



Range Management Advisory Committee
State Lands Grazing License and Land Management
subcommittee

STATE LANDS GRAZING PACKET:
Guidebook



California State Board of Forestry and Fire Protection ('Board')
Range Management Advisory Committee (RMAC)
State Lands Grazing License and Land Management Sub-Committee ('RMAC Subcommittee')

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Appendix A: Grazing Agreement Template ('Agreement' Template)

Appendix B: Management Action Plan Template ('MAP' Template)

Acronyms

ATV	All-terrain vehicle
APN	Assessor Parcel Number
AU	Animal Unit
AUM	Animal Unit Month
BOF	Board of Forestry and Fire Protection ('Board')
CAL FIRE	Department of Forestry and Fire Protection
Cal-IPC	California Invasive Plant Council
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CRM	Certified Rangeland Manager
FAC	Food and Agriculture Code
GMP	Grazing Management Plan
MAP	Management Action Plan
MCV	Manual of California Vegetation
NRCS	Natural Resources Conservation Service
PFEC	Professional Foresters Examining Committee
RDM	Residual Dry Matter
RMAC	Range Management Advisory Committee
RMP	Resource Management Plan
PRC	Public Resources Code
SLGLLM	State Lands Grazing License and Land Management ('Sub-committee')
UCANR	University of California Agriculture and Natural Resources
UCCE	University of California Cooperative Extension
USDA	United States Department of Agriculture
UTV	Utility Vehicle
WUI	Wildland Urban Interface

Definitions

Adaptive management An approach to making decisions and adjustments to better meet goals based on changes, new information, and feedback.

Agency Refers to a Government Organization within a state or national government that is responsible for the administration or oversight of a specific area of study, field, or sector, for example CDFA or CDFW.

Agreement	A negotiated and legally binding arrangement between parties.
Assessor Parcel Number	A number assigned to real property by the county assessor for identification and recordkeeping. Often notated as 'APN'.
Bagley	Ex-California Deputy Attorney General Shana Bagley of the Bagley-Keene Open Meeting Act, protecting the public's opportunity not only to observe, but also to participate in, the decision-making process of State bodies.
Condemnation	The legal process by which the government authorities take private property for public use, providing fair compensation to the owners. This is often associated with the exercise of eminent domain.
Continuous grazing	Allowing animals access to one pasture or grazing unit without rest or rotation.
Contract grazing	When someone is hired to provide a grazing treatment on a property, generally for the purpose of meeting a specific objective or outcome.
Contractee	A person or business that enters into a contract with another entity that provides services.
Contractor	A person or business that that enters into a contract to provide services.
Cow/Calf Operation	A method of raising cattle which maintains a breeding herd of cows to produce weaned calves to sell.
Damage	Harm caused to something in such a way as to impair its value, usefulness, or normal function.
Destruction	The process of causing so much damage to something that it no longer exists or cannot be repaired.
Eminent domain	The right of the government or its agent to expropriate private property for public use with payment of compensation.
Farming	In the context of this document, the practice of growing crops (excluding livestock).
Fee Credit	A credit toward rent, received by the Grazing Operator for improvements preformed on the property beyond the requirements of the license.
Flexible use fields	Pastures without sensitive resources or that are held to lower resource standards to allow for staging areas, or areas to graze the livestock when certain resources located elsewhere need to be avoided.

Fine fuels	Small, lightweight, flammable materials that ignite easily and burn quickly, such as grasses.
Fire fuels	Any combustible material that can burn when exposed to heat and oxygen. In the context of this document, combustible wildland vegetative materials, living or dead.
Fuels	See “Fire fuels” above.
Grazer	Livestock or wildlife that consume mostly grasses.
Grazier	A human who manages grazing animals. Also see Grazing operator.
Grazing Agreement template	An outline used as guidance in developing a legal contract between landlord and grazier. In the context of the State Lands Grazing Packet and this Guidebook, this is Appendix A.
Grazing operator	A human who manages grazing animals. This term is used throughout the State Lands Grazing Packet documents to refer to the livestock manager or owner who enters into the Grazing Agreement. Also see Grazier.
Grazing season	The time of year in which animals are given access to a property.
Grazing service providers	A livestock producer that can be hired to perform contract grazing.
Grazing unit	Area to be grazed within a designated boundary.
Guidebook	This document, developed as a supplement to the Grazing Agreement Template (Appendix A) and MAP Template (Appendix B) to provide more in-depth information related to the development of specific items and to provide a directory of related resources.
Infrastructure	Any improvements made on the land for management purposes (e.g., temporary or permanent fences, handling facilities, corrals, portable or permanent water tanks, wells).
Landlord	The property owner who rents out the property to a tenant (in this context, the Grazing Operator). This term is used throughout the State Lands Grazing Packet documents to refer to the public agency that owns or manages the land for which the Grazing Agreement and Management Action Plan are developed.
Land manager	An individual or entity responsible for actively managing a particular property and implementing any associated resource management plans or land management plans associated with a particular property.
Lessor	An individual or entity that owns property or assets and enters into a lease agreement with a lessee to allow the lessee to use the property in

exchange for regular rental payments. The lessor, also known as the landlord or property owner, transfers possession and use of the property to the lessee for an agreed-upon period and terms outlined in the lease contract.

Licensee	An individual or entity that enters into a license agreement with a licensor to rent or use property. The licensee is also known as the renter or tenant (in this context, the Grazing Operator).
Licensor	An individual or entity that owns property or assets and enters into a license agreement with a licensee to license the use of the property in exchange for regular rental payments. The licensor, also known as the landlord or property owner, transfers possession and use of the property to the licensee for an agreed-upon period and terms outlined in the license contract.
Lien	A legal right or claim against a property by a creditor, securing the payment of a debt or obligation with the property.
Managed grazing	A grazing technique in which variables (such as stock density, timing, duration) are manipulated to meet stated management goals.
MAP template	Management Action Plan Template (Appendix B) of the State Lands Grazing Packet. Intended to guide the management of lands, including grazing activities, and is generally referenced in a related grazing agreement.
Manager	An individual or entity responsible for oversight of a particular operation (i.e., land manager or livestock manager).
Managing agency	Government entity responsible for oversight of a particular operation.
Objectives	Statements of specific measurable conditions to be achieved (e.g., what, how, when). Also see Performance Standards.
Overgrazing	When a plant is eaten or trampled and re-eaten or trampled without an adequate recovery period (i.e., roots and aboveground foliage have fully recovered from the previous grazing event). A generalized and often over-used or mis-used term referring to damage due to excessive grazing impacts. Such impacts must be specified with verified quantities stated. Generally used in reference to perennial grasses.
Parcel	A part or portion of land.
Pasture	A grazing unit in which livestock are confined.
Party	Any individual, group, or organization participating in a contract.

Performance standards	Clear, measurable criteria used to evaluate management attainment of an objective (e.g., maintain average RDM levels between 1,000–3,000 pounds per acre from June through November)** ¹ .
Permanent improvement	A fixed addition or change to land that is not temporary or portable.
Prescribed grazing	The controlled harvest of vegetation with grazing or browsing animals managed with the intent to achieve management objectives. The term can refer simply to planned grazing or to a very specific time and amount of grazing by a specific species (Launchbaugh and Walker 2006).
Personal property	Movable items or belongings exclusive of land and buildings.
Property	Land and anything permanently attached to the land, plus the rights inherent in the ownership of the real estate.
Public lands	Areas of land and water that are owned and managed by the government for the benefit of all citizens.
Ranching	A form of agriculture focused on the raising of livestock for meat, wool, milk, and other animal products, typically on large tracts of land.
Rangeland	Any expanse of land not fertilized, cultivated or irrigated that is suitable, and predominately used for grazing by domestic livestock and wildlife. These include the Conifer Woodland, Hardwood Woodland, Shrub, Grassland, Desert Woodland and Desert Shrub classes as well as some habitats within the Wetland and Hardwood Forest classes (FRAP 2017).
Rent	A tenant’s regular payment of a landlord for the use of property or land.
Renter	One that rents, specifically the lessee, licensee, or tenant.
Residual Dry Matter	The amount of old plant material left on the ground during the non-growing season, often measured at the start or end of the new growing season. Often notated as RDM.
Residue	The amount of vegetation left on the ground after grazing. Also see Residual Dry Matter.
Resource Management Plan	A document outlining strategies for managing a particular resource or multiple resources within a single management unit.

¹ Bartolome et al. (2006) defined RDM as the “old plant material (herbaceous residual biomass) left standing or on the ground at the beginning of a new fall growing season (that is, the “break of season,” defined by George et al. (2021), as “when rains start the germination of stored seed.” They explain that “break of season follows the first fall rains that exceed 0.5 to 1 inch during a 1-week period (Bentley and Talbot 1951).” RDM is not simply dry grass residue. I believe it is meant to be the quantity of dry grass residues present shortly before or at the time of the first significant fall rains. In recent years, that might sometimes be in February.

Rotational Grazing	A livestock management practice that involves moving animals through multiple pastures, of which, one pasture is grazed, while the other pastures rest, allowing plants to recover between grazing.
Sacrifice area	Also called ‘sacrifice zones’.
Seasonal grazing	When grazing restricted to a portion of the year.
Site	The piece of land on which something is located; in this context, generally a defined location or area where grazing or other land management actions occur.
Special management area	Defined areas that support resources of concern, and to be managed to benefit specified resources of concern; these areas are sometimes unfenced within a pasture or overlapping among multiple pastures and may have a grazing prescription more complicated than for the rest of the pasture.
State Lands Grazing Packet	Collectively, the three documents developed by the RMAC subcommittee—the Grazing Agreement Template (Appendix A) , MAP Template (Appendix B) , and this Guidebook.
Stocker operation	Livestock operation in which calves are raised on pasture between weaning (i.e., removal from the cow to prevent nursing) and finishing (i.e., when the animal is ready for processing).
Sustainable	An operation that can remain viable in the long-term, by minimizing impacts on natural resources, while maintaining financial stability.
Targeted grazing	The application of livestock grazing at a specified season, duration and intensity to accomplish specific vegetation management goals. The term “targeted” refers to the specific plant or landscape that is the aim of controlled grazing practices (Launchbaugh and Walker 2006)
Temporary	Portable or not permanent, when referring to infrastructure.
Tenant	An individual who occupies or possesses property rented from a landlord (in this context, the Grazing Operator).
Under-grazing	Grazing (i.e., removal of vegetation) performed at a level resulting in residual vegetation that exceeds resource management goals.
Wildland Urban Interface	The geographical intersection of two disparate systems: wildland and the built environment (i.e., structures, infrastructure). At this interface, structures and vegetation are close enough that a wildland fire could spread from vegetation to structures, or from structures to vegetation (FRAP 2017).

FOREWORD

The Range Management Advisory Committee (RMAC) is authorized by Public Resources Code (PRC) § 741² of the State of California to provide a source of counsel for the Board of Forestry and Fire Protection (“Board”) concerning the rangelands of California. The mission of RMAC is to consider issues related to California’s rangeland resources, provide recommendations on addressing them, facilitate strong relationships with local, state and federal agencies and develop solutions that are based on environmental, social, and economic information that is current, data-driven, and considers diverse perspectives.

The State Lands Grazing License and Land Management (SLGLLM) subcommittee—a subcommittee of the RMAC (“RMAC subcommittee”)—developed templates for a **Grazing Agreement Template (Appendix A)** (RMAC 2024a) and a **Management Action Plan (MAP) Template (Appendix B)** (RMAC 2024b) to guide and support California government agencies and Grazing Operators in utilizing managed livestock grazing as a tool to enhance ecological and sustainability values and to reduce fire fuels on public lands.

This Guidebook was developed as a supplement to the Agreement and MAP Templates to provide more in-depth information related to the development of specific items and to provide a directory of related resources. Many historical sustainable grazing management programs exist on state lands that can serve as a model to those looking to utilize grazing as a land management tool on public lands.

Collectively, the three documents developed by the RMAC subcommittee—the Agreement

template, MAP template, and Guidebook—are referred to as the **‘State Lands Grazing Packet’**.

Together, the three documents in the State Lands Grazing Packet provide tools to assist agency staff in streamlining the implementation of grazing management programs as well as providing resources to guide existing grazing programs. **In these documents, the RMAC subcommittee uses the term ‘Grazing Operator’ to refer to the tenant, and this is the individual(s) who enters into the Agreement. The term ‘Landlord’ will be used throughout to refer to the public agency that owns or is responsible for the management of the land for which the Agreement and MAP are being developed.**

While developed for use on California’s public lands, the principles within these documents can be applied to other public and private lands. The efforts to develop the State Lands Grazing Packet contribute to meeting the objective in the RMAC’s Strategic Plan to “Share information and education with Certified Range Managers and government agency rangeland and forestry staff to grow professional knowledge in the field of rangeland health” (RMAC 2020). The RMAC will develop a plan for pilot implementation of the State Lands Grazing Packet as well as a review period for these templates after 3–5 years for testing, adjustments, and updates.



² https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC§ionNum=741

State Lands Grazing License and Land Management (SLGLLM) sub-committee

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A subset of SLGLLM members worked to develop the two accompanying appendices to this Guidebook (i.e., the Agreement and MAP templates). See the **Agreement Template (Appendix A)** and **MAP Template (Appendix B)** for a list of the authors and contributors.

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** Additional editing and contributions were incorporated from stakeholders across various public agencies and during the two public comment periods, which were opened during the development of the State Lands Grazing Packet: a 30-day review period beginning July 22, 2022 and a 21-day review period beginning November 01, 2024.

I. INTRODUCTION

California Rangelands

California's grasslands in Mediterranean climate zones—which are represented across the majority of the low-elevation inland grasslands—are presently dominated by annual grasses and forbs. These plants were first introduced to California shores as seed from ship-borne livestock feed harvested and transported from the European Mediterranean region during Spanish exploration and colonization beginning in the mid-1500s and peaking in the mid through late 1700s. Mediterranean grasslands of Europe evolved plant communities characterized by a diversity of both annual and perennial grasses, together with annual and perennial herbs and various woody species. The introduction of non-native grasses into California's Mediterranean climate zone resulted in their dominance of most of California's Mediterranean-type grasslands (Bartolome et al. 2007). In high-altitude meadows, the Transverse Ranges, Mojave Desert, and east of the Mediterranean climate zone, many of the introduced Mediterranean species occur in the grasslands with the original native grassland and shrubland species. Paradoxically, California's Mediterranean grasslands are recognized as a global "hotspot" of biodiversity, with high numbers of endangered and threatened native species (Bartolome et al. 2014). Many of these native species benefit from grazing by livestock that reduces the mass and height of the introduced annual grasses. Without ongoing management, these grasslands can build up high volumes of annual grass residues, which together with woody fuels, increase ignition risks and the intensity and spread of wildfires (Ratcliff et al. 2022). These herbaceous fuels can often be effectively reduced by livestock grazing, and so also can some canopy components of shrublands be thinned and collapsed to reduce combustion rates and flame lengths.

Grazing in California

California was historically grazed by a variety of ruminants (Burcham 1982). With increasing populations and development of land, vast herds of elk were greatly diminished, and grazing became dominated by sheep, a trend driven by a high demand for wool. By the latter part of the 20th century demand for wool had dramatically fallen, and cattle became the primary grazers. In the 21st century, growing public interest in preservation of nature drove interest in reducing or even eliminating human influence on public lands, and grazing with domestic livestock was viewed by many as inappropriate and degraded ecosystems. More recently, a distinct shift is evident in public and professional focus on conservation and multiple-use strategies on working landscapes to support and derive ecosystem services (Buckley Biggs et al. 2021).

By 2020 however, the state was experiencing increasingly severe wildfires and public and agency attention shifted to reducing fire risk. While much attention has been paid to longer term climate change concerns, a more immediate focus on ignition sources and fuels has resulted in greater interest and programs to support vegetation management, including grazing (Ratcliff et al. 2022). Animals may consume and crush vegetation, which is now a relatively accepted means of reducing fuel loads. Grazing may be more attractive in some circumstances than using herbicides or heavy machinery, particularly where those or other vegetation treatment methods are prohibited for a variety of reasons (e.g., air quality concerns or regulations prohibiting or severely limiting burn days, prohibited use of pesticides in certain areas or at certain times). In addition to reducing fine fuels, there is a growing body of evidence supporting the premise that properly planned and implemented grazing practices can also aid in

improving habitat conditions for some key species of native plants and animals (Marty 2005, Bartolome et al. 2014).

Livestock Grazing as a Management Tool

Livestock grazing can be a practical and economical management tool for habitat conservation and fire fuel reduction in California grasslands. However, it is challenging for managers to balance grazing operations with the integration of conservation goals associated with many State lands. These objectives combine the conventional range management goals of preserving ecological function, ecosystem stability, resilience, and productivity with the conservation objectives of minimizing soil erosion, invasive pest plant infestations and spread, and water pollution, and improving and sustaining conventional grazing operations to accomplish the combined objectives in specific locations and circumstances. Succeeding at this in California's diverse and dynamic grasslands will require flexible management guided towards land use and conservation objectives by an ever-evolving body of science.

Management objectives can be met using many different grazing techniques. The simplest form—continuous or season-long grazing—where cattle graze in one area all year or all season, could be used as a general vegetation removal/reduction method. Livestock management techniques often become more complex as the resource management goals become more complex. Planned or managed grazing involves forming a strategy and manipulating grazing variables such as timing, livestock density, or duration of grazing to meet the objectives of the strategy. Similarly, prescribed grazing refers to using a grazing prescription (e.g., specified season, duration, and intensity of grazing, among other variables) to accomplish defined vegetation or conservation goals. The most intensive grazing technique is targeted grazing which generally involves high intensity grazing focused on a single objective such as reducing an invasive species or reducing vegetative fuel loads. This type of grazing is generally conducted by contract grazers who are paid to perform this intensive management. These various techniques have significant overlap and can be used together to meet management objectives.

When grazing is chosen as a management tool, the land manager must recognize that management measures and parameters must be compatible with the livestock operation and generally allow for an economically sustainable livestock enterprise. Understanding the annual schedule of the animals and the livestock industry are important in developing a grazing program on any site. A successful program will balance the site-specific habitat and conservation goals with the needs of the livestock operation to develop a plan that optimizes both.

The information contained in this Guidebook will address a variety of these factors and assist managers in developing a Grazing Agreement and comprehensive Management Action Plan that will help managers achieve their local goals and objectives, ensure a sustainable grazing operation, and support a mutually beneficial relationship for the Landlord and Grazing Operator.

II. USING THIS GUIDEBOOK

The **Agreement Template (Appendix A)** and **MAP Template (Appendix B)** were developed with general language that could be applied to any property or project with the addition of site-specific details. The Agreement and MAP should be separate documents because the **Agreement is a legally binding document**, while the **MAP is a management tool**. The MAP will need to be updated over time due to changing circumstances, lessons learned from monitoring results, and new technologies. Some of the

items within the templates are self-explanatory, such as the parties involved, property location, and assessor's parcel numbers. Other items, such as structuring grazing fees, may have several options with different implications which require more specific knowledge of grazing systems or livestock production. In most cases, the Landlord should work with the Grazing Operator to develop the Agreement and MAP and should be fully apprised of and understand the content within each.

Elements of this Guidebook

The **Grazing Agreement Template Chapter (Chapter III)** contains a list of explanations and additional information for each section as they relate to specific Items in the **Agreement Template (Appendix A)**. The **Management Action Plan (MAP) Template Chapter (Chapter IV)** contains explanations and additional information pertaining to specific sections and items in the **MAP Template (Appendix B)**. Items are referenced by their alpha-numeric identifier in the corresponding template document. The three main elements in this Guidebook are further delineated below:

1. CHAPTERS of this Guidebook include the following:

- **Chapter I.** Introduction
- **Chapter II.** Using this Guidebook (i.e., this chapter)
- **Chapter III.** Grazing Agreement Template
- **Chapter IV.** Management Action Plan Template
- **Chapter V.** Certified Rangeland Managers
- **Chapter VI.** References
- **Chapter VII.** Supplemental Resources

2. SECTIONS in this guidebook are the next level of each Chapter and include the main components of each template (i.e., the Grazing Agreement Template, and the MAP Template):

- In the Grazing Agreement Template, Sections are numbered 1 through 18 (e.g., **Section 1. Identification of the Parties**).
- In the MAP Template, Sections are numbered 1 through 7 (e.g., **Section 2.0 Description of Current Site Conditions**).

3. ITEMS in this guidebook are the next level of each Section:

- In the Grazing Agreement Template, Items are indicated with the leading Section number, followed by a character. For example, **Item 1b. Contracting Parties** is part of **Section 1. Identification of the Parties**.
- In the MAP Template, Items are indicated with the leading Section number, followed by a numeric identifier. For example, **Item 2.1 General Description of Property** is part of **Section 2.0 Description of Current Site Conditions**.
 - Additional sub-Items in the MAP template are indicated by a third numeric identifier. For example, **sub-Item 5.2.1 Location(s) of treatment** is part of **Item 5.2 General Prescription**.

III. GRAZING AGREEMENT TEMPLATE

When agencies or other Landlords are interested in having the lands they manage grazed by domestic livestock, there will be questions about the kinds of documentation necessary to establish a satisfactory agreement between a potential Grazing Operator and an entity seeking the services of a Grazing Operator (typically, the 'Landlord'). This section aims to provide some guidance, recognizing that there are a multitude of conditions that will vary by location, habitat type, and mission of the agency.

Grazing agreements can be as simple as a handshake or as complex as a lengthy legal document. When executing a grazing agreement with a public agency on public land, habitat goals and management constraints lend themselves to a more detailed agreement, combined with an associated site-specific management plan; in the State Lands Grazing Packet, this is the MAP.

In the State Lands Grazing Packet, any type of document that allows for any of the above forms of contracts, licenses, or leases are referred to as a Grazing Agreement. The template developed by the SLGLLM for the purpose of establishing such a relationship is referred to as the 'Grazing Agreement', or 'Agreement' and takes the form of a 'License' (see **Item 3b. Occupancy Rights** for a discussion of this term).

Grazing Agreement Guidance

The Agreement should focus primarily on the legal aspects of the arrangement. When managing sensitive habitat areas, the Agreement also works in conjunction with the MAP, which focuses on the stewardship of the land.

The following explanations pertain to the corresponding numbered and/or alphabetical items in the **Agreement Template (Appendix A)** and are meant to highlight items to be taken into consideration and to provide additional information to land managers to assist in the decision-making process when developing this agreement.

NOTE: Not all items in the Agreement Template require extensive explanation, so not all items will be represented below.

1. Identification of the Parties

b. Contracting Parties

If other than individuals are parties, the legal status of the contracting party should be identified (e.g. corporation authorized to do business in CA, or registered partnership). Operations using unregistered fictitious names should not be contracted with. Public lands may require citation to authority to lease property. As part of the Agency's authority to lease the property, they may also need to include non-discrimination language and Americans with Disabilities Act language.³ Also see associated MAP **Item 1.3 Preparers**, above.

³ <https://www.ada.gov/>

2. Property Description

d. Infrastructure

Include the locations or a list of any pertinent infrastructure – wells and troughs, corrals and staging areas, fence lines, and important environmental features and sensitive resources of concern, such as safety concerns, waterways, degraded areas, invaded areas and invasive species, and known nests or occupied habitats (also see associated MAP **Section 5.0 Grazing Program**).

3. Duration, Termination, and Extension Options

A grazing agreement can be structured to cover any duration depending on Agency policies. A typical grazing license would be one year minimum, and up to five years or more. In general, a longer-duration license is more desirable to the Grazing Operator, allowing them to plan long-term. A Grazing Operator is also more likely to make improvements to the site if they know they can benefit from the improvements for several years. A longer-term agreement also benefits the Agency by not having to seek a new Grazing Operator and conduct the bid process annually, and it also provides continuity of management. A potential downfall of a longer-term agreement is that if a Grazing Operator has a multi-year agreement, it can be more difficult to switch Grazing Operators if management is not performed to expectations. Grazing Operators are generally less likely to make any improvements on the property if they don't know how much return they will get in the form of continued use. Ideally a Grazing Operator would treat the land well no matter the duration of the agreement, but a longer-term agreement incentivizes taking care of the land because the Grazing Operator knows they are coming back the next year. One option to offer security and incentive to the Grazing Operator if Agency policies prohibit a multi-year agreement is to offer an automatic renewal for a given number of years.

b. Occupancy Rights

A “lease” is generally viewed as conveying a right to possession of the property to the exclusion of others. Some leases may reserve certain structures or areas from the description of the property or may allow the landlord to enter and inspect under certain circumstances or to use the property in certain ways (e.g. for storage, some limited use or perhaps a right of way). A “license” or “permit” is generally viewed as conveying a limited right of occupancy consistent with a licensed or permitted “use.”

The U.S. Forest Service, especially since the Multiple Use Sustained-Yield Act of 1960,^{4,5} has managed land for multiple uses. A grazing permittee (in this context, the Grazing Operator) is allowed to occupy an allotment, but not to the exclusion of other recognized uses (e.g., recreation). Therefore, the Grazing Operator has a temporary right to use and enjoyment of the property for a specific purpose but may not change the character of the property.

c. Grazing Season and Pressure

Also see associated items in the MAP **Section 5.0 Grazing Program**.

⁴ <https://www.govinfo.gov/app/details/COMPS-1125>

⁵ https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3795279.pdf

- It is common for grazing to be seasonal on a site, based on the site’s habitat management needs, availability of forages and water, nutritional value of forages, and the livestock’s needs. These seasons generally correspond to a “winter” grazing season, October or November to May or June, and a “summer” grazing season from May or June to October or November.
- The Agreement should specify on/off dates with the ability to move these dates earlier or later in the season in any given year, based on annual conditions. For example, in a poor rain year, livestock may need to be removed from winter pasture earlier than normal due to lack of forages or water availability. Under the same circumstances summer pasture may become drier earlier, or may have less snow which melts earlier, allowing the lease to start earlier than normal. In a year with abundant rainfall, a winter lease may last longer to remove excess vegetation later in the season, to take advantage of high-quality forages later in the season, or water availability may extend the grazing season. A summer lease may start later due to excess snow that melts later in the season or a later thaw. These environmental factors affect not only the site that the livestock are currently grazing but could also affect the site that the livestock are moving to for the next season. For this reason, there should be a strong working relationship between the land manager and the Grazing Operator so that decisions such as altering the duration of the grazing season can be made with input from both sides, with enough advance notice for planning.
- Stocking rates if applicable
- Provision waiving pre-occupancy inspection by landlord if inspection was not performed in a timely manner – animals must eat and if they are scheduled to leave one location and move to the contracted land at a specific point in time they need to move to their new source of feed/water; the possibility of bureaucratic delay could discourage responsible Grazing Operators from participating.

d. Early Termination

Many different circumstances could trigger early termination of the grazing agreement from either party in the agreement. A catastrophic environmental occurrence such as drought, fire, or flooding could cause damage to infrastructure or loss of feed, rendering the site ungrazeable (also see associated items in the MAP **Item 6.2 Plan and Practice Adaptation**). Other examples of why a Grazing Operator may want to terminate an agreement early could be plant toxicity, water source contamination, disease, or unmanageable predation. Poor management such as not following the terms of the Agreement, not following the MAP, or failing to meet performance standards could cause early termination of the Agreement by the Landlord. In general, if the cause for early termination is environmental or vandalism and not the fault of the Grazing Operator, the Grazing Operator would be credited a prorated portion of the rent and may be credited the lost grazing seasons, once the site is grazeable again, rather than having to bid on the grazing again. If the cause of early termination is the fault of the Grazing Operator, such as not meeting performance standards or not following the Agreement terms, then the Grazing Operator generally does not receive any payment credit. It is important to note that performance standards must be clear and measurable to be enforceable in circumstances such as early termination of a grazing agreement. The Agreement should identify:

- Rent refunds/payments in the event of early termination; and,

- Reason(s) for early termination.

e. Extension/Renewal Terms and Conditions

If Agency policies limit the length of a grazing agreement to one year, automatic term renewals can be used to offer incentive and security to the potential Grazing Operator. For example, an Agreement could be written to automatically renew for three annual terms if the Grazing Operator continually complies with the associated MAP and meets performance standards. This gives the Grazing Operator the security of a three-year grazing agreement and the incentive to make improvements on site which benefit the Grazing Operator and can also benefit the property and future Grazing Operators.

4. Rent or Payment, and Fee Credits for Improvements

There is not one correct fee structure that fits all situations, and multiple options could work for one situation. The pros and cons should be weighed for each site and each situation and ultimately it will come down to the type of livestock used, site-specific parameters, and Agency preferences.

a. Rent Payments

The Agreement should specify the payment amount with due dates and the 'payable to' party if payments are being made to the agency; outline the party that is responsible for providing utilities. Rent payments can be structured around several parameters, each with their own benefits and drawbacks. Any of following typical methods can be used to calculate license payments:

- **Per Acre Basis**

Per Acre options can be calculated on an annual basis—which would be the same regardless of how long the grazing season lasts—or monthly depending on how long the site is grazed each season.

- **Benefits**

- **Per Acre Per Year** is easy for the land manager to track because they do not need to know the number of animals or the grazing duration.
 - Calculated annually and the fee is the same each year.
- Could be structured on a **Per Acre Per Month** basis so that if the Grazing Operator removes their animals due to poor forage conditions, they are not still paying.

- **Drawbacks**

- The Grazing Operator could be more likely to maximize the number of animals or length of season to recuperate their cost, as this does not result in increased costs to the Grazing Operator.
- The Grazing Operator may be less likely to remove livestock in a poor forage year since they are paying for grazing regardless of use.
- Can lead to overutilization for the above reasons.

- **Considerations**

- To alleviate some of the potential drawbacks, a maximum stocking rate or on/off date can be included in the grazing license as well as performance standards in an associated MAP.

- **Per Head or Animal Unit Basis**

Like the Per Acre fee structure discussed above, **Per Head** options can be based on an annual or monthly basis. This may also be priced based on **Animal Unit Months (AUM)** (see **Box 1. Animal Units**).

- **Benefits**

- May reduce the likelihood of overutilization because costs increase as the number of animals or length of time on site increases.
- The Grazing Operator only pays for what they use, so they are not charged if they remove animals early, such as a drought year.

- **Drawbacks**

- Could lead to under-utilization as the Grazing Operator only pays for the animals that are there, so they could leave areas ungrazed or under-grazed which might not meet management goals.
- Requires more accounting by the land manager to track the number of animals and on off dates, or a certain amount of trust that the Grazing Operator will accurately report this information.

- **Considerations**

- The screening that occurs during the bid process should help to select a trustworthy Grazing Operator.

- **Per Pound Weight Gain Basis**

Fee structures may also be based on pounds of weight gain.

- **Benefits**

- Rent payments are directly related to performance (i.e., how well the cattle gain on that property).

- **Drawbacks**

- Requires the use of a certified scale to weigh livestock when they arrive at the beginning of the grazing season and when they are shipped out at the end.
- May be difficult for the Landlord to budget and predict payments in advance, as rent payments are linked to forage production. Income could be low in a drought year where the cattle do not gain well.

- **Considerations**

- This fee structure is better geared toward a stocker grazing operation than a cow/calf operation.

BOX 1. Animal Units

An **animal unit (AU)** is equivalent to one 1,000-pound cow and her nursing calf, and an **animal unit month (AUM)** is the amount of forage required to support one animal unit for one month. More information on AUMs and AUM equivalencies across species can be found in **Chapter VII. Supplemental Resources**.

b. Fee Credits

Another payment option which can benefit both parties is to offer **Fee Credits** for improvements. These improvements could include building fence, building corrals, or developing or expanding the water system. A per foot price for fence or an overall project cost would be agreed upon beforehand, and this value would be credited toward the rent payment

after the work is completed. The same idea could be applied to management practices that go beyond the scope of normal grazing such as exotic weed treatment or an intensified grazing treatment on part of the property that requires more labor or temporary fencing (see **Box 2. Other Fee Structures**). The payment amount and due dates if payments should be clearly identified if payments are being made **BY** the agency; any costs such as utilities that are not included in the fees paid to the Grazing Operator should be identified.

- **Benefits**
 - The Grazing Operator benefits as it guarantees that rent payments go directly to the property in the form of infrastructure that can be used in future grazing seasons or potential increased forages in the case of vegetation treatments.
 - The Landlord benefits from the installation of permanent infrastructure that they own and that will benefit the property for years, as well as potential habitat improvements.
- **Drawbacks**
 - Agency policies may vary on whether they can offer credits for on-site improvements or if they require cash payments for rent.

5. Taxes

c. *Possessory Interest Taxes*

Clarify whether there might be a Possessory Interest tax incurred. Those taxes are set by the local county to require a person in possession of otherwise tax-exempt property to pay what would otherwise be the property tax. Some counties charge possessory interest tax even of USFS permittees who do not have exclusive possession and 'Grazing Service Providers' may be exempt as service providers instead of Grazing Operators of land (also see **Box 2. Other Fee Structures**).

BOX 2. Other Fee Structures

Fee-for-service, or “**contract grazing**” is often conducted where a particular ecological outcome is desired. A Grazing Operator (or in this context, a ‘Grazing Service Provider’) is hired and financially compensated to perform this service using the tool of livestock grazing, alone or in combination with other methods. In California, it is not uncommon for contract graziers to perform vegetation management using the tool of grazing alone or in combination with other vegetation treatments to manage fuels that may accumulate due to build up of dry, dead vegetation that may present a high fire risk. This work may be performed with a variety of species.

Grazing service providers—which primarily are sheep and goat operations but can include some cattle operations—charge for grazing with prices calculated based on size of area to be treated, terrain, type of vegetation, season, need for and feasibility of temporary containments, access, and a variety of other potential factors.

This document focuses on Agreements in which the primary fee structures are those in which the Grazing Operator pays the Landlord for use of the property. Other types of fee structures, like those described above, are more appropriate for situations in which the grazer is primarily receiving

6. Property Uses

a. *Agreement Type*

Once a tentative decision has been made to develop an agreement with a Grazing Operator, the type of agreement needs to be chosen. Typically, a “lease” gives the Landlord the right of possession of the entire parcel. While a lease could provide such an arrangement, it does not adequately cover important aspects, like structures or locations and use by others. A type of agreement that would address these more complex issues is properly defined as a ‘license’ or ‘permit’. These licenses allow for limited uses—like grazing—on the property, while the property itself remains under the control of the landlord agency. A license or permit to graze a parcel would not normally entitle, not simply provide, the right to graze in accordance with the terms of the license, which may reference a plan tailored to the specific property to guide grazing management activities. In some circumstances, it might be more appropriate to enter into a ‘service contract’ for vegetation removal, for instance with a contract grazing operation (see **Box 3. Contract Grazing**, next page).

b. *Allowable Uses*

Description of parties allowed to enter or use the property, and a description of allowable uses by each party. Include policies on other/associated aspects such as ATVs, horses, trucks, supplemental feeding, farming, and hunting. Off-road vehicles, such as ATVs and UTVs, are often essential tools in a livestock operation for providing feed supplements like salt blocks and doing fence maintenance and are often allowed as ‘implements of husbandry’.

8. Maintenance, Repairs, and Improvements

Generally, the Landlord is responsible for providing all infrastructure on site in good working order at the beginning of the grazing term. The Grazing Operator is typically responsible for general maintenance to keep the infrastructure in working order throughout the grazing term. The Agreement should clearly specify these details. A dollar threshold may be specified in the Agreement signifying when something goes beyond the responsibility of the Grazing Operator (e.g., maintenance) to the responsibility of the Landlord (e.g., repair). An example of this might be the Grazing Operator conducting routine maintenance on a pump, but when the pump fails, the Landlord repairs or replaces it. Another example could be the Grazing Operator maintains broken fence wire throughout the season but if a car crashes into the fence, knocking out gates and brace posts, the Landlord replaces that. If the Grazing Operator will be responsible for building or maintaining fencing, the Landlord should consider including fence specifications in the Agreement.

California Food and Agriculture Code (FAC) § 17121⁶ describes a ‘lawful fence’ as follows:

A lawful fence is any fence which is good, strong, substantial, and sufficient to prevent the ingress and egress of livestock. No wire fence is a good and substantial fence within the meaning of this article unless it has three tightly stretched barbed wires securely fastened to posts of reasonable strength, firmly set in the ground not more than one rod apart, one of which wires shall be at least four feet above the surface of the ground. Any kind

⁶ https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=FAC§ionNum=17121

of wire or other fence of height, strength and capacity equal to or greater than the wire fence herein described is a good and substantial fence within the meaning of this article. The term “lawful fence” includes cattle guards of such width, depth, rail spacing, and construction as will effectively turn livestock.

This definition of a lawful fence is a minimum standard. Some Landlords might consider specifying spacing between t-posts (12 feet is an accepted standard), weight of t-posts (1.33 pounds/foot is an accepted standard), and number of wires (four to five is an accepted standard) when the Grazing Operator will be repairing and replacing fence to maintain acceptable standards on site. Some agencies prefer to use “wildlife friendly” fences which may include smooth top and bottom wires at specific heights to allow for easier wildlife passage while still containing livestock. These fences can be compatible with cattle but are less compatible with sheep and goats. Any desired fence specifications should be detailed in the Agreement.

a. Maintenance and Repairs

Typically, a Grazing Operator is responsible for maintenance and repairs of infrastructure (e.g., fences, roads, ditches, drains, and watering infrastructure) in compliance with applicable permits and laws. This could depend on the condition of infrastructure on entry and anticipated length of the contract period, and whether other parties will have use of the infrastructure. A provision can be included to share costs (e.g., if a well becomes dysfunctional a Grazing Operator might only be responsible for a limited share of the costs involved).

BOX 3. Contract Grazing

One major distinction within the grazing community often arises between **sheep and goat graziers** and **cattle graziers**. While all species may be the primary market animal raised for production purposes in a livestock operation, contract graziers may employ a different strategy for operations that focus on the use of livestock grazing as a tool to reach a specific goal or set of goals or objectives.

CONTRACT GRAZIERS frequently utilize sheep and goats primarily to conduct grazing targeted toward environmental management objectives, such as the reduction of fine fuels, and therefore, an assumed reduction in fire risk. Contract graziers are typically **paid to graze** off vegetation to minimize accumulated levels of dry fuels.

CATTLE GRAZIERS (as well as many sheep graziers) are more likely to pay to graze, and are more often focused on production operations, rather than performing an environmental or ecological service via grazing activities. In general, their income is derived from selling animals by the pound; therefore, they typically focus on weight gain.

Any livestock species or combinations of species may be managed to achieve specific management goals, but the business models are quite different, and logistical considerations vary greatly. The selection of the type and species of grazer will depend on various factors such as type of vegetation, vegetation management objectives, parcel sizes, type of livestock in the vicinity, and available infrastructure. These factors need to be considered before executing contracts.

b. Permanent Improvements

The Grazing Operator is typically given permission in writing from the landlord to construct permanent improvements; such documentation includes who pays for projects, or at least parameters on how this might be decided on a case-by-case basis.

9. Stewardship Guidelines

Details regarding stewardship practices should be incorporated in the MAP, and the RMP if applicable (see associated items in the **Section 4.0 Grazing Management Goals, Objectives, and Performance Standards**). The Agreement should have a clause incorporating the MAP (and RMP, if applicable) by reference to ensure the practices are part of the Agreement.

10. Additional Constraints

Describe any limitations or restrictions on ranching/farm practices, including:

d. Invasive Species Measures

Describe the potential for introduction of invasive species from feed, vehicles, animals, or other equipment, and describe measures to reduce or eliminate introductions.

e. Other Restrictions

Describe any restrictions on activities, such as driving, recreational horseback riding, camping, hunting, trapping, use of herding dogs, and pest animal control. Often an Agreement will prohibit the use of offroad vehicles (e.g., all-terrain vehicles) or limiting vehicle travel to designated roads. All-terrain vehicles (ATVs) are an important management tool for many grazing operations used for everything from checking, treating, and gathering livestock to hauling nutrient supplements to checking and fixing fences. Most of these activities cannot be limited to designated roads. It is important in the Agreement to distinguish between recreation vehicle use and use of vehicles for management purposes. ATVs used for animal management and husbandry should be exempted from restrictions. There may be instances of sensitive areas that should be avoided with ATVs, in which case, these areas should be clearly mapped and described in the agreement (also see **Item 5.10 Restrictions in Chapter IV. MAP Template**).

11. Subcontracting

a. Landlord Consent

Subcontracting or subletting is when the party holding an Agreement (i.e., the ‘Grazing Operator’) then rents all or a portion of the property to *another* party for their use. The party initially selected for the lease may no longer be involved once they subcontract the grazing. Subcontracting is generally not accepted as it involves a potentially unknown third party who was not part of the application or screening process. In addition, since the person grazing the property is not on the Agreement it can be difficult to enforce performance standards and can have legal ramifications if something goes wrong on site.

This section should also address the policy on taking in “pasture cattle”. This is a term used when the Grazing Operator grazes cattle they do not own. An example would be if the Grazing Operator brought in stocker cattle, owned by someone else who was paying the Grazing

Operator on a per-pound-of-gain basis to feed and manage the cattle for the season. This is like subcontracting but has some distinct differences. The main difference is that the Grazing Operator is still managing the livestock and the grazing and is still the on-site presence. With subcontracting, the Grazing Operator would be hands-off while a third-party would bring in the livestock and conduct the management on site. Taking in “pasture cattle” is generally more accepted in grazing agreements than subcontracting but should be considered on a case-by-case basis, depending on the situation. This can also be addressed in **Section 7. Entry** of the **Agreement Template (Appendix A)** that outlines who is allowed to enter/use the property.

b. Grazing Operator Responsibilities

Generally, the Grazing Operator is still responsible for terms of agreement unless otherwise agreed, for instance by the Landlord accepting assignment of the contract.

12. Insurance and Liability

Specify policies for the livestock, payment credits, and future use of the property if the property is damaged by an act of nature vs. vandalism vs. the fault of the Grazing Operator vs. other reason(s). The same policies would apply as were described in **Item 3d. Early Termination**, above.

a. Liability Insurance

Grazing Operator should typically have comprehensive insurance to cover general liability, bodily injury and death liability, and broad form property damage liability insurance. The Landlord may want to be named as an ‘other insured.’

13. Indemnifications

a. Landlord Indemnification

Some agreements call for the Grazing Operator to indemnify landlord and all affiliates except in the case of negligence or breach of the license terms on landlord’s part.

b. Accessible Public Lands

In the case of public access lands or lands where multiple Grazing Operators may access the same property, and where the Grazing Operator may have little role in the injury this requirement might be addressed by listing the landlord agency as an ‘other insured’ on the Grazing Operator’s liability insurance.

14. Damage or Destruction

Specify policies for the livestock, payment credits, and future use of the property if the property is damaged by an act of nature vs. vandalism vs. the fault of the Grazing Operator. The same policies would apply as were described in **Item 3d. Early Termination**, above.

15. Condemnation

Detail what happens to the license and payments if the property is taken under eminent domain.

16. Removal of Personal Property

Dates should be specified for which Grazing Operator should remove personal property and temporary improvements and should generally occur prior to or upon termination of the agreement.

17. Dispute Resolution

Include details of how disputes will be handled including attorneys' fees and potential appeals.

18. Notices and Communications

Describe how communication will be conducted between the parties and include contact information for all involved parties.

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IV. MANAGEMENT ACTION PLAN TEMPLATE

The MAP template includes elements to address grazing management that will guide the implementation of specific grazing-related activities developed in concert by the Landlord and the **Grazing Operator** and to accomplish goals and objectives stated in a more comprehensive, related Resource Management Plan (RMP) for a property or set of properties. Not all properties will have an RMP, but it is recommended that one be developed to provide an overarching document outlining the resources, goals, and needs of the property or properties. The MAP would then act as a supplement to the RMP on properties that are grazed by livestock.

The **MAP Template (Appendix B)** was designed to assist land managers in developing a proper grazing plan to achieve stated goals and objectives for use on a working landscape. The MAP Template details the critical items to be included in a comprehensive MAP. The items marked with a corresponding **asterisk (*)** are critical items that should be included in any MAP (e.g., a simplified version that does not include other items that do NOT have an asterisk). The MAP template does not include every possible detail or factor that must be addressed but provides the most common and important topics to include and develop, guiding managers in developing the MAP from resource assessment and management objectives through monitoring and adaptation.

Land managed by state agencies is often associated with specific management goals and objectives related to the property's acquisition and Landlord policies, often including uses such as recreation and wildlife habitat, and are usually defined in the comprehensive RMP. When grazing management is used as a tool there are generally additional goals and objectives that range from habitat enhancement to fire fuel reduction. The objectives should be clearly outlined in the MAP. These plans can range from simple to complex, but at the very least they should clearly outline the objectives of the management and how success of these objectives will be measured. The plan should define desired and expected grazing management results and the performance standards for each objective that can demonstrate compliance with and effectiveness of the plan.

The primary focus of the MAP is to guide all parties to collaboratively develop a plan to best achieve stated conservation and sustainability goals. The RMAC subcommittee **strongly recommends** that MAPs be developed by or in concert with a Certified Range Manager (CRM) and with input from an experienced livestock manager, who has the experience necessary to determine the best strategy to achieve the state goals and objectives of the MAP. Engagement of a Certified Rangeland Manager is not required in all circumstances but is legally mandated in certain forested landscapes. See **Chapter V. Certified Rangeland Managers** for more information on the importance of utilizing a CRM to develop MAPs and other grazing recommendations. Additionally, ensuring the Grazing Operator has some flexibility to decide how to graze the land to achieve the desired results—subject to the terms of the MAP and the Agreement—rather than requiring a specific grazing prescription, can be advantageous. The Subcommittee has seen many cases where the monitoring of a grazing prescription (such as on/off dates, numbers of livestock) is focused on compliance rather than on the desired results (such as habitat quality and fuel reduction in the special management areas).

Purpose of the Management Action Plan (MAP)

Management Action Plans are written as implementation plans for specific actions and activities identified to accomplish specific goals-oriented objectives, which are often stated in associated RMPs. In

many cases, the MAP may take the form of supplemental California Environmental Quality Act (CEQA) documents which tier off existing RMPs, other types of land management plans, and documents with similar purposes. For the purposes of the State Lands Grazing Packet, the MAP will focus on the use of prescribed grazing but can include many other conservation or management activities based on the type of land and uses. Land use or environmental objectives can range from simple “vegetation reduction” for specific portions of the property to a more targeted reduction of specific plant canopies or species for the enhancement of wildlife habitat, minimization of fuels, trail maintenance, or other purposes. In the case of grazing, a state agency may need to establish an agreement with a Grazing Operator for the work (in the State Lands Grazing Packet, this is the Grazing Agreement, or ‘Agreement’). Such an agreement would be drafted to cover the legal aspects of the grazing arrangement and would reference the MAP to be implemented.

Some public agencies, conservation organizations, and private Landlords might not have sufficient time or funding to develop a MAP as described here prior to the application of grazing, especially where an immediate need exists. We recommend those in that position seek assistance in developing a **simplified plan**. For state agencies or conservation organizations, such plans might be developed by modifying existing plans already created for other similar properties managed by the agency/organization, or derived from plans created by other state or federal land management agencies or allied organizations. Private Landlords can also receive planning assistance from staff at their local USDA Natural Resource Conservation Service office (See “Find your Local Service Center” at <https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/california>) or the local University of California Cooperative Extension/UCANR office (<https://ucanr.edu/About/Locations/>).

Role of a Resource Management Plan (RMP)

As noted above, the MAP will be separate from the RMP, which should include a broader explanation of how management of the subject land is governed by any purposefully or legally mandated processes, objectives, or other guiding documents or constraints such as easements, Habitat Conservation Plans, or timber/forest management plans. The MAP is intended to complement the RMP as a means of accomplishing some of the RMP’s goals and objectives, where appropriate. Like any other management action undertaken with the purpose of producing specific outcomes, a practical evaluation of whether the grazing treatment(s) have produced these outcomes to the level intended must be a part of the MAP. The MAP need not reiterate the RMP, but rather, should build upon it.

Existing RMPs may already assess relevant resource vulnerabilities to, and benefits from, grazing activities. In such cases, the MAP need only *reference* the RMP. The monitoring component of the MAP should explain how the resources affected by grazing will be monitored and how the monitoring results relate back to the resource objectives. Documentation of how grazing and other land treatments were implemented and other site-specific environmental factors at the time of grazing are crucial to interpreting the monitoring results and outcomes of the implemented grazing activities. The current planning effort presented at the link below should cover all items in the template. The Multi-Agency Cooperative Forest Management Plan developed by CAL FIRE (<https://ucanr.edu/sites/forestry/files/318079.docx>) is one example of an RMP. Other divisions within the California Natural Resources Agency likely have their own requirements and examples of existing RMPs.

Livestock grazing has many interacting effects on rangeland resources and associated pastureland that should be included in a MAP that is intended to conserve ecosystems wholly, not just focus on the management of targeted species or individual agricultural opportunities. The MAP should include realistic conservation objectives while maintaining feasibility and sustainability for grazing operators and the broader community. Management Action Plans for all significant actions, including grazing, must include measurable objectives and performance standards, and include monitoring of implementation and effects (i.e., results/outcomes). MAPs should include monitoring and adaptation plans, with clear detailed descriptions of methods and processes for making adjustments to the MAP.

Management Action Plan Guidance

The following explanations pertain to the corresponding numbered items in the **MAP Template (Appendix B)** and are meant to highlight items to be taken into consideration and to provide additional information to land managers to assist in the decision-making process when developing this agreement.

Items identified with asterisks (*) in the MAP template are critical to address in any simplified MAP and are further detailed below; however, all items are recommended for inclusion in any MAP.

1.0 Introduction

***1.1 Relationship of this MAP to Other Documents**

Differentiate various purposes of land management plans and tier any plan to existing planning documents. Cite all available documents: include applicable plans, federal or state code or legal agreements or legislation, environmental reviews, permits, easements, regulatory documents, and any other information salient to the property and to which the MAP applies. Provide a concise description of relevant management goals and requirements.

NOTE: Goals and requirements specifically related to the grazing aspects of the agreement will be further delineated in **Section 5.0 Grazing Program**.

***1.2 Purposes and Uses of this MAP**

Describe intended benefits and expectations of the effects of grazing and associated activities on the grazed lands; describe how the MAP should be applied when making grazing and related management decisions and how it relates to associated documents. The related Grazing Agreement will refer to this MAP, and the MAP will reference the Agreement.

***1.3 Preparers**

List the primary professionals with qualifications and affiliations who directly contributed to development of this MAP. Those authorizing such planning must identify who is to be responsible for developing these plans (usually the Landlord, not the Grazing Operator, if public lands). May be identified on title page; requires review of applicable state code, including but not limited to the following: California Deputy Attorney General Bagley's 2008 analysis (Bagley 2008). Include the supervising licensed California Certified Rangeland Manager, if any, particularly where required (see **Chapter V. Certified Rangeland Managers**). It is useful to include a process for making decisions,

resolving conflict, and settling on details of the agreement. See also related components of **Items 5.6 Conflict Mitigation Strategies, 5.11 Communications, and 6.2 Plan and Practice Adaptation.**

2.0 Description of Current Site Conditions

NOTE: Impacts of grazing are discussed in **Section 6.0 Monitoring, Reporting, and Plan Adaptation.**

For all items below, include relevant map(s).

***2.1 General Description of Property**

Physical location; history of land use(s), especially grazing and cultivation.

***2.2 Native/Naturalized Vegetation**

Known and expected occurrence of special-status plants and natural communities; descriptions of suitable habitats; may be based on Manual of California Vegetation (MCV) Vegetation Types (Sawyer et al. 2008).

***2.3 Invasive Pest Plants**

Table of priority pest plants with California Department of Food and Agriculture (CDFA)⁷ and California Invasive Plant Council (Cal-IPC) ratings.⁸

***2.4 Wildlife and Habitats**

Known and expected occurrence of special-status animals; descriptions of suitable habitats; see California Natural Diversity Database (CNDDDB).⁹

2.5 Aquatic and Hydrologic Resources

Description of watersheds, streams, ponds, lakes, and wetlands.

2.6 Soils and Topography - Ecological Site Descriptions, Productivity, Erosion, and Compaction

List soil types, Ecological Site Descriptions,¹⁰ herbaceous production, and hazards of erosion and compaction.

2.7 Fire Hazards and Risks

Descriptions of herbaceous and woody fuels; higher risk zones of ignition, route of spread; see Department of Forestry and Fire Protection (CAL FIRE) maps of Fire Hazard Severity Zones;¹¹ requirements for emergency vehicle access.

⁷ https://www.cdfa.ca.gov/plant/IPC/encycloweedia/wininfo_weedratings.html

⁸ <https://www.cal-ipc.org/plants/inventory/>

⁹ <https://wildlife.ca.gov/Data/CNDDDB>

¹⁰ <https://www.nrcs.usda.gov/getting-assistance/technical-assistance/ecological-sciences/ecological-site-descriptions>

¹¹ <https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones>

2.8 Woody Encroachment

Description of status of any current or expected woody plant community encroachment into grasslands affecting suitability for grazing and maintenance of special grassland habitats.

3.0 Impacts of Grazing on Resources of Concern

***3.1 Grazing Context**

Describe type of grasslands/forage, grazable areas, grazing hazards, built structures, neighbors, access, and current grazing program.

***3.2 Summary of Expected Grazing Effects on Special Resources and Desired Management Outcomes**

Describe how grazing is expected to affect special-status resources, including those listed above in **Items *2.2 Native/Naturalized Vegetation through 2.8 Woody Encroachment**, above, and general guidance on how to manage grazing to achieve the desired results.

***3.3 Potential Conflicts with Wildlife, Recreation, or Neighbors**

Describe any potential conflicts in grazing management objectives and practices with application of other plans to manage wildlife, pest plants, recreation, or neighbors' activities, including those in specified situations (e.g., protected wildlife require feed, which contributes to feed losses for the Grazing Operator) and offer of fee-credits or payments by the Landlord for in-lieu work performed by the Grazing Operator to fix or to compensate for damages or trade-offs.

3.4 Expected Effects of Climate Change

Describe current models of expected climate change on the fundamental conditions of the property, shifts of vegetation state, and habitat quality for special species and natural communities. Describe any management strategies that could be used to adapt to annual changes in environmental conditions.

3.5 Priorities for Ongoing Maintenance

Describe any plans and activities currently or expected to be implemented by the Landlord as priorities to maintain or improve the property, including ranch roads and watering infrastructure, and to achieve special resource results, such as restoration of oak woodlands, minimizing erosion and pollution, controlling shrub encroachment, or carbon sequestration. Describe ongoing strategies that will be used and timing of these activities to maintain the vegetation at desired levels and conditions (see **Item 5.4 Forage Utilization and Residue Standards**).

4.0 Grazing Management Goals, Objectives, and Performance Standards

***4.1 Identify Goals, Objectives, and Performance Standards to Meet RMP Objectives**

Distinguish the relationships of goals, objectives, and performance standards stated in this MAP, and to be utilized for monitoring of management results. Objectives need to

be practical and measurable. These should be feasible and ecologically significant to be worth the effort it takes to implement management activities and monitor outcomes and be measurable to allow for assessment of management success.

5.0 Grazing Program

***5.1 Glossary of Terms**

Define any industry-specific or site-specific terms that may need clarification. Examples of commonly defined terms may also be found at the beginning of this Guidebook, under Definitions.

***5.2 General Prescription**

This prescription will be for initial implementation, as defined by the Landlord, but adjusted by the mutual consent with the Grazing Operator to achieve desired results in this MAP.

It is important to understand that any one parcel or site is often part of a larger grazing system or property, and livestock have seasonal requirements and limitations, as do other parcels within the grazing system. For instance, there are typical grazing seasons for any type of livestock, which a land manager needs to understand and consider when developing a Grazing Agreement and associated MAP. Starting or ending the contract period of an Agreement at a non-conventional time of year may make it difficult for Grazing Operators to accommodate, or make it financially less viable for a Grazing Operator, and therefore make it more difficult to find an operation able and willing to graze. Often the timing that livestock go to one property may be dictated by when they have to leave another property, either based on environmental conditions such as feed or water availability or lease stipulations. Extensive planning goes into securing forages throughout the year that meet livestock requirements. Livestock are not simply waiting somewhere until spontaneously needed at another location.

Management goals and objectives should drive the actual grazing management. These may be derived from an RMP or developed separately and clearly stated in the MAP. Grazing management strategies should be chosen to best achieve the identified natural resource objectives. Grazing management strategies should detail specifically the desired outcomes of the grazing. Conventionally, specifics of the grazing operation include:

***5.2.1 Location(s) of treatment**

Identify where grazing will occur. Areas excluded from grazing should be included on a map, which may be developed for the MAP or Agreement (see **Section 2. Property Description** in **Chapter III. Grazing Agreement Template**) or may exist as part of an RMP or other land management document.

5.2.2 Period(s) of treatment

When grazing will occur. If parcels will be visited more than once in a year, indicate return intervals (see **Subitem 5.2.5 Frequency of grazing revisits to previously grazed units**, below).

5.2.3 Types, approximate weights, and numbers of animals to be used

What kinds of animals will be used (e.g., species, approximate weight, stage of production).

5.2.4 Anticipated length of grazing periods

How long the animals will remain in the property, including the entire time they will be on the property, and the number of grazing days within each grazing unit or parcel during each grazing event and in total across the entire year or grazing season.

5.2.5 Frequency of grazing revisits to previously grazed units (if any)

Return Intervals (i.e., whether the grazing treatment is to be repeated within a season) for each grazing unit or parcel.

5.3 *Grazing Capacity and Recommended Initial Stocking Rates

Based on available forage, management goals and objectives, and consistent with terms of the Agreement. Present calculations and results of a grazing capacity analysis, including expected forage production for the different soils, grazable acres, forage losses, and retention of residue; forage available by weather year; initial stocking rates; and how adjustments may be made.

5.4 *Forage Utilization and Residue Standards

Describe the desired levels of forage utilization by grazing livestock, and residue standards at the end of the grazing period. Describe outcome-based standards that will be applied to grazing management and monitoring. For annual dominated rangelands this is usually managing for Residual Dry Matter (RDM) standards (Bartolome et al. 2006, Clawson et al. 1982). For perennial-dominated rangelands, meadows, and great basin range types – a percent utilization standard on desirable forage species is usually adopted.

5.5 *Special Management Areas for Targeted and Deferred Grazing

Describe any areas that will be targeted or avoided due to various resource needs. Identify clusters of special resources affected by grazing with strategy to target or defer grazing to achieve conservation objectives, while moving grazing as needed to flexible use fields.

5.6 *Conflict Mitigation Strategies

Describe potential conflict mitigations (see **Item 3.3 Potential Conflicts with Wildlife, Recreation, or Neighbors**), including requirements to minimize the conflicts in specified

situations (e.g., protected wildlife require feed, which contributes to feed losses for the Grazing Operator) and offer of fee-credits or payments by the Landlord for in-lieu work performed by the Grazing Operator to fix or to compensate for damages or trade-offs.

***5.7 Fire Hazards and Risks Mitigation Strategies**

Describe any potential fire risks and strategies that may or will be used to minimize these risks. Describe any additional studies or results of planning with local and state emergency service agencies and resulting strategies for reduction of fuels noted in **Item 2.7 Fire Hazards and Risks**.

***5.8 Supplemental Feeding and Feeding Areas**

Describe whether supplemental feeding may occur on site, type(s) of supplemental feeding, restrictions on supplemental feeding, and locations and timing of supplemental feeding.

***5.9 Animal Distribution Improvements**

Describe the existing and planned infrastructure and other strategic activities to improve distribution of grazing, as well as any restrictions or constraints.

***5.10 Restrictions**

Describe any restrictions to be imposed, such as restrictions on dogs, horses, building of structures, supplementary enterprises, use for non-grazing purposes, private recreation or hunting access by the landowner and the Grazing Operator.

***5.11 Communications**

Describe plans for communications between the Landlord and Grazing Operator for general planning as well as emergency response. Include the following:

- Mutual expectations for communications between the Landlord and Grazing Operator for general planning as well as emergency response;
- Landlord expectation of response window (i.e., number of hours) for the Grazing Operator or representative to arrive at the property to respond to emergency calls; and,
- Content and timing of annual planning meetings and reports.

***5.12 Livestock Agreement Options and Recommendations**

Refer to the Agreement and describe any pertinent lease details as they relate to timing and management of grazing; the Agreement should also refer to the MAP, which may be updated periodically.

***5.13 Grazing Fee Credit Options and Other Incentives for Stewardship Cooperation**

Describe payment options such as land improvements or specific management that could apply to grazing payments or discounted rates; such incentives will vary by Landlord and managing agency and should align with stipulations in the Agreement.

***5.14 Infrastructure**

Abide by applicable state codes regarding livestock fencing, and concise presentation of

required compliance by the Grazing Operator (see FAC § 17121–17124¹² and FAC § 17150–17153¹³ for electrified fences).

***5.14.1 Existing Grazing-related Infrastructure**

Describe all infrastructure such as corrals, fencing, water troughs, and pumps.

***5.14.2 “Wildlife-friendly” fencing**

“Wildlife-friendly fencing” should be used or required only at segments where specified wildlife may be directly harmed by regular fence; fence segments where no such conflict is expected should use regular fence; however, all fence should meet or exceed the CDFA “good and substantial fence” code.

***5.14.3 Required Improvements**

Describe any infrastructure improvements that will need to be made before grazing can be implemented or during the course of the grazing agreement.

***5.14.4 Maintenance and Unexpected Repairs**

Describe which party is responsible for maintenance and repairs of infrastructure on the property.

***5.14.5 Estimated Costs and Responsibilities**

Costs of permanently installed infrastructure (with useful life expected to exceed the term of the Agreement) related to the desired grazing operation are typically covered by the Landlord; costs of maintenance of that infrastructure are typically covered by the Grazing Operator.

5.15 *Extreme Weather (drought, flood, debris flows, infrastructure damage) Preparations, Special Monitoring, and Response Plan*

Describe potential extreme weather events, including those associated with climate change (see **Item 3.4 Expected Effects of Climate Change**). Describe strategies for communications among management agency staff and Grazing Operator, priority responses (see **Item 5.11 Communications**), and subsequent monitoring of emergency impacts. Describe indicators of likely conditions which would cause grazing to be suspended (e.g., saturated soils, public use, or drought). Describe management strategies to be used during extreme weather, such as when animals will be removed and when they can return to the property.

¹²

https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=FAC&division=9.&title=&part=1.&chapter=7.&article=5

¹³

https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=FAC&division=9.&title=&part=1.&chapter=8.&article=

6.0 Monitoring, Reporting, and Plan Adaptation

Monitoring is a common aspect of the MAP. Monitoring can be used to measure the effectiveness of management practices at meeting the objectives, or compliance with Agreement terms. When developing monitoring strategies, methods should be chosen that measure variables directly related to the resource goals. This provides feedback as to whether goals were met and provides a basis for management decisions. Many resources are available detailing various rangeland monitoring methods and their uses. A monitoring regime is project-specific and should be tailored toward specific sites and objectives. For these reasons, this document will NOT delve deeply get into specific monitoring methodology. However, many useful monitoring resources are provided below in the **Chapter VII. Supplemental Resources**.

***6.1 Monitoring and Reporting**

Describe monitoring variables, methods of measurement, schedule, data analysis, and reporting requirement to determine compliance and effectiveness of management actions; describe the rationale for inclusion or exclusion of potential variables with reference to common professional practices and expected grazing effects. Describe any required methods and variables.

***6.2 Plan and Practice Adaptation**

Describe how the monitoring plan may be adjusted to better measure existing conditions, adapt to changes, and meet the plan's objectives. Include the following:

- Describe required changes to existing grazing plans at time of Agreement that must be negotiated (including responsibilities for any costs) with all parties before requiring those changes;
- Clarify timing and expectations for modifications to the grazing strategy, which may be required during extreme weather and other emergencies (see **Item 5.11 Communications**);
- Clarify how periodic monitoring will be conducted and by whom (e.g., Landlord, Grazing Operator, CRM), how the Grazing Operator will be expected to respond to updates to the MAP, and how any resulting added costs to the Grazing Operator be covered;
- Describe monitoring variables, methods of measurement, schedule, data analysis, and reporting requirement to determine compliance and effectiveness of management actions; and,
- Describe the rationale for inclusion or exclusion of potential variables with reference to common professional practices and expected grazing effects.

***6.3 Roles and Responsibilities of Landlords and Grazing Operators**

Those authorizing such planning must also identify who will be responsible for conducting the required monitoring (usually the Landlord, with supplementary monitoring by the Grazing Operator). Describe which staff members of the Landlord, managing agency, Grazing Operator, and consultants will be responsible for all steps in monitoring and adaptation of plans. The Subcommittee strongly recommends employing professional expertise to lead plan development and conduct the monitoring.

Those authorizing such planning must identify who will pay for such services (usually the Landlord). See related discussion in **Chapter V. Certified Rangeland Managers**, below.

7.0 Summary of Requirements and Recommendations

***7.1 Concise Summary of Key Management Requirements Described in this MAP**

***7.2 Supplementary Assessments and Planning**

Describe required and recommended supplementary assessments and planning, such as pest plan management plans, soil erosion and water pollution mitigation plans, and fire hazard management and emergency response plans.

V. CERTIFIED RANGELAND MANAGERS

MAP Preparation by a Certified Range Manager

Preparation of Management Action Plans (MAPs) for grazing management should be overseen or prepared by a professional with expertise in both rangeland ecology and management and livestock management. Individuals holding California Certified Range Manager (CRM) licenses can provide this expertise [PRC § 762,¹⁴ 766,¹⁵ and 772¹⁶; Title 14 California Code of Regulations (CCR) §1650 and 1651,¹⁷ 14 CCR §1651(a)¹⁸]. California CRMs are licensed by the Board of Forestry and Fire Protection for a certified specialty, rather than as a Registered Professional Forester.

The Board's Policy Number 12¹⁹ ('Policy') clarifies those management activities on rangelands that are most appropriately carried out by a CRM. The Policy states that a CRM license is required for professional practice of rangeland management on non-federal forested landscapes and lists the following tasks associated with the practice of rangeland management:

1. "Drafting rangeland management plans to meet specific natural resource objectives, including:
 - a. Vegetative fuel management on rangelands;
 - b. Control or management of invasive species;
 - c. Reintroduction or increase of desirable species;
 - d. Improvement of economic viability of rangeland; and,
 - e. Mitigation of potential environmental effects.
2. Developing and implementing means of improving or maintaining watershed function.

¹⁴ https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=762.&lawCode=PRC

¹⁵ https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=766.&lawCode=PRC

¹⁶ https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=772.&lawCode=PRC

¹⁷

[https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I4C0359205B4D11EC976B000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I4C0359205B4D11EC976B000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

¹⁸

[https://govt.westlaw.com/calregs/Document/I4C0F40065B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Document/I4C0F40065B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

¹⁹ https://bof.fire.ca.gov/media/slucohuw/pfec-4-b-pfec-policy-12-5-20-21_ada.pdf

3. Conducting rangeland inventories and assessments.
4. Making recommendations regarding prescriptive grazing on rangelands.
5. Planning and implementation of rangeland monitoring programs.
6. Providing recommendations regarding conservation of, and regard for, rangeland as an expression of open space, viewshed, watershed, and other public benefits.”

Policy Number 12 “... recognizes that performance of the following tasks does not constitute the practice of rangeland management, under the Professional Foresters Law, unless the tasks are principally directed toward the management and treatment of rangelands:

- Mapping, acreage/vegetative cover determination or other site evaluations through photogrammetry, Geographical Information Systems (GIS), and/or surveyed location.
- Mitigating or recommending mitigation of impacts from previous or proposed land use activities by other environmental experts within their field of expertise.
- Determinations of significance pursuant to the California Environmental Quality Act (CEQA).”

A useful assessment of these legal requirements was provided by the California Attorney General (Bagley 2008). This assessment also helps clarify differences between the requirement and the recommendation to involve CRMs in professional rangeland management.²⁰ Those rangeland management activities performed personally on the subject property by the Landlord are exempt (PRC §§ 756²¹ and 757²²). Other rangelands and other professional work in rangelands may also be exempt under these regulations. For example, 14 CCR § 1621.2²³ states that landscape gardening, horticulture, and agricultural pursuits not related to tree growing are exempt.

How to Become a Certified Range Manager

The Independent Program for Certification of Rangeland Managers is supported by a Certification Panel of the California-Pacific Section of the Society for Range Management.²⁴ In all circumstances, the Certification Panel recommends involvement of a licensed CRM to provide the benefits of professional competency, to protect the public interest, and to ensure proper management of California’s rangeland resources. A CRM applies scientific principles to the art and science of managing rangelands in the context of the Professional Foresters Law definition of “forested landscapes.” The CRM Certification

²⁰ Conduct of such work is required to comply with state resources code. Refer to Professional Foresters Examining Committee (PFEC) Policy 12 “Guidance on the Certified Rangeland Manager Program” approved by the California Board of Forestry on July 14, 2021 (https://casrm.rangelands.org/pdfs/pfec-policy-statements-adopted-july-14-2021_ada.pdf) and California Deputy Attorney General Bagley’s 2008 analysis (<http://www.elkhornsloughctp.org/uploads/files/1223682249DAG%20Opinion%20on%20CRM.pdf>).

²¹ https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=756&lawCode=PRC

²²

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=757.&nodeTreePath=2.3.3&lawCode=PRC

²³

[https://govt.westlaw.com/calregs/Document/I4B7F5C1A5B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Document/I4B7F5C1A5B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

²⁴ <https://calpacrm.org/certified-rangeland-managers/certified-rangeland-manager>

Panel certifies applicants based on their educational and experience qualifications, including experience with California rangelands. Following review of applications, the Panel may recommend individuals to the Board of Forestry and Fire Protection for the CRM exam, which is developed and graded by the Panel. The exam focuses on principles and skills as applied to California rangeland types. If passed, the examinee is recommended to the Board of Forestry and Fire Protection for licensing. CRMs are obliged to follow a Code of Ethics and are encouraged to maintain their proficiency through continuing education.

When is a Certified Range Manager Required?

A person is required to be a CRM to practice professional rangeland management on non-federal lands when it involves activities undertaken on “forested landscapes.” California PRC § 754²⁵ defines forested landscapes as “...tree dominated landscapes and their associated vegetation types on which there is growing a significant stand of tree species, or which are naturally capable of growing a significant stand of native trees in perpetuity, and is not otherwise devoted to non-forestry commercial, urban, or farming uses.”

California PRC § 756²⁶ stipulates that a CRM must be in charge of any professional practice or the work of others who are not licensed; and that all professional work or documents must be produced by or under the supervision of the CRM for covered rangelands.

It is becoming an increasing common practice to require CRM licenses for both employees and grant-recipients of public and private organizations that manage California rangelands (e.g. University of California Department of Agriculture and Natural Resources, California Department of Food and Agriculture’s Healthy Soils Program). The Certification Panel is currently working to improve the certification process to produce more CRMs to meet the increasing demand for their services. The Panel is working on new ways to:

1. Make more existing CRMs available.
2. Provide more opportunities for potentially interested students and applicants to fulfill educational deficiencies.
3. Support more non-conventional rangeland managers to go through the process to become a licensed CRM.

Thus, this RMAC Subcommittee strongly endorses the practice of MAP development by a CRM.

²⁵ https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC§ionNum=754

²⁶

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=756.&nodeTreePath=2.3.3&lawCode=PRC

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VII. SUPPLEMENTAL RESOURCES

NOTE: Debates continue in the rangeland practitioner and research communities regarding the validity and efficacy of some components of some grazing planning methods discussed in some of the supplemental resources provided here. Different practitioners may experience different results due to a variety of factors. Certified Rangeland Managers may be of particular assistance in developing a reasonable, feasible, and scientifically-sound grazing plan based on results-oriented goals. Managers should plan to monitor outcomes to assess if expectations for planned management activities are likely producing the desired results and adapt when and where possible to mitigate potentially negative outcomes at the earliest signs of outcomes not being realized. See **Chapter V. Certified Rangeland Managers** for a discussion of the merits of employing a CRM for rangeland management activities.

Grazing Agreements

- **Guide to Regenerative Grazing Leases:** Opportunities for Resilience – Published in 2022, this booklet provides dozens of resources and reference for land managers. This publication focuses on livestock grazing leases on private lands but can provide useful resources and case studies for public land managers.
Citation: California FarmLink and TomKat Ranch Educational Foundation. 2022. Guide to Regenerative Grazing Leases: Opportunities for Resilience. Available online: https://cdn.prod.website-files.com/63616c9201c634982d121dc7/63b7716b24c56db860a60fa4_Guide-to-Regenerative-Grazing-Leases-Final-03.24.2022-small.pdf. Verified 01 November 2024.
- **A Guide to Livestock Leases for Annual Rangelands:** This straight-forward article assists landowners and managers with little experience in livestock grazing some guidance on developing grazing leases, managing for objectives, and avoiding pitfalls.
Citation: Barry, S., S. Larson, L. Ford, and P. Brownsey. 2020. A guidebook to livestock leases for annual rangelands. University of California Division of Agriculture and Natural Resources Publ. No. 8679. Available online: <https://anrcatalog.ucanr.edu/pdf/8679.pdf>. Verified 28 October 2024.
- **Stakeholders:** Please suggest appropriate resources.

Management Action Plans

- **Monitoring for Successful Grazing Management:** This peer-reviewed extension article discusses the development and implementation of monitoring programs for private and public land managers.
Citation: Johnson, D. 2019. How to monitor progress in grazing land management. Reviewed 2024. Oregon State University Extension Service, Corvallis. Available online: <https://extension.oregonstate.edu/animals-livestock/beef/monitoring-key-successful-grazing-management>. Verified 01 November 2024.
- **Carrying Capacity and Stocking Rates:** This NRCS and North Dakota State University Extension article provides information on establish the correct stocking rates to optimize forage production, maintain livestock performance, and ensure resource sustainability.
Citation: Meehan, M., K.K. Sedivec, J. Printz, and F. Brummer. Determining Carrying Capacity and Stocking Rates for Range and Pasture in North Dakota. Natural Resources Conservation

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- **Stakeholders:** Please suggest appropriate resources.

Additional Resources

- **University of California Cooperative Extension Livestock and Natural Resources Advisors:** A network of scientists and educators located across the state of California that can provide technical advice on the development of grazing programs, assist with solicitation of grazing opportunities to the livestock industry, and more. UC Cooperative Extension Advisors conduct science-based extension and outreach; along with scientific studies to advance sustainable livestock grazing management. Learn more at https://ucanr.edu/sites/UCCE_LR/Rangeland_-_Pasture/Livestock_-_Natural_Resources_Advisors_-_Specialists/. Verified 01 November 2024.
- **Certified Rangeland Managers:** There are over 100 individuals in California that are a "Certified Rangeland Manager" (CRM), licensed under the California Board of Forestry and Fire Protection. These professionals can serve as technical advisors to state agencies looking to implement grazing programs. Learn more about Cal-Pac SRM at <https://casrm.rangelands.org/index.html>, and the Certified Rangeland Managers program at <https://casrm.rangelands.org/HTML/certified.html>. Verified 01 November 2024.
- **California Rangeland Conservation Coalition (CRCC):** The CRCC brings together ranchers, environmentalists and government entities to conserve and enhance the ecological values and economic viability of California's working rangelands and provides an array of educational opportunities and resources at <https://carangeland.org/>. Verified 01 November 2024.
- **Central Coast Rangeland Coalition (CCRC):** The CCRC is a group of individuals and organizations that support rangelands and communities on California's Central Coast, with partners from rangeland owners and ranchers, conservation organizations, public landowners, and research and educational organizations. The website contains reference materials and information about the Central Coast Rangeland Coalition's meetings and the Coalition's rangeland conservation forum: <https://ucanr.edu/sites/CCRC/>. Verified 01 November 2024.
- **Encyclopedias: Weed Ratings:** In California, biologists of the California Department of Food and Agriculture recommend plants for listing, after consultation with outside experts and the Agricultural Commissioners of California's counties (CACs). If a plant is found to probably be "troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture, or important native species, and difficult to control or eradicate", the Department will designate the plant as a noxious weed. This website provides a list of the listed plants and ratings: https://www.cdfa.ca.gov/plant/IPC/encyclopedias/wininfo_weedratings.html. Verified 01 November 2024.
- **California Invasive Plant Council (Cal-IPC):** Cal-IPC maintains an Inventory that categorizes plants that threaten California's natural areas. The Inventory includes plants that currently cause damage in California (invasive plants) as well as "Watch" plants that are a high risk of becoming invasive in the future. The Inventory represents the best available knowledge of invasive plant

experts in California. Categorization is based on an assessment of ecological impacts, conducted with transparent science-based criteria and expert review: <https://www.cal-ipc.org/plants/inventory/>. Verified 01 November 2024.

- **California Natural Diversity Database (CNDDDB):** <https://wildlife.ca.gov/Data/CNDDDB>
The **CNDDDB** is an inventory of the status and locations of rare plants and animals in California. CNDDDB staff work with partners to maintain current lists of rare species, as well as to maintain an ever-growing database of GIS-mapped locations for these species. This web service is particularly helpful for identifying potential special-status species and resources of concern that may be present in California: <https://www.nrcs.usda.gov/getting-assistance/technical-assistance/ecological-sciences/ecological-site-descriptions>. Verified 01 November 2024.
- **Wildfire Planning:** CAL FIRE maintains a database of Fire Hazard Severity Zones that may be useful for prioritizing fuels and vegetation management: <https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones>. Verified 01 November 2024.
- **RangeDocs Searchable Science:** RangeDocs is a new and innovative tool that allows rangeland professionals and producers to search using common rangeland terminology and pinpoint information at the paragraph level from key national and regional rangeland resources. RangeDocs also allows users to browse curated reading lists (called collections) on critical issues as well as create personalized collections. These collections can be shared with others and saved to a mobile device to take offline into the field without an internet connection. RangeDocs is the result of a collaborative effort between the University of Idaho, University of Arizona, and The Rangelands Partnership (RP). Review and outreach assistance has been provided by the [Altar Valley Conservation Alliance](#) (AVCA), a consortium of ranchers and land managers focused on watershed-based collaboration in Southern Arizona. Funding is being provided by an NRCS Conservation Innovation Grant. <https://docs.rangelandsgateway.org/>. Verified 01 November 2024.
- **Plant Identification:** This Field Guide for Common California Rangeland and Pasture Plants provides photo aids for identification of the major pasture species and summarizes information about their characteristics and management.
Citation: Forero, L., J. Davy, S. Barry, J. Bartolome, and S. Larson. Field Guide for Common California Rangeland and Pasture Plants. U.C. Cooperative Extension. Available online: <https://ceshasta.ucanr.edu/files/235849.pdf>. Verified 01 November 2024.
- **Stakeholders:** Please suggest appropriate resources.