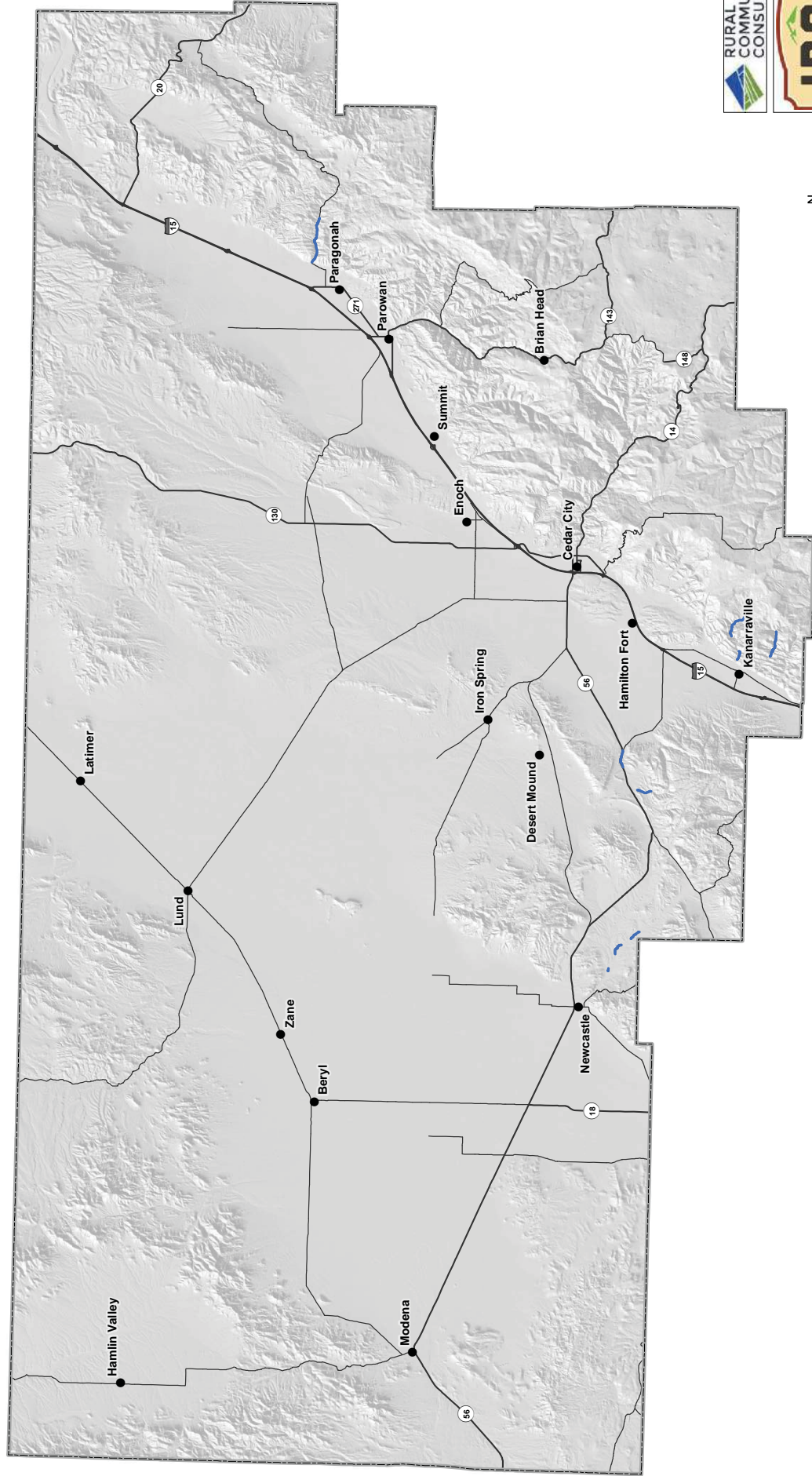


Iron County Wetlands



Iron County Wild and Scenic Rivers

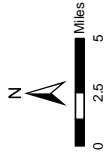
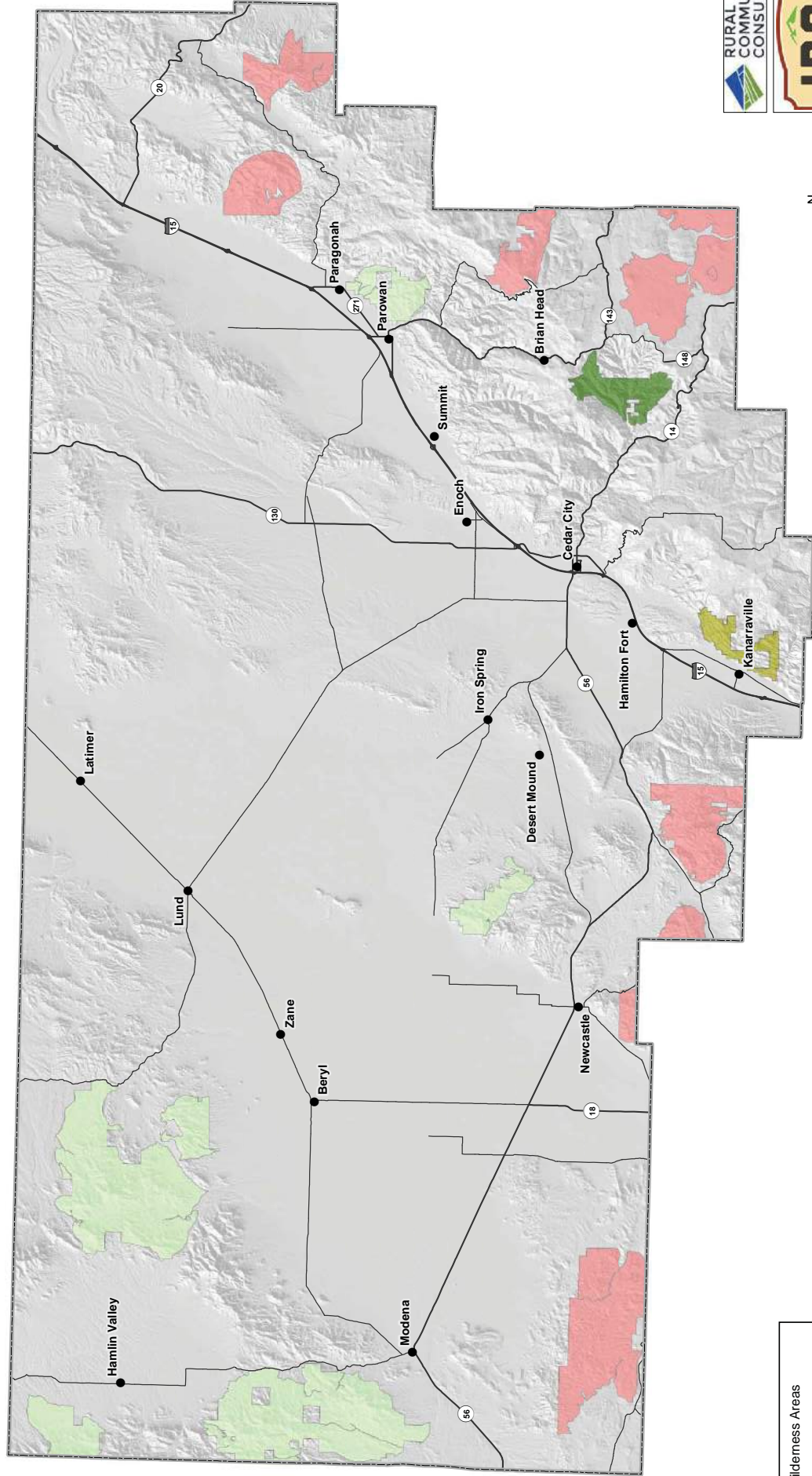
Eligible River Segments



— Eligible Wild and Scenic Rivers

Iron County Wilderness

Wilderness and Related Lands



Iron County Wildlife Crucial Habitat

