Gunnison County, CO Community Development Office

221 N. Wisconsin St. Ste. D, Gunnison, CO 81230
Phone: (970) 641-0360
Website: www.gunnisoncounty.org
Email: *mcastillo@gunnisoncounty.org*

To: Gunnison Basin Sage-grouse Strategic Committee Members

From: Misty Castillo

Date: 11/07/2025

Included in your packet for the Gunnison Basin Sage-Grouse Strategic Committee Meeting:
November 19, 2025 Agenda
NFWF Letter of Support
Habitat Prioritization Tool Revision and Adoption
September 17, 2025 Draft Minutes

GUNNISON BASIN SAGE-GROUSE STRATEGIC COMMITTEE
REGULAR MEETING AGENDA

DATE: Wednesday, November 19, 2025
PLACE: Planning Commission Meeting Room, Blackstock Government Center OR via Zoom meeting, Meeting ID: 859 9849 7601 (see Teleconference Information below)

1.	10:00am	• Call Regular Meeting to Order; Determination of Quorum; Verify Public Notice of Meeting • Approval of September 17, 2025 Meeting Minutes • Agenda Approval for October 15, 2025 Agenda
2.	10:15am	• Committee Member Reports/Updates • Committee Member Reapplications Reminder • UGRWCD Letter of Support for the NFWF RESTORE Grant
2.	10:30am	• HPT Update Discussion and Vote
4.	12:00pm	• Public Comments
5.	12:05	• Future Meeting
6.	12:10	• Adjourn

NOTE: This agenda is subject to change, including the addition of items up to 24 hours in advance or the deletion of items at any time. All times are approximate. Regular Meetings, Public Hearings, and Special Meetings are recorded and **ACTION MAY BE TAKEN ON ANY ITEM**. Work Sessions are not recorded and formal action cannot be taken. Two or more Gunnison County Commissioners may attend this meeting. For further information, contact the County Administration at 641-0248. If special accommodations are necessary per ADA, contact 641-0248 or TTY 641-3061 prior to the meeting.

Topic: Gunnison Basin Sage-Grouse Strategic Committee
Time: 10:00 AM Mountain Time (US and Canada)
Every month on the Third Wed, until Dec 17, 2025, 10 occurrence(s)
Please download and import the following iCalendar (.ics) files to your calendar system.
Monthly: https://gunnisoncounty-org.zoom.us/meeting/tZApde2upz8jGNMaYbBDHpBuBMmm8Gs3YgJQ/ics?icsToken=DGZ0Iiolll85m5wUu8wAALAAAALtnJX1fp7nWI-bgIR7Yrs40cen9OR2cgdKCG3FNcQmWn-qURisB8-AQfzdCvM78l4oNdG1lp9czYytuUDAwMDAwMQ&meetingMasterEventId=iRakBkDJTGGH4DonS6cJBA
Join Zoom Meeting
https://gunnisoncounty-org.zoom.us/j/84424694927?pwd=34Dj2PPHgy1aMAghpjDz6SZFE68xZj.1

Meeting ID: 844 2469 4927
Passcode: 693807

One tap mobile
+17193594580,,84424694927#,,,,*693807# US
+12532158782,,84424694927#,,,,*693807# US (Tacoma)

Dial by your location
- **+1 719 359 4580 US**
- **+1 253 215 8782 US (Tacoma)**
- **+1 346 248 7799 US (Houston)**
- **+1 408 638 0968 US (San Jose)**
- **+1 669 444 9171 US**
- **+1 669 900 6833 US (San Jose)**
- **+1 253 205 0468 US**
- **+1 689 278 1000 US**
- **+1 301 715 8592 US (Washington DC)**
- **+1 305 224 1968 US**
- **+1 309 205 3325 US**
- **+1 312 626 6799 US (Chicago)**
- **+1 360 209 5623 US**
- **+1 386 347 5053 US**
- **+1 507 473 4847 US**
- **+1 564 217 2000 US**
- **+1 646 876 9923 US (New York)**
- **+1 646 931 3860 US**

Meeting ID: 844 2469 4927
Passcode: 693807

Find your local number: https://gunnisoncounty-org.zoom.us/u/kczu4lQpy

Tuesday, September 30, 2025

National Fish and Wildlife Foundation
1625 Eye Street NW, Suite 300
Washington, DC 20006

RE: Enhancing Watershed Resilience & Local Capacity in the Upper Gunnison River Basin (CO)

Dear RESTORE Grant Review Committee,

The Gunnison Basin Sage-grouse Strategic Committee offers our enthusiastic support for the *Enhancing Watershed Resilience & Local Capacity in the Upper Gunnison River Basin (CO)*. The committee works together to promote efforts that benefit the habitat and critical portions of the specie's life cycle by identifying and addressing threats, coordinating land management practices, supporting research and population, and supporting habitat restoration projects. The Upper Gunnison River Water Conservancy District (District) project proposes to work across Gunnison Sage-grouse (GUSG) critical habitat in the Upper Gunnison River Basin (Basin) to improve sagebrush ecosystems, aquatic habitat, watershed resiliency, GUSG brood-rearing habitat, big game winter habitat and migration corridors, and to support and enhance capacity building efforts in the Basin.

The District took a leadership role through the Wet Meadow and Riparian Restoration Resiliency Building Project (Wet Meadows Program), which started in 2012 following a community climate action work-session. The District maintains critical staffing to carry out the Program including hiring a program director, field supervisor, and seasonal field crews. Since 2012, over 2,000 low-tech process-based restoration structures have been built to restore GUSG brood-rearing habitat across the Basin. The Program includes over thirty stakeholder partners from federal, state, and local governments, non-profit organizations, universities, research organizations, and private landowners. These projects play a critical role not only to GUSG and other wildlife and aquatic species, but also to the health of our watershed and its resiliency to drought and wildfire, our ability to build capacity and train the next generation of restoration practitioners and supports our local agricultural and recreational economy.

Commented [SC1]: I forget the exact name - pls check.

Partnership with the Gunnison County Cheatgrass Coordinator ensures holistic long-term sustainability and success of wet meadow restoration and cheatgrass mitigation projects in GUSG critical habitat. Additionally, the District's partnerships with the Gunnison Conservation District and Trout Unlimited has allowed cross-boundary collaboration onto private lands and increased participation in NRCS programs.

The success of the Wet Meadows Program and the ability to recover GUSG depends on support from the RESTORE Colorado Grant. We hope that you will give this project your full support as we do, and we thank you for your consideration. If you have any questions, please contact_____.

Sincerely,

Gunnison Basin Sage-Grouse Strategic Committee

HPT Update Packet

Memo from Gunnison County Attorney Regarding HPT

GUNNISON COUNTY

Cathie Pagano, Assistant County Manager

Gunnison County Community & Economic Development Department

Phone: (970) 641-0360
Email: planning@gunnisoncounty.org
Website: www.GunnisonCounty.org

From: Cathie Pagano, Assistant County Manager for Community & Economic Development and Matthew Hoyt, Gunnison County Attorney

To: Sage Grouse Strategic Committee

Date: May 30, 2025

Re: Habitat Prioritization Tool Revision and Adoption

This memo is intended to provide clarification to the Gunnison Sage-grouse Strategic Committee as they consider updates to the Habitat Prioritization Tool. My office administers the Gunnison County *Land Use Resolution* and incorporates recommendations from the Gunnison Conservation District wildlife biologist and Colorado Parks and Wildlife staff into conditions for permit approvals. The County has discretion on what recommendations are included as conditions of permit approval.

Gunnison County *Land Use Resolution* Standards

The Gunnison County *Land Use Resolution*, Section 2-102: *Definitions*, defines Gunnison Sage-grouse habitat as:

> "Areas that are mapped as habitat for Sage-grouse as defined by the Gunnison Basin Gunnison Sage-grouse Habitat Prioritization Tool (Gunnison Basin Sage-grouse Strategic Committee 2012), as may be amended by the Gunnison Basin Sage-grouse Strategic Committee, with final approval by the Gunnison County Board of County Commissioners."

Thus, the Sage-grouse Strategic Committee (the Committee) may make a recommendation of revisions to the habitat prioritization tool (HPT) to the Board of County Commissioners who will make the final decision on adoption of the revisions and updated tool. I can help facilitate that process and scheduling.

As the Committee considers updates to the HPT please keep in mind the standards adopted in the Gunnison County *Land Use Resolution* (LUR). Section 11-106: *Protection of Wildlife Habitat Areas* A.2 states this Section (Section 11-106) is designed to:

> *"1. SUSTAIN AND ENHANCE EXISTING POPULATIONS OF GUNNISON SAGE-GROUSE. Sustain and enhance survival of the Gunnison Sage-grouse.*
>
> *2. PRECLUDE THE NEED TO UP-LIST OR MINIMIZE THE IMPACT OF LISTING OF GUNNISON SAGEGROUSE AS CANDIDATE SPECIES. Help implement an effective strategy to minimize the impact of listing of the Gunnison Sage-grouse as a candidate for endangered status pursuant to*

the Endangered Species Act of 1973, or at a minimum, demonstrate the intent of Gunnison County to preserve and protect habitat that will lessen the impact if listing does occur."

Gunnison Sage-Grouse Strategic Committee Organizational Guidelines

Additionally, the Gunnison Sage-grouse Strategic Committee organizational guidelines identify the following Committee purposes:

> *"To implement programs and strategies which will aid in the preservation of the Gunnison Sage-grouse. This will involve coordination with the Bureau of Land Management, U. S. Forest Service, the Colorado Parks and Wildlife, US Fish and Wildlife Service, National Park Service, Natural Resources Conservation Service, Range Wide Conservation Committee and private land owners…*
>
> *To assist in the review of the Gunnison County Land Use Resolution to advise as to what revisions need to be made to further protect Sage-grouse Habitat."*

Legal Standards

Gunnison County's regulatory authority is limited to land use and potential impacts of development to wildlife. The Committee's review of and recommendations regarding the HPT, therefore, must be mindful of the requirements and limitations of the LUR, and also the limitations on County authority as compared to the authorities and roles of the United States government with regard to species such as the Gunnison Sage-grouse.

The goals of the HPT include:

- To minimize unnecessary burdens on private landowners.
- To provide land use predictability and transparency through data-based mapping.
- To reduce the risk or severity of future federal listing impacts by demonstrating local engagement.

Responsibility for Species Protection Lies with Federal Agencies:

- The U.S. Fish & Wildlife Service holds the legal authority and mandate to manage species protection under the Endangered Species Act.
- The County's role is cooperative and facilitative, not regulatory, in regard to wildlife conservation outcomes.

The Status of the Species in Question. The "Gunnison sage-grouse (*Centrocercus minimus*), a bird species from southwestern Colorado and southeastern Utah[.]" *See* 79 FR 69192, 69193, 79 FR 69192.

- The U.S. Fish & Wildlife Service ("FWS") listed the species as threatened under the Endangered Species Act of 1973, 16 U.S.C. §1531 *et seq.*, on November 14, 2014. *See* 79 FR 69192, 69193, 79 FR 69192.
- Gunnison County, along with the Gunnison County Stockgrowers Association, challenged in multiple and years-long litigation matters, FWS's listing decision. *See, e.g., generally Center for Biological Diversity v. U.S. Fish & Wildlife*, No. 1:15-cv-286 (D. Colo.). One of the arguments made by the County was that the Conservation Agreement with FWS, which included the HPT, was not adequately considered by FWS in its listing decision. *See, e.g.,* Intervenors' Br. No. 1:15-cv-286 (D. Colo.) (Doc. No. 147) (filed Aug. 2, 2017) at 16, n. 4)

- Such efforts ultimately proved unsuccessful. *See, e.g., Colorado v. United States Fish & Wildlife Serv*., 362 F. Supp. 3d 951, 989 (D. Colo. 2018) ("[T]he Court finds that the Service's decision to list the Gunnison sage-grouse as threatened and designate land as its critical habitat was not arbitrary, capricious, an abuse of discretion, without observance of the required procedures, or otherwise contrary to law. Both determinations are therefore AFFIRMED."). Thus, a reasonable conclusion includes that the Federal courts were unconvinced that the HPT had or should have had any discernable or material effect on FWS's Endangered Species Act assessment on the Gunnison sage-Grouse.
- On July 26, 2024, FWS issued its five-year review of the Gunnison sage-Grouse listing, concluding that the grouse remains a threatened species. *See* Status Review (July 26, 2024) at 8. Although the Review makes passing reference to this Committee, it makes no reference to the HPT, citing instead to the Committee's cheatgrass treatments and wet meadow restoration as assisting the viability of the species. *See id.* at 5. Thus, one could conclude that FWS does not see the HPT as having a discernable effect on the listing of or protections regarding the species.

Standard for updating the HPT:
Any proposed updates must meet the following threshold:

- Justification must be expressly and demonstrably tied to land use impacts, expressly taking into account the factors listed in the LUR, particularly Section 11-106.
- Changes should reflect measurable, practical implications for permitting, zoning, or landowner decisions.
- Scientific rationale and support is both necessary and critical—any change to the HPT must be grounded in science and how it informs land use decisions. Given the multi-factor approach of the LUR, it further must be balanced with appropriate land use, agricultural and other public policy implications if community support and buy-in erodes. Moreover, the apparent fact that neither the Federal courts nor FWS have cited or relied upon the HPT as necessary, or even important, to protect the species could reduce the County's ability to protect and defend any changes to the HPT in litigation. *See, e.g., N. N.M. Stockman's Ass'n v. United States Fish & Wildlife Serv*., 494 F. Supp. 3d 850, 1004 (D.N.M. 2020) (applying regulatory takings analysis to cattle grazing restrictions related to Endangered Species Act protections).

Gunnison County remains a committed partner in collaborative conservation and the County must ensure the tools and regulations remain within the bounds of the County's land use authority and do not duplicate or substitute federal enforcement roles. Further, such tools must comply with the LUR multi-factor requirements, *e.g.*, LUR Section 11-106.

Please feel free to reach out with any questions or concerns. Thank you.

Gunnison County LUR Sec 11-106

Protection of Wildlife Habitat Areas

G. **WARNING AND DISCLAIMER**. As a condition of approval of the proposed land use change, the applicant shall sign the following warning and disclaimer that shall be included on the Final Plat of a subdivision, or within the applicable recorded document that approves the Land Use Change Permit:

WARNING AND DISCLAIMER OF WILDFIRE HAZARDS
AFFECTING USE AND OCCUPANCY OF THIS PROPERTY

"I/We_____ (owner(s) of property) on behalf of myself/ourselves and all successors, heirs and assigns, hereby acknowledge having been informed by Gunnison County of the existence of wildfire hazard areas that may affect the use and occupancy of the property, and any improvements thereto. I/We acknowledge that the County's approval of this land use change does not guarantee the safety of the property, or in any way imply that areas outside of the designated hazard areas will be free from hazards and hereby agrees to indemnify, defend and save harmless the County, its agents, officers and employees from and against any and all liability, expense including defense costs and legal fees, and claims for damages of any nature whatsoever, including bodily injury, death, personal injury, or property damage arising from or connected with any activity related to these hazards, including any suits, liability, or expense."

H. **OWNERS SHALL BE RESPONSIBLE**. Property owners who develop in, or have access through, areas subject to wildfire hazards shall be required to construct, implement, maintain, monitor, improve and bear the cost of their development's proportionate share of all reasonable measures necessary to mitigate any wildfire-related hazard created by such development.

SECTION 11-106: PROTECTION OF WILDLIFE HABITAT AREAS

A. PURPOSE. The natural and scenic resources in Gunnison County, including wildlife, are essential components of the County's economic base and help to establish the rural character of the County. Tourists visit and recreate in Gunnison County because of the quality of these natural resources, including the abundance of wildlife species found in the area. These resources are also a basic element of the quality of life for residents of Gunnison County. The standards in this Section are intended to protect sensitive wildlife habitat areas, to protect biological field research, and to ensure that wildlife remains a part of Gunnison County's natural environment for generations to come. In addition, this Section is designed to:

1. **SUSTAIN AND ENHANCE EXISTING POPULATIONS OF GUNNISON SAGE-GROUSE.** Sustain and enhance survival of the Gunnison Sage-grouse.
2. **PRECLUDE THE NEED TO UP LIST, OR MINIMIZE THE IMPACT OF LISTING OF GUNNISON SAGE-GROUSE AS CANDIDATE SPECIES.** Help implement an effective strategy to minimize the impact of listing of the Gunnison Sage-grouse as a candidate for endangered status pursuant to the Endangered Species Act of 1973, or at a minimum, demonstrate the intent of Gunnison County to preserve and protect habitat that will lessen the impact if listing does occur**.**

B. APPLICABILITY. All applications for Land Use Change Permits, including Building Permits, On-Site Wastewater Treatment System Permits, Gunnison County Access Permits, Gunnison County Reclamation Permits, and Land Use Change Permits shall be processed subject to the individual requirements of this Section, and assessed to determine if the location of the proposed activity is within the sensitive wildlife habitat areas designated on the maps referenced in *Section 11-106: C.: Maps Used to Identify Sensitive Wildlife Habitats.*

1. **DEVELOPMENT ON INDIVIDUAL LOTS, WITHIN A BUILDING ENVELOPE, IN SUBDIVISIONS APPROVED BY GUNNISON COUNTY.** If a building envelope on individual lots in subdivisions approved by Gunnison County that was designated on an approved plat, recorded in the Office of the Gunnison County Clerk and Recorder, and is located in Tier 1 Sage-grouse habitat, the building envelope shall be relocated to avoid or minimize impacts to Gunnison Sage-grouse or their habitat, to the maximum extent feasible. This requirement is general in nature and applicable to property subject to land use regulation by Gunnison County. If it is determined that relocation of the building envelope is necessary to avoid or minimize impacts to Gunnison Sage-grouse or their habitat, the process to relocate the building envelope shall be handled as an administrative review by the Community Development Department.

C. MAPS USED TO IDENTIFY SENSITIVE AND CRITICAL WILDLIFE HABITATS. The general reference maps used to identify locations of sensitive wildlife habitats. Because maps depicting wildlife habitat are general in nature, and because animal distribution is fluid and animal populations are dynamic, the maps shall be used as "guides" or "red-flags."

1. **COLORADO DIVISION OF PARKS AND WILDLIFE MAPS.** The Colorado Wildlife Species Map Viewer available on the Colorado Division of Parks and Wildlife website,

2. **GUNNISON COUNTY MAPS.** The Gunnison County *Gunnison Sage-grouse Habitat Map*. The purpose of this map is to place a landowner on notice that a parcel may contain important Sage-grouse habitat areas.

D. INITIAL SITE-SPECIFIC ANALYSIS REQUIRED FOR ACTIVITY PROPOSED ON A PARCEL THAT IS WHOLLY OR PARTIALLY WITHIN GUNNISON SAGE-GROUSE HABITAT. As part of the applicable required permit application review process, the Gunnison County Wildlife Conservation Coordinator, in consultation with the Colorado Division of Parks and Wildlife, shall conduct an initial site-specific analysis of development that is proposed on a parcel that is wholly or partially within Gunnison Sage-grouse habitat.

E. APPLICATIONS FOR LAND USE CHANGE PERMITS, BUILDING PERMITS, ACCESS PERMITS, ON-SITE WASTEWATER TREATMENT SYSTEM PERMITS AND GUNNISON COUNTY RECLAMATION PERMITS ON A PARCEL THAT IS WHOLLY OR PARTIALLY WITHIN GUNNISON SAGE-GROUSE HABITAT. Development located on a parcel that is wholly or partially within Gunnison Sage-grouse habitat that requires a Building Permit, Access Permit, an On-Site Wastewater Treatment System Permit, or a Gunnison County Reclamation Permit.

1. **LOCATION WITHIN GUNNISON SAGE-GROUSE TIER 1 HABITAT.** All applications for Land Use Change Permits, Building Permits, Access Permits and On-Site Wastewater Treatment System Permits and Gunnison County Reclamation Permits shall be reviewed by the Gunnison County Wildlife Conservation Coordinator and shall require consultation with the Colorado Division of Parks and Wildlife.

2. **LOCATION WITHIN GUNNISON SAGE-GROUSE TIER 2 HABITAT.** All applications for Land Use Change Permits, Building Permits, Access Permits, On-Site Wastewater Treatment System Permits and Gunnison County Reclamation Permits shall be reviewed by the Gunnison County Wildlife Conservation Coordinator and may require consultation with the Colorado Division of Parks and Wildlife.

3. **PRE-APPLICATION CONFERENCE**. Owner(s) of land may request a pre-application conference with Gunnison County staff to review Gunnison Sage-grouse issues that reasonably may arise from an application pursuant to this Section. Upon receipt of such request, Gunnison County staff, and as available a representative of the Colorado Division of Parks and Wildlife, will meet with the owner(s) to review such issues and to identify potential solutions. The Community Development Department will coordinate the conference. Gunnison County shall consider the advice of applicant's wildlife biologist/ecologist or a similar qualified expert.

4. **REFERRAL TO GUNNISON COUNTY WILDLIFE CONSERVATION COORDINATOR AND ON-SITE CONSULTATION.** The Community Development Department and the Public Works Department shall forward a copy of the application(s) to the Gunnison County Wildlife Conservation Coordinator. The Gunnison County Wildlife Conservation Coordinator shall determine the habitat type and whether an on-site consultation is required. If an on-site consultation is required the Gunnison County Wildlife Conservation Coordinator shall coordinate and schedule an on-site consultation with the applicant and/or applicant's representative, the Community Development Department, Public Works Department and a representative from the Division of Parks and Wildlife. The purpose of the on-site consultation shall include location of any habitat, identification of site-specific data to inform the review process, and identification of potential mitigation of Sage-grouse related issues..

   a. **TIMELINE FOR REVIEW.** The County shall request that the Colorado Division of Parks and Wildlife submit comments about the application within 21 days after the on-site consultation; when comments are not provided within that time by the Division, the County shall proceed to complete the permit process without those comments.

F. REVIEW, REFERRAL TO COLORADO DIVISION OF PARKS AND WILDLIFE OF MINOR AND MAJOR IMPACT PROJECT APPLICATIONS. The Community Development Department shall refer Land Use Change Permit applications for Minor or Major Impact projects to the local office of the Colorado Division of Parks and Wildlife for that agency's review and comments to make use of the expertise and judgment of that agency in the protection of sensitive wildlife habitat, and its recommendations, if any, to reduce or eliminate adverse impacts to sensitive wildlife habitat and species that may result from proposed development. It is intended that the Division of Parks and Wildlife will review the application and participate in on-site consultations and provide timely comments to the Community Development Department that identify actions and/or recommendations to reduce or eliminate adverse impacts to wildlife.

1. **MINOR IMPACT PROJECTS.** The Department shall submit a copy of the Minor Impact project application to the Division pursuant to *Section 6-106: E: Request for Review by Other Agencies or Departments*, with a written request that the Division review the application and identify in a written response whether or not the parcel on which the land use change is proposed is located within sensitive wildlife habitat, and issues that it believes appropriate to be addressed during the permitting process. Based upon the Division's knowledge of a specific site, the Division may also recommend that a wildlife habitat analysis be conducted, pursuant to *Section 11-106:*

F.4.: Wildlife Habitat Analysis of Minor Impact or Major Impact Projects, which shall be required to be submitted by the applicant before a public hearing is scheduled on the Minor Impact project application.

2. **MAJOR IMPACT PROJECTS.** The Department shall submit a copy of the Preliminary Plan for a Major Impact project application to the Division pursuant *to Section 7-302: C: Review and Comment by Review Agencies,* with a written request that the Division review the application and identify in a written response whether or not the parcel on which the land use change is proposed is located within sensitive wildlife habitat and issues that it believes appropriate to be addressed during the permitting process. If the parcel is located within sensitive wildlife habitat, a wildlife habitat analysis conducted pursuant to *Section 11-106: F.4.: Wildlife Habitat Analysis* shall be submitted by the applicant before the public hearing on the Preliminary Plan is scheduled.

3. **PRE-APPLICATION CONFERENCE FOR MINOR OR MAJOR IMPACT PROJECTS LOCATED ON A PARCEL WHOLLY OR PARTIALLY WITHIN GUNNISON SAGE-GROUSE HABITAT.** A Pre-Application Conference is required for any Minor or Major Impact project located wholly or partially on a parcel within Gunnison Sage-grouse habitat.

4. **WILDLIFE HABITAT ANALYSIS OF MINOR IMPACT OR MAJOR IMPACT PROJECTS**. If Colorado Division of Parks and Wildlife comments indicate that the proposed land use change for a Minor Impact or Major Impact project is within sensitive wildlife habitat, the applicant shall be required to submit a site-specific wildlife habitat analysis. The analysis shall evaluate the relevant physical features of the property, shall make a site-specific determination of the locations of wildlife habitat on the property, and shall describe how the proposed development will comply with *Section 11-106: G.: General Standards for Development in Sensitive Wildlife Habitat Areas.* The analysis shall be prepared by a wildlife biologist/ecologist or similar qualified expert in consultation with the Colorado Division of Parks and Wildlife. It shall be submitted with the Preliminary Plan application for a Major Impact project, or before the public hearing is scheduled on a Minor Impact project, and shall contain the following:

   a. **MAP.** A map of the property shall be submitted, depicting the activity patterns of the wildlife using the sensitive wildlife habitat, identifying, where relevant, migration routes, travel corridors or patterns, nesting, feeding, watering and production areas, and any critical connections or relationships with habitat adjoining, but outside of, the project site. The map shall also identify whether the land immediately surrounding the proposed land use change is privately owned or is public land owned by the U.S. Forest Service, U.S. Bureau of Land Management, Colorado Division of Parks and Wildlife, or other similar agency.

   b. **REPORT.** A report shall be submitted that describes the activity patterns of the wildlife using the habitat, using a scientifically valid time period. It will also identify any species that use the property that are listed by the U.S. Department of the Interior or the State of Colorado as endangered, threatened, or are species of special concern.

      1. **EVALUATE IMPACTS.** The report shall evaluate the potential impacts of the proposed land use change on the sensitive wildlife habitat and the species using that habitat, including whether it could be a threat to the viability of the species, cause a reduction in the diversity of wildlife species in the county, or change the status of its federal or state listing. The report shall identify the types of potential impacts that are anticipated (including stress due to human presence, interference with reproduction, change of migration routes, etc.) and the time periods (spring, summer, fall, winter, year-round, etc.) during which wildlife are expected to be affected by the proposed land use change.

      2. **CUMULATIVE IMPACTS.** The report addressing any Major Impact project (and any proposed land use change classified as a Minor Impact project that the Planning Commission determines requires such evaluation) shall also evaluate the cumulative impacts on wildlife habitat beyond the project site. The report shall also address whether the cumulative impacts of the proposed land use change when added to the past and present impacts of other land use changes, will eliminate, reduce, or fragment wildlife habitat in the county to the extent that the viability of an individual species is threatened or the diversity of species found in the county is reduced, or the population of a species in the impact area will be significantly reduced.

      3. **MITIGATION PLAN.** The report shall include a wildlife habitat mitigation plan that describes how the proposed development will comply with *Section 11-106: G.: General Standards for Development in Wildlife Habitat Areas,* providing detail regarding the avoidance, mitigation, and enhancement techniques, monitoring and performance criteria that will be employed.

G. **GENERAL STANDARDS FOR DEVELOPMENT IN SENSITIVE WILDLIFE HABITAT AREAS**. All development shall comply with the following standards when it is located on lands designated as sensitive wildlife habitat, including but not limited to parcels located partially or wholly in habitat areas delineated on the Gunnison County *Gunnison*

Sage-grouse Habitat Map, and all lands determined to be sensitive wildlife habitat pursuant to Section 11-106: B: *Applicability*.

1. **MITIGATION OF ADVERSE IMPACTS TO SENSITIVE HABITAT.** A proposed land use change must mitigate adverse impacts it causes to lands determined to be sensitive wildlife habitat including but not limited to Gunnison Sage-grouse habitat. Proposed land use changes that are found to have a significant net adverse impact that cannot be mitigated upon sensitive wildlife habitat, shall be denied.

    a. **CONSIDERATION OF BENEFICIAL EFFORTS**. Gunnison County shall consider, and affirmatively recognize as mitigation in the permitting process, conservation easements/covenants (and similar mechanisms), and documented management agreements/programs accomplished, or to be accomplished, in coordination with the Colorado Division of Parks and Wildlife or other agencies (such as the Natural Resources Conservation Service or the U.S. Fish and Wildlife Service) that are beneficial to sensitive wildlife habitat. Each case will be reviewed on an individual basis to determine if the easement, covenant or deed restriction satisfies all of these standards.

        1. **TERMS OF EASEMENT ARE PERPETUAL AND SATISFACTORY TO COUNTY**. The terms of the existing easement, covenant or deed restriction are perpetual and acceptable to the County.

        2. **PRESERVED LANDS PROVIDE SENSITIVE WILDLIFE HABITAT**. That both the preserved land provides sensitive wildlife habitat, and the restrictions imposed by the pertinent easement, covenant or deed restriction are sufficient to justify the determination that adverse impacts have been substantially or wholly mitigated by such preservation.

        3. **ADDITIONAL BENEFITS SUBSTANTIALLY OR WHOLLY MITIGATE ADVERSE IMPACTS.** Additional preservation efforts substantially or wholly mitigate adverse impacts to sensitive wildlife habitat.

2. **IRRIGATION DITCHES.** Pursuant to Colorado law, owners of irrigation ditches have the right to maintain irrigation ditches, headgates and other diversion structures. Gunnison County shall not require mitigation that will interfere with the right of ditch owners to maintain ditches, headgates or other diversion structures.

3. **MITIGATION TECHNIQUES**. Mitigation techniques to protect wildlife species that the County determines may be impacted by a proposed land use change on lands identified in Section 11-106: B: *Applicability,* including, but not limited to:

    a. **LIMITATIONS.** Requirements to avoid sensitive wildlife habitat during seasons the wildlife species use the habitat. When appropriate, the proposal shall include techniques to minimize human intrusion, including, but not limited to:

        1. **BUFFERS.** Visual and sound buffers to screen structures and activity areas from habitat areas through effective use of topography, vegetation, and similar measures.

        2. **LIMITATIONS OF HUMAN ACTIVITIES DURING SENSITIVE TIME PERIODS**. Seasonal avoidance limitations on, or stoppages of intrusive human activities during sensitive time periods, including limiting construction activities and recreational uses during sensitive time periods such as elk migration, elk calving or when sage grouse mating, nesting or brood rearing is occurring on parcels located partially or wholly in habitat areas delineated on the Gunnison County *Gunnison Sage-grouse Habitat Map.*

        3. **LOCATIONAL CONTROLS.** Controls on the location of development, so it does not force wildlife to use new migration corridors, or expose wildlife to significantly increased predation, interaction with vehicles, intense human activity, or more severe topography or climate, or encircle wildlife habitat with development.

    b. **WATERING AREAS**. Measures to avoid disturbance of waterholes, springs, seepages, marshes, stream beds, stream banks, wetlands, streamside vegetation, ponds, and watering areas to the maximum extent feasible. Catchment basins may be required to prevent stream siltation.

    c. **HABITAT COMPENSATION**. Requirements to develop additional habitat, or to acquire and permanently protect existing habitat to compensate for habitat that is lost to development, in the form of ongoing on-site or off-site wildlife habitat enhancement. Enhancement is the process of increasing wildlife carrying capacity on undeveloped habitat and may include prescribed burns, seeding, brush cutting, and fertilization, as determined to be appropriate by the County, based on the advice of the Colorado Division of Parks and Wildlife or other technical experts.

d. **DOMESTIC ANIMAL CONTROLS.** Controls on domestic animals within or near areas of sensitive wildlife habitat. Dogs may be prohibited within one-half mile of elk, deer, and bighorn sheep critical winter ranges and winter concentration areas. The number of cats and dogs allowed in a development may also be limited.

   1. **DOGS AND CATS PROHIBITED OR CONTROLLED NEAR GUNNISON SAGE-GROUSE HABITAT.** Requirements in the form of conditions of a permit, and/or inclusion within declarations of a subdivision's protective covenants enforceable by Gunnison County, may be required prohibiting, or requiring control by kenneling or other physically-secure methods within Gunnison Sage-grouse lek or within Gunnison Sage-grouse habitat.

e. **PROTECTION FROM ANIMAL-BORNE DISEASES**. Gunnison County may impose limitations on the introduction or possession of non-native species to lessen the possibility of the introduction of disease to native wildlife populations.

f. **CONTROL OF NUISANCES.** Controls on lighting, noise, excess use of fertilizers or pesticides, and similar nuisances that could have a significant net adverse effect on Gunnison Sage-grouse habitat and the continued use of the area by other wildlife.

g. **DENSITY RELOCATION.** Residential development may be clustered to avoid sensitive wildlife habitat.

h. **ROAD CONSTRUCTION.** Requirements to avoid new road construction through sensitive wildlife habitat.

i. **STREAM ALTERATIONS OR DIVERSIONS.** Controls on alterations or diversions of streams to retain the character and productivity of the streams. Such alterations will be subject to all applicable local, state and federal codes and regulations.

j. **ALTERATIONS OF EXISTING WET MEADOW/SAGE HABITAT INTERFACE AREAS.** Controls on alterations of existing wet meadow/sage habitat interface areas.

k. **STRUCTURES TO MINIMIZE HAZARDS.** Requirements to design, locate, construct and maintain game-proof fencing, one-way gates, game underpasses, or other structures to minimize hazards to wildlife, such as requiring a minimum distance between high-power electric wires to avoid electrocution of eagles.

l. **AGENCY ACCESS.** Where applicable, the provision of access to Colorado Division of Parks and Wildlife or other applicable agencies to facilitate maintenance of wildlife and wildlife habitat.

H. **STANDARDS SPECIFIC FOR DEVELOPMENT PROPOSED ON PARCELS THAT ARE WHOLLY OR PARTIALLY WITHIN GUNNISON SAGE-GROUSE HABITAT.** In addition to the standards and mitigation techniques included within this Section, the following standards shall apply specifically to development proposed on a parcel that is wholly or partially within Gunnison Sage-grouse habitat:

   1. **DISTURBANCE GUIDELINES**. Development activity shall comply with the GUSG *Disturbance Guidelines in the Gunnison Sage-grouse Rangewide Conservation Plan*, *Appendix 1*, as may be adopted and amended from time to time by the BOCC.

   2. **LIMITATION ON HUMAN ACTIVITIES INCLUDING RECREATIONAL USES DURING GUNNISON SAGE-GROUSE SENSITIVE TIME PERIODS**. Seasonal avoidance or limitations of intrusive human behavior during sensitive time periods, including but not limited to winter and when Gunnison Sage-grouse are mating or raising chicks.

   3. **UNDERGROUND UTILITIES REQUIRED NEAR GUNNISON SAGE-GROUSE LEKS**. Utility lines shall be placed underground within Gunnison Sage-grouse habitat, to discourage avian predators.

I. **FENCES.** Design of fences other than those associated with agricultural operations ~~to~~ shall ensure they do not adversely impact wildlife. Design standards for fences are as follows:

   1. **MAXIMUM HEIGHT**. Fences shall not be higher than 42 inches.

   2. **MATERIALS.** Fences should be limited to a maximum of three strands or rails. Rail fences should only use rounded rails. Wire fences should not be made of woven wire, unless they are used to enclose sheep or goats. Wire and rail fences shall have a kick-space (distance between the top two wires or rails) of not less than 18 inches that uses wire or rail that has a smooth surface. The top rail should be made of a solid material in heavy use areas, to make it more visible to wildlife.

   3. **REMOVABLE SECTIONS**. Fences in migration corridors should have removable sections or openings to allow for seasonal passage of wildlife. The applicant shall be responsible for removing fence sections when migration is occurring and replacing those sections when the season of migration has ceased.

4. **UPGRADING EXISTING FENCES.** As a condition of development approval, applicants proposing land use changes within sensitive wildlife habitat areas should agree to remove or to alter any existing fences on the property to comply with the above requirements.

5. **FENCES AROUND RESIDENCES EXEMPT.** Fences located in the immediate vicinity of a residence shall be exempt from these limitations.

6. **DESIGN AND LOCATION.** Fence location and design should minimize adverse impacts to sensitive wildlife habitat.

J. VEGETATION. Proposed land use changes shall be designed to comply with the recommendations of the Colorado Division of Parks and Wildlife regarding vegetation, and to preserve large areas of vegetation utilized by wildlife for food and cover. Roads shall be located on the edge of wildlife habitat areas, to prevent fragmentation of wildlife habitat. When native vegetation must be removed within habitat areas, it shall be replaced with native and/or desirable non-native vegetation capable of supporting post-disturbance land use. Individuals planting vegetation away from the homesite should consider using vegetation suitable for wildlife cover and food. Vegetation removed to control noxious weeds shall not be required to be replaced, unless the site requires revegetation to prevent erosion or noxious weeds from becoming established.

1. **TIME ALLOTTED FOR REVEGETATION.** Vegetation required pursuant to *Section 13-115: Reclamation and Noxious Weed Control* shall be established and growing within two growing seasons (730 days) of the issue date of the applicable Gunnison County Reclamation Permit.

K. CDOW ACCESS. Where applicable, the applicant shall continue to provide historical access or agreed-upon new access other than the historical access, for the Colorado Division of Parks and Wildlife to manage wildlife and to monitor wildlife activities.

SECTION 11-107: PROTECTION OF WATER QUALITY

A. PURPOSE. The purpose of this Section is to protect the quantity, quality and dependability of water resources in Gunnison County by avoiding development in and adjacent to water bodies and mudflow hazard areas whenever possible, by minimizing adverse impacts of development, including siltation, sedimentation, salinization, runoff, loss of decreed minimum in-stream flows, stream bank erosion and change to existing drainage patterns.

B. RELATIONSHIP TO OTHER SECTIONS. As applicable, of the standards imposed by this Section, and Section 11-103: *Development in Areas Subject to Flood Hazards*, Section 13-116: *Grading and Erosion Control*, and Section 13-117: *Drainage, Construction and Post-Construction Storm Water Runoff*, the more restrictive shall apply.

C. APPLICABILITY. Unless otherwise exempted, this Section shall apply to all Land Use Change Permit applications that involve uses within 125 feet of water bodies and mudflow hazard areas in unincorporated areas of Gunnison County, except as exempted in Section 11-107: C. 1.: *Exempt,* and Section 11-107: C. 2.: *Partially Exempt.*

1. **EXEMPT.** The following structures, improvements, activities, or areas shall be exempt from all of the requirements of this Section:

   a. **STRUCTURES USED FOR DECREED WATER RIGHT**. Structures or improvements used for the exercise of a decreed water right, including headgates and measuring devices; and

   b. **WETLANDS RESULTING FROM AGRICULTURAL OPERATIONS**. Wetlands and riparian areas created solely by normal and customary agricultural activities; and

   c. **PROJECTS PRIMARILY FOR WATER PROTECTION THAT HAVE RECEIVED REQUIRED STATE OR FEDERAL PERMITS**. Projects that have received all applicable permits required by state and/or federal agencies, such as those designed primarily for the enhancement, protection and/or restoration of water body banks or channels, wetlands, riparian areas and/or piscatorial wildlife habitat; and

   d. **WATER IMPOUNDMENTS**. Water impoundments that are a component of an approved mineral exploration or extraction Project or construction materials processing Project, and comply with Section 13-118: *Water Impoundments,* and with all applicable federal codes and regulations; and

   e. **EMERGENCY FLOOD CONTROL MEASURES.** A structure or other land use change necessary, in an emergency declared by the County Manager to eliminate or reduce potential flood hazards or damage. If it is to be removed, it shall be removed as soon as possible; and

HPT Update Presentation

Proposed Revisions to the Habitat Prioritization Tool

Technical Subcommittee

Gunnison Basin Sage Grouse Strategic Committee

May 2025

Where are we headed?

- Overview, uses
- County land use review process
- How the HPT works
- Proposed updates
- Changes to Tier 1/Tier 2 acreage and parcels
- Scenarios for development

Photo from eBird

Habitat Prioritization Tool Overview

- Began in 2012
  - Updated in 2018
  - Annual and 5-year updates recommended in documentation
- Prioritizes **potential** habitats for Gunnison sage-grouse
  - Tier 1 vs Tier 2
- Technical Subcommittee
  - Approved by full Strategic Committee

Photo by Bob Gress

2014 Listing Decision
Federal Register Volume 79, No. 224

- "As described in detail below, we have determined that the most substantial threats to Gunnison sage-grouse currently and in the future include habitat decline due to human disturbance (Factor A), small population size and structure (Factor E), drought (Factor E), climate change (Factor A), and disease (Factor C)." (page 69192)
- **Summary of Changes From the Proposed Rule** (Endangered to Threatened)
  - "…. we have reevaluated our proposed listing rule and made changes as appropriate. (4) We have found that the threat from current residential development in the Gunnison Basin is not as high as we previously concluded. See Factor A analysis and discussion." (page 69201)
  - It's the ONLY factor listed with that change.

Gunnison County Land Use Resolution
Section 11-106: Protection of Wildlife Habitat Areas

A. **Purpose**. The standards in this Section are intended to protect sensitive wildlife habitat areas, to protect biological field research, and to ensure that wildlife remains a part of Gunnison County's natural environment for generations to come.

   1. Sustain and Enhance Existing Populations of Gunnison Sage-Grouse
   2. Preclude the Need to List, or Minimize the Impact of Listing of Gunnison Sage-Grouse as Candidate Species.

C. **Maps Used to Identify Sensitive and Critical Wildlife Habitats.** The general reference maps used to identify locations of sensitive wildlife habitats. Because maps depicting wildlife habitat are general in nature, and because animal distribution is fluid and animal populations are dynamic, the maps shall be used as "guides" or "red-flags."

How is it Used?

- Gunnison County land use planning
- BLM uses the HPT to identify routes for decommissioning
- USFS used the HPT when under the CCA agreement to prioritize projects and for Section 7 consultation
- Incorporated into the
  - CPW Wildlife Decision Tool
  - Cheatgrass treatment prioritization mapping
  - Referenced in USFWS GUSG SSA and RIS

USFWS Species Status Assessment

- Conservation Efforts
  - Long-Term Protection on Private Lands
  - **Regulatory Measures on Private Lands (3.3.2)**
    - "Most counties with GUSG populations have developed specific land use regulations addressing local habitat conservation in long-term development planning"
  - Regulatory Measures on Public Lands
  - Habitat Restoration Actions
  - Translocations and Captive Rearing

- Cited in Conservation Scenarios section as a factor to consider for species viability assessments

USFWS Recovery Implementation Strategy – Priority 1 Actions and Activities

- 3.05 Acquire and/or protect private lands, prioritizing those adjacent to public lands and contain moderate to high quality GUSG habitat in collaboration with state, Federal, local, and conservation partners (such as land trusts, conservation realtors, and NGOs).
- 3.08 Continue using Habitat Prioritization Tool (HPT) and Gunnison County Land Use Resolution for land use permitting in GUSG habitat.
- 3.09 Improve procedures with counties to determine if take may occur from private lands development and a streamlined process for issuing incidental take permits. This can be done through determining specific standards for preventing take of GUSG and their habitat at the population level and specific minimization and mitigation standards to offset take in an incidental take permit (Habitat Conservation Plan) and/or county regulations.
- 3.11 Improve communication and outreach to improve land use regulations and procedures to avoid loss of habitat, specifically in Saguache County.

Gunnison County Sage-Grouse Reviews

Gunnison County receives pre-app or permit app and sends to contract biologist

Biologist evaluates Tier 1/ Tier 2, distance to lek, presence of existing development

Tier 2

If no additional factors warrant site visit, biologist completes desk review

Contract biologist sends review to County. County may choose to implement recommendations into building permit approvals. Review recorded with deed.

no

Tier 1

Biologist determines if a site visit is warranted, sends to CPW for concurrence

yes

If a site visit is warranted, includes contract biologist, CPW biologist, applicants, County Public Works, County Community Development

Determine habitat condition, line of sight to lek, presence of grouse sign (fecal pellets, etc.). Consider and discuss mitigations to minimize impact.

Gunnison County Land Use Planning

Actions	Tier 2 Parcels	Tier 1 Parcels
Desk review / site visit	Usually desk review, can request site visit	Usually desk review, can request site visit (more likely to have potential for a site visit)
Request concurrence with CPW	Can occur, but usually not	Always
Reclamation Permit	Usually not required unless >10,000 sq ft disturbance or in discussion with Gunnison County Public Works or CPW about resources at risk	Usually required

Likely Recommendations

- Noxious weed treatment
- Controlling pets
- Need separate review for proposals not covered by current review
- Reclamation permit and reseeding with native species
  - Tier 2: if disturbance >10,000 sq ft (or at discretion, request of County staff)
  - Tier 1: always

- "This review encompasses restrictions as related to sage-grouse habitat values and **DOES NOT** constitute clearance for building. The applicant shall obtain the applicable Gunnison County permits before beginning construction or ground-disturbing activities."

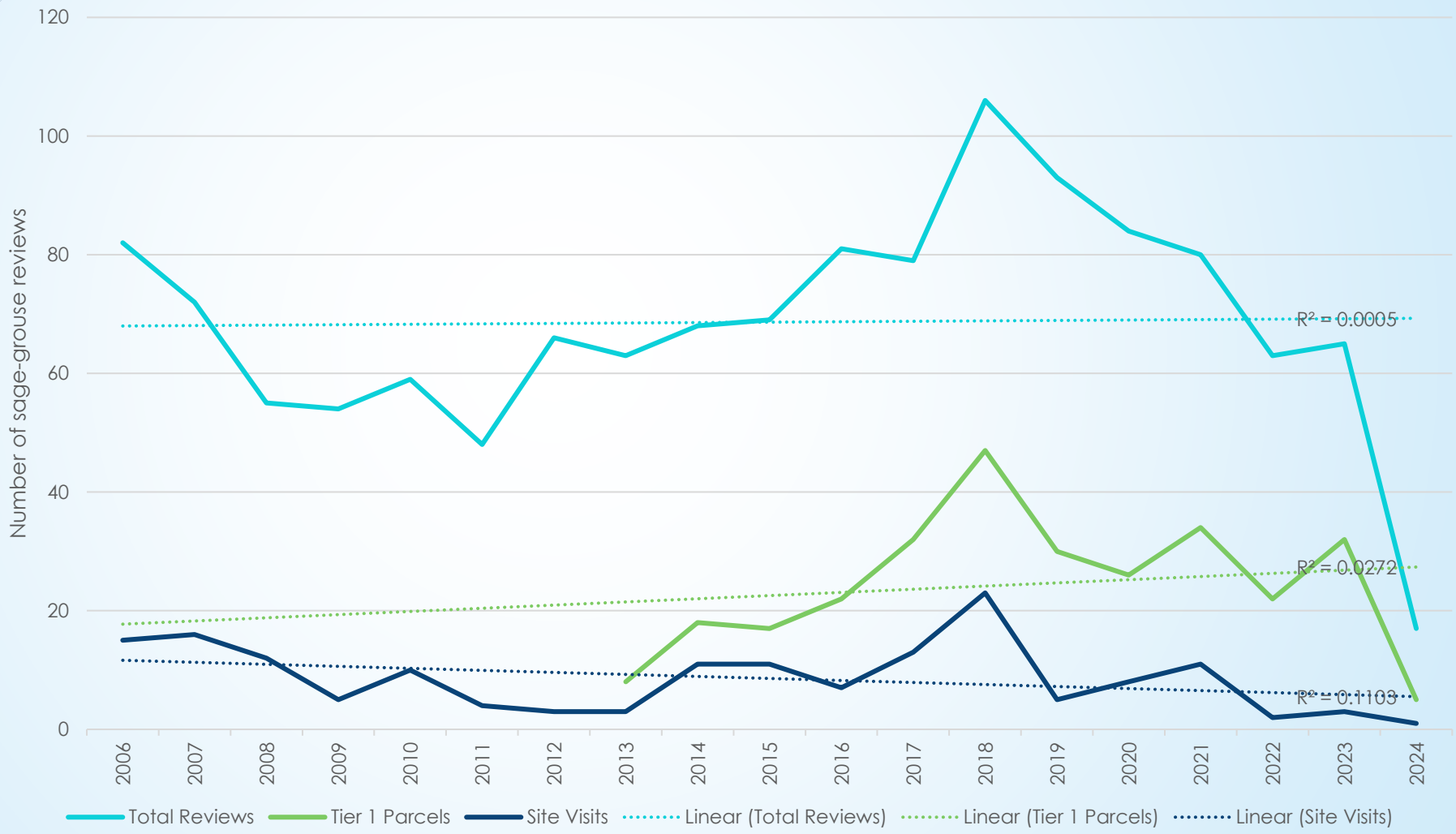
Possible Additional Recommendations

- Wildlife friendly fencing
- No conversion of sagebrush habitats or habitat treatments without consultation
- Grazing planning assistance
- No gallinaceous game bird importation
- No roads, trails, etc. without additional review
- Long-term camping permit
- Site specific design and location control
  - House color, number of stories, driveway orientation to minimize headlights, exterior lighting
  - Cluster development, building envelope
- Driveway width waiver to 12-foot wide
- Living with wildlife recommendations

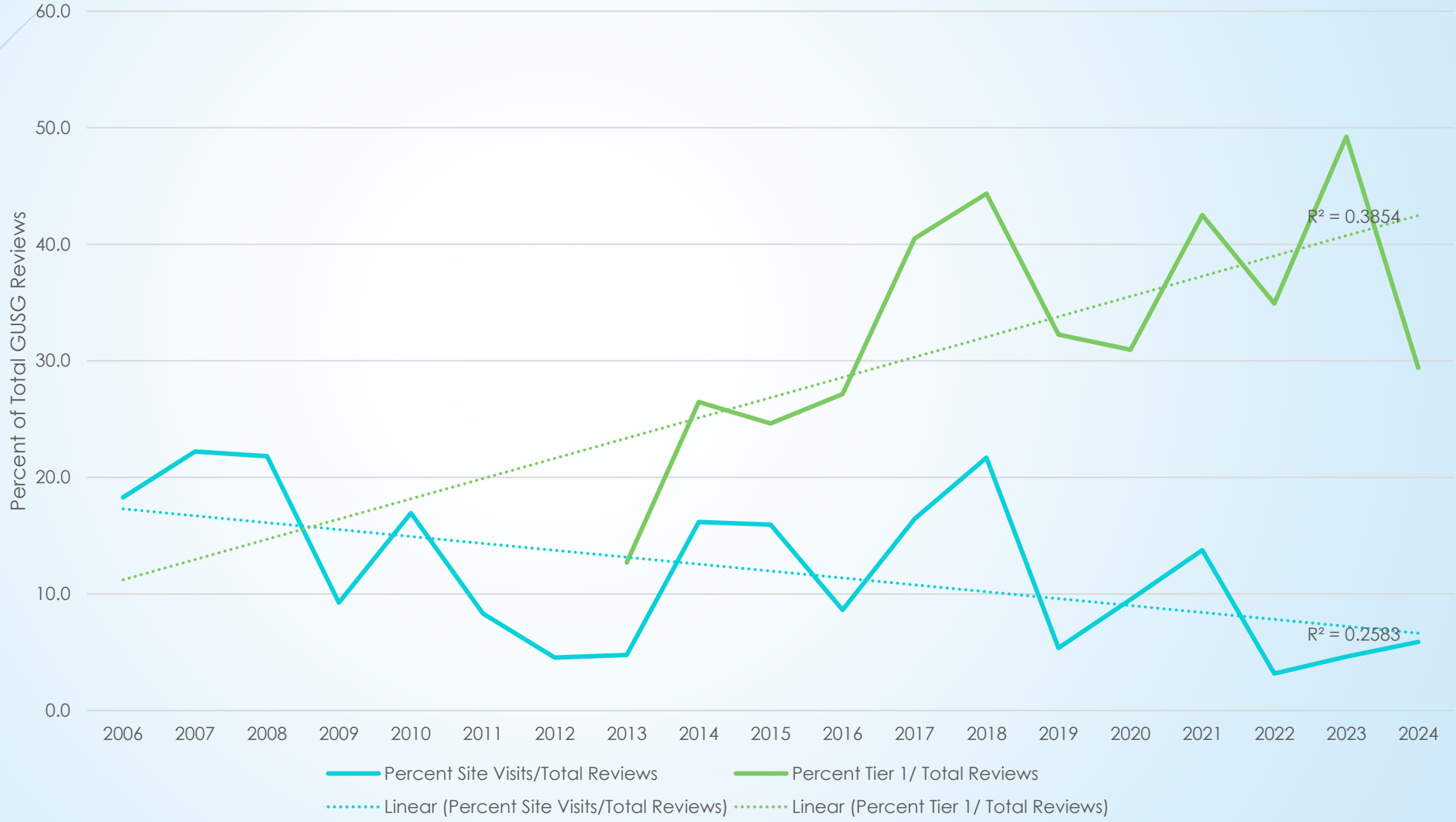
Cost to Applicants for Land Use Planning

- Sage-grouse Review
  - Desk review $65
  - Site visit $225
  - Fees will be adjusted annually with the Consumer Price Index
- Reclamation Permit
  - Until January 1, 2025: $75
  - Post January 1, 2025: $670 permit application fee
    - $1,500 security deposit for first 10,000 sq ft and $200 for each additional 1,000 sq ft

How many reviews?



How many reviews?



Habitat Prioritization Tool

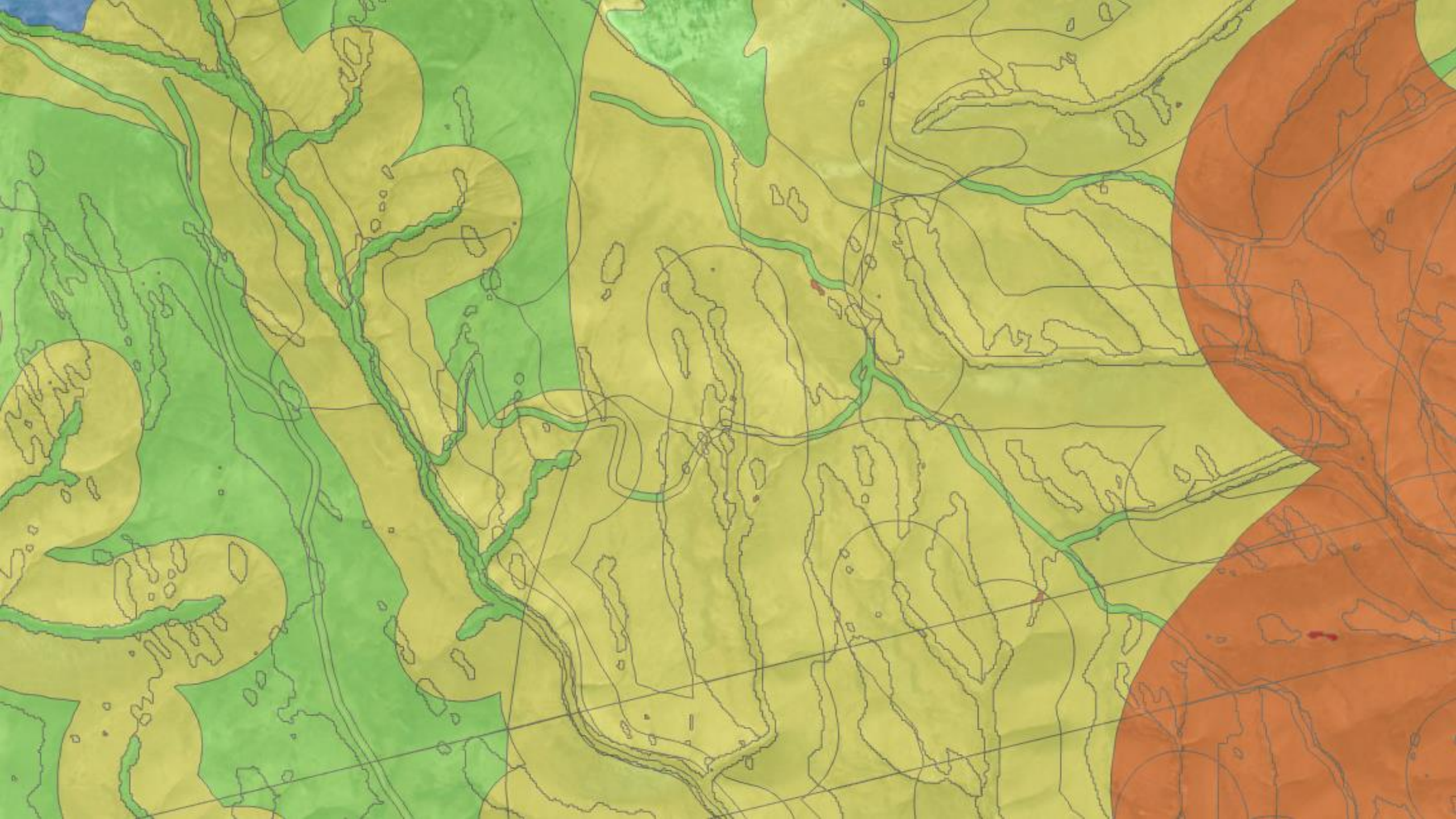
How does the HPT work?

Habitat (+)

- Leks (within 0.6 miles)
- Land Near Active Leks (within 2.0 miles)
- Brood Rearing Habitat
- Nesting/Summer/Fall/Winter Habitat
- Irrigated Lands

Impacts (-)

- Subdivisions
- Roads and Trails
- Power Lines
- Unsuitable Habitat



Evaluation Class Breaks – Habitat (+)

- Leks (within 0.6 miles)
  - Active (15)
  - Unknown (10)
  - Inactive (8)
  - Historic (1)
- Land Near Active Leks (within 2.0 miles)
  - Areas within active leks and <2 miles from the edge of the active leks (5)
- Brood Rearing Habitat
  - Present (13)
- Nesting/Summer/Fall/Winter Habitat
  - Present <750 ft from brood rearing and winter habitat (15)
  - Present >750 ft from brood rearing and winter habitat (10)
- Irrigated Lands
  - Present (1)

Evaluation Class Breaks – Impacts (-)

- Subdivisions
  - Areas within 300 ft of a house point (-5)
  - Areas where 3 house points are within 1,000 ft (-20)
- Roads and Trails
  - <150 ft from the centerline of an improved road (-4)
  - <50 ft from centerline of a double track (-3)
  - <25 ft from the centerline of a single track (-2)
  - <25 ft from the centerline of a closed route (0)
- Power Lines (above-ground)
  - 0 – 820 ft from WAPA transmission line (-3)
  - 820 – 1640 ft from WAPA transmission line (-2)
  - 1641 – 4920 ft from WAPA transmission line (-1)
  - 4920 – 6560 ft from WAPA transmission line (0)
  - 150 – 450 ft from GCEA distribution line (-1)
  - <150 ft from GCEA distribution line (-2)
- Unsuitable Habitat
  - Within and <500 ft from the landfill boundary (-30)
  - UMTRCA site (-30)
  - Gunnison County airport (-30)
  - Large open water areas (-30)
  - Large/historic gravel pits (-30)

Habitat Prioritization Tool Proposed Updates

2025 Recommended Updates

- "This model incorporates the most recent information providing a representation of potential on the ground habitat conditions in the Gunnison Basin. Data included is the best information available at the time. Future updates will be essential when new and better data is available."
  - Gunnison Sage-Grouse Habita Prioritization Tool 2018 Update Documentation
- Recommended updates to:
  - Spatial data
  - Scores
  - Documentation

Considered but Dismissed

- Critical Winter Habitat
- Seeps and springs spatial data for Brood Rearing Habitat
- Tree/conifer layer
- Communication towers
- Decommissioned routes vs. closed routes
- Seasonal road closures
- Noxious weeds
- Viewshed analysis for power lines

Updated Spatial Data

- Soils data
- Roads layers – BLM, USFS, NPS, CPW
  - Including driveways
- Lek status
- Lek polygon shapes/locations

Updated Scoring

- Irrigated lands
  - 1 → -8
- Leks
  - Within 0.6 miles of a historic lek
    - 1 → 6

Updated Scoring

- Irrigated lands
  - 1 → -8
- Leks
  - Within 0.6 miles of a historic lek
    - 1 → 6
  - Within 0.6 miles to 1.0 miles of an active lek
    - 0 → 8
  - Within 0.6 miles to 1.0 miles of an unknown lek
    - 0 → 5
  - Within 0.6 miles to 1.0 miles of an inactive lek
    - 0 → 4
  - Within 0.6 miles to 1.0 miles of an historic lek
    - 0 → 3

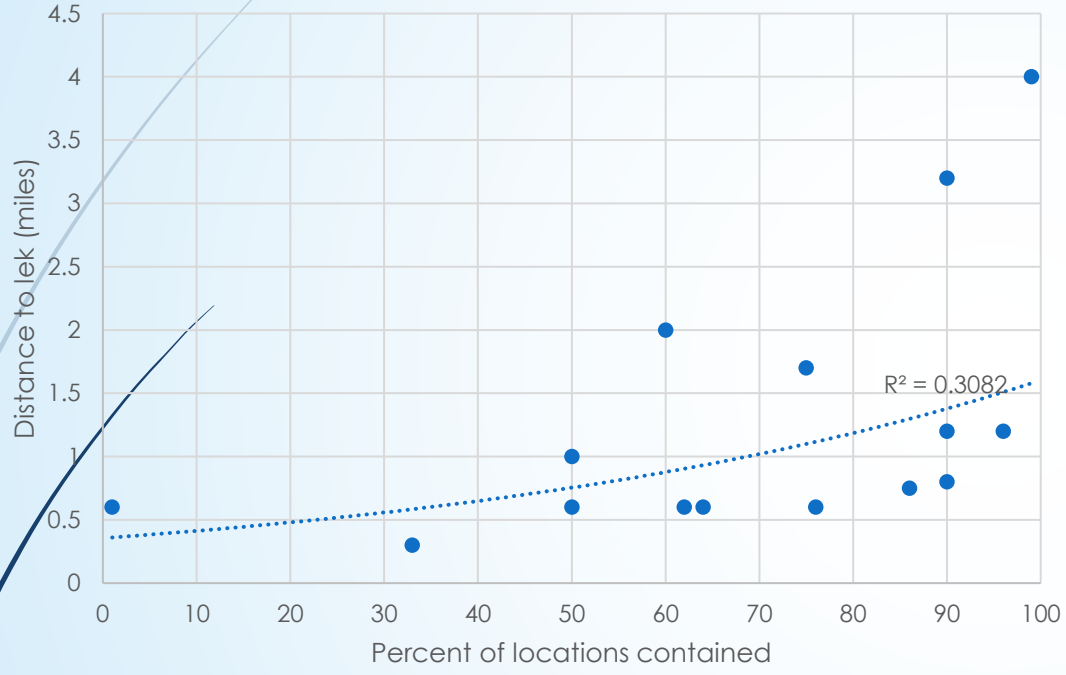
Lek Buffer Literature - Disturbances

- Blickley et al. 2012:
  - Greater sage-grouse
  - 73% declines in male lek attendance, 48% declines in female lek attendance associated with road noise (even with no road present but mimicked road 0.25 miles away)
- Piquette et al. 2014:
  - Gunnison sage-grouse
  - Short-term anthropogenic noises (vehicles, airplanes)
  - Disrupted lek behavior including vocalizations/display efforts from 0.3 – 4.3 miles from leks
  - Mechanism for masking display noise
- Atkinson et al. 2021:
  - Raven point counts were more likely to detect ravens closer to (larger) leks and human footprint
  - Ravens disrupted lek behavior more than any other predator or ungulate
  - May adversely influence lek activity and therefore reproduction

Lek Abandonment and Extirpation

- Aldridge et al. 2008: Extirpation most likely in areas with ≥ 4 people/sq km in 1950
- Holloran 2005: Male lek attendance declined nearly 100% for leks close to drilling rigs, producing wells, main haul roads within 5 km of lek
- Harju et al. 2010: Leks with 1+ well in 0.25 miles had 35-91% lower attendance, and impacts up to 3 miles. 8 well pads/sq mile had 77-79% reduced attendance
- Hanser et al. 2011: Occurrence was reduced near energy development, power lines, major roads
- Johnson et al. 2011: Fewer leks and more significantly declining attendance in 3.1 miles of developed land
- Wisdom et al. 2011: Factors that separated extirpated and occupied ranges included sagebrush area, distance to transmission lines, distance to cellular towers, land ownership. Human density 26 times lower in occupied vs extirpated range.
- Hess and Beck 2012: Lek abandonment increased with number of oil and gas wells within 1.0 km
- Gregory and Beck 2014: Increasing well density associated with 24% decline in lek counts
- Suzuki Spence et al. 2017: Core Areas in WY were half as likely to have lek collapse
- Dinkins et al. 2021: Higher proportions of human populations, oil and gas well densities were associated with lower abundance (removing time-varying population cycles)

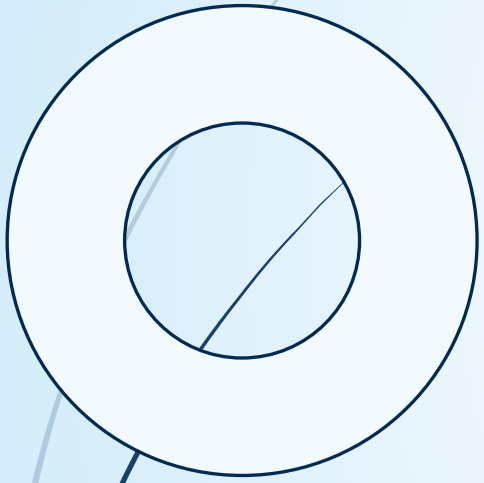
Distance to lek (miles)	Male/ Female	Metric	Season	Result	n (adults)	Capture location	Citation
0.9– 1.1	M	"Cruising radius" from lek	Breeding	Range			Carr et al. 1967
0.6	M	Locations	Breeding	76% contained	15 (13)	Lek	Wallestad and Schladweiler 1974
0.8	M	Locations	Breeding	90% contained	15 (13)	Lek	Wallestad and Schladweiler 1974
0.2 – 1.2	M	Daily movement from lek	Breeding	90% contained	15 (13)	Lek	Wallestad and Schladweiler 1974
0.6	M	Locations for males	Breeding	64% contained	?	?	Rothenmaier 1979
0.75	M	Locations for males	Breeding	86% contained	?	?	Rothenmaier 1979
>0.3	M	Locations for males	Breeding	67% contained	?	?	Emmons 1980
0.6	M	Lek to day use	Breeding	Average	11 (9)	Along roads, leks	Schoenberg 1982
0.02 – 1.2	M	Lek to day use	Breeding	Range	11 (9)	Along roads, leks	Schoenberg 1982
0.6	M	Lek to day use	Breeding	62% contained	11 (9)	Along roads, leks	Schoenberg 1982
1.2	M	Lek to day use	Breeding	96% contained	11 (9)	Along roads, leks	Schoenberg 1982
0.3 – 0.5	M	Lek to day use	Breeding	"Typical"	8 (7)	Lek	Ellis et al. 1987, Ellis et al. 1989
1.2 – 1.3	M	Lek to day use	Breeding	Longest	8 (7)	Lek	Ellis et al. 1987, Ellis et al. 1989
0.6 – 1.2	F	Daily displacement	Breeding	Average	30	Lek, and unknown	Bradbury et al. 1989
3.2	Both	Space use	All seasons	90% contained	193	Spring/fall	Coates et al. 2013
1.7	Both	Space use	All seasons	75% contained	193	Spring/fall	Coates et al. 2013
1.0	Both	Space use	All seasons	50% contained	193	Spring/fall	Coates et al. 2013
0.6	F	Locations, Gunnison Basin	Breeding – brood-rearing	1% contained	4	Unknown	Ouren et al. 2019
2.0	F	Locations, Gunnison Basin	Breeding	60% contained	4	Unknown	Ouren et al. 2019
4.0	F	Locations Gunnison Basin	All seasons	99% contained	4	Unknown	Ouren et al. 2019


Distance to lek (miles)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
10
20
30
40
50
60
70
80
90
100
Percent of locations contained
R² = 0.3082

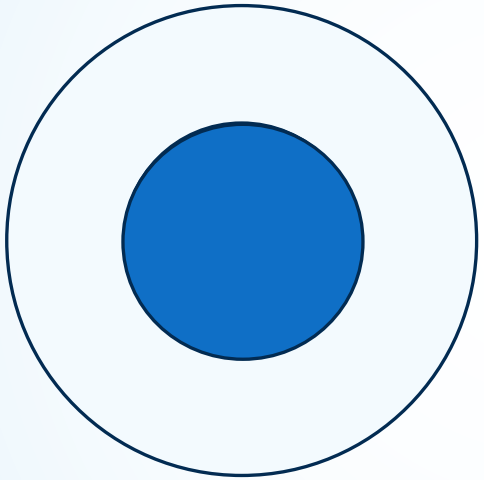

Distance to lek (miles)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Males
Females
Both

Impacts to Tier 1 / Tier 2 Habitat Designations

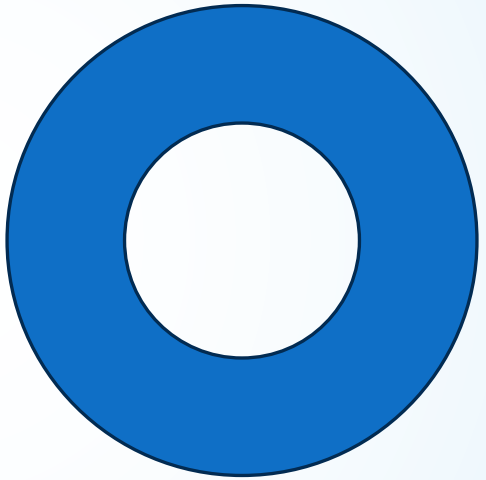
2018



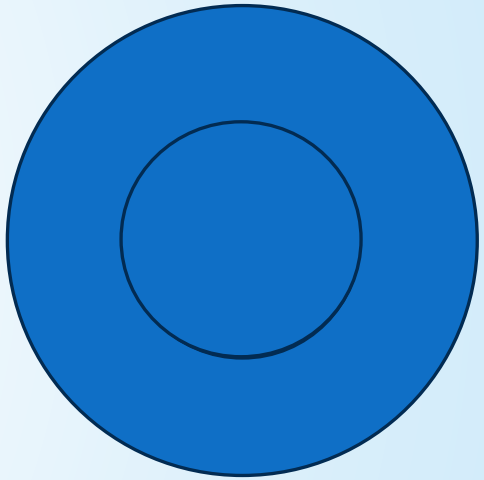
2025
"Base"



2025
"Half Values"



2025
"Full Values"



Changes to Habitat and Impacts Acreage

Habitat	HPT Version	Acres	% Change in Acreage from 2018 to Draft 2025	% of Total Acreage*	% Change in Total Acreage* from Version 2 (2018)
Winter	2018	210,645.3	0	34.9%	0
	Draft 2025	210,504.7	-0.1%	34.9%	0
NSF	2018	217,847.9	0	36.1%	0
	Draft 2025	216,132.6	-0.8%	35.8%	-0.3%
Roads	2018	18,043.1	0	3.0%	0
	Draft 2025	20,111.2	10.3%	3.3%	0.3%

*All acreage included in HPT is 602,985.5

Changes to Tier 1 and Tier 2 Acreage

Tier	HPT Version	Acres	% Change in Tier 1/ Tier 2 Acreage from Version 2 (2018)	% of Total Acreage*	% Change in Total Acreage* from Version 2 (2018)
Tier 1	2018	364,348.7	0	60.4%	0
	Draft 2025	389,728.2	6.5%	64.6%	4.2%
	Draft 2025 with half values 0.6 – 1.0 miles	398,204.1	8.5%	66.0%	5.6%
Tier 2	2018	238,636.8	0	39.6%	0
	Draft 2025	213,729.3	-16.5%	34.0%	-4.2%
	Draft 2025 with half values 0.6 – 1.0 miles	205,379.3	-16.2%	34.1%	-5.6%

*All acreage included in HPT is 602,985.5

Changes to Tier 1 and Tier 2 Acreage

Tier	HPT Version	Acres	% Change in Tier 1/ Tier 2 Acreage from Version 2 (2018)	% of Total Acreage*	% Change in Total Acreage* from Version 2 (2018)	
Tier 1	2018	364,348.7	0	60.4%	0	
	Draft 2025	389,728.2	6.5%	64.6%	4.2%	1.4%
	Draft 2025 with half values 0.6 – 1.0 miles	398,204.1	8.5%	66.0%	5.6%	
Tier 2	2018	238,636.8	0	39.6%	0	
	Draft 2025	213,729.3	-16.5%	34.0%	-4.2%	-1.4%
	Draft 2025 with half values 0.6 – 1.0 miles	205,379.3	-16.2%	34.1%	-5.6%	

*All acreage included in HPT is 602,985.5

Changes to Tier 1 and Tier 2 Parcels Gunnison County

Parcel type	Version 2 (2018)	Version 3 (2025)	Version 3 (2025) Half Values
Total	6,286	6,286	6,286
Tier 1	1,327	1,311 **(-16)**	1,333 **(6)**
Tier 1 with Easement	207	198 (-9)	198 (-9)
Tier 1 Public Land	722	730 (+8)	734 (+12)
Tier 1 with Existing Reviews	379	407 (+28)	414 (+35)
Tier 1 Private Land, No Easements, No Existing Reviews	306	268 **(-38)**	281 **(-25)**

Changes to Tier 1 and Tier 2 Parcels Gunnison County

Parcel type	Version 2 (2018)	Version 3 (2025)		Version 3 (2025) Half Values
Total	6,286	6,286		6,286
Tier 1	1,327	1,311 **(-16)**	**+20**	1,333 **(6)**
Tier 1 with Easement	207	198 (-9)	**0**	198 (-9)
Tier 1 Public Land	722	730 (+8)	**+4**	734 (+12)
Tier 1 with Existing Reviews	379	407 (+28)	**+7**	414 (+35)
Tier 1 Private Land, No Easements, No Existing Reviews	306	268 **(-38)**	**+13**	281 **(-25)**

Of changes to parcels in Gunnison County

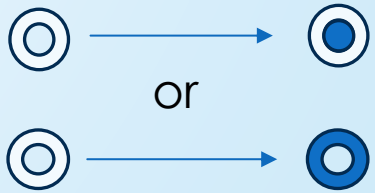
- Version 2 (2018) HPT to Version 3 (2025 draft **with** 0.6-1.0 mile buffer)
  - 99 parcels decreased from Tier 1 to Tier 2
  - 105 parcels increased from Tier 2 to Tier 1 **(net 6)**
  - Of parcels that increased from Tier 2 to Tier 1:
    - 29 public
    - 0 easement
    - 68 previous reviews
    - 24 other
      - 13 developed
      - 7 undeveloped partially forested
      - 4 undeveloped

Changes to Tier 1 and Tier 2 Parcels Saguache County

Parcel type	Version 2 (2018)	Version 3 (2025)	Version 3 (2025) Half Values
Total	332	332	332
Tier 1	296	301	300
Tier 1 with Easement	21	22	22
Tier 1 Public Land	3	3	3
Tier 1 with Existing Reviews	No spatial data	No spatial data	No spatial data
Tier 1 Private Land, No Easements, No Existing Reviews	273	277	277

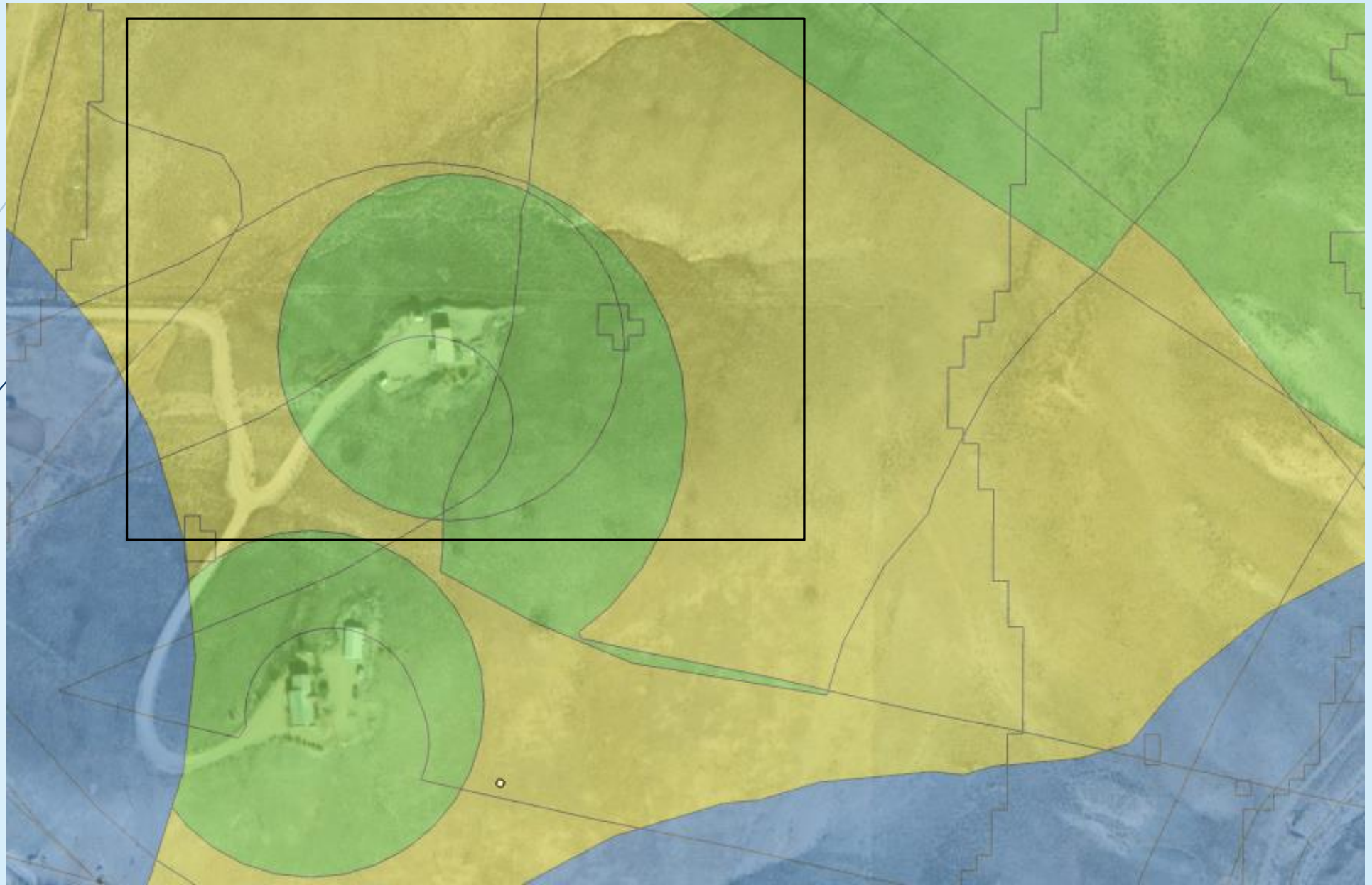
Of changes to parcels in Saguache County

- Version 2 (2018) HPT to Version 3 (2025 draft **with or without** 0.6-1.0 mile buffer)
  - 0 parcels decreased from Tier 1 to Tier 2
  - 5 parcels increased from Tier 2 to Tier 1 **(net +5)**
  - Of parcels that increased from Tier 2 to Tier 1:
    - 1 easement
    - 4 other (spatial data not available in time to assess if they were previously reviewed)
      - 1 developed
      - 3 undeveloped partially forested
      - 0 undeveloped

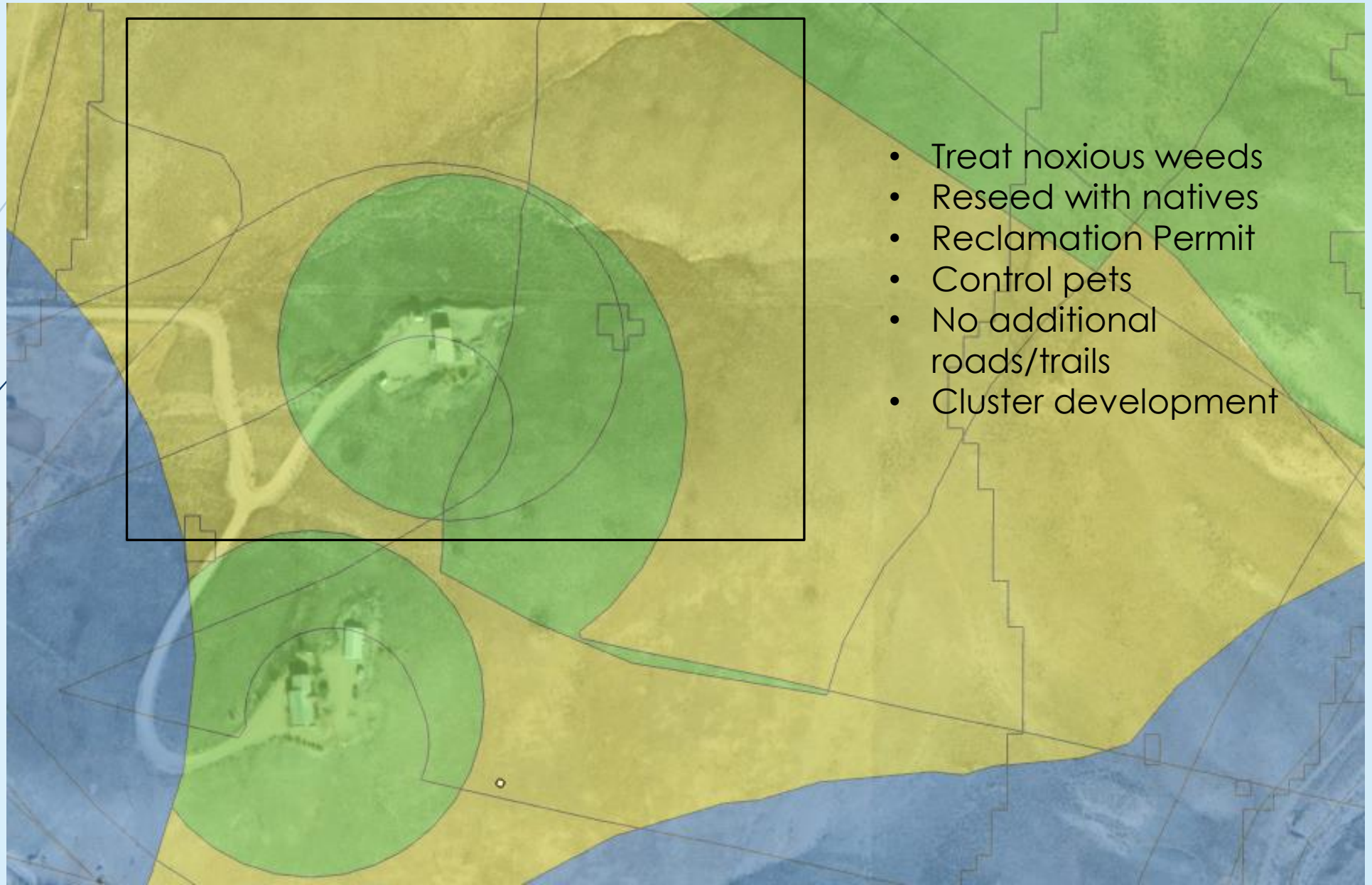


On the Ground Scenarios

Scenario 1: Developed



Scenario 1: Developed



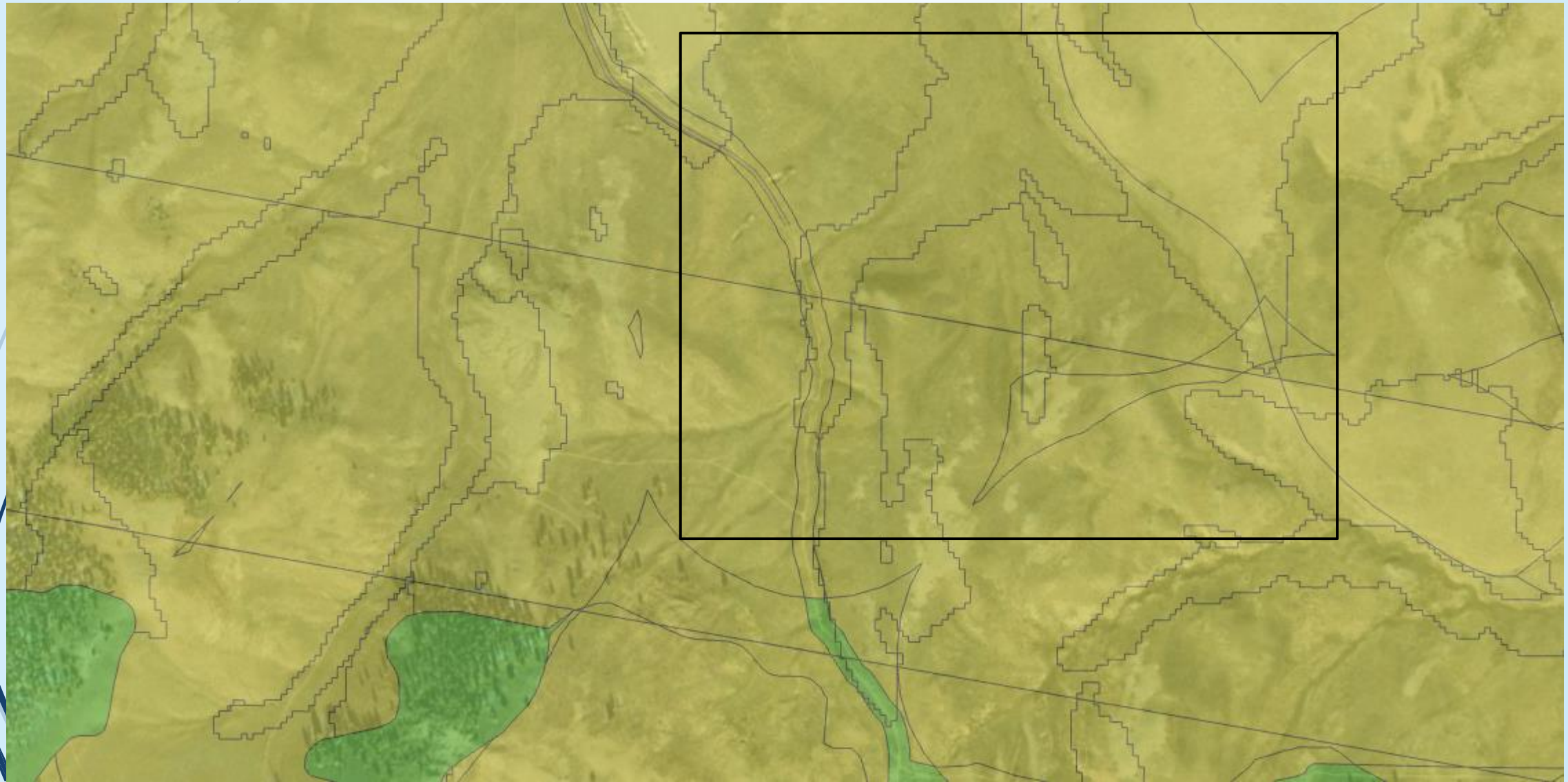
- Treat noxious weeds
- Reseed with natives
- Reclamation Permit
- Control pets
- No additional roads/trails
- Cluster development

Scenario 2: Undeveloped, Partially Forested

Scenario 2: Undeveloped, Partially Forested

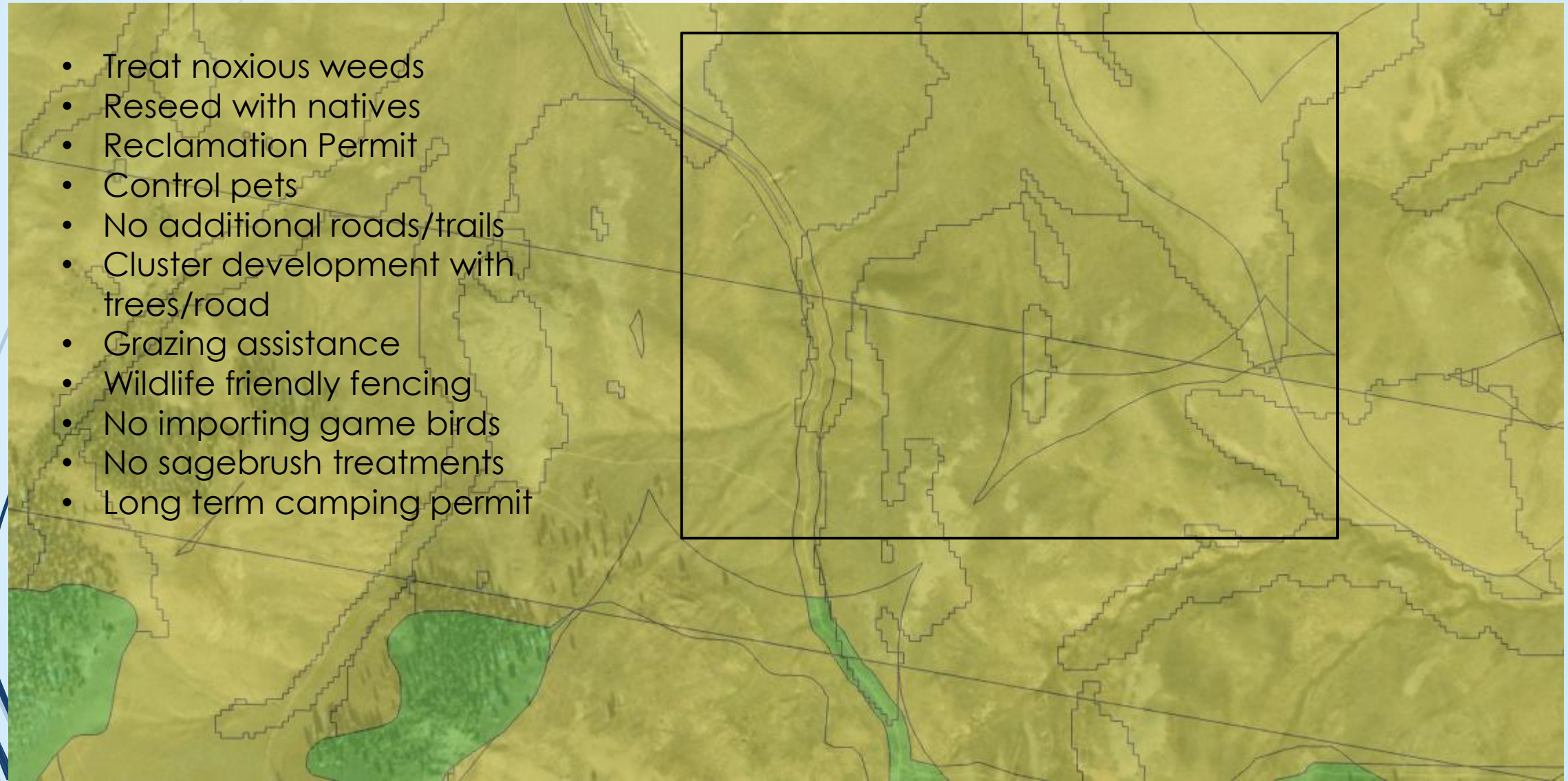
- Treat noxious weeds
- Reseed with natives
- Reclamation Permit
- Control pets
- No additional roads/trails
- Cluster development with trees/road
- Grazing assistance
- Wildlife friendly fencing
- No importing game birds
- No sagebrush treatments
- Long term camping permit

Scenario 3: Undeveloped, Lower Concern

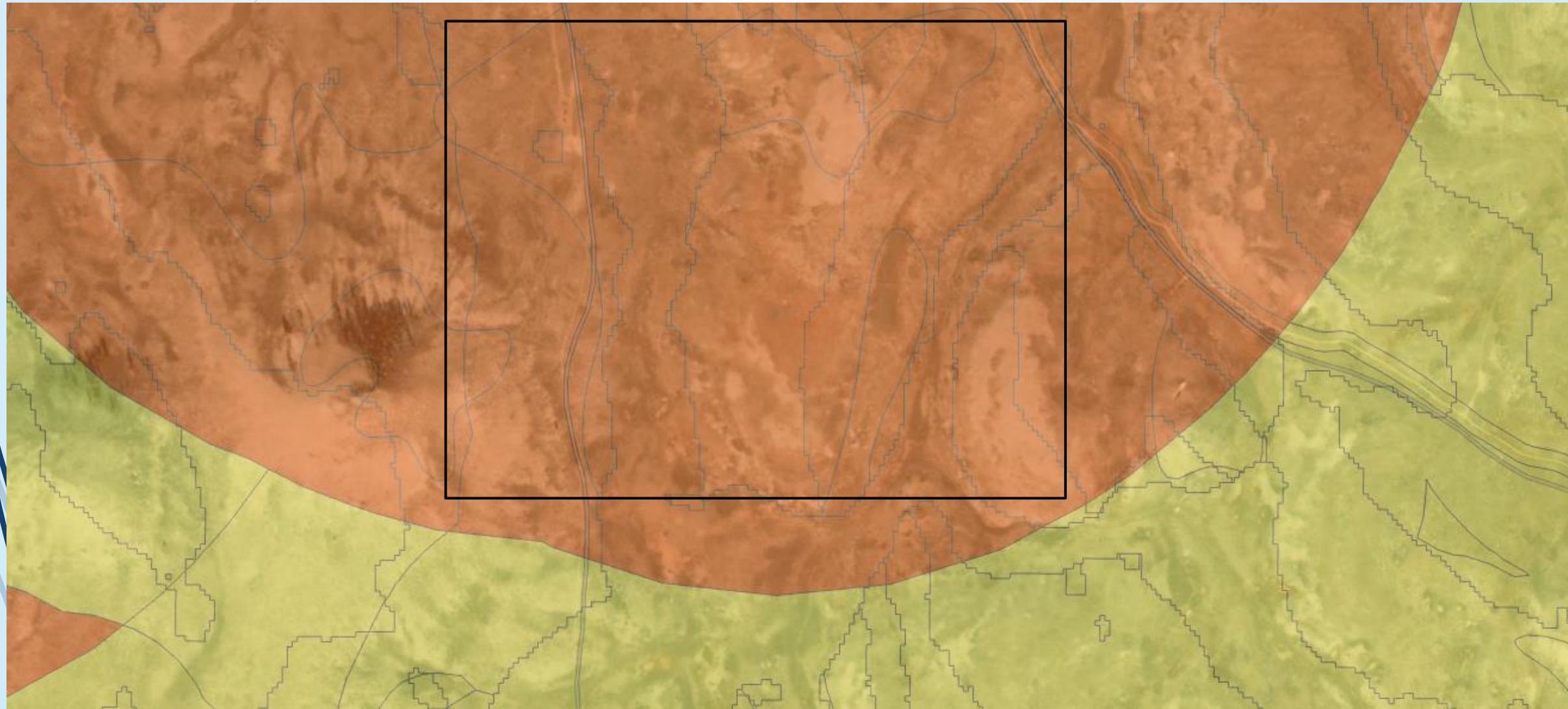


Scenario 3: Undeveloped, Lower Concern

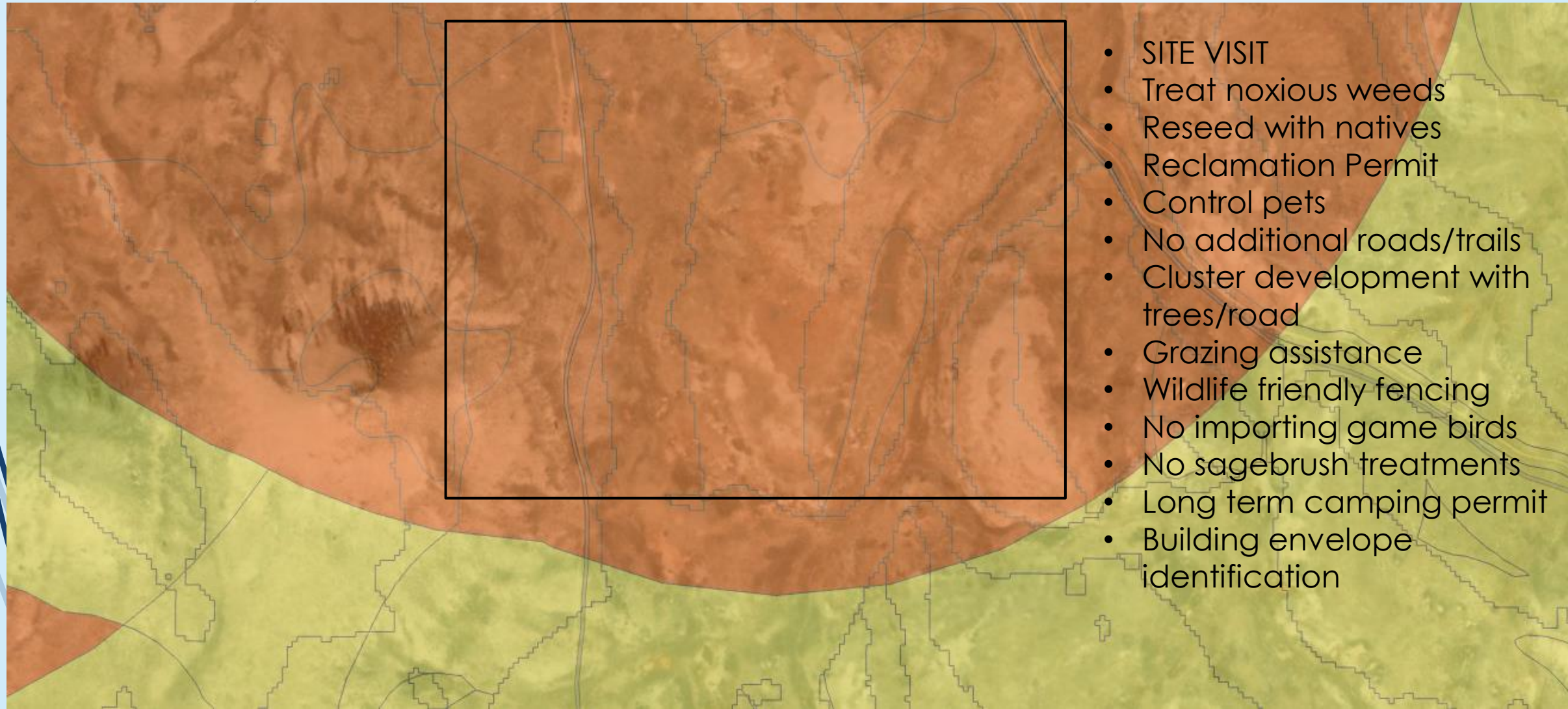
- Treat noxious weeds
- Reseed with natives
- Reclamation Permit
- Control pets
- No additional roads/trails
- Cluster development with trees/road
- Grazing assistance
- Wildlife friendly fencing
- No importing game birds
- No sagebrush treatments
- Long term camping permit



Scenario 4: Undeveloped, Higher Concern



Scenario 4: Undeveloped, Higher Concern



- SITE VISIT
- Treat noxious weeds
- Reseed with natives
- Reclamation Permit
- Control pets
- No additional roads/trails
- Cluster development with trees/road
- Grazing assistance
- Wildlife friendly fencing
- No importing game birds
- No sagebrush treatments
- Long term camping permit
- Building envelope identification

Recap

- County land use review process is the primary use and has significant discretion from the expertise of the biologists involved
  - The review process is NOT included in HPT documentation or the LUR
- HPT weighs positive habitat attributes against negative impacts
- Proposed updates
  - Spatial data for soils, roads, lek status and shape
  - Score updates for historic leks, irrigated meadows, and a buffer from 0.6 to 1.0 miles (half values of the 0- to 0.6-mile buffer)
- Changes to Tier 1/Tier 2 acreage and parcels
  - Minimal changes to acreage included in HPT shifting from Tier 2 to Tier 1
  - Net loss in parcels overall in Tier 1

Photo from eBird


QUESTIONS?

Of changes to parcels in Gunnison County

- Version 2 (2018) HPT to Version 3 (2025 draft with **no** 0.6-1.0 mile buffer)
  - 103 parcels decreased from Tier 1 to Tier 2
  - 87 parcels increased from Tier 2 to Tier 1 **(net -16)**
  - Of parcels that increased from Tier 2 to Tier 1:
    - 26 public
    - 0 easement
    - 62 previous reviews
    - 13 other
      - 4 developed
      - 5 undeveloped partially forested
      - 4 undeveloped

Site visit numbers and raw data

Year	Total Reviews	Tier 1 Parcels	Site Visits	Site Visits/ Total Reviews %	Tier 1 Reviews/ Total Reviews %
2006	41		14	34.1	
2007	82		15	18.3	
2008	72		16	22.2	
2009	55		12	21.8	
2010	54		5	9.3	
2011	59		10	16.9	
2012	48		4	8.3	
2013	66		3	4.5	
2014	63	8	3	4.8	12.7
2015	68	18	11	16.2	26.5
2016	69	17	11	15.9	24.6
2017	81	22	7	8.6	27.2
2018	79	32	13	16.5	40.5
2019	106	47	23	21.7	44.3
2020	93	30	5	5.4	32.3
2021	84	26	8	9.5	31.0
2022	80	34	11	13.8	42.5
2023	63	22	2	3.2	34.9
2024	65	32	3	4.6	49.2
2025	17	5	1	5.9	29.4

Changes to Tier 1 and Tier 2 Parcels Gunnison County

Parcel type	Version 2 (2018)	Version 3 (2025)	Version 3 (2025) Half Values
Total	6,286	6,286	6,286
Tier 1	1,327	1,311 (-103, +87)	1,333 (-105, +99)
Tier 1 with Easement	207	198 (-9, +0)	198 (-9, +0)
Tier 1 Public Land	722	730 (-18, +26)	734 (-17, +29)
Tier 1 with Existing Reviews	379	407 (-34, +62)	414 (-33, +68)
Tier 1 Public Land, No Easements, No Existing Reviews	306	268 (-51, +13)	281 (-49, +24)

Changes to Tier 1 and Tier 2 Parcels Gunnison County

Parcel type	Version 2 (2018)	Version 3 (2025)	Version 3 (2025) Half Values	Version 3 (2025) Full Values
Total	6,286	6,286	6,286	6,286
Tier 1	1,327	1,311 (-103, +87)	1,333 (-105, +99)	1382 (-88, +143)
Tier 1 with Easement	207	198 (-9, +0)	198 (-9, +0)	202 (-6, +1)
Tier 1 Public Land	722	730 (-18, +26)	734 (-17, +29)	739 (-17, +34)
Tier 1 with Existing Reviews	379	407 (-34, +62)	414 (-33, +68)	428 (-29, +78)
Tier 1 Public Land, No Easements, No Existing Reviews	306	268 (-51, +13)	281 (-49, +24)	312 (-44, +50)

Changes to Tier 1 and Tier 2 Parcels Gunnison County

Parcel type	Version 2 (2018)	Version 3 (2025)	Version 3 (2025) Half Values	Version 3 (2025) Full Values
Total	6,286	6,286	6,286	6,286
Tier 1	1,327	1,311 (-16)	1,333 (6)	1382 (55)
Tier 1 with Easement	207	198 (-9)	198 (-9)	202 (-5)
Tier 1 Public Land	722	730 (8)	734 (12)	739 (17)
Tier 1 with Existing Reviews	379	407 (28)	414 (35)	428 (49)
Tier 1 Public Land, No Easements, No Existing Reviews	306	268 (-38)	281 (-25)	312 (6)

Bibliography for HPT Update

Species	Study Location	M/F	N Juv, Ad	GPS/ VHF	Locations Recorded (schedule, number per bird, time of day)	Season	Trapping Timing	Capture location	Results	Citation (years of data collection)
GRSG	North Park, CO	Both	5 M / 4 F	VHF	Triangulation until visual confirmation. 1965 had 1 M 3 F tagged but 2 F never had a signal and 3rd only had a signal for 2 days. M had a signal for 41 days but never located precisely. In 1966, 4 M and 1 F were tagged and F was never relocated. Max monitoring for 28 days.	Breeding/ "spring"	"mostly during breeding season when sage grouse roosted on strutting grounds, although some were captured on roosting areas in summer". Cannon net, drive-net trap in summer	"driving onto sage grouse roosting areas at night"... "repeated until no more birds could be found on the roosting area"	0.875-1.125 mile "cruising radius" from lek. Cruising radii were only a few days of observations, and Carr was monitoring flocks so when they broke into smaller groups he could not continue surveillance -represents last place seen rather than extent of the days movements (paraphrased).	Carr et al. 1967 (1965-1966)
GRSG	Central Montana (Yellow Water Triangle)	M	15 2, 13	VHF	Located with hand-held and vehicle-mounted antenna. Located daily when undisturbed (disturbed locations eliminated) and away from strutting ground. 169 total locations from 13 birds used for analysis (1 killed, 1 yearling gradually moved away from lek of capture so location data was eliminated).	Breeding	Late evening or early morning	"On strutting grounds", multiple different leks	"Daytime movements of up to 0.8 mile from the strutting ground were common, with 82% of locations falling beyond 0.2 mile). The maximum distance an undisturbed cock was located from the strutting ground was 1.1 miles." 76.4% of locations contained within 0.6 miles of lek. 91.2% of locations contained within 0.8 miles of lek. 97.1% of locations within 1 mile of lek. 0.2 – 1.2 miles from lek represented 90% of daily movements from the lek. "These results, when considered along with the results of other sage grouse studies in the area (Eng and Schladweiler 1972, Wallestad and Pyrah 1974), suggest that this protection [untreated sagebrush] should extend to a radius of at least 1.5 miles from strutting grounds."	Wallestad and Schladweiler 1974 (n = 7 in 1968, n = 8 in 1972)
GRSG	Campbell County, WY	Both	10 M / 8 F 5, 5 / 3, 5	VHF	Triangulation, circling small areas, generally avoiding flushing. 53 locations for males, no number reported for females but looks like approximately 48 on the corresponding map.	March 14 – August 1	Attempted as early as January, but March 14 – April 26	"Vicinity of strutting ground or in an area where birds had been seen in late afternoon" for spotlighting, cannon nets on lek	Cannon net trapped April 9 – "...only 2 males were captured, but both were high-ranking males, occupying positions near the mating center" but they were banded and patagial tagged but no VHF. All male locations were within 1.55 miles of a lek. 64% of locations were within 0.62 miles from one lek and 86% of locations were contained within 0.75 miles of the lek. Female locations: 81% were within a 1.24 miles radius of the lek	Rothenmaier 1979 (1978)

GRSG	North Park, CO	M	37 17, 20	VHF	Located during lek counts between 4:30 – 7:30 am, triangulation. Males not on leks were located after completion of lek counts.	Breeding	2/25 – 5/1 1978 and 4/7 – 5/4 1979	"On leks and along roads and trails"	14 adults/13 juveniles caught on leks, 6 adults/4 juveniles caught off leks. Able to use data from 33 males (16 juveniles, 17 adults). 67% of locations were greater than 0.3 miles from leks.	Emmons 1980; Emmons and Braun 1984
GRSG	7 active leks in North Park, CO	M	12 3, 9	VHF	Movements primarily from 1-3 leks. Daily locations at leks, feeding-loafing sites, and nests. Triangulation or flushing. Movement distances by compass caliper. 12 locations in 1980, 80 locations in 1980 (most locations recorded in later half of May).	Breeding (late April – early June)	4/18-5/9 1979, 2/1-6/29 1980	"while roosting along roads and on leks throughout the study area"	The average movement from lek to day use areas was 0.6 miles. The range was 0.02 – 1.2 miles. Differed between years. 62% of day use area locations were 0.6 miles from the lek. Approximately 61.9% of all feeding-loafing movements from Raven Lek were within 0.6 miles and 95.7% of all movements to feeding-loafing sites were within 1.2 miles of the lek.	Schoenberg 1982 (1979 = 3 M/ 4 F, 1980 = 12 M / 17 F)
GRSG	Duchesne, NE UT	M	18 1, 17	VHF	Located 1-3 times per day for 2-4 days per week. Began triangulating 30 min-1 hr after lekking ended until 2 hours before sunset. Periodically flushed to count group size. 1983 had 8 grouse x 27 days monitored = 78 locations. 1984 = 10 grouse x 18 days = 130 locations. Total = 208.	Breeding (4/2-5/25 1983, 4/2-5/17 1984)	3/19 – 5/16 1983, 3/21– 3/24 1984	"…as they roosted on the lek"	"In both years, lengths of dispersal flights were typically [0.3 to 0.50 mi]." Longest movements from lek to day use were 1.2 – 1.3 miles. Birds seldom moved more than 0.12 miles between 9:00 am and 3:00 pm. "If disturbed while in day-use areas bird would flush and commonly fly beyond [0.50 miles]".	Ellis et al. 1987, Ellis et al. 1989 (1983, 1984)
GRSG	Mono County, CA	F	26 in March, 33 in April, and 23 in May across the three years	VHF	During mating season, attempted to locate each bird at least once per day with triangulation < 500 m. "In practice, birds that moved into remote areas were located less frequently and sometimes at greater range." Total fixes across the 3 study years in March = 313, April = 330, May =133.	Breeding (primarily beginning around March 13 – April 8)	Does not specify	Rocket nets when they attended leks, night captures (no location given)	Average daily displacement for hens during breeding season was 0.6 to 1.2 miles from the lek.	Bradbury et al. 1989 (1984-1986)
GRSG	Mono County, CA	Both	193	VHF	Attempted to locate each grouse to within 30 m at least 2 times per week during spring and at least once per week during fall and winter. Recorded location on GPS. 11,878 locations (average 62.3 ± 3.2 per grouse, every 4.7 ± 0.09 days). Used to create 395 seasonal utilization distributions (87% from females)	All seasons. Breeding/ nesting = 3/1-6/30, summer/ fall = 7/1-10/31, winter = 11/1-2/28	Night March – April and October – November 2003 - 2009	Does not specify	Utilization distributions - 90% of the space use during all season was contained within 3.2 miles of a lek. 75% of the space use for all seasons was contained within 1.7 miles of the lek. 50% of the space use during all seasons was contained within 1.0 miles of the lek. A peak in space use at 1.9 miles likely represented a large volume of the space use in spring/summer for migratory and non-migratory populations.	Coates et al. 2013 (2003-2009)

GUSG	Gunnison Basin, CO	F	4 (9 “bird years” during breeding)	GPS PTT	14 locations / day, one attempt hourly from 0600-1800 and one location attempt at midnight. 27,827 GPS locations collected on 4 birds March 2010 – January 2013 (max of 3,896 locations/bird/year).	Breeding = March 20 – July 1, Brood-rearing = July 2 – Oct 15	March 2010	Does not specify	1% of locations during breeding and brood-rearing were contained within 0.6 miles of the lek for the Gunnison Basin. 60% of locations were contained within 2.0 miles of the lek during the breeding season. 99% of locations were contained for the breeding season within 4.0 miles of the lek.	Ouren et al. 2019 (2010-2014)
GUSG	Crawford, CO	F	9 (8 birds representing 14 “bird-years” for breeding season)	GPS PTT	14 locations / day, one attempt hourly from 0600-1800 and one location attempt at midnight. 2011 – 2014 (minimum 250 locations/bird/season to 4,498 locations). Used 24/hour location distances.	Breeding = March 20 – July 1, Brood-rearing = July 2 – Oct 15	2011-2014	Does not specify	99% of locations were contained within 2.0 miles of the lek during breeding season. Approximately 75-80% of locations were within 0.6 miles of the lek during the breeding season.	Ouren et al. 2019 (2010-2014)
GRSG	Carbon County, WY	M	21 – 59 per year (42 ± 9) with 4-7 juveniles/ yearlings per year	GPS PTT	Every hour 0400 – 0900, 3 more locations throughout day on 5 schedules. 66,300 locations in spring, including 51,817 locations in March 1 – May 31.	Breeding (consistent GPS locations on lek confirmed with site visits), narrowed down to March 1 – May 31	March – May, Sept - Oct	Roosting sites on and around leks and not associated with leks in spring an fall. 21% captured in autumn not associated with leks.	For spring, average distance from lek was 0.65 ± 1.55 miles (p= 0.09 for differences based on age with juveniles averaging slightly further from leks). For March 1 – May 31, average distance from lek was 0.65 ±1.58 miles for adults and 0.77 ± 0.92 miles for juveniles. Average distance from lek for March 1 – May 31 for males captured in fall was 0.72 ± 1.39 miles versus 0.64 ± 1.59 miles for males captured in spring ($p << 0.01$).	Rummel unpublished data (2011- 2015)
GRSG	Carbon County, WY	F	169 36, 133	GPS PTT	6-8 GPS locations per day	Breeding (March 1 – May 31)	March – May, Sept - Oct	Across the study area in roost locations	For spring, average distance from lek was 1.48 ± 2.31 miles (with adults significantly farther from leks than juveniles). Females captured in fall were 2.17 ± 3.61 miles from leks in spring, whereas females captured in spring were 1.12 ± 0.97 miles from leks in spring.	Rummel unpublished data (2010- 2015)

Lek Buffers / Disturbance Around Leks Annotated Bibliography

Primary Literature Organized by Publication Date – Disturbances at Leks

Blickley, J. L., D. Blackwood, and G. Patricelli. 2011. Experimental evidence for the effects of chronic anthropogenic noise on abundance of greater sage-grouse at leks. Conservation Biology 26(3): 461-471. The Society for Conservation Biology

- Replicated noise levels to be about 400 m (0.25 miles) of drilling rigs and/or access roads
    - Roads included 56 semis and 61 light truck recordings interspersed with 170 30-second silent files to simulate average levels of traffic on an access road, played throughout the day
- 73% decline in lek attendance by males and 48% decline in lek attendance by females (GRSG) using road noise playbacks with no actual road present
- Declines in attendance occurred within the first year of noise playbacks
- Intermittent noise had a greater effect on attendance than continuous noise.

Piquette, D., A. Keck, N. Seward, B. P. Magee, P. A. Magee, and G. Patricelli. 2014. Acoustic soundscapes in the Gunnison Basin and effects of anthropogenic noise on Gunnison sage-grouse (*Centrocercus minimus*) in the Gunnison Basin, Colorado. Report to Colorado Parks and Wildlife, 22 April 2014. 27 pages.

- 12 GUSG leks in 2012 and 11 leks in 2013. Documented anthropogenic noise including automobile traffic on roads and highways, jet airplanes, and propeller airplanes (exceeding ambient noise by about 15 dBa).
- Analyzing data for all leks combined, they found a significant reduction in grouse vocalizations during and after noise events caused by passing aircraft and nearby vehicle traffic (highways from 0.3 – 4.3 miles from leks).
- Short-term intermittent anthropogenic noises, such as road noise and airplanes, disrupted lekking behavior for GUSG including vocalizations and display efforts, suggesting impacts to breeding behavior.

Atkinson, J. L., P. S. Coates, B. E. Brussee, I. A. Dwight, M. A. Ricca, and P. J. Jackson. 2021. Common ravens disrupt greater sage-grouse lekking behavior in the Great Basin, USA. Human-Wildlife Interactions 15(3): 374-390.

- Human expansion has contributed to increased abundance of common ravens, which were documented causing flushing behavior or ceasing sage-grouse displaying activity
- Ravens were more likely to be observed closer to leks, especially as leks increased in size (point counts)
    - Significantly more likely to be found near sites with increasing road density and increasing agriculture (as well as more shrub and more open edges)
- Ravens disrupt lek behavior, cause flushes, or cause males to cease displaying
    - Ravens were the most common predator observed during lek counts, and more common than ungulates
    - Ravens more likely to flush but also observed stopping males from displaying
- May adversely influence their reproduction during lekking, and/or counts could be low

Primary Literature Organized by Publication Date – Movements and Habitat Use in and Around Leks

Carr, H. D. 1967. Effects of sagebrush control on abundance, distribution and movements of sage grouse. Colorado Game, Fish, Parks Dept. Job Completion Rep. Proj. W-37-R-20, Job 8a. 106 pp.

- Followed male sage-grouse as they left 4 CO leks
- Maximum cruising radius of 0.875 miles to 1.125 miles from leks

Wallestad, R. and P. Schladweiler. 1974. Breeding season movements and habitat selection of male sage grouse. The Journal of Wildlife Management 38(4): 634-637. Breeding Season Movements and Habitat Selection of Male Sage Grouse.

- Captured late evening/early morning hours on leks. 15 males (13 adults, 2 juveniles)
- Followed male movements daily during spring/breeding season
- "Movements of up to 0.8 miles from the strutting grounds were common, with 82 percent of the locations falling beyond 0.2 mile"
- Maximum distance was 1.1 miles from lek
- "Results of this and previous studies in this area indicate that this protection should extend to a radius of no less than 1.5 miles from strutting grounds" in reference to sagebrush removal projects

Rothenmaier, D. 1979. Sage grouse reproductive ecology: breeding season movements, strutting ground attendance and site characteristics, and nesting. M.S. Thesis. University of Wyoming, Laramie, Wyoming. Sage grouse reproductive ecology: Breeding season movements, strutting ground attendance and site characteristics, and nesting - ProQuest

- 64% and 86% of the radio locations of males using the "section 17 strutting ground" were within a 1.0- and 1.2-km radius (0.62 miles and 0.75 miles), respectively

Emmons 1980

- Dispersal distances to day-use areas of 0.2 km were common and that 67% of all day-use areas were over 0.5 km (0.31 miles) from the lek

Schoenberg, T. J. 1982. Sage grouse movements and habitat selection in North Park, Colorado. M.S. Thesis. Department of Fishery and Wildlife Biology. Colorado State University, Fort Collins, Colorado. Sage grouse movements and habitat selection in North Park, Colorado | Semantic Scholar

- Birds captured on roads and on leks
- Daily movements of males from leks to day-use areas in spring averaged 0.9 km (0.56 miles), with a range of 0.03 (0.02 miles) to 2.4 km (1.49 miles). Average of 0.9 km in 1979 and 1.3 km in 1980 (difference attributed potentially to more locations in 2nd half of May/end of breeding season in 1980 when distances could be farther)
- 62% of all movements from leks to day use were within 1 km (0.62 miles) and 95.7% of all movements were within 2 km (1.24 miles)
- Average daily dispersal distance for hens to nest sites was 2.7 km (1.68 miles)

Ellis, K. L., J. R. Murphy, and G. H. Richins. 1987. Distribution of breeding male sage grouse in northeastern Utah. Western Birds 18: 117-121. https://archive.westernfieldornithologists.org/archive/V18/18(2)-p0117-p0122.pdf

- Captured males as they roosted on the lek– potential bias for dominant males since they birds often moved back toward the lek 2 hours before sunset
- Primary day-use areas for 8 males (7 adults, 1 juvenile) overlapped both years, but core areas (with greater than 5% use) shifted by 0.4-0.5 km)
- Dispersal flights from lek to day-use areas in spring were typically 0.5 km (0.31 miles) to 0.8 km (0.5 miles)
- Longest flights recorded were 2.1 km in 1983 and 1.9 km in 1984

Bradbury, J. W., R. M. Gibson, C. E. McCarthy, and S. L. Vehrencamp. 1989. Dispersion of displaying male sage grouse: II. The role of female dispersion. Behavioral Ecology and Sociobiology 24(1): 15-24. Dispersion of Displaying Male Sage Grouse: II. The Role of Female Dispersion

- Mean monthly values for female daily displacements peaked at 1.0 km (0.6 miles) to 1.9 km (1.2 miles) per day during the pre-breeding and mating period from February through April.
- Captured on leks and by spotlighting (locations not specified)
- N=30 after excluding transmitter failures and deaths

Ellis, K. L., J. R. Parrish, J. R. Murphy, and G. H. Richins. 1989. Habitat use by breeding male sage grouse: a management approach. The Great Basin Naturalist 49(3): 404-407. HABITAT USE BY BREEDING MALE SAGE GROUSE: A MANAGEMENT APPROACH

- Captured males as they roosted on the lek – potential bias for dominant males
- Evaluated day-use flights from leks in spring for 8 males (7 adults, 1 juvenile), which were often 0.5 km (0.31 miles) to 0.8 km (0.5 miles) with longest flights of 2.1 km (1.3 miles)

Coates, P. S., M. L. Casazza, E. J. Blomberg, S. C. Gardner, S. P. Espinosa, J. L. Yee, L. Wiechman, and B. J. Halstead. 2013. Evaluating greater sage-grouse seasonal space use relative to leks: implications for surface use designations in sagebrush ecosystems. Journal of Wildlife Management 77(8): 1598-1609. DOI: 10.1002/jwmg.618. Evaluating greater sage-grouse seasonal space use relative to leks: Implications for surface use designations in sagebrush ecosystems - Coates - 2013 - The Journal of Wildlife Management - Wiley Online Library.

- Spring/fall captures, 193 sage-grouse (87% of UDs from females)
- 90% of the volume of all utilization distributions (space use) within 5.16 km (3.2 miles) of leks for all seasons combined. 75% was within 2.79 km (1.73 miles) and 50% was within 1.56 km (0.97 miles).
- Space use varied by migratory patterns of the population and season (non-migratory populations had space use closer to leks in spring/summer).
    - Peak at 3 km (1.86 miles) likely represents a large volume of spring and summer space use for both migratory and non-migratory populations.

Ouren, D. S., B. S. Cade, K. W. Holsinger, and M. S. Siders. 2019. Are Lek Disturbance Buffers Equitable for All Gunnison Sage-Grouse Populations? Journal of Fish and Wildlife Management 10(1): 51-61.

SEE PRIMARY LITERATURE ORGANIZED BY PUBLICATION DATE – EVALUATIONS OF LEK BUFFERS AND/OR LEK PERSISTENCE SECTION

Primary Literature Organized by Publication Date – Evaluations of Lek Buffers and/or Lek Persistence

Aldridge, C. L., S. E. Nielsen, H. L. Beyer, M. S. Boyce, J. W. Connelly, S. T. Knick, and M. A. Schroeder. 2008. Range-wide patterns of greater sage-grouse persistence. Diversity and Distributions 14(6): 983-994. Range-wide patterns of greater sage-grouse persistence - Aldridge - 2008 - Diversity and Distributions - Wiley Online Library

- Extirpation of sage-grouse was most likely in areas having at least four persons per square kilometer in 1950, 25% cultivated cropland in 2002 or the presence of three or more severe droughts per decade.

Holloran, M.J. 2005. Greater sage-grouse (Centrocercus urophasianus) population response to natural gas field development in western Wyoming. PhD Dissertation. University of Wyoming, Laramie, Wyoming. GREATER SAGE-GROUSE (Centrocercus urophasianus) POPULATION RESPONSE TO NATURAL GAS FIELD DEVELOPMENT IN WESTERN WYOMING

- Examined impacts of natural gas development features on male and female habitat selection and use, including distances of features to leks and their counts
- Declines in male lek attendance approached 100% for leks close to drilling rigs, producing wells, and main haul roads with most impacts occurring within 5 km of the lek

Harju, S. M., M. R. Dzialak, R. C. Taylor, L. D. Hayden-Wing, and J. B. Winstead. 2010. Thresholds and time lags in effects of energy development on greater sage-grouse populations. Journal of Wildlife Management 74(3): 437-448.

- Evaluated 704 leks over 12 years in Wyoming for GRSG peak male attendance in relationship to oil and gas development
- Surface occupancy was negatively associated with male lek attendance at 5 of 7 study sites
- Leks with 1 or more wells within 0.25 mile radius had 35-91% fewer males attending than leks with no wells in that radius
- In 2 of 5 study areas, negative effects of well surface occupancy were present out to 4.8 km (2.98 miles)
- Declining lek attendance with well pad density. 4 well pads/sq mile ranged from 13% to 74% lower than attendance at unimpacted leks. 8 well pads/sq mile ranged from 77% to 79% lower attendance than unimpacted leks.
- Delay of 2-10 years between activity associated with energy development and measurable impacts to lek attendance.

Hanser, S. E., C. L. Aldridge, M. Leu, M. M. Rowland, S. E. Nielsen, and S. T. Knick. 2011. Greater sage-grouse: General use and roost site occurrence with pellet counts as a measure of relative abundance. Sagebrush ecosystem conservation and management: ecoregional assessment tools and models for the Wyoming Basins, pages 112-140. Chapter 5: Greater sage-grouse: General use and roost site occurrence with pellet counts as a measure of relative abundance

- Proximity to anthropogenic disturbance including energy development, power lines, and major roads was negatively associated with sage-grouse occurrence.
- Sagebrush within 1 km and NDVI was most important for predicting roost site occurrence
- Sage-grouse occurrence was negatively affected by anthropogenic features. Areas near interstates and major highways, power lines, and oil and gas well locations had lower probability of sage-grouse occurrence (roost and general use).

Johnson, D. H., M. J. Holloran, J. W. Connelly, S. E. Hanser, C. L. Amundson, and S. T. Knick. 2011. Influences of environmental and anthropogenic features on greater sage-grouse populations, 1997-2007. PP. 407-450 *in* S. T. Knick and J. W. Connelly (editors). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol. 38), University of California Press, Berkley, CA. doi.org/10.1525/9780520948686-021

- Few leks were located within 5 km (3.1 miles) of developed land, and trends were lower for leks with more developed land within 5 km (3.1 miles) or 18 km (11.2 miles)
- Lek trends reduced when communication towers were nearby, no effect for power lines

Wisdom, M. J., C. W. Meinke, S. T. Knick, and M. A. Schroeder. 2011. Factors associated with extirpation of sage-grouse. PP. 451-472 *in* S. T. Knick and J. W. Connelly (editors). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol. 38), University of California Press, Berkley, CA. Factors Associated with Extirpation of Sage-Grouse

- Factors that best discriminated between extirpated and occupied ranges included sagebrush area, elevation, distance to transmission lines, distance to cellular towers, and land ownership
- Human density per km^2 was significantly different in occupied and unoccupied ranges: mean human density was 26 times lower in occupied than in extirpated range
- Also significantly lower in occupied ranges: road density, distance

Hess, J. E., and J. L. Beck. 2012. Disturbance factors influencing greater sage-grouse lek abandonment in north-central Wyoming. Journal of Wildlife Management 76(8): 1625-1634. Disturbance factors influencing greater sage-grouse lek abandonment in north-central Wyoming - Hess - 2012 - The Journal of Wildlife Management - Wiley Online Library

- Evaluated lek abandonment from 144 occupied and 39 unoccupied leks over 30 years.
- 1.0, 3.2, 4.0, 5.0, and 6.4 km radii around leks for features including agricultural development, oil and gas development, prescribed burns, roads (and wildfire and vegetation attributes)
- Factors that influenced lek abandonment:
    - Number of oil and gas wells within 1.0 km (odds of persistence was 0.66 for each 1 unit increase in oil and gas wells within 1.0 km)
    - Percent area of wildfire in a 1.0 km radius
    - Variability in shrub height in a 1.0 km radius

Gregory, A. J., and J. L. Beck. 2014. Spatial heterogeneity in response of male greater sage-grouse lek attendance to energy development. PLoS ONE 9(6): e97132. doi:10.1371/journal.pone.0097132 pone.0097132 1..8

- Evaluated 814 leks 1991-2011. Found oil and gas well pad density increased 3.6x across the state and was associated with 24% decline in lek count high male counts.
- Found 1-4 year time lag between development density and lek decline.
- Development density alone does not predict impacts of oil and gas on sage-grouse.
- Suggests maximum development density of 1 well-pad within 2 km of leks to avoid measurable impacts within 1 year, and <6 well pads within 0 km of leks to avoid delayed impacts.

Suzuki Spence, E., J. L. Beck, and A. J. Gregory. 2017. Probability of lek collapse is lower inside sage-grouse Core Areas: Effectiveness of conservation policy for a landscape species. PLoS ONE 12(11): e0185885. https://doi.org/10.1371/journal.pone.0185885

- Sage Grouse Core Areas in WY designated in 2008 by limiting anthropogenic disturbance (primarily oil and gas development) near active sage-grouse leks
- Core Areas contained 77% of male sage-grouse attending leks and 64% of active leks
- 10.9% probability of lek collapse in Core Areas and 20.4% probability of collapse outside Core Areas
- Development density outside Core Areas was related to probability of lek collapse inside Core Areas

Ouren, D. S., B. S. Cade, K. W. Holsinger, and M. S. Siders. 2019. Are Lek Disturbance Buffers Equitable for All Gunnison Sage-Grouse Populations? Journal of Fish and Wildlife Management 10(1): 51-61. LINK

- 4 females for analysis for Gunnison, 9 females for analysis for Crawford
- Focused on Gunnison Basin and Crawford populations, which had different distances between active leks, home range sizes, and total daily distance traveled.
- Lek disturbance buffers in small populations overlapped, therefore not providing equal protection for all populations
- Compared 3 lek buffers
    - B1 = 966 m (0.60 miles), based on GRSG studies of movement of adult males during breeding season (GSGRSC 2005 1-3)
    - B2 = 3217 m (2.00 miles), based on sage-grouse nests not being uniformly distributed in nesting habitat and some research indicating 70-80% of nests occur within 3,217 m of an active lek (page 23 in GSGRSC 2005)
    - B3 = 6,437 m (4.00 miles), based on GRSG unpublished studies where 85% of all nests and 81% of all breeding and summer/fall seasonal locations were within 6,437 m of lek of capture (page D-3 in GSGRSC 2005)
- 99% of bird use in western Gunnison Basin was contained in the B3 buffer, whereas 99% of Crawford bird use was contained in B2 buffer
    - During the breeding and late brood-rearing season specifically, an average of 1% of locations were contained within B1 buffer for western Gunnison Basin (60% of locations in B2 during breeding season and 85% in late-brood rearing)
    - Maximum distance to an active lek for any season was 9,040 m (5.62 miles) for Gunnison Basin

Dinkins, J. B., K. J. Lawson, J. L. Beck. 2021. Influence of environmental change, harvest exposure, and human disturbance on population trends of greater sage-grouse. PLoS ONE 16(9): e0257198. https://doi.org/10.1371/journal. pone.0257198

- Evaluated hunted populations versus non-hunted populations but also examined landscape-scale factors that could impact lek counts.
- Higher proportions of human population and oil and gas well densities were associated with lower equilibrium abundance (removing time-varying population cycles)
    - They evaluated human population density, and activities related to sagebrush habitat loss (all significantly negatively correlated with population size)

Primary Literature Organized by Publication Date – Nest Site Selection

Wallestad, R. and D. B. Pyrah. 1974. Movement and nesting of sage grouse hens in central Montana. Journal of Wildlife Management 38(4): 630-633. Movement and Nesting of Sage Grouse Hens in Central Montana

- Found 68% of all nests occurred within a radius of 1.5 miles of leks.
- Average distance from leks to nests was 1.5 miles for adults and 1.7 miles for yearlings.

Wakkinen, W. L., K. P. Reese, and J. W. Connelly. 1992. Sage grouse nest locations in relation to leks. Journal of Wildlife Management 56(2): 381-383. Sage Grouse Nest Locations in Relation to Leks

- Mean distance from nest to lek of capture was 4.6 ±0.8 km
- Mean distance from nest to nearest lek was 1.5±0.2 km
- 92% of nests were less than 3 km from any lek, whereas 55% of nests were less than 3 km from the lek of capture

Hagen, C. A. 1999. Sage grouse habitat use and seasonal movements in a naturally fragmented landscape, Northwestern Colorado. M. S. Thesis. University of Manitoba, Winnipeg, Manitoba, Canada.

- Nest locations for females (only 6) had an average distance to nearest lek of 1.0 ± 0.4 and distance to lek of capture of 1.4 ±0.8 km
- Given seasonal evaluations of home ranges, etc. one of the management recommendations is: "Fragmented landscapes may require a re-evaluation for the 3.2 km buffer as a suitable amount of habitat may occur within those boundaries."

Hausleitner, D. 2003. Population dynamics, habitat use and movements of greater sage-grouse in Moffat County, Colorado. M. S. Thesis. University of Idaho, Moscow, Idaho.

- Lek to nest movements were 4.00 km ± 0.56 km (2.5 ± 0.3 miles) in 2001 and 4.01 km ± 0.46 km (2.5 ± 0.3 miles)

Lyon, A. G., and S. H. Anderson. 2003. Potential gas development impacts on sage grouse nest initiation and movement. Wildlife Society Bulletin 31(2): 486-491. Potential Gas Development Impacts on Sage Grouse Nest Initiation and Movement

- Considered disturbed leks as ones with oil/gas development within 3 km
- Distance from disturbed leks to nest sites was greater than the distance to undisturbed leks.
- Nest initiation rates for hens from disturbed leks was 65%, whereas hens from undisturbed nests had an initiation rate of 89%. Nest success at both was 50%.
- Light traffic disturbance (1-12 vehicles/day) might reduce nest-initiation rates and increase distances moved from leks during nest site selection.

Aldridge, C. L., D. J. Saher, T. M. Childers, K. E. Stahlnecker, and Z. H. Bowen. 2012. Crucial nesting habitat for Gunnison sage-grouse: A spatially explicit hierarchical approach. Journal of Wildlife Management 76(2): 391-406. Crucial nesting habitat for gunnison sage-grouse: A spatially explicit hierarchical approach - Aldridge - 2012 - The Journal of Wildlife Management - Wiley Online Library.

- Maximum distance a female GUSG traveled from lek of capture to nesting site was 10.1 km

- Patch-scale variables with the strongest influence on nest site selection were proportion of sagebrush cover >10%, distance to residential development, distance to high volume paved roads, and mean productivity.
- Patch scale used a 0.564-km moving window. Euclidean distance to residential classed habitat (quadratic function) – moderate distance from residential development for nest sites. Threshold response curve capturing selection for large landscapes (1.5 km radii) with a low density of residential development at <1%.
- Patch-scale threshold suggests maximum probability of nest site selection 2.5 km away from any given development (residential, roads, etc.)

Coates, P. S., M. L. Casazza, E. J. Blomberg, S. C. Gardner, S. P. Espinosa, J. L. Yee, L. Wiechman, and B. J. Halstead. 2013. Evaluating greater sage-grouse seasonal space use relative to leks: implications for surface use designations in sagebrush ecosystems. Journal of Wildlife Management 77(8): 1598-1609. DOI: 10.1002/jwmg.618. Evaluating greater sage-grouse seasonal space use relative to leks: Implications for surface use designations in sagebrush ecosystems - Coates - 2013 - The Journal of Wildlife Management - Wiley Online Library

- 95% of all nests were within 3.1 miles of leks. 75% were within 2.2 km (1.37 miles), 50% were within 1.5 km (0.93 miles).
- Average nest to lek distance across all study sites was 1.9 ± 0.1 km.

Holloran, M. J., and S. H. Anderson. 2005. Spatial distribution of greater sage-grouse nests in relatively contiguous sagebrush habitats. The Condor 107(4): 742-752. https://doi.org/10.1650/7749.1

- Nest distributions related to lek locations, with 45% of all nests within 3 km (1.86 miles) of the lek and 64% of all nests within 5 km (3.11 miles) of the lek

Summaries from Biological Opinions, Conservation Plans, Review Papers, Agency Recommendations etc.

Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin 28(4): 967-985. Guidelines to Manage Sage Grouse Populations and Their Habitats

- Summarizes seasonal movements and home ranges, survival, reproduction, habitat requirements by season, effects of habitat alterations including range management treatments, land use, weather, and predation.
- Provides recommended guidelines:
    - For nonmigratory grouse occupying habitats that are distributed uniformly (i.e., habitats have the characteristics described in guideline 1 and are generally distributed around the leks), protect (i.e., do not manipulate) sagebrush and herbaceous understory within 3.2 km of all occupied leks. For nonmigratory populations, consider leks the center of year-round activity and use them as focal points for management efforts (Braun et al.1977)
    - For nonmigratory populations where sage- brush is not distributed uniformly (i.e., habitats have the characteristics described in guideline 1 but distributed irregularly with respect to leks), protect suitable habitats for <= 5 km from all occupied leks.
    - For migratory populations, identify and protect breeding habitats within 18 km of leks in a manner similar to that described for nonmigratory sage grouse. For migratory sage grouse, leks generally are associated with nesting habitats but migratory birds may move > 18 km from leks to nest sites. Thus, protection of habitat within 3.2 km of leks may not protect most of the important nesting areas (Wakkinen et al.1992, Lyon 2000).
    - Human activities within view of or < 0.5 km from leks should be minimized during the early morning and late evening when birds are near or on leks

Connelly, J. W., S. T. Knick, M. A. Schroeder, and S. J. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats

- Discusses general impacts of urbanization and land use
- Chapter 12 is about the human footprint across the sage-grouse conservation area
- In areas that have a low human footprint, the addition of anthropogenic features could potentially have drastic effects.
- They found the human footprint intensity differs between areas currently occupied and extirpated
    - Highest footprint areas were less than 5% of occupied range and 25% of the extirpated range
    - Low footprint classes/densities encompassed 72% of the current range and 46% of the extirpated range

Gunnison Sage-grouse Rangewide Steering Committee. 2005. Gunnison sage-grouse range-wide conservation plan. Colorado Division of Wildlife, Denver, Colorado, USA. Gunnison Sage-Grouse Rangewide Conservation Plan.pdf

- Describes life history, saying nests are not uniformly distributed in nesting habitat (Bradbury et al. 1989, Wakkinen et al. 1992)
    - 70-80% of nests often occur within 2 miles of an active lek (Bradbury et al. 1989, Wakkinen et al. 1992)

- GRSG in NW CO showed 46% of females nesting within 1.8 miles of lek of capture, 76% within 4 miles, and 88% within 5.8 miles (Hausleitner 2003, A. D. Apa unpublished data)
- In North Park CO, GRSG moved 1.6 miles on average from lek to nest and in ID movements were 2.1 to 3.0 miles (Wakkinen 1990, Fischer 1994, and Apa 1998).
- 85.2% of GUSG nests were within 4 miles of the lek of capture (Apa 2004, NPS unpublished data)
- 80% of nests in the Gunnison Basin population were placed less than 4 miles from the lek of capture (Young 1994, Apa 2004, NPS unpublished data)
    - 68% of nests were within less than 3 miles of the lek of capture
- Distances from lek to nest were 0.6 to 0.83 miles at Poncha Pass (Nehring and Braun 2000), 0.1-12.6 for 6 GUSG populations (Apa 2004)
- Average GUSG distance from nest to nearest lek were 2.6 +/- 2.2 miles in Gunnison Basin (Young 1994)

Connelly, J. W., C. A. Hagen, and M. A. Schroeder. 2011. Characteristics and dynamics of Greater Sage-Grouse populations. Pp. 53–67 in S. T. Knick and J. W. Connelly (editors). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol. 38), University of California Press, Berkeley, CA.

- Summarizes home ranges, seasonal movements, site fidelity and breeding biology
- During breeding season, home ranges <1 km to 29 km^2 (Schroeder et al. 1999)
- Discusses lek site fidelity and how leks sometimes shift due to persistent disturbances or alterations of vegetation cover, or over time with female selection of certain males, satellite leks forming during periods of relatively high population abundance, etc. (pg 61)
- Discussion of conservation implications of landscape-scale species

U.S. Fish and Wildlife Service. 2014. Endangered and Threatened Wildlife and Plants; Threatened Status for Gunnison Sage-Grouse Final Rule. Federal Register 79(224): 69192-69310.

- "As described in detail below, we have determined that the most substantial threats to Gunnison sage-grouse currently and in the future include habitat decline due to human disturbance (Factor A), small population size and structure (Factor E), drought (Factor E), climate change (Factor A), and disease (Factor C)." (page 69192)
- Summary of Changes From the Proposed Rule (originally proposed as Endangered but updated decision to Threatened): "…. we have reevaluated our proposed listing rule and made changes as appropriate. (4) We have found that the threat from current residential development in the Gunnison Basin is not as high as we previously concluded. See Factor A analysis and discussion." (page 69201)
    - Factor A (residential development) is the only factor listed

Natural Resources Conservation Service. 2014. Gunnison Sage-Grouse NRCS Final Biological Opinion. December 16, 2014.

- UT DWR recommends 1 mile from GUSG leks as a buffer in the UT NRCS BO
- CO BO all surface disturbances will not occur March 1 – July 15 within 4 miles of a lek and any construction or surface disturbance within 0.6 miles around active leks would be avoided entirely.
    - Page 20: As outlined in (78 FR 2486; 78 FR 2540), a landscape-scale spatial model predicting Gunnison sage grouse nest site selection showed strong avoidance of areas with high road

densities of roads classed 1 through 4 (primary paved highways through primitive roads with 2-wheel drive sedan clearance) within 6.4 km (4 mi) of nest sites (Aldridge et al. 2011). Nest sites also decreased with increased proximity to primary and secondary paved highways (roads classes 1 and 2) (Aldridge et al. 2011). Male greater sage-grouse lek attendance was shown to decline within 3 km (1.9 mi) of a methane well or haul road with traffic volume exceeding one vehicle per day (Holloran 2005). Male sage grouse depend on acoustical signals to attract females to leks (Gibson and Bradbury 1985; Gratson 1993). If noise from roads interferes with mating displays, and thereby female attendance, younger males will not be drawn to the lek and eventually leks will become inactive (Amstrup and Phillips 1977; Braun 1986). In a study on the Pinedale Anticline in Wyoming, greater sage-grouse hens that bred on leks within 3 km (1.9 mi) of roads associated with oil and gas development traveled twice as far to nest as did hens that bred on leks greater than 3 km (1.9 mi) from roads. Nest initiation rates for hens bred on leks close to roads also were lower (65 versus 89 percent), affecting population recruitment (33 versus 44 percent) (Lyon 2000; Lyon and Anderson 2003).

- Page 21: Considerations of buffers and/or timing restrictions are warranted as daytime movements of adult male Greater sage-grouse (GRSG) during the breeding season do not vary greatly. Wallestad and Schladweiler (1974) found daily movements ranged between 0.2 and 0.8 miles from leks, with a maximum cruising radius of 0.9 to 1.2 miles. Ellis et al. (1987) reported that dispersal flights of male GRSG (to day-use areas) ranged from 0.3 to 0.5 miles, with the longest flights ranging from 1.2 to 1.3 miles. Carr (1967) reported that the cruising radius of male GRSG ranged from 0.9 to 1.1 miles. Rothenmaier (1979) found that 60 to 80% of male GRSG locations were within 0.6 to 0.7 miles of a lek. Emmons (1980) reported that male dispersal distances to day-use areas of 0.1 miles were common and that 67% of all use areas were greater than 0.3 miles from the lek. In addition, Schoenber (1982) found that male daily movements averaged 0.6 miles, but ranged from 0.02 to 1.5 miles. While no similar data are available for GUSG, the Service believes this information is applicable to the species due to similar life histories.

Manier et al. 2014 (Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review)

- BLM RMPA and USFS Forest Management Plan both cite this publication
- Wallestad et al. 1974: in Montana, showed a 0.6-mile buffer contained 76% of breeding season movements (90% within 0.8 miles)
- Coates et al. 2013: found 90 – 95% of locations within 5 miles of leks in CA/NV and 95% of nests were within 3.1 miles
- Holloran and Anderson 2005: found 64% of nests in 3.1 miles
- Connelly et al. 2000 and 2004: found large home ranges where a 3.1-mile buffer would be insufficient protection
- Johnson et al. 2011: human footprint negatively associated with lek counts
- Aldridge et al. 2008 and Wisdom et al 2011: human footprint negatively associated with population persistence
- Knick and Hanser 2011: 1965 through 2007 lek abandonment research showed the level of human footprint within 3.1 miles is negatively associated with lek persistence
    - Discussion of this has several citations associated with mechanisms for decreases in abundance which could be the association of generalist predators with infrastructure and their subsequent predation on sage-grouse

Colorado Parks and Wildlife. 2023. Colorado Parks and Wildlife's (CPW) Recommendations to Avoid and Minimize Impacts to Wildlife From Land Use Development in Colorado. July 19, 2023.

- CPW_HPH-Map-Layers.pdf
- For Gunnison Sage-Grouse Lek Sites: "No Lease (Leasable Minerals only); NSO/NGD (year-round) within 1.0-mile of lek sites; CSU/SSR - Surface density limitation of one pad per square mile and less than one linear mile of routes per square mile (640 acres). If pad or route density cannot be achieved or maintained, implement offsite mitigation to offset functional habitat loss. Relocate compressors > 4 miles from a lek and limit noise to not exceed 49 dB as measured 30 feet from the source."
    - NSO = No Surface Occupancy (use or occupancy of the land surface for fluid mineral exploration or development and all activities associated with fluid mineral leasing (e.g. truck-mounted drilling, stationary drilling, geophysical exploration equipment off designated routes, and construction of wells, pads, compressors or pipelines) are prohibited to protect resource values)
    - NGD = No Ground Disturbance
    - CSU = Controlled Surface Use (area is open to fluid mineral leasing and development subject to special operating constraints to protect the specified resource values)
    - SSR = Site Specific Relocation (is similar to a CSU in that it allows some development while protecting the identified resource values with special constraints. These constraints may include shifting the activity away from the resource value needing protection)

Technical Subcommittee Meeting Mins July 31

Outline for Discussion at Technical Subcommittee Meeting

Thursday, July 31, 2025 1:00 pm – 3:00 pm

2nd Story Meeting Room, Blackstock Government Building, Gunnison, CO 81230

Join Zoom Meeting
https://gunnisoncounty-org.zoom.us/j/88300942636?pwd=A8iQc9LhWlBLmz54xyJMi7a7ka1eyy.1
Meeting ID: 883 0094 2636
Passcode: 057613

Technical Subcommittee Members Present:
Aleshia Rummel, National Park Service (NPS)
Ben Prior, Gunnison Conservation District (GCD)
John Scott, Scott Resource Management Services
Liam Duggan, U.S. Forest Service (USFS)
Andy Stokes, Bureau of Land Management (BLM)
Marcella Tarantino, Bird Conservancy of the Rockies (BCR)
Sarah Lowe, USFS

Technical Subcommittee Members Absent:
Dan Olson, Natural Resources Conservation Service (NRCS)
Liz With, NRCS
Nathan Seward, CPW
Pat Magee, Western Colorado University (WCU)

Others Present:
Kathy Griffin, Colorado Parks and Wildlife (CPW)
Miranda Middleton, Colorado Parks and Wildlife (CPW)
Mike Pelletier, Gunnison County GIS

Discuss County Memo

Direction from the Strategic Committee was to determine the scientific basis for the proposed update, and meet the thresholds and goals from the County Memo for updates.

Scientific Basis

Rummel asked what types of evidence should be considered for buffers, such as things that directly contribute to disturbance on leks, habitat loss around leks, space use around leks, etc. The previous buffer of 0.6 miles cited the disturbance guidelines from the Rangewide Conservation Plan, and that plan cited 5 studies regarding space use around leks. Duggan wanted to consider relevant papers especially with space use around leks. Rummel said her concerns with the 5 papers cited in the RCP were that they were small sample sizes of primarily adult males captured on leks, therefore biased towards dominant males that are likely to use space close to a lek throughout the day in spring.

Griffin asked about the purpose of the buffer in the HPT, and said initially it was a 0.25 mile buffer to protect lekking activity from disturbances, and 0.6 miles was in regards to habitat protection. Rummel thought the documentation cited disturbance, but the citations themselves were regarding space use around leks. Scott

said 0.6 miles was chosen because it was a higher priority, and 2 miles was included for active leks as another priority. He said it was not about access or disturbance, just highest priority habitat.

Rummel provided a table where she had categorized each paper by the number of grouse, number of locations, where birds were captured, etc. Rummel also showed some basic statistics pulled from locations obtained from greater sage-grouse from her MS projects, where she found that birds trapped in spring are more likely to spend time near leks, adult males spend more time near leks than juvenile males, males spend more time closer to leks than females.

Duggan wanted to know if we were going to capture the most space use as possible, because most of the literature suggested space use at greater than 0.6 miles from the lek. Social, political, and economic incentives could be taken into account as well, but primary responsibility of the Technical Subcommittee is to take into account the scientific evidence. Scott said that Technical Subcommittee is also responsible for taking into account the resource, land use, County, and other factors. Prior also agreed that he thought the role of the Technical Subcommittee is to review the scientific data. Scott argued that when they first started the HPT it was based on resource professionals familiar with the area that "ignored science", who wanted to show Gunnison sage-grouse habitat.

Griffin argued that the original tool was not ignoring science because there were citations and classification breaks informed by science, but the use of buffers is discretionary and a tool for prioritization. Scott was concerned with the Manier paper and how they interpreted other people's data, and how recommendations should be site specific. Rummel said we as a Technical Subcommittee are not bound to citing Manier. Scott said that there was nowhere in primary literature that says 1 mile, and Rummel said there is never going to be a consensus on a single number. Griffin agreed that studies are rarely set up to evaluate a specific buffer distance, but are more likely to evaluate impacts within a certain distance, or number of locations in a certain distance, or more often these days a raster of probable space use. Duggan agreed that professionals need to read and review the primary literature, consider biases, and determine what makes sense locally. Duggan pointed out one of the studies said the minimum daily dispersal was 0.6, so right now the protection was starting at the minimum. Duggan asked if we valued capturing more space use with the buffers?

Pelletier said that he thought the change in Tier 1/ Tier 2 values did not have much of an impact, but there is a political impact. He thought reviewing the thresholds would be useful to see if the literature justifies changing the buffer. He also reminded everyone that the scoring can balance everything, and it was still an option to change scoring. Pelletier asked if there was new or missed science that are significant enough to justify the update in the face of the political challenges of the update. Subcommittee agreed to evaluate the goals and thresholds, and Griffin said we could always include an appendix to show the scientific basis for future reference and to demonstrate that the Technical Subcommittee did consider scientific evidence. If the full Strategic Committee or BOCC made a different decision, then at least it would be documented.

Scott asked how CPW determined 1 mile for their land use recommendations and how that decision was documented. Griffin explained it was a body of evidence, with the final recommendation in the land use document, and a series of information meetings for the CPW and oil and gas commissions, including public comment on those recommendations.

Goals of the HPT

Smith had stated in the Strategic Committee meeting in June that she would reach out to Rummel, but she had not and had not responded to repeated attempts by Rummel to get in touch with Smith. Therefore, the Technical Subcommittee would review both the goals and thresholds in the County memo since they were both referenced in the Strategic Committee meeting and there was no ability to gain clarification from the BOCC and Smith before the Technical Subcommittee meeting.

1. To minimize unnecessary burdens on private landowners

Rummel said no matter what model is considered, the updates would have no change to the private landowner burden because the HPT provides data, but the regulatory burden is a product of the Land Use Resolution and the County land use planning process. There are also virtually the same number of people that have reduced regulatory burdens as have increased burden. Tarantino agreed and pointed out that if the County were sued by a landowner for the process, the regulatory burden could increase substantially if it moved towards having USFWS Habitat Conservation Plans.

Duggan asked about the responsibility to reach out to landowners to let them know about the change, and said Houck had explained how normally the landowner reaches out to the County for a review but the County is generally not proactive. Rummel said when she began doing reviews it was right after the 2018 update and occasionally a landowner would have printed a 2012 version map, but it was never a concern when they explained that the model had been updated. Duggan worried about the optics and wondered if the County could be more proactive. Rummel suggested that the Technical Subcommittee request the County to send a letter to any potentially impacted landowners to let people know they have a month or two to do a pre-application conference request if they have plans to build in 5 years. Griffin asked about people that would lose the Tier 1 status, and if they would be notified. Pelletier thought it would not be necessary to contact them because there were few landowners impacted, and that it would be hard to determine if the 0.6-to-1.0-mile buffer changed the value or if it was the soils mapping, etc. Scott said he would attend the BOCC meeting to ask for the landowners to be grandfathered in to maintain Tier 2 status.

Scott asked Duggan if he could defend on the witness stand a 1.0-mile buffer. Duggan and Rummel both said they would be very comfortable defending 1.0 mile. Rummel asked if Scott would feel comfortable defending a 0.6-mile buffer when the Ouren paper showed that 1% of female locations were contained within a 0.6-mile buffer in spring and summer for Gunnison sage-grouse. Scott instead said that 0.6 miles is a higher priority and asked if anyone would disagree. Griffin said she would disagree because there are no concentric circles in habitat, and there could be a wet meadow beyond 0.6 miles that is higher quality habitat than something within 0.6 miles. She argued that is the point of having an HPT as a first cut, where someone could then be the ”boots on the ground” to consider the possibility it could be good habitat at a further distance from leks.

Prior also pointed out that we have not yet met population goals set out by USFWS and we might need more protections to meet population goals. Scott said USFWS used 0.6 miles, and Prior argued that maybe it should be more. Rummel pointed out development was the number one threat in the listing decision. Lowe also confirmed that land use planning is an iterative process where they still get to build eventually for most applications, and Prior confirmed that most applications are still a favorable outcome. Most of the relocations are also because the site was unfavorable because of the driveway, septic system, etc.

Stokes said he could agree that within 0.6 miles does seem like a high priority, but that sage-grouse do use habitats up to 4 miles beyond leks. He pointed out that there are a lot of challenges with prioritization in general, and wanting to keep everything as a high priority. It is also tricky with only 2 tiers. Stokes said he

would agree that 1 mile is the best available science, but if the only consideration was prioritization, 0.6 miles would be sufficient. Stokes had concerns about the time commitment that is being requested from the Strategic Committee, and Prior agreed that the Technical Subcommittee made a recommendation and it is now time for the Strategic Committee and then the BOCC to take their votes. Lowe agreed. Tarantino also agreed that the full committee is designed to take into account stakeholder points of view, and most of the discussions currently remaining were related to the full committee.

Rummel suggested recommending the LUR could be updated to the full Committee because there are a lot of inaccuracies in it (responsibilities, the lack of mention of the Habitat Prioritization Tool, almost no mention of Tier 1/ Tier 2 habitat in Section 11-106). For example, the HPT is not mentioned as a mapping tool so the reviewer could simply use CPW SAM maps or CH maps, and they are directed to apply ALL restrictions in the RCP Appendix I regarding disturbance mitigations, which is substantially more than is currently recommended to the County for inclusion in building permit approvals.

Stokes thought he could not argue that 1 mile is enough in a court of law, and that there was sufficient evidence to suggest the buffer should be higher. He wanted to move forward with the recommendation, and the large Strategic Committee can move forward to vote on it. Griffin asked if there was a charter for the Technical Subcommittee, and Rummel and Prior were not aware of any charter for the Subcommittee. Griffin also mentioned her concerns that public perception and the BOCC should be likely considered, especially if we were going to make a recommendation that would be likely to not be moved forward. If there are not many parcels impacted, is it worth the potential consequences of public perception (lack of trust that could impact conservation into the future) and/or having to return to the drawing board for the model. Gunnison County is the only county that has done anything for habitat prioritization, and only one other county has land use regulations that incorporate sage-grouse. Griffin said we could document discussions and move forward with no 1 mile buffer. Prior disagreed and said it made sense for the Technical Subcommittee to put forward something that made sense biologically, and that the full Strategic Committee should vote to include that or not. Stokes discussed how the larger Strategic Committee recommends all the factors that we as biologists do not understand.

Scott brought up the possibility of translocating sage-grouse. Scott was concerned that landowners would not agree to give sage-grouse trapping permission. Scott believed that everyone should be able to give their name, and agency in the vote to change the buffer. He believed that there was a regulatory buffer change, and Griffin said there was no change in regulatory buffers, but Scott said the perception is that it is a regulatory buffer change. Scott predicted that the 1 mile buffer would go to the Strategic Committee, and he predicts that no federal employees will vote because the perception of the increased regulation, and so the Committee would leave it at 0.6 miles.

Rummel asked if the public would ask why they did not do more if GUSG got uplisted. Scott said we had nearly met the population guidelines for USFWS and Griffin said we were not close to meeting the guidelines because we need to meet 7 of 9 consecutive years, we needed to be above target and we had only met the target once. Translocation targets are different and we were closer to meeting those if not already.

Duggan said it comes down to the role f the Technical Subcommittee, and he would vote differently depending on which committee he was a part of at the time. As a Technical Subcommittee member, he felt a 1.0 mile buffer is important and reasonable, but that as a Strategic Committee member he might consider the erosion of public trust more and vote against it. He thought the perception may not be correct, but it is a perception regardless.

Pelletier said we could still adjust scores. Rummel also said we are directed to look at the County memo which also requests us to examine the LUR 11-106, and she said that the section regarding maps does not specify that we use the HPT – technically we could use SAM maps or the Critical Habitat boundary, and the LUR also says that the County **shall** apply all recommendations in the disturbance guidelines in the RCP. That would be predictable and transparent, but would reduce the ability of professionals on the ground to reduce that regulatory burden by examining the properties and recommending fewer restrictions where that is appropriate. Rummel said that most people have not been through the land use planning process, and there is a lot of fear associated with land use planning that probably is not relevant.

Scott said the consideration of 0.6 to 1.0 mile wasted a lot of time for a lot of people. Prior thought that having hard discussions once a decade was important and that we should be evaluating those updates or risk becoming obsolete. Lowe also had concerns that if you wait too long and have too many big updates as research, people, and ideas change, it could be too challenging to do an update at that point. Prior also thought we can document everything for people to consider in future HPT updates, where they might reconsider what we have talked about. Scott did say he should not have said it was a waste of time.

Stokes agreed that as a member of this committee he would vote for a 1 mile buffer, but on the larger full committee he might vote differently. He also pointed out that there is an ethical decision of making recommendations based on fear of retaliation. Griffin asked if we should write up that 1 mile is the biological/best science answer, but that 0.6 mile meets the other stakeholder concerns. Prior said we should continue with the 1.0 mile buffer recommendation, and it is the responsibility of the full Committee to address the other concerns given their representation of other stakeholders.

Rummel said we should address the other goals and thresholds in the County memo to see if we do meet those guidelines. She also believed that some of the questions were really the purview of the full Strategic Committee, but we could address as much as we could.

2. To provide land use predictability and transparency through data-based mapping

Prior explained that the HPT map is available (as Tier 1 / Tier 2 habitat) on the County website so it is always predictable as to which category your land ownership would be under. Rummel said the way to be predictable and transparent would be to use the Critical Habitat boundary and apply all recommendations in the RCP to all land use reviews regardless of Tier 1 or Tier 2.

Rummel had concerns about predictability and transparency in that the LUR is outdated and does not really illustrate the County's land use planning process currently, so either the County should move towards exactly what is written in the LUR if they value predictability and transparency.

Rummel also intends for the documentation to be much more transparent than it has been in the past. Duggan did say that he had some concern that we were not transparent in having Technical Subcommittee meetings without public input, and Rummel said to address predictability the County could send out letters to let those people impacted have a pre-application conference request.

Tarantino asked about building envelope predictability, and Rummel and Prior confirmed that unless there is a large change in available data, building envelopes will stay in the same location if someone applies a second time.

3. To reduce the risk or severity of future federal listing impacts by demonstrating local engagement

Tarantino had concerns that environmental groups could sue the County for failing to follow identified science-based conservation measures. Scott thought the local engagement was referring to what the County filled with the HPT and the recovery plan speaks to the use of the continued use of the HPT. Scott thought that without reducing the number of parcels, there would not be concern but Tarantino pointed out that a 0.6 mile buffer alone would have fewer parcels as Tier 1. Scott thought it was different because it was a change in spatial data in 2018 rather than the different buffer. Rummel and others were disappointed in the vague language of the County's memo as it is challenging to say if the tool did or did not meet the threshold when the threshold includes vague language (i.e. "demonstrating local engagement"). Duggan thought the HPT was maintaining status quo, and he did not know if a change in buffer distance would change the protections substantially for sage-grouse. Scott said "it's just a starting place" to evaluate habitat further.

Scott talked about the Habitat Conservation Plan for the annexation of the City of Gunnison that was formerly considered Critical Habitat, and reminded everyone again about the upcoming CCAA conversions into Conservation Benefits Agreement, and how those CCAAs with Cis were removed from the Critical Habitat layer from the USFWS. There is some overlap with CCAAs and conservation easements, but for other properties there is some concern about what might happen with those properties if they do not have CBAs. Prior asked how the tool impacts agricultural lands that are not proposing development. Scott said it just is about credibility and perception but did not name any impacts to agricultural lands. Prior said it helps protect agricultural lands from being converted into subdivisions, and Rummel agreed that it was a win-win-win because it is more acres of Tier 1 with less parcels impacted and fewer constraints on agricultural land (hay meadows) that would make it easier for agricultural landowners to develop those areas. Duggan said it is a perception to still be mindful of even if it is not a correct perception on the way the tool works.

Discussion about Thresholds for Updating the HPT per the Gunnison County Memo

Any proposed updates must meet the following threshold:

- Justification must expressly and demonstrably tied to land use impacts, expressly taking into account the factors listed in the LUR, particularly Section 11-106.

Rummel talked again about the LUR 11-106's inaccuracies especially regarding the HPT and language surrounding mapping and restrictions that should be placed on private lands during a sage-grouse review. She said that she felt that either update would meet this threshold if it is referring to how the LUR 11-106 is currently enacted versus not meeting this threshold if it were referring to how the LUR is written (reference earlier discussion). Duggan asked about if the 2018 version had to be evaluated for meeting thresholds specifically related to the LUR and Rummel said she was not aware of any examination of how the 2018 update met thresholds, and Scott said it was because of the vote and non-unanimous decision at the Technical Subcommittee level that caused the County to draft the memo. The Technical Subcommittee agreed that the update(s) would meet the first threshold as practiced, not as written in the LUR 11-106.

- Changes should reflect measurable, practical implications for permitting, zoning, or landowner decisions.

Rummel pointed out the vague language, and said as the LUR 11-106 is practiced (not written), the updates would meet the threshold. Griffin asked about if we have to document the changes in a measurable way. Rummel said she had tried repeatedly to get in touch with Liz Smith before this meeting but she never heard back so we have to do the best we can with interpreting the language. Lowe said we had already documented the changes in terms of numbers of parcels and acreage, and had discussed potential changes in terms of

how challenging a review might be or might not be for parcels that would change status for sage-grouse reviews. Lowe said there was almost no measurable change.

- Scientific rationale and support is both necessary and critical – any change to the HPT must be grounded in science and how it informs land use decisions. Given the multi-factor approach of the LUR, it further must be balanced with appropriate land use, agricultural and other public policy implications if community support and buy-in erodes. Moreover, the apparent fact that neither the Federal courts nor FWS have cited or relied upon the HPT as necessary, or even important, to protect the species could reduce the County's ability to protect and defend any changes to the HPT in litigation.

Rummel reminded everyone that USFWS (Darnall) had pushed back on the last sentence in the full Strategic Committee meeting so it is not a relevant portion of the threshold. Darnall had said that the SSA update was based on what had changed, which did not include the HPT. Tarantino also reminded everyone that the HPT was clearly written into the listing decision as an important factor, which also made the last sentence irrelevant. Lowe said she thought this was relevant to both the Technical Subcommittee (scientific rationale) and that she believed the second part of the sentence was relevant to the full Strategic Committee to evaluate. Prior agreed that biologists cannot evaluate all of the factors. Tarantino agreed that the full committee is structured to look at things in a broader lens with input from additional stakeholders, and that there is no reason the full committee could not evaluate all of the information provided to them and adopt only a portion of the update (e.g. accept all base changes and choose not to implement the 0.6 to 1.0 mile change in spatial data). That way the decision is tied to the other stakeholders interests and not tied to the scientific rationale. Prior and Stokes agreed that was a relevant assessment of the structure of the subcommittee versus the full committee.

Rummel thought there could be some mitigations such as the pre-applications within 6 months or some similar timing, updating the language in the LUR to reflect the actual process to be less restrictive (and more accurate to current operations), and requesting the County provide more funds to Ben or Sarah's contracts to address some of the things in the Action Plan that the County has taken responsibility for but not enacted especially as related to other user groups.

Wrap Up Thoughts

Rummel said anyone else was welcome to present if they wanted, but if not her plan was to talk through the goals of the HPT and thresholds that were met (with stronger scientific rationale for the 0.6 to 1.0 mile). Rummel asked about presenting the updates as a whole package, and the consensus from the group was that the Strategic Committee could dissect it into pieces if they only wanted to agree to certain updates. Griffin suggested presenting alternatives (spatial data updates, versus including 0.6 to 1.0 miles). Tarantino clarified that it would be the half values from 0.6 to 1.0 miles because that was already a compromise based on the literature, and Griffin asked that the compromise be made clear at the presentation to the full Committee. Pelletier suggested talking about if the parcels were large and had many alternate locations to place the house or if they were small and limited in options. Pelletier also recommended making it clear that it is a tool to determine if site visits were warranted, and having a site visited warranted or being in Tier 1 is not necessarily going to change the proposal from applicants.

Tarantino again emphasized the need to explain that half values from 0.6 to 1.0 miles is a compromise already balancing scientific rationale and landowner interests. Scott said that a change in buffers was a change on the ground. Rummel disagreed and said that the line is a change in the model, and parcels that

change from Tier 1 to Tier 2 could be impacted by changes to other relative scores or spatial data updates. Scott asserted that the line still moves from 0.6 to 1.0 miles, and that it was not a compromise. Lowe said it could have been full scores to 1.0 miles (and several other people agreed that it could be further based on scientific literature). Stokes articulated the compromise of doing 0.6 to 1.0 miles as half values. Tarantino again explained that the LUR changes the management requirement but the HPT would simply change the scoring.

Rummel again emphasized her concerns with the LUR writing and that much of the concern from landowners is really stemming from the LUR and not the HPT as a tool that could be used. Griffin clarified that the cost of building in Gunnison County was primarily related to other permits and not sage-grouse, so Rummel explained the cost for the sage-grouse related reviews in the context of thousands of dollars worth of permits. Historically the cost of building permits did not cover the cost of the review to the County, so taxpayers were subsidizing private landowners to develop on their land, and hence some of the more recent changes in the cost of building permits.

Griffin asked about if there were any evaluations of how well the HPT is working (e.g. how many properties had proposals, what the outcomes were, what level of review occurred?). She thought it might be useful for USFWS and for public perception to help them understand the process. Prior said all the numbers of reviews (Tier 1 vs Tier 2) and site visits versus desk reviews, but Rummel said it might be harder to quantify how effective it is. Prior explained too that desk reviews are generally completed within 7 days. Pelletier asked if the HPT is relatively accurate on site. Prior thought it was pretty accurate. Rummel pointed out that disturbed sites are not always picked up in the HPT but are easy to identify via aerial imagery (that may be Tier 1 but in actuality may not be great habitat). She also said that looking at the more detailed information about why different areas are higher scoring was sometimes helpful in advance when considering things like drainages as brood-rearing habitat. Pelletier asked about Tier 2 site visits, and Rummel and Prior said there are not really Tier 2 site visits. Duggan asked if you can verify from the desk that Tier 2 should not be Tier 1, and Rummel thought that most of those were pretty obvious (in a hay meadow or subdivision), and Rummel said that there were a handful (3-4) that were close enough to a lek but in Tier 2 that she would verify with Nate. Most of those were still impacted by things like subdivisions to the point it still felt appropriate. Pelletier asked if having Tier 1 vs Tier 2 was helpful in discussions with landowners and he thought that landowners want to blame the map. Rummel thought it depends on the landowner, where some were happy to go to Tier 2 locations, and others want to use the map as a black and white version where it is (and should be used) as a tool. Overall Rummel and Prior agreed that it was still helpful to narrow down the habitat to determine what is helpful.

Griffin asked about the documentation. Rummel said she would send out the documentation again for another round of reviews so we could move quickly to finalize it whenever a decision is reached at the full Strategic Committee level. Griffin suggested adding a Purpose and Need. Scott recommended adding an appendix to discuss how we reached the decisions and updates we did, and Rummel said her preference would be to keep topics together where they are discussed in text and to keep appendices for factual additional information.

Scott said Sue Navy had asked for less numbers, so be prepared to discuss less numbers.

Tarantino asked about including a flowchart for how the land use planning process goes as an appendix, and Rummel said she would not want to do that because it is a tool but it is not regulatory.

They briefly discussed the potential for updating the LUR and how it can be an uncomplicated process.

2025 HPT Update Documentation Draft

Gunnison Sage-grouse Habitat Prioritization Tool

2025 Update

Documentation

Table of Contents

INTRODUCTION

The below listed information was incorporated into a spatial model to evaluate habitat within the Gunnison Basin for Gunnison sage-grouse (GUSG). The spatial model is designed for use on a broad scale for planning and rough habitat assessment. Projects and development will still need to be evaluated with an onsite assessment on a project-by-project basis.

The Habitat Prioritization Tool (HPT) was developed in 2012 and updated previously in 2018. This Version 3 (2025) of the model sought to update data and spatial layers to ensure the best, most-current science and knowledge was used in the prioritization of Gunnison sage-grouse habitat within the Gunnison Basin.

This model only covers occupied critical habitat and not all critical habitat. The Habitat Prioritization Tool only addresses Gunnison sage-grouse occupied habitat. Unoccupied habitat within USFWS designated critical habitat was not addressed because of discrepancies in soil types, necessity of significant habitat modifications to make those areas usable by GUSG, and other issues. The importance of prioritizing habitat where the species exists was determined to be of paramount importance.

This model has been developed through collaborative efforts of the Gunnison Basin Sage Grouse Strategic Committee with specific guidance from Gunnison County, US Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), US Forest Service (USFS), Colorado Parks and Wildlife (CPW), National Park Service (NPS), Natural Resources Conservation Service (NRCS), Gunnison Conservation District, Western Colorado University, Bird Conservancy of the Rockies, and interested stakeholders. This model incorporates the most recent information providing a representation of potential on the ground habitat conditions in the Gunnison Basin. Data included is the best information available at the time. Future updates will be essential when new and better data is available.

PURPOSE AND NEED

Gunnison County's Land Use Resolution 11-106 directs the County to evaluate impacts to "natural and scenic resources in Gunnison County, including wildlife" because they are "essential components of the County's economic base and help to establish the rural character of Gunnison County." General reference maps are needed to identify locations of sensitive wildlife habitats, and the Habitat Prioritization Tool was designed to be used in the land use planning process for identifying important sage-grouse habitats that should be considered during land use planning.

There is also a need from agency and other stakeholder interest groups in identifying priority habitats for restoration projects such as invasive plant species treatments, wet meadow restoration projects, fence removals or conversions to wildlife friendly fence, and other sage-grouse habitat improvement projects. The Habitat Prioritization Tool should be useful to identify these priority areas as well.

1. HABITAT POTENTIAL

Gunnison sage-grouse habitat potential was evaluated within the CPW Occupied Habitat boundary for the Gunnison Basin population. This mapped layer is updated frequently and this tool currently uses data from 2015 with slight modification to include areas around Blue Mesa Reservoir down to the high water line. All land within the outer boundary is evaluated. This layer is slightly different from the habitat polygon delineated in the Federal Register. Potential and vacant/unknown habitats are not included in scoring because of lack of habitat and geospatial data. Vacant/Unknown habitat is high quality habitat without birds. Potential habitat would require a significant amount of time, energy and resources to create to a habitat of sufficient quality that could be colonized by grouse.

This tool evaluates the habitat potential as a sum of the weighted scores assigned to each habitat layer in combination with perceived impacts (uncontrollable and existing threats.) This score is the foundation for assigning habitat statuses (Tier 1 and Tier 2). The goal of this valuation is primarily to decease future habitat fragmentation and secondarily to increase the ability for site-specific conservation and habitat improvement planning. Tier 1 habitat is defined as those habitats scoring 15 or higher. Tier 2 habitats are all other habitats (<15).

1.1 Habitat

Lek

The official lek status and high male count are defined and reported from lekking data collected and published by CPW in their annual Gunnison Basin Lek Count Summary and Population Estimate. The Official Status of a lek is given as a cumulative status and designated as Active, Historic, Inactive, or Unknown. To be Officially Active, a lek only needs to be designated as Active (at least 2 males during at least 2 count periods) in the current year. A lek is not considered Officially Inactive unless it has been seasonally Inactive for five consecutive years. Thus, a lek might not have any birds for a given season, but its official status may be Unknown because the lek had not been Inactive during all of the past five years. Historical lek status is not given until a lek has been Inactive for 10 consecutive years (Jackson and Seward 2011).

- **Geospatial data:** This layer is the CPW lek polygon layer and includes a 0.6-mile buffer from the outside edge of the lek polygon with spatial boundaries from the 2022 unofficial update as well as the local status from 2023. Buffering the lek polygons by 0.6 miles matches up with the disturbance guidelines in the 2005 Rangewide Conservation Plan and was included in the Version 1 (2012) and Version 2 (2018) update. This 0.6-mile buffer serves as a measure of protection to ensure that the entire lek polygon is captured within the buffer polygon and that potential direct or indirect impacts adjacent to a lek that could influence breeding behavior and attendance are evaluated. More recent data incorporating females and juveniles (Coates et al. 2013, Ouren et al. 2019) has shown that sage-grouse use space beyond a 0.6 mile buffer around a lek, and are sensitive to disturbances during lekking sometimes significantly beyond 1 mile away from a lek (Blickley et al. 2011, Coates et al. 2013, Ouren et al. 2019, Piquette et al. 2014, Atkinson et al. 2021). Given the significance of females (Taylor et al. 2012) and juveniles (Davis et al. 2016) to population growth, a new buffer was added from 0.6 to 1.0 miles beyond the lek boundary polygon. This space was assigned half of the value of the relative scores for space within 0.6 miles of a lek boundary given the impacts from disturbance may be less substantial.

- **Evaluation class breaks (weight) justification:** Leks are considered important habitat for sage-grouse. Habitat alteration on or near a lek has the potential to have a great impact to the population. There is a need to conserve all leks, regardless of the number of birds displaying on the lek (Aldridge 2011b; Phillips 2011; Jackson and Seward 2011).
    - Within 0.6 miles of an Active Lek (15)
      Active leks are those of greatest value to the grouse population. Birds display regularly on an annual basis.
    - Within 0.6 miles of an Unknown Lek (10)
      These leks have an Official Status of Unknown for many reasons, including missing count data when the lek is inaccessible. Leks can fall into this category in a one-year time frame.
    - Within 0.6 miles of an Inactive Lek (8)
      These leks should not be completely discounted. There is potential for the grouse to come back and use these areas on a regular basis if numbers increase or surrounding habitat improves. It takes 5 years for a lek to move into this category.
    - Within 0.6 miles of an Historic Lek (6)
      The majority of these leks are close to high build-out densities and will probably never be able to recover to active status regularly, although there is some potential for recovery at some sites. The lek would have been inactive for 10 years or greater.
    - Within 0.6 to 1.0 miles of an Active Lek (8)
      Active leks are those of greatest value to the sage-grouse population, although topography and distance may reduce some of the value of the land further from the leks.
    - Within 0.6 to 1.0 miles of an Unknown Lek (5)
      Leks of unknown status are potentially still used frequently by sage-grouse, although topography and distance may reduce some of the value of the land further from these leks.
    - Within 0.6 to 1.0 miles of an Inactive Lek (4)
      Leks with an inactive status have the potential for recovery, although topography and distance may reduce some of the value of the land further from these leks.
    - Within 0.6 to 1.0 miles of an Historic Lek (3)
      Leks with a historic status may not be able to recover to active status quickly if the population improved, but warrant protection if they are to be available for recovery in the future. Topography and distance may reduce some of the value of the land further from these leks.
- **Data for support:**
    - 2015 Gunnison Basin Gunnison sage-grouse Lek Count Summary and Population Estimate Final Report (Jackson and Seward, 2015).
    - 2011 Gunnison Basin Gunnison Sage-grouse Lek Count Summary and Population Estimate Final Report (Jackson and Seward, 2011).
    - 2011. Seward, Nate. Lek Status Definitions.
    - 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.

- 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.
- US Fish and Wildlife Service. 2014. Endangered and Threatened Wildlife and Plants: Critical Habitat for Gunnison Sage-Grouse; Final Rule, 79 Fed. Reg. 69312 (November 20, 2014).
- Blickley, J. L., D. Blackwood, and G. Patricelli. 2011. Experimental evidence for the effects of chronic anthropogenic noise on abundance of greater sage-grouse at leks. Conservation Biology 26(3): 461-471.
- Piquette, D., A. Keck, N. Seward, B. P. Magee, P. A. Magee, and G. Patricelli. 2014. Acoustic soundscapes in the Gunnison Basin and effects of anthropogenic noise on Gunnison sage-grouse (*Centrocercus minimus*) in the Gunnison Basin, Colorado. Report to Colorado Parks and Wildlife, 22 April 2014. 27 pages.
- Atkinson, J. L., P. S. Coates, B. E. Brussee, I. A. Dwight, M. A. Ricca, and P. J. Jackson. 2021. Common ravens disrupt greater sage-grouse lekking behavior in the Great Basin, USA. Human-Wildlife Interactions 15(3): 374-390.
- Coates, P. S., M. L. Casazza, E. J. Blomberg, S. C. Gardner, S. P. Espinosa, J. L. Yee, L. Wiechman, and B. J. Halstead. 2013. Evaluating greater sage-grouse seasonal space use relative to leks: implications for surface use designations in sagebrush ecosystems. Journal of Wildlife Management 77(8): 1598-1609.
- Ouren, D. S., B. S. Cade, K. W. Holsinger, and M. S. Siders. 2019. Are Lek Disturbance Buffers Equitable for All Gunnison Sage-Grouse Populations? Journal of Fish and Wildlife Management 10(1): 51-61.

- **Area for improvement:**
  - The Local CPW Office GUSG Annual Report definitions do not align with the RCP or current Statewide definitions for Official Lek Status as defined by Colorado Parks and Wildlife. Local CPW staff has maintained consistency in local definitions and is working to align them with the RCP and Statewide definitions.

  - The 2025 Technical Subcommittee recommended including a buffer from 0.6 to 1.0 miles from a lek, with relative scores at half the value of the scores for each lek designation at 0 to 0.6 miles from a lek (e.g., for 0.6 to 1.0 miles, active lek relative score of 8, unknown lek relative score of 5, inactive lek relative score of 4, historic lek relative score of 3). Version 1 (2012) and Version 2 (2018) had limited the lek buffers to 0.6 miles from a lek boundary, citing the Rangewide Conservation Plan's (RCP) disturbance buffer in Appendix I. The primary literature cited in that section of the RCP is limited to data regarding space use around leks for primarily adult males with limited locations using VHF telemetry data. New research with larger sample sizes of individuals and/or or locations (Coates et al. 2013, Ouren et al. 2019) suggests that females and juveniles are likely to use space substantially beyond the 0.6-mile buffer, and given the relative significance of females (Taylor et al. 2012) and juveniles (Davis et al. 2016) to population growth, the Technical Subcommittee believed the proposed update would better reflect habitat use for important segments of the population. In addition, Blickley et al. 2011 documented significant declines in greater sage-grouse lek attendance with intermittent

anthropogenic noise near leks, and Piquette et al. 2014 similarly documented traffic noise impacting vocalizations and disrupting breeding behavior of lekking GUSG from 0.3 to 4.3 miles from the lek, suggesting that anthropogenic activities could disturb lekking behavior substantially beyond 0.6 miles from a lek boundary. The proposed model had minor changes in the distribution and extent of Tier 1 acreage or parcels impacted, but the stakeholder representatives at the Strategic Committee level chose not to adopt this proposed model. Future updates should continue to evaluate the use of a 0.6-mile buffer with available scientific evidence of space use around leks and disturbance impacts during the breeding season.

Land Near Active Leks

Land near active leks is considered a higher priority for preservation. Leks are often in close proximity to quality nesting habitat (Connelly et al. 2000; Aldridge et al. 2011). The Rangewide Conservation Plan (1997) notes that these areas are priority areas used by nesting hens.

- **Geospatial data:** A two-mile buffer was placed around the outer edge of the 2017 CPW lek polygon layer. Both the area within the 2-mile buffer and the lek itself were included in this layer. Irrigated areas were removed from this layer. The 2-mile buffer is from the Gunnison Sage-grouse Rangewide Conservation Plan (1997) and supported by Aldridge et al. 2012 and Ouren et al. 2019.
- **Evaluation class breaks (weight) justification**:
  - Areas within active leks and < 2 miles from the edge of the active leks (5)
- **Data for support:**
  - Ouren, D. S., B. S. Cade, K. W. Holsinger, and M. S. Siders. 2019. Are Lek Disturbance Buffers Equitable for All Gunnison Sage-Grouse Populations? Journal of Fish and Wildlife Management 10(1): 51-61.
  - Aldridge, C. L., D. J. Saher, T. M. Childers, K. E. Stahlnecker, and Z. H. Bowen. 2012. Crucial nesting habitat for Gunnison sage-grouse: A spatially explicit hierarchical approach. Journal of Wildlife Management 76(2): 391-406.
  - Gunnison Sage-grouse Rangewide Steering Committee. 2005. Gunnison sage-grouse range-wide conservation plan. Colorado Division of Wildlife, Denver, Colorado, USA.
  - Connelly, J.W., M.A. Schroeder, A.R. Sands and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitat. Wildlife Society Bulletin 28:967-985.
- **Area for improvement:**
  - Especially if future updates re-evaluate the 0.6 mile buffer around leks, consider the value relative score at various buffer distances, and potential evaluation class breaks at 2 miles for leks with an unknown, inactive, or historic status.

Brood Rearing Habitat

Brood rearing habitat is defined in the Rangewide Conservation Plan (RCP pages 29-30). It generally includes sagebrush stands with diverse herbaceous understories, and includes mesic areas (swales,

meadows, sagebrush near irrigation ditches and irrigated meadows) with lush herbaceous vegetation. In the HPT, the Brood Rearing Habitat layer focuses on the mesic resources.

- **Geospatial data:** This layer was updated extensively in the Version 2 (2018) model but remained similar from Version 2 (2018) to Version 3 (2025). A 10 m DEM slope assessment was completed to find all drainages and draws. This layer was then combined with the National Hydrography Dataset (NHD) streams and irrigation ditch spatial data to capture more brood rearing habitat. Using a cost analysis which incorporated slope, the Technical Subcomittee was then able to create a varied width representing the actual floodplain and thus the brood habitat. The model also incorporated the wet meadow/sagebrush interface and all alluvial soils (2GB6 and 2GB7 included in the 2025 update). Areas within lakes (as mapped by the NHD), irrigated areas outside the 50-m buffer around irrigation ditches, and areas outside of nesting/summer/fall/winter habitat were removed from the Brood Rearing Habitat layer. The modifications to this layer tried to improve upon the general 50-m buffer provided for in the Gunnison Basin Local Plan by incorporating varying relief and differences in width in these floodplain areas. Some areas may be wider than 50 m while others are less.
- **Evaluation class breaks (weight) justification:**
  - Present (13)
- **Data for support:**
  - The Nature Conservancy: Gunnison Basin Mesic area project prioritization model, 2017.
  - Gunnison Sage-grouse Rangewide Steering Committee. 2005. Gunnison sage-grouse range-wide conservation plan. Colorado Division of Wildlife, Denver, Colorado, USA.
  - Gunnison Basin- Colorado. 1997. Local species management plan.
  - Endangered and Threatened Wildlife and Plants: Critical Habitat for Gunnison Sage-Grouse; Final Rule, 79 Fed. Reg. 69312 (November 20, 2014).
  - U.S. Geological Survey. 2023. National Hydrography Dataset (NHD) streams layer.
- **Area for improvement:**
  - Removal of any brood rearing habitat from heavily treed areas. The 2025 Technical Subcommittee discussed this as detailed in Tree Canopies section below.
  - There is a need to add other features including springs and seeps that are not captured in the current data layers. In 2025, the Technical Subcommittee considered data from the U.S. Fish and Wildlife Service's National Wetlands Inventory, the Sage Grouse Initiative's Mesic Resources map layer, and agency-specific mapping of springs, developed springs, fens, and other water features. At the time, none of these layers added value over the existing brood-rearing layer that was created for the Version 2 (2018) HPT, but future updates should continue to evaluate if these or other spatial data add value to the Brood Rearing Habitat Layer.

Nesting/Summer/Fall/Winter Habitat

These habitats are defined in the Gunnison Sage-grouse Rangewide Conservation Plan (RCP pages 26 - 31) and in the Federal Register for Critical Habitat and includes sagebrush dominated areas.

- **Geospatial Data:** This data layer was compiled from NRCS soils data and includes all sagebrush dominated range sites (mountain loam, subalpine loam, mountain outwash, dry mountain loam, dry exposure and deep clay loam) and stony rock areas. *See Appendix I for soils included from each Soil Survey for Nesting/Summer/Fall Habitat and Winter Habitat.* Brood and irrigated layers were removed from this layer.
- **Evaluation class breaks (weight) justification:** In Version 2 (2018), the Technical Subcommittee decided to differentiate nesting habitats based on proximity to brood rearing habitat upon visual inspection of the map - nesting habitat closer to the brood rearing habitat would receive a higher score. Sage-grouse hens have to be able to move their broods from the nests to brood rearing habitat by walking. All nesting habitat is of value, but nesting habitat closer to brood rearing habitat has potential to be of higher value. All nesting habitat within 4 miles of a lek is accounted for in the model (Connelly et al 2000, Aldridge 2011b, Ouren et al. 2019).
  - Present <750 ft from brood rearing and winter habitat (15)
  - Present >750 ft from brood rearing and winter habitat (10)
- **Data for support:**
  - Gunnison Sage-grouse Rangewide Steering Committee. 2005. Gunnison sage-grouse range-wide conservation plan. Colorado Division of Wildlife, Denver, Colorado, USA.
  - NRCS Soil Surveys—See Appendix I.
  - 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.
  - Connelly et. al 2000.
  - 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.
- **Area for improvement:**
  - Reconsider any distance from nesting habitat to winter habitat. Given some greater sage-grouse populations make substantial annual migrations to appropriate winter habitat, often near or exceeding 10 miles (Fedy et al. 2012, Johnson, et al. 2025, Newton et al. 2017), 750 feet may not be defensible. Future updates could consider disregarding proximity from nesting habitat to winter habitat

Critical Winter Habitat

Winter habitat is defined in the Gunnison Sage-grouse Rangewide Conservation Plan (RCP pages 30 - 31). This layer was not included in the HPT because defining data was not available.

- **Geospatial data:** The only geospatial data in 2025 that the Technical Subcommittee was aware of included the CPW Species Activity Maps for critical winter range, which are largely based on anecdotal evidence of sage-grouse use. They are likely incomplete given the difficulty of observing significant portions of the Gunnison Basin throughout winter. Remote sensing was discussed as an alternate technology to determine what habitats meet the metrics outlined in the RCP for critical winter habitat, but there is no spatial information available that would adequately and accurately classify the canopy cover and sagebrush heights needed to differentiate critical

winter habitat according to RCP guidelines. In addition, features such as windswept slopes or sagebrush species/subspecies available for foraging could be important factors that are likely not possible to distinguish remotely at this time, especially given the mixed sagebrush types that co-occur within the Gunnison Basin and preclude accurate mapping by large-scale land cover classification products.

- **Evaluation class breaks (weight) justification:** Not applicable
- **Data for support:**
  - Gunnison Sage-grouse Rangewide Steering Committee. 2005. Gunnison sage-grouse range-wide conservation plan. Colorado Division of Wildlife, Denver, Colorado, USA.
- **Area for improvement**:
  - There is a need to define these areas spatially, but the group does not have the tools/data necessary at this point. This will likely become more important in the future as winter weather becomes increasingly unpredictable with rain-on-snow events and extreme snowfall events, which may reduce the typically high over-winter survival of grouse and emphasize the importance of critical winter habitat for species conservation. Therefore, future efforts to incorporate this information should provide added points for critical winter habitat but not decrease the value of existing known winter habitat.
  - Research from Gunnison and North Park, Colorado on greater sage-grouse severe winter space use could inform predictive mapping. This could involve significant time investment to model possible habitats.

Irrigated Lands

Irrigated areas greater than 50 m from the sagebrush interface and outside CPW lek polygons are not considered as suitable grouse habitat.

- **Geospatial data:** This is a spatial layer of irrigated meadows where the inside of the polygon greater than 50 m from the sagebrush was scored to reduce the value of the habitat as indicated in the RCP and Federal Register. If this area happened to coincide with a lek polygon, the value was not removed (the higher score was kept). Irrigated areas within brood habitat were removed from this layer.
- **Evaluation class break (weight) justification:**
  - Present (-8)
- **Data for support:**
  - Gunnison Sage-grouse Rangewide Steering Committee. 2005. Gunnison sage-grouse range-wide conservation plan. Colorado Division of Wildlife, Denver, Colorado, USA.
  - Endangered and Threatened Wildlife and Plants: Threatened Status for Gunnison Sage-Grouse; Final Rule, 79 Fed. Reg. 69192 (November 20, 2014).
  - 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.

- **Area for improvement:**

Tree Canopies

Trees are not typically present in grouse habitat, and may increase the risk of predation by providing predator perches. Some research indicates greater sage-grouse avoid trees at a density of 4% cover within 1 km of leks (Knick et al 2013) or 3% cover within 800 m of nests (Severson et al. 2017), and research in Gunnison sage-grouse suggests that different populations may be more tolerant of conifer cover and density (Saher et al. 2022). However, multiple resource managers in the Gunnison Basin have anecdotally noted the presence of Gunnison sage-grouse in and around small stands of trees such as aspens, especially during brood-rearing in drought conditions. Additionally, recent research indicates small patches of trees may be used for thermal cover (Dungannon et al. 2024, Kohl et al. 2024), but even if these areas are selected as habitat during temperature extremes, these areas may also have increased predation risk (Beers and Frey 2023). Given the inconsistencies on the situational use and corresponding risks of using tree patches, and the difficulty in separating tree species and tall shrubs from remotely sensed data, this is not a specific layer in the HPT. It is somewhat defined by the forested soils layer.

- **Geospatial Data:** Currently, there is no geospatial data defined for a tree canopy layer. Forested soils are not included as nesting, summer/fall, or winter habitat, but there are small patches of trees and individual trees that are not captured in forested soils layers (for example, small, low-elevation aspen stands are frequent within the subalpine loam ecological site). Remote sensing or LiDAR could be used to distinguish tree vegetation, but appropriate classification breaks would be required to determine tree height and the patch size or density of biological significance. Depending on the classification breaks for tree height using LiDAR technology, the layer could potentially capture tall shrubs as well. NDVI data can be used to find juniper trees in sagebrush landscapes, but often includes other vegetation (i.e. other shrubs like serviceberry) that may or may not be equivalent in terms of the habitat features they provide.
- **Evaluation class breaks (weight) justification:** Not applicable.
- **Data for support:**
    - Beers, A. T., and S. N. Frey. 2023. Greater sage-grouse face tradeoffs between predation risk and thermal exposure in selecting habitat. *Authorea.* August 02, 2023. DOI: 10.22541/au.169096101.11288084/v1.
    - Dungannon, T. D., C. R. Anthony, T. S. Bowden, and C. A. Hagen. 2024. Microclimate and thermal refuge influences on sage-grouse brood habitat selection. Journal of Thermal Biology 124. 103957. DOI: 10.1016/j.jtherbio.2024.103957.
    - Knick, S. T., S. E. Hanser, and Kristine L. Preston. 2013. Modeling ecological minimum requirements for distribution of greater sage-grouse leks: implications for population connectivity across their western range, U.S.A. Ecology and Evolution 3(6): 1539-1551.
    - Kohl, M. T., C. P. Sandford, P. C. Rogers, R. Chi, T. A. Messmer, D. K. Dahlgren. 2024. Function over form: The benefits of aspen as surrogate brood-rearing habitat for greater sage-grouse. Ecosphere DOI: 10.1002/ecs2.70060.

- Saher, D. J., M. S. O'Donnell, C. L. Aldridge, and J. A. Heinrichs. 2022. Balancing model generality and specificity in management-focused habitat selection models for Gunnison sage-grouse. Global Ecology and Conservation 35: e01935.
- Severson, J. P., C. A. Hagen, J. D. Maestas, D. E. Naugle, J. T. Forbes, and K. P. Reese. 2017. Effects of conifer expansion on greater sage-grouse nesting habitat selection. The Journal of Wildlife Management 81(1): 86-84.

- **Area for improvement:**
  - If future Technical Subcommittees find it more appropriate to include a tree canopy layer, suitable spatial data must be identified that can adequately represent different tree species and tree patch sizes.

1.2 Impacts

Roads and Trails

All roads and improved trails were evaluated for their impact to the habitat from fragmentation and predator corridors. *Use and recreation impacts from disturbance are not considered in this layer. This is a habitat impact evaluation of the roads themselves.* Improved roads are considered to be all season, 2-wheel drive roads such as passenger car roads, highways, and improved county roads. Double track roads are considered unimproved roads and include administrative access routes, jeep trails, primitive roads, high clearance roads, private roads and driveways, and ATV routes. Single track routes are considered trails (mechanized and motorized are included). Closed routes are routes that are permanently closed (not seasonally) that have not been reclaimed.

- **Geospatial Data:** Road data from Gunnison County, CPW, BLM, NPS and USFS were used to create this layer. Data included is from 2017 and the 2010 USFS/ BLM Travel Management Plan and 2010 NPS Motorized Vehicle Access Plan. This data was updated in 2025 with the most current information about route decommissioning, closures, and improved spatial data. Additionally, Gunnison County is continually updating mapping for driveways meeting County standards to require an emergency services turnaround (150 feet in length) to include in the double track category.
- **Evaluation class break (weight) justification:**
  - <u><150 ft from the centerline of an improved road</u> (-4)
    These roads are defined as passenger car roads, highways, and county roads.
  - <u><50 ft from centerline of a double track</u> (-3)
    These roads are defined as roads with vegetation growing between the tracks and include admin routes, jeep trails, primitive roads, private roads (driveways), unmaintained roads, and ATV routes.
  - <u><25 ft from that center line of a single track</u> (-2)
    These are defined as smaller disturbances that include trails, including both mechanized and motorized uses.
  - <u><25 ft from that center line of a closed route</u> (0)
    These are defined as routes that are permanently closed (not seasonally) that have not been reclaimed.
- **Data for support:**
  - Aldridge et al. 2010. Aldridge does not agree with the 150ft buffer. He feels that improved roads can impact nesting habitat up to 8 km away. Double track roads can have an impact to over 6 km away. He feels that there is not a non-linear response as grouse move away from the road and that a regression model needs to be used to depict this.
  - 2010 Gunnison Basin USFS and BLM Federal Travel Management Plan.
  - 2010 NPS Motorized Vehicle Access Plan.
- **Area for improvement:**
  - In the past, winter use of trails and roads were listed as a potential classification break for consideration. The Technical Subcommittee in 2025 believed that the required status updates related to this could be challenging, and determining the relative values of motor

vehicle closures and all use closures would be critical. In the past, and Version 3 (2025), roads were considered based on their physical impact and not the use of those routes. Additionally, incorporation of winter closures would need to be scored in a way that still considers summer habitat use and retains protections in breeding, nesting, and summer/fall habitats, and the HPT may not provide that temporal resolution.

- The 2025 Technical Subcommittee discussed the inclusion of reclaimed roads and trails, which could be incorporated separately from closed routes. Closed routes could still be a potential site for non-native plant species introduction and establishment and they could provide travel corridors for predators, whereas a decommissioned route would potentially not have the same concerns. A decommissioned route and closed route would have different relative scores. However, the spatial data for reclaimed and decommissioned routes is not available for most agencies at this time.

Power Lines

Power lines pose a potential risk for direct mortality from collision, and habitat degradation due to predation and fragmentation. There is a significant distinction between Western Area Power Administration (WAPA) lines and the Gunnison County Electric Association (GCEA) lines. WAPA lines have large structures, high lines, and improved roads associated with them. GCEA lines are smaller primary and secondary lines that usually do not have roads associated with them.

- **Geospatial Data:** There is a data layer available that maps large, above ground, WAPA transmission lines, and a data layer available for GCEA distribution power lines.
- **Evaluation class break (weight) justification:**
  - 0 to 820 ft. (0.25km) from an above-ground, transmission power line (WAPA) (-3)
    These lines typically have a maintained road, and taller structures associated with them.
  - 820 ft. to 1,640 ft. (0.25 to 0.5 km) from an above-ground, transmission power line (WAPA) (-2)
    These lines typically have a maintained road, and taller structures associated with them.
  - 1,640 ft. to 4,920 ft. (0.5 to 1.5 km) from an above-ground, transmission power line (WAPA) (-1)
    These lines typically have a maintained road, and taller structures associated with them.
  - 4,920 ft. to 6,560 ft. (1.5 to 2km) from an above-ground, transmission power line (WAPA) (0)
    These lines typically have a maintained road, and taller structures associated with them.
  - 150 ft. to 450 ft. from a GCEA above-ground, distribution power line (-1)
    These lines are typically smaller in structure and have no maintained road that accompanies them.
  - <150 ft. from a GCEA above-ground, distribution power line (-2)
    These lines are typically smaller in structure and have no maintained road that accompanies them.

- **Data for support:**
  - 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse. Mike feels that an impact from power lines is for direct mortality (2 birds within the scope of his study).
  - 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.
  - Messmer, T. et al. 2017. Greater sage-grouse lek persistence and breeding distributions relative to electric power transmission and distribution lines.
  - Kohl, M. T., T. A. Messmer, Crabb, B. A., M. R. Guttery, D. K. Dahlgren, R. T. Larsen, S. N. Frey, S. Liguori, and R. J. Baxter. 2019. The effects of electric power lines on the breeding ecology of greater sage-grouse. PLoS One 14(1): e0209968.
- **Area for improvement:**
  - Exponential decay out to about 2.5km is more probably the direct influence of the power lines. This would reflect the impact of predation on the grouse from perching predators (Aldridge 2011b). Version 3 (2025) incorporates up to 2.0 km, consistent with the previous versions, and the Technical Subcommittee felt that was sufficiently close to represent the impacts.

Unsuitable Habitat

There are areas within the Gunnison Basin that may have been included within CPW's occupied habitat layer that need to be removed. This layer servers to call out specific, finite areas that should not be counted as grouse habitat.

- **Geospatial Data:** The spatial information comes from aerial imagery and county parcel data.
- **Evaluation class break (weight) justification:**
  - Landfill boundary (-30)
    The Gunnison County landfill does not count as grouse habitat due to the level of disturbance, lack of appropriate vegetation and/ or subsidized predation.
  - <500 ft of the landfill boundary (-30)
    This area still provides large subsidies for predators and reduces the quality of habitat to the grouse due to increased levels of predation.
  - Uranium Mine Tailings Radiation Control Act of 1978 (UMTRCA) site (-30)
    This site is the mitigated tailing location for uranium mining that has historically occurred in the valley. Currently, the area is capped with a very thick layer of coarse black rock that precludes growth of vegetation. The boundary of the rock can be seen using aerial imagery and it is not grouse habitat.
  - Gunnison County Airport (-30)
    This site does not count as sage-grouse habitat due to the level of disturbance and it lacks appropriate vegetation.
  - Large areas of open water (-30)

These sites do not count as sage-grouse habitat because they do not provide appropriate vegetation, structure, or food resources for sage-grouse.

- Large, historic gravel pits (-30)

  These sites do not count as sage-grouse habitat because they do not provide appropriate vegetation, structure, or food resources for sage-grouse.

- **Data for support:**
- **Area for improvement:**

Subdivisions

Areas divided by subdivision and development have greater impacts on grouse habitat.

- **Geospatial Data:** Gunnison and Saguache County's parcel layers, as well as their 9-1-1 house point layers, have been combined to determine development potential and impact. Development was defined as home, barn, or any improvement valued at more than $30,000 on a parcel in HPT Version 1 (2012). At each house point, there was a 300-foot radius buffer added to the known structure. House points that were within 1,000 ft of another two house points were then buffered by 1,000 ft due to the increased impact on sage-grouse (Cochran, 2011). The 300-ft buffered housing points was clipped and removed from the 1,000 ft buffer so that points did not receive a negative score for both the buffers. Parcel and house point data is from 2025 updates for both counties, and is usually regularly maintained.
- **Evaluation class break (weight) justification:**
  - Areas within 300ft of a house point (-5)

    Areas adjacent to houses are not suited for grouse habitation.
  - Areas where a 3 house points are within 1000 ft (-20)

    Areas where more house points are located closer together (subdivisions) will have an even greater negative impact on the grouse habitat.
- **Data for support:**
  - Cochran, Jim. 2011. Personal communication.
  - Phillips, Mike. 2011. Personal communication.
- **Area for improvement:**
  - In future updates, it would be important to consider the relative values of subdivisions and active leks. Although subdivisions can be detrimental to sage-grouse use of certain sites, the areas with subdivisions and active leks should likely be evaluated to see if those areas are still higher habitat values.

2. VALIDATION

The Version 1 (2012) HPT was validated using known grouse locations by CPW. The Version 2 (2018) HPT and the Version 3 (2025) HPT have not been validated against known sage-grouse locations because the acreage and distribution of Tier 1 and Tier 2 habitat did not change substantially from one version to the next. Additionally, there have not been any more recent telemetry locations, so there is a lack of recent GPS data to evaluate. Some space use may have changed in the last few years with development, recreation, habitat restoration projects, and other changes to the landscape, so the existing GPS data may not accurately represent current space use.

Table 1. Model accuracy of the HPT using known grouse locations from telemetry. The number presented is the percent of known bird locations accounted for within the tool.

Model Accuracy*

	Version 1 (2012)	Version 2 (2018)	Version 3 (2025)
Tier 1	87.75	Not assessed	Not assessed
Tier 2	12.25	Not assessed	Not assessed
Total	100.00	Not assessed	Not assessed

3. SCORING REFERENCE MATRIX

Table 2. Scoring reference for all positive habitat potential attributes and all negative impacts to habitat.

HABITAT POTENTIAL		
	Evaluation Class	**Weight**
Lek (0.6-mile buffer from edge of lek polygon)	Active lek status	15
	Unknown lek status	10
	Inactive lek status	8
	Historic lek status	6
Lek 0.6- to 1.0- mile buffer from edge of lek polygon)	Active lek status	8
	Unknown lek status	5
	Inactive lek status	4
	Historic lek status	3
Land Near Active Leks (areas within 2 miles of an active lek and the lek itself)	Lek and land <2 miles from active lek boundary	5
Brood Rearing Habitat within 50m of water (riparian, irrigation ditches, mountain meadows, swales) and sagebrush	Present	13
Nesting/Summer/ Fall/ Winter Habitat (sagebrush dominated ecological sites and stony rock lands)	< 750ft from brood rearing habitat	15
	> 750ft from brood rearing habitat	10
Irrigated Lands (irrigated land greater than 50m from sagebrush not discounting any leks in these areas)	Present	-8

IMPACTS (This accounts for impacts on the habitat that will not likely be changed)		
	Evaluation Class	**Weight**
Subdivisions (areas with development at certain densities)	Within 300' of development (house)	-5
	Areas with 3 housing points within 1000'	-20
Roads and Trails (this accounts for the fragmentation impacts of the road/trail structure and NOT the impacts associated with the recreational use)	<150ft from the centerline of improved roads	-4
	<50ft from the centerline of a double track roads	-3
	<25ft from the centerline of a single track roads	-2
	<25ft from the centerline of a closed routes	-1
Powerlines	0 – 820 ft from above ground transmission line	-3
	820ft – 1,640ft from above ground transmission line	-2
	1,640 – 4920 ft from above ground transmission line	-1
	4,920 – 6,560 ft from above ground transmission line	0
	150- 450ft from above ground distribution line	-1
	<150ft from above ground distribution line	-2
Unsuitable Habitat	Landfill boundary	-30
	< 500ft of the landfill boundary	-30
	UMTRCA site	-30
	Gunnison County Airport	-30
	Open water	-30
	Large, historic gravel pits	-30

4. MAPPED ACREAGE

Table 3. Acreages of each habitat type and impact type for each version of the HPT (Version 1 in 2012, Version 2 in 2018, and Version 3 in 2025).

Mapped Acreage				
		Version 1 (2012)	Version 2 (2018)	Version 3 (2025)
Lek	Active			
	Unknown			
	Inactive			
	Historic			
Brood Rearing Habitat				
Nesting/Summer/ Fall Habitat			217,848	216,133
Winter Habitat			210,645	210,504
Critical Winter Habitat		Not Evaluated	Not Evaluated	Not Evaluated
Land Near Active Leks				
Irrigated Lands				
Subdivisions	< 300' of a development			
	3 housing points within 1000'			
	<70 acres and developed			
Roads and Trails	<150' from improved road		18,043	20,111
	<50' from double-track			
	<25' from single-track			
	<25' from closed route			
Power Lines	<450' from GCEA line			
	<450' from WAPA line			
Tier 1 Acres			364,349	389,728
Number of parcels in Tier 1 Habitat			1,607	1,612
Tier 2 Acres			238,637	204,783
Total acres in the HPT			602,986	602,987

5. SUMMARY OF UPDATES FOR VERSION 1 (2012) TO VERSION 2 (2018)

In order to maintain the usefulness and improve the accuracy of this tool, occasional updates will be needed. It is proposed that this tool be reviewed and adjusted according to new science and spatial information. Reviews should coincide with CPW's species review for the Gunnison sage-grouse or at the request of the Gunnison Basin Sage Grouse Strategic Committee.

The major changes to the HPT from Version 1 (2012) to Version 2 (2018) were:

- Reduced the **buffer to proximity of Brood Rearing** (BR) habitat to the Nesting/ Summer/ Fall (NSF) habitat and added proximity to Winter habitat. This was to capture the idea that NSF and Winter habitat in closer proximity to brood rearing/ mesic areas has higher value.
- Drastically updated the **brood rearing habitat** to capture the floodplain versus a buffered line (increased brood rearing substantially)—based on the The Nature Conservancy (TNC) mesic area project prioritization model created by TNC in their Climate Resiliency Project. This update also captured small depression areas in ephemeral drainages that might not have been captured in the first tool.
- Added missing **soil layers** (like Taylor Park Soil Survey).
- Removed the **development threat to areas greater than 70 acres**. This tended to reduce the core of high-quality habitat for political reasons that is not appropriate for a habitat assessment.

Updates that were not incorporated, but may provide useful in future updates:

- **Tree stands** are not consistently removed from the habitat model. Is there a better way to capture sites that have the potential to produce trees? If so, those areas should be removed. Adding this layer would also tend to indicate a permanent loss or degradation of habitat that may not actually reflect treatment and restoration capabilities.
- **Noxious weeds** and invasive species information would be very valuable to add to the tool, but due to inconsistencies in mapping across private and public lands, it is hard to incorporate into this model. Adding this layer would also tend to indicate a permanent loss or degradation of habitat that may not actually reflect new treatment and restoration technologies.
- Consider using a view shed analysis to review implications of **powerlines** on habitat. Currently there is a gradient, but topography is not weighing in to the mapping. To complete this analysis, we would need more information like tower and wire heights.

Major Questions/ Concerns:

- Have we adequately captured grouse habitat (at nearly 60% of the basin)? Can we ground truth this again like we did in the previous model with the CPW data. (Version 1 captured >80% of the bird locations in Tier 1.)
- Winter habitat was combined with the nesting/summer/fall habitat. Differentiation between the two habitat types was difficult and inaccurate. A new Critical Winter Habitat layer is needed in future year updates.
- Official lek status was updated to 2016 data provided by CPW. The lek boundary layer remains the 2012 layer.

- The occupied habitat layer collected by CPW will be updated from the 2005 data to the 2015 data.
- All address points (indicating development and housing) will be updated to the current available data (2017).
- Road data is current as of 2010 for BLM, USFS, County, Municipal, State and US.
- Unofficial Taylor Park Soil Survey data was incorporated into the model.
- Updated power line data to include GCEA local distribution lines.
- To simplify the geospatial layers included in the model, the Version 2 (2018) model will only include scored habitat and impact layers. All other layer data will be kept for future years project analysis.
- Small sliver polygons less than 1 acre will be blended into an adjacent polygon in which it shares the largest border. Due to the model's spatial inaccuracies, the removal of these small polygons will more closely reflect the data's accuracy.
- More information is needed to substantiate the ranking values assigned.
- Comparative analysis of model to known grouse locations as provided by CPW and NPS needs to be done to fully understand the model's ability to capture grouse habitat suitability. Initial reviews of the original tool with on the ground assessment and preliminary data from CPW have shown good ability to capture habitat values.
- A future update strategy needs to be created.
- Area around Blue Mesa that was initial outside of CPW's occupied habitat layer but above the Bureau of Reclamation's high-water line for the reservoir was added back in.
- When compared to several other models that have been created specifically for the Gunnison sage-grouse, the HPT is the only one that focuses on habitat potential based upon soils and not bird tracking locations. Both Mindy Rice's (CPW) and Cam Aldridge's models (USGS) focus on resource selection which may not truly depict habitat potential, quality and distribution.

6. SUMMARY OF UPDATES FOR VERSION 2 (2018) TO VERSION 3 (2025)

In order to maintain the usefulness and improve the accuracy of this tool, occasional updates will be needed. It is proposed that this tool be reviewed and adjusted according to new science and spatial information, every 5 years. Reviews should coincide with USFWS species status assessments for Gunnison sage-grouse or at the request of the Gunnison Basin Sage Grouse Strategic Committee.

The major changes to the HPT for Version 2 (2018) to Version 3 (2025) are:

- Official lek status and the boundary layer was updated to 2024 data provided by CPW.
- All address points (indicating development and housing) will be updated to the current available data. Gunnison County is in the process of mapping driveways for driveways long enough to require an emergency turnaround, and these will be included in the Roads and Trails Impacts category (ongoing as digitization occurs).
- Road data is current as of 2025 for CPW, BLM, USFS, NPS, County, Municipal, State and US.
- Soils data were updated with the most recent release of NRCS soil data, including Taylor Park Soil Survey data.
- Small polygons less than 1 acre were blended into an adjacent polygon in which the polygon shared the largest border. Due to the model's spatial inaccuracies, the removal of these small polygons more closely reflects the data's accuracy.
- Scores were updated for:
    - Irrigated lands, to remove the central areas of hay meadows from priority habitat designations.
    - Historic leks, to increase the value of historic leks given occasional documented use of these areas, and the value for recovery.
    - The area 0.6 to 1.0 miles from a lek, to more closely align with literature documenting sage-grouse use of areas farther than 0.6 miles from a lek in spring.

Updates that were not incorporated, but may provide useful in future updates:

- Noxious weeds and invasive species information would be valuable to add to the tool, but due to inconsistencies in mapping across private and public lands, it is hard to incorporate into this model. Adding this layer would also tend to indicate a permanent loss or degradation of habitat that may not reflect ongoing and recent efforts by agencies and private landowners. Currently, the Technical Subcommittee believes that the HPT can be used in conjunction with agency-specific noxious weed data to prioritize noxious weed treatments in sage-grouse habitat.
- Communication towers are found throughout the Gunnison Basin, and proposals for new towers and tower modifications occur regularly. Communication towers are not currently included in the 2025 version given uncertainty in spatial data accuracy and completeness, and the lack of information on their impacts. They could potentially be included as tall structures with similar impacts to powerlines and distribution lines, but there would have to be further consideration of potential impacts and relative scoring, as well as appropriate buffer distances which could vary depending on tower design, guy wires, and more.
- Consider breaking historic leks into a "destroyed" category and a "potentially recoverable" category. Destroyed leks could include sites where infrastructure or development has occurred

and the lek would be unlikely to be used in the future by sage-grouse, whereas potentially recoverable leks would include leks where habitat is not permanently impacted by development and could be reestablished as leks as the population recovers. This could impact relative scoring.

Major Questions/ Concerns:

- Tree stands are not consistently removed from the habitat model. Some tree stands provide value as thermal refugia, cover, and foraging resources, but they also may create mortality risk as perches for predators. If further research indicates the importance or impact of trees as habitat, and appropriate spatial data can be found or created, tree stands could be incorporated into the model.
- Have we adequately captured grouse habitat? Version 1 (2012) captured >80% of the bird locations in Tier 1. Version 2 (2018) was not validated given the small changes in acreage and distribution of Tier 1 habitat, and Version 3 (2025) has not been validated given the lack of additional sage-grouse locations and telemetry since 2012. Without additional data, minor changes to the distribution of Tier 1 habitat are unlikely to result in significant changes to the validation. Additionally, there may be alterations to the physical environment (development) that alters GUSG habitat use currently which might not be captured by the historic telemetry data.
- Winter habitat was combined with the nesting/summer/fall habitat in Version 2 (2018) because differentiation between the two habitat types was difficult and inaccurate. A new Critical Winter Habitat layer is needed in future year updates, but spatial data is limited (see page 8).
- To simplify the geospatial layers included in the model, the 2025 model will only include scored habitat and impact layers. All other layer data will be kept for future years project analysis.
- More information is needed to substantiate the ranking values assigned, especially where primary scientific literature may exist. Several impacts rely on expert opinions from the initial development of the tool, and new literature may better support those sections.
- Comparative analysis of model to known grouse locations as provided by CPW and NPS needs to be done to fully understand the model's ability to capture grouse habitat suitability. Initial reviews of the original tool with on the ground assessment and preliminary data from CPW have shown good ability to capture habitat values.

7. HPT FUTURE UPDATE PLAN

Annual

These updates do not require approval by the Strategic Committee unless a majority of the Committee requests review/approval of one or more of these updates. These updates will only occur if new data is available.

- House points
- Lek status (including new leks identified by CPW)
- Roads and trails
    - New roads/trails
    - Changed status of roads/trails (upgrades/downgrades)
    - Decommissioned roads/trails

Every 5 years

These updates require recommendation by the Technical Subcommittee and approval by the full Strategic Committee. At minimum a review of the specific data/layers noted below is required by the Technical Subcommittee to determine if updates in any of these categories are necessary/appropriate.

- Lek polygons
- Occupied habitat polygon
- Consider any new science that may be applicable to the HPT
- Continue work to refine the brood rearing habitat layer
- Continue work to refine/improve the treed layer within the HPT
- Changes to soil layer if needed

Reporting

The Chair of the Technical Subcommittee and/or the Gunnison County GIS Program Manager shall report to the Strategic Committee at its June meeting annually on any updates made to the HPT.

8. 2011 PROJECT TEAM

Members of the Technical Subcommittee to the Gunnison Basin Sage Grouse Strategic Committee are shown in bold.

Matt Vasquez – U.S. Forest Service
Russ Japuntich – Bureau of Land Management
Tony Apa – Colorado Parks and Wildlife
Mike Phillips – Colorado Parks and Wildlife
Theresa Childers – National Park Service
Jim Cochran – Gunnison County
Mike Pelletier – Gunnison County
Nathan Seward – Colorado Parks and Wildlife
Gay Austin – Bureau of Land Management
Tara DeValois – Bureau of Land Management
Liz With – Natural Resources Conservation Service
John Scott – Natural Resources Conservation Service
Amanda – Bureau of Land Management
Ken Stalhnecker – National Park Service
John Toolen – Bureau of Land Management
Charlie Sharp – US Fish and Wildlife Service
Susan Linear – US Fish and Wildlife Service

9. 2018 PROJECT UPDATE TEAM

Members of the Technical Subcommittee to the Gunnison Basin Sage Grouse Strategic Committee are shown in bold.

Matt Vasquez – U.S. Forest Service**,** *chair*
Russ Japuntich – Bureau of Land Management
Kathy Brodhead – Bureau of Land Management
Theresa Childers – National Park Service
Jim Cochran – Gunnison County
Mike Pelletier – Gunnison County
Nathan Seward – Colorado Parks and Wildlife
Brooke Vasquez – Gunnison Conservation District
Gay Austin – Bureau of Land Management
Tara DeValois – Bureau of Land Management
Liz With – Natural Resources Conservation Service
John Scott – Scott Resources Management
Brooke Vasquez – Gunnison Conservation District
Mark Brennan- USFWS
Pat Magee – Western State Colorado University
Suzie Parker – USFS
Aleshia Fremgen – Interested community member

10. 2025 PROJECT UPDATE TEAM

Members of the Technical Subcommittee to the Gunnison Basin Sage Grouse Strategic Committee are shown in bold.

Aleshia Rummel – National Park Service and Colorado Parks and Wildlife, *chair*
Marcella Tarantino – Bird Conservancy of the Rockies
Andrew Stokes – Bureau of Land Management
Clarinda Wilson – Bureau of Land Management
Nathan Seward – Colorado Parks and Wildlife
Kathy Griffin – Colorado Parks and Wildlife
Miranda Middleton – Colorado Parks and Wildlife
Ben Prior – Gunnison Conservation District
Mike Pelletier – Gunnison County
Liz With – Natural Resources Conservation Service
Dan Olson – Natural Resources Conservation Service
John Scott– Scott Resources Management
Angela Trnka – U.S. Fish and Wildlife Service
Nathan Darnall – U.S. Fish and Wildlife Service
Liam Duggan – U.S. Forest Service
Sarah Lowe – U.S. Forest Service
Pat Magee – Western Colorado University
Ari Yamaguchi – Upper Gunnison River Water Conservation District

11. REFERENCES

Aldridge, C. L., D. J. Saher, T. M. Childers, K. E. Stahlnecker, and Z. H. Bowen. 2012. Crucial nesting habitat for Gunnison sage-grouse: A spatially explicit hierarchical approach. Journal of Wildlife Management 76(2): 391-406.

Beers, A. T., and S. N. Frey. 2023. Greater sage-grouse face tradeoffs between predation risk and thermal exposure in selecting habitat. Authorea. August 02, 2023.DOI: 10.22541/au.169096101.11288084/v1.

Colorado Division of Wildlife. 2011 Gunnison Basin Gunnison Sage-Grouse Lek Count Summary and Population Estimate Final Report. Colorado Division of Wildlife, Gunnison basin, Colorado, USA.

Colorado Division of Wildlife. 2010 Gunnison Basin Gunnison Sage-Grouse Lek Count Summary and Population Estimate Final Report. Colorado Division of Wildlife, Gunnison basin, Colorado, USA.

Colorado Division of Wildlife. 2009 Gunnison Basin Gunnison Sage-Grouse Lek Count Summary and Population Estimate Final Report. Colorado Division of Wildlife, Gunnison basin, Colorado, USA.

Connelly, J.W., M.A. Schroeder, A.R. Sands and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitat. Wildlife Society Bulletin 28:967-985.

Davis, A. J., M. L. Phillips, and P. F. Doherty Jr. 2016. Declining recruitment of Gunnison sage-grouse highlights the need to monitor juvenile survival. The Condor 118: 477-488. DOI: 10.1650/CONDOR-15-165.1.

Dungannon, T. D., C. R. Anthony, T. S. Bowden, and C. A. Hagen. 2024. Microclimate and thermal refuge influences on sage-grouse brood habitat selection. Journal of Thermal Biology 124. 103957. DOI: 10.1016/j.jtherbio.2024.103957.

Fedy, B. C., C. L. Aldridge, K. E. Doherty, M. O'Donnell, J. L. Beck, B. Bedrosian, M. J. Holloran, G. D. Johnson, N. W. Kaczor, C. P. Kirol, C. A. Mandrich, D. Marshall, G. McKee, C. Olson, C. C. Swanson, and B. L. Walker. 2012. Interseasonal movements of greater sage-grouse, migratory behavior, and an assessment of the core regions concept in Wyoming. Journal of Wildlife Management 76(5): 1062-1071.

Gunnison Sage-grouse Rangewide Steering Committee. 2005. Gunnison sage-grouse range-wide conservation plan. Colorado Division of Wildlife, Denver, Colorado, USA.

Johnson, A. J., J. M. Galanti, D. Englestead, and J. C. Whiting. 2025. Migratory patterns and

Kohl, M. T., T. A. Messmer, Crabb, B. A., M. R. Guttery, D. K. Dahlgren, R. T. Larsen, S. N. Frey, S. Liguori, and R. J. Baxter. 2019. The effects of electric power lines on the breeding ecology of greater sage-grouse. PLoS One 14(1): e0209968.

Kohl, M. T., C. P. Sandford, P. C. Rogers, R. Chi, T. A. Messmer, D. K. Dahlgren. 2024. Function over form: The benefits of aspen as surrogate brood-rearing habitat for greater sage-grouse. Ecosphere DOI: 10.1002/ecs2.70060.

Knick, S. T., S. E. Hanser, and Kristine L. Preston. 2013. Modeling ecological minimum requirements for distribution of greater sage-grouse leks: implications for population connectivity across their western range, U.S.A. Ecology and Evolution 3(6): 1539-1551.

Newton, R. E., J. D. Tack, J. C. Carlson, M. R. Matchett, P. J. Fargey, D. E. Naugle. 2017. Longest sage-grouse migratory behavior sustained by intact pathways. Journal of Wildlife Management 81(6): 962-972.

Ouren, D. S., B. S. Cade, K. W. Holsinger, and M. S. Siders. 2019. Are Lek Disturbance Buffers Equitable for All Gunnison Sage-Grouse Populations? Journal of Fish and Wildlife Management 10(1): 51-61.

Rice M. etal. The importance of seasonal resource selection when managing a threatened species: targeting conservation actions within critical habitat designations for the Gunnison sage-grouse. 2017. CSIRO Publishing.

Saher, D. J., M. S. O'Donnell, C. L. Aldridge, and J. A. Heinrichs. 2022. Balancing model generality and specificity in management-focused habitat selection models for Gunnison sage-grouse. Global Ecology and Conservation 35: e01935.

Severson, J. P., C. A. Hagen, J. D. Maestas, D. E. Naugle, J. T. Forbes, and K. P. Reese. 2017. Effects of conifer expansion on greater sage-grouse nesting habitat selection. The Journal of Wildlife Management 81(1): 86-84.

Taylor, R. L., B. L. Walker, D. E. Naugle, and L. S. Mills. 2012. Managing multiple vital rates to maximize greater sage-grouse population growth. Journal of Wildlife Management 76(2): 336-347. DOI: 10.1002/jwmg.267.

USDA Natural Resources Conservation Service. *Web Soil Survey - Home*. Web. 15 Nov. 2011. <http://websoilsurvey.nrcs.usda.gov/app/>.

US Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants: Threatened Status for Gunnison Sage-Grouse; Final Rule, 79 Fed. Reg. 69192 (November 20, 2014).

12. ACRONYMS

BLM- Bureau of Land Management

CPW- Colorado Parks and Wildlife

CDOW- Colorado Division of Wildlife

GCEA- Gunnison County Electric Association

NHD- National Hydrography Dataset

NPS- National Park Service

NRCS- Natural Resources Conservation Service

RCP- Gunnison Sage-grouse Rangewide Conservation Plan

TNC- The Nature Conservancy

USFS- US Forest Service

USFWS- US Fish and Wildlife Service

WAPA- Western Area Power Association

Appendix I

NRCS Soil Survey data

Nesting/Summer/Fall

Soil survey CO660: [MUSYM] in ("127", "138", "142")] and in NE aspects (331 to 149 degrees) in ("107", "131", "139", "153", "165", "172", "191")

Soil survey CO661: [MUSYM] in ("PeA") and in NE aspects (331 to 149 degrees) in ("BaE", "BaF", "EyF", "GoE", "JuF", "LiF", "LmF", "LuE", "LuF", "MhF", "Rl", "SmF", "SoF", "St", "SuF")

Soil survey CO662: [MUSYM] in ("2GB1", "2GB2", "2GB6", "2GB7", "BoE", "BsB", "CeE", "CoE", "CuB", "DeB", "DeC", "DoE", "EvB", "EvD", "GeB", "GeE", "IrB", "JeE", "KuE", "LeE", "MoE", "MrE", "PwE", "RcE", "Ro", "Rs", "RuE", "SuE", "YgE", "YlE", "YpE") and in NE aspects (331 to 149 degrees) in ("2GB3", "2GB4", "2GB5", "2GB8", "CrE", "KcE", "PhF")

Soil Survey: CO663 [MUSYM] in ("108") and in NE aspects (331 to 149 degrees) in ("105", "109", "110", "111", "119", "121", "122", "130", "131", "132", "133", "141", "142")

Winter Habitat (just the SW aspects of 150 to 330 degrees for all following soils)

Soil survey CO660: [MUSYM] in ("107", "131", "139", "153", "165", "172", "191")

Soil survey CO661: [MUSYM] in ("BaE", "BaF", "EyF", "GoE", "JuF", "LiF", "LmF", "LuE", "LuF", "MhF", "Rl", "SmF", "SoF", "St", "SuF")

Soil survey CO662: [MUSYM] in ("2GB1", "2GB2", "2GB3", "2GB4", "2GB5", "2GB6", "2GB8", "BoE", "CeE", "CoE", "CrE", "DeC", "DoE", "EvD", "GeE", "JeE", "KcE", "KuE", "LeE", "MoE", "MrE", "PhF", "PwE", "RcE", "Ro", "Rs", "RuE", "SuE", "YgE", "YlE", "YpE")

Soil survey CO663: [MUSYM] in ("105", "109", "110", "111", "119", "121", "122", "130", "131", "132", "133", "141", "142")

Appendix II

Manifold GIS instructions and code for the 2025 HPT:

Import static layers from last HPT

- 750' brood - buffer 750' from brood areas and then clip out areas not in NSF or Winter, as well as irrigated areas.
- CPW range - from CPW
- Nonhabitat - Landfill, lakes, etc.
- NSF - based on query of soils, remove irrigated and brood areas from NSF. Also, remove BsB soil polygon in the City of Gunnison.
- Winter - based on query of soils, remove irrigated and brood areas from Winter
- Electric main

Leks - get the latest lek info from CPW. Copy/paste from their layer to active, inactive, historic, and unknown.

- Buffer and merge polygons. Create a .6 mile buffer and a 1 mile buffer
- Clip by importance. Active clips inactive, unknown, and historic. Unknown clips inactive and historic. Inactive clips historic.
- 2 mile buffer from active layer requires removing full irrigated lands (includes 50 meter adjacent to ditches) from this polygon.

Get latest

- GCEA
- Double track (Driveways and roads - vehicular trails, admin) - 50' buffer
- Roads improved (Roads - secondary, major, and local) - 150' buffer
- Irrigated - excludes 50 meter adjacent to ditches
- Trails - 25' buffer

How to create address layers (300' and 1000'):

- Get latest address points
- Clip to desired CPW GuSG range
- Delete address points touching vacant parcels and agricultural parcels with less than $20,000 improvement value
- Buffer remaining address points by 300' and merge them.
- Use same address points in query called "Select address 3 or more within 1000'
- From the result, create buffer of 1000'.
- Clip out of the 300' buffer, the 1000' buffer to not double count.

- Merge all layers into one layer Using merge layers dialogue. Keep no fields or source names and remove nulls.
- Clip the merged layer to the CPW range.
- Use transform to 1) convert to lines, and 2) split lines into branches or possibly try into parts using itself for the split.
- Run topology on lines, set tolerance to something like 3 feet.
- Use Trace transform to convert to bounded areas. Call it [DA] (discrete areas) and [DA Table].
- Copy over fields for each layer into DA, using the join dialogue.
- Create centroid geom for each discrete area, call it [Geom_pt] and be sure to make a drawing of it so it knows the projection.
- Run the query "Mark discrete areas for habitat" to put "1" in each approriate field. This marks the layers each discrete area touches.

- Then use query to apply scores for each layer and sum the weighted score field for each discrete area.

Here's the current query that calculates the score for each discrete area in the HPT:

```
--Overall Habitat
--Update [DA] set [Score 1 mile half] =
Update [DA] set [Score 1 mile full] =
--Update [DA] set [Score no 1 mile] =

case when [Lek .6 active] = 1 then 15 else 0 end +
case when [Lek .6 historic] = 1 then 6 else 0 end +
case when [Lek .6 inactive] = 1 then 8 else 0 end +
case when [Lek .6 unknown] = 1 then 10 else 0 end +

--case when [Lek1active] = 1 then 8 else 0 end +
--case when [Lek1historic] = 1 then 3 else 0 end +
--case when [Lek1inactive] = 1 then 4 else 0 end +
--case when [Lek1unknown] = 1 then 5 else 0 end +

case when [Lek1active] = 1 then 15 else 0 end +
case when [Lek1historic] = 1 then 6 else 0 end +
case when [Lek1inactive] = 1 then 8 else 0 end +
case when [Lek1unknown] = 1 then 10 else 0 end +

case when [Lek active 2 mile] = 1 then 5 else 0 end +

case when [NSF] = 1 then 10 else 0 end +
case when [Brooding] = 1 then 14 else 0 end +
case when [Winter] = 1 then 10 else 0 end +
case when [750' brood] = 1 then 5 else 0 end +
case when [Irrigated] = 1 then -8 else 0 end +
case when [CPW Range] = 1 then 1 else 0 end +

case when [300' house] = 1 then -5 else 0 end +
case when [300' house] = 1 then -15 else 0 end +
case when [1000' house] = 1 then -20 else 0 end +
case when [Nonhabitat] = 1 then -30 else 0 end +

case when [WAPA 0 to 0.25 km] = 1 then -3 else 0 end +
case when [WAPA 0.25 to 0.5 km] = 1 then -2 else 0 end +
case when [WAPA 0.5 to 1.5 km] = 1 then -1 else 0 end +
case when [WAPA 1.5 to 2 km] = 1 then 0 else 0 end +

case when [GCEA 150'] = 1 then -2 else 0 end +
case when [GCEA 450'] = 1 then -1 else 0 end +

case when [Road Improved] = 1 then -4 else 0 end +
```

```
case when [Double Track] = 1 then -3 else 0 end +
case when [Trail] = 1 then -2 else 0 end
```

GUNNISON BASIN SAGE-GROUSE STRATEGIC COMMITTEE
MEETING MINUTES
September 17, 2025

The September 17, 2025 Gunnison Basin Sage-grouse Strategic Committee meeting was conducted in the Gunnison County Blackstock Government Center, 2nd floor meeting room, located at 221 N. Wisconsin #D, Gunnison, CO, 81230. The meeting was also available on Zoom.

Committee Members Present:

Voting Members:
Kathy Griffin, Colorado Parks and Wildlife (CPW), Chairperson
Liz Smith, Gunnison County Board of County Commissioners (BOCC), Vice Chair
Sue Navy, High County Conservation Advocates (HCCA)
Dayle Funka, Forest Service (USFS), USFS Regular
Peter Caloger, Public At-Large Regular
Sarah Elzay, Gunnison County Cheatgrass Coordinator, Research & Education At-Large
Brinnen Carter, National Park Service (NPS), NPS Regular
Paul Mowery, Crossbar Ranch, Stockgrowers
Angela Trnka, US Fish and Wildlife Service (USFWS), USFWS Regular
Tim Kuegler, Gunnison Trails, Recreation At-Large
Andy Stokes, Bureau of Land Management (BLM), BLM Alternate

Non-Voting Members
Matthew Vasquez, USFS Alternate
Nathan Darnall, USFWS Alternate
Jessica Frey, NPS Alternate
Stephanie Chain, Public At-Large Alternate

Others in the Audience:
Bailey Friedman, Upper Gunnison River Water Conservancy District (UGRWCD)
Ari Yamaguchi, UGRWCD
Nate Seward, CPW
Miranda Middleton, CPW
John Scott, Private Consultant
Matt Holloran, BLM
Sarah Lowe, USFS
Marcella Tarantino, Bird Conservancy of the Rockies

Staff Members Present:
Ben Prior, Gunnison Conservation District
Misty Castillo, Gunnison County Community and Economic Development Department
Others present as listed in text.

CALL TO ORDER: Chairperson Griffin called the September 17, 2025, meeting of the Gunnison Basin Sage-grouse Strategic Committee to order at 10:02 AM.

DETERMINATION OF QUORUM: Griffin confirmed that a quorum was present.

AGENDA APPROVAL: **Moved:** by Navy and seconded by Caloger to approve the September 17, 2025, agenda as amended. Motion carried unanimously.

APPROVAL OF MEETING MINUTES: **Moved:** by Smith and seconded by Navy to approve the June 18, 2025, meeting minutes as amended. Motion carried unanimously.

NOTE: Full meeting video recordings and transcripts are available at the Gunnison Basin Sage-Grouse Strategic Committee webpage (LINK).

GUNNISON TRAILS GRANT PROPOSAL

Gunnison Trails will be applying for a CPW non-motorized trail grant and would like a letter of support from the Gunnison Basin Sage-Grouse Strategic Committee. This grant is strictly for maintenance on non-motorized trails and would help Gunnison Trails fund a five-person trail crew. Trail work would be done in areas throughout the Gunnison Basin, including the Signal Peak area. Last year the Gunnison Trail crew installed new signage for the Signal Peak seasonal closure for Gunnison sage grouse (GUSG). They also stationed crew members at popular trail heads to inform the public about the GUSG seasonal closure. This grant will help continue these efforts.

UGRWCD GRANT PROPOSAL

UGRWCD will be applying to the National Fish and Wildlife Foundation Restore Grant and would also like a letter of support from the committee. This grant funding would help UGRWCD, and partners implement wet meadow restoration projects, cheatgrass treatments, and other water-based projects throughout several hydrologic unit codes (HUCs) within and around the Gunnison Basin. Many of these projects will take place in important GUSG habitat.

COMMITTEE MEMBER COMMENTS / REPORTS

Caloger noted that a large bear has been seen roaming the alleys within Gunnison city limits. He expressed his concern about this and the need for more bear proof trash cans in Gunnison.

Navy, HCCA had a successful two day wet meadow restoration volunteer event along Gold Basin Road. Over 12 new rock structures were constructed and maintenance on existing structures also occurred. GUSG were seen in the project area during the event.

Elzay, working on several grant applications to help fund cheatgrass treatments. She will be partnering with UGRWCD on the Restore grant application. She has submitted a Rocky Mountain Elk Federation grant application for cheatgrass treatments on USFS lands. She also partnered with the Gunnison Conservation District in their Natural Disaster Mitigation Enterprise grant application. This application included funding for 400 acres of cheatgrass treatment throughout the Gunnison Basin on public and private lands.

Tarantino, there will be a wet meadow restoration workshop on October 3. The workshop will be half in classroom and half touring a wet meadow restoration site.

Frey, NPS is finishing up their grazing management plan. This plan had a public scoping in August and public comment period in June. They have also been doing riparian restoration work, installing beaver dam analogues and similar structures in the Red Creek area.

Yamaguchi, UGRWCD has built or done maintenance on over 50 low tech structures this year.

Stokes, BLM has recently had several Youth Corps crews conducting cheatgrass treatments and sagebrush plantings on BLM lands in the Gunnison Basin. BLM was able to secure funding to hire wildlife interns for next year. New BLM seasonal closure signage will be installed soon in the Gunnison Basin. The Gunnison BLM Field Office hopes to have their new weeds ecological assessment (EA) completed and signed by January 2026. This EA will allow for the use of indaziflam on BLM lands in the Gunnison Basin.

Mowery, Gunnison stock growers are concerned with the current grey wolf reintroduction plan and are worried about how grey wolves may negatively affect the Gunnison sage grouse population in the Gunnison Basin. Griffin, wolves have shown to be beneficial in some instances to greater sage grouse populations. Wolves can outcompete smaller predators (i.e. badgers, coyotes, foxes) resulting in a decrease in these other predator populations. This can help take predator pressure off of sage grouse.

Funka, USFS has completed monitoring on 34 allotments that have critical Gunnison sage grouse habitat. Monitoring has been successfully completed for five consecutive years. Maintenance on wet meadow restoration structures on national forest land is ongoing. The Gunnison National Forest recently lost their range technician, so weed spraying on national forest land may be impacted. USFS is working with partners to get funding to treat cheatgrass on USFS lands in the Gunnison Basin.

Trnka, September 30th is the end of the year for federal reporting. Any conservation activities related to Gunnison sage grouse and other wildlife that occurred this year should be entered into the Conservation Efforts Database by September 30th. This is a USFWS tool that is managed by the United States Geological Survey.

GUNNISON BASIN SAGE GROUSE 2025 POPULATION UPDATE

Middelton gave a presentation on the preliminary data from this year's lek counting season. This is overviewed below.

- There were 40 lek counters from 12 different organizations this year.
- A total of 309 lek counts were conducted over 87 leks throughout the Gunnison Basin.
- Many different animals other than sage grouse were observed on leks. These animals included ravens, golden eagles, crows, red tailed hawks, coyotes, pronghorn, mule deer, elk, and moose.
- One photographer and videographer were able to capture photos and videos of sage grouse leking. This material will be shared with the committee once it is officially published.
- The sage grouse male high count for 2025 was 726, which is little higher than 2024's high male count.
- The 2025 population estimate for the Gunnison Basin sage grouse population is 3,562 birds.

GUNNISON SAGE GROUSE 2025 SATELITTE POPULATION UPDATE

Griffin gave an overview of the Gunnison sage grouse satellite populations. The satellite populations are San Miguel, Pinyon Mesa, Crawford, Cerro Summit, Dove Creek, Monticello, and Poncha Pass.

- The San Miguel and Pinyon Mesa populations are doing well. The Pinyon Mesa population had the highest lek count numbers ever recorded.
- The Crawford population continues to struggle. This area has been in severe drought for a while.
- The Cerro Summit, Dove Creek and Monticello populations are all still at zero or one bird for their estimated populations.
- The Poncha Pass population has been bouncing back.

PUBLIC COMMENTS

None.

FUTURE MEETINGS: Future meetings will occur in the Gunnison County Blackstock Government Center, 2nd floor meeting room and by Zoom online meetings, unless changed for a specific reason.

11-19-25	10-12	Regular Meeting	Blackstock; 221 N. Wisconsin 2nd floor meeting room
12-17-25	10-12	Regular Meeting	Blackstock; 221 N. Wisconsin 2nd floor meeting room

ADJOURN: September 17, 2025, meeting of the Gunnison Basin Sage-grouse Strategic Committee adjourned at 12:21 PM.
Minutes Prepared By: Ben Prior, Gunnison Conservation District