



ABSTRACT
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Central California

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1999

Standards for Rangeland Health
and
Record of Decision

Central California

DoD () Fish () Record of Decision (X)
United States Department of the Interior, Bureau of Land Management (BLM)

Type of Action Administrative Legislative ()
STANDARDS

Abstract: This is the Record of Decision for Rangeland Health Standards and Guidelines for Livestock Grazing Management on BLM-administered lands in parts of California and NW Nevada. The Record of Decision covers that part of Central California formerly known as the Bakersfield District.

and

The Preferred Alternative described in the final EIS (Alternative 5), has been chosen as the Standards and Guidelines for Central California. The changes reflected in this Decision are within the scope and analysis of the EIS.

These Standards and Guidelines will be approved by the Secretary of the Interior for final approval. They will take effect immediately upon that approval.
GUIDELINES

for Livestock Grazing Management

This document contains the final Decision establishing Rangeland Health Standards and Guidelines for Central California. It includes the following:

- Decision on Plan Amendments
- Standards and Guidelines for Central California (formerly the Bakersfield District)
- Implementation Plan
- Monitoring Plan

Al Wright
Al Wright, Acting State Director
Bureau of Land Management
6/14/99
Date

Prepared by the Bureau of Land Management
California State Office
June 1999

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1999

Standards for Rangeland Health
and Guidelines for Livestock Grazing Management

Draft () Final () Record of Decision (X)

United States Department of the Interior, Bureau of Land Management (BLM)

1. Type of Action: Administrative (X) Legislative ()

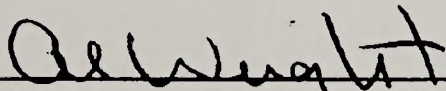
2. Abstract: This is the Record of Decision for the environmental impact statement (EIS) documenting the effects of adopting regional standards for rangeland health and guidelines for livestock grazing management on BLM-administered lands in parts of California and NW Nevada. This Record of Decision covers that part of Central California formerly known as the Bakersfield District.

The Preferred Alternative described in the final EIS (Alternative 5), has been chosen as the Standards and Guidelines for Central California. The changes reflected in this Decision are within the scope and analysis of the EIS.

These Standards and Guidelines will be recommended to the Secretary of the Interior for final approval. They will take effect immediately upon that approval.

This document contains the actual Decision establishing Rangeland Health Standards and Guidelines for Central California. It includes the following:

- Decision on Plan Amendments
- Standards and Guidelines for 'Central California (formerly the Bakersfield District)
- Implementation Plan
- Monitoring Plan


Al Wright, Acting State Director
Bureau of Land Management
California State Office

6.14.99
Date

Standards for Reporting Health
and Welfare for Legislative Committee

Section 1
Title of Report
Author
Date
Type of Report
Abstract

Abstract: This is the report of the Health and Welfare Committee (HWC) regarding the effects of the 1987-1988 legislative session on the health and welfare of the people of California. The report is based on the findings of the HWC's study of the health and welfare of the people of California.

The HWC's study was conducted in the first half of 1988. The study was conducted in the following areas: health care, education, and housing. The HWC's study was conducted in the following areas: health care, education, and housing.

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- Health care
 - Education
 - Housing

1988-1989

[Signature]
Chairman
Health and Welfare Committee

SUMMARY

This is the Record of Decision (Decision) recommending Rangeland Health Standards and Livestock Grazing Management Guidelines for Central California. These recommendations will be submitted to the Secretary of the Interior (Secretary) for his approval, and will become effective immediately upon that approval.

The Decision amends BLM land use plans in Central California to include the Standards and Guidelines and directs evaluation of existing, and development of new, Desired Plant Community (DPC) standards to ensure conformance of the DPCs with the Standards.

The Decision selects the Preferred Alternative described in the final EIS (Alternative 5), with minor changes for clarification, as the Rangeland Health Standards and Guidelines to be submitted to the Secretary for his approval.

The Decision describes how the Standards and Guidelines will be implemented and how rangeland health conditions will be monitored to assure achieving the Standards.

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2135 Butano Drive
Sacramento, CA 95825-0451
(916) 978-4630

APPENDICES

1. Implementation
2. APPENDICES AND SUPPORTING

REFERENCES

SUMMARY

This is the first of two volumes (the second volume is the second volume of the series) and contains the first volume of the series. It contains the first volume of the series and the second volume of the series. It contains the first volume of the series and the second volume of the series.

The first volume of the series is the first volume of the series. It contains the first volume of the series and the second volume of the series. It contains the first volume of the series and the second volume of the series.

The second volume of the series is the second volume of the series. It contains the first volume of the series and the second volume of the series. It contains the first volume of the series and the second volume of the series.

The third volume of the series is the third volume of the series. It contains the first volume of the series and the second volume of the series. It contains the first volume of the series and the second volume of the series.

The fourth volume of the series is the fourth volume of the series.

Carl F. ...
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COVER LETTER

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- 2. Assessments and Monitoring

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1. Introduction

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DECISION

1. INTRODUCTION

There were five alternatives considered and analyzed in the EIS. Alternative 1 consisted of the standards and guidelines developed by the three Resource Advisory Councils (RACs) for their representative areas. Alternative 2 consisted of the state-wide standards developed by BLM, in consultation with representatives from each of the RACs, but without concurrence by the entire RAC membership. The guidelines for Alternative 2 were essentially the same as those for Alternative 1. Alternative 3 was adoption of the national "fall-back" standards and guidelines listed in the regulations. Alternative 4 (the environmentally preferred alternative) was a rapid improvement or rapid recovery alternative developed by BLM, with suggestions from several interest groups. The Standards in Alternative 4 were the same as those in Alternative 2, except for Water Quality; however, the implementation would have occurred much faster than under other alternatives. Alternative 5 was a modified version of Alternative 1, with changes based upon suggestions and new information from the public, the RACs, and BLM.

The Decision is to select Alternative 5, with some minor changes and clarifications, all of which are within the scope of the analysis. This decision will become effective immediately upon approval by the Secretary of the Interior.

This Alternative was selected for a number of reasons, including (1) it meets the requirements of the regulations at 43 CFR 4180.1 and 4180.2 to address the principles of rangeland health; (2) it was based upon and incorporates a large portion of the regional standards and guidelines recommended by the Resource Advisory Council; (3) it incorporates some good suggestions by other agencies and the public; (4) it is based upon sound science as requested repeatedly by the different parties who commented on the process; and (5) it can be implemented within BLM's existing budgets without undue economic impacts to the grazing operators and the surrounding communities.

2. PLAN AMENDMENTS

In accordance with the grazing administration regulations at 43 CFR 4100, existing land use plans (Resource Management Plans and Management Framework Plans) have been examined to determine their compliance with the new regulations and the principles of rangeland health. In most cases, these plans do comply.

The land use plans identified below, as well as allotment management and other activity level plans, are hereby amended to include the standards and guidelines as adopted in this decision. The standards and guidelines will become effective immediately upon approval by the Secretary of the Interior and will be incorporated into the Plans at that time. Where there are plan decisions that are contrary to the new regulations, the principles of rangeland health, and the standards and guidelines, those decisions will be deleted from the plans or amended to comply.

Where "desired plant community" (DPC) objectives have been determined through the BLM planning and NEPA processes, the DPCs will be evaluated to ensure they meet the standards of rangeland health. Where DPCs have not yet been determined for a pasture or allotment, they will be developed through the BLM planning and NEPA processes to meet local and regional management objectives, and the standards of rangeland health.

1. INTRODUCTION

The first part of the report is devoted to a description of the problem and the objectives of the study. It is followed by a brief review of the literature on the subject. The main body of the report is divided into three parts: a description of the methodology used, a presentation of the results, and a discussion of the findings. The report concludes with a summary of the main points and some suggestions for further research.

The second part of the report describes the methodology used in the study. It includes a detailed description of the data collection process, the statistical methods used for data analysis, and the criteria used for selecting the samples.

The third part of the report presents the results of the study. It includes a detailed description of the data, a presentation of the statistical analysis, and a discussion of the findings. The results show that there is a significant difference between the two groups in terms of the variables studied.

2. DATA COLLECTION

The data for this study were collected from a random sample of the population. The sample was selected using a stratified sampling method to ensure that the results are representative of the population as a whole.

The data were collected over a period of six months. During this time, the researchers conducted interviews, surveys, and focus group discussions to gather information on the variables of interest. The data were then analyzed using statistical software to identify patterns and trends.

The findings of the study are discussed in detail in the final section of the report. The results indicate that there is a strong correlation between the variables studied, and that the findings have important implications for the field of research.

Each Field Office will make the physical changes to their land use plans prior to the next grazing season. As this is merely plan maintenance, further NEPA analysis will not be necessary to complete this administrative action.

LAND USE PLAN	PLAN DATE	FIELD OFFICE
Sierra Management Framework Plan Amendment	1988	Folsom
Hollister Resource Management Plan	1984	Hollister
Clear Creek Amendment	1995	Hollister -- part only
Bishop Resource Management Plan	1993	Bishop
Caliente Resource Management Plan	1997	Caliente

3. STANDARDS AND GUIDELINES for RANGELAND HEALTH in CENTRAL CALIFORNIA

The Preferred Alternative described in the final EIS (Alternative 5), with minor changes for clarification, has been chosen as the Standards and Guidelines for Central California. The changes reflected in this Decision are within the scope and analysis of the EIS. These Standards and Guidelines will take effect immediately upon their approval by the Secretary of the Interior.

These standards and guidelines were developed for, and are hereby adopted for, that part of central California formerly known as the Bakersfield District.

Preamble

The standards for rangeland health and guidelines for livestock management on Bureau of Land Management lands are written to accomplish the four fundamentals of rangeland health, insofar as the standards are affected by livestock grazing practices. Those fundamentals are:

- A. Watersheds are properly functioning;
- B. Ecological processes are in order;
- C. Water Quality complies with State standards; and,
- D. Habitats of protected species are in order.

A "standard" serves as the criterion to determine if management actions are resulting in the maintenance or attainment of healthy rangelands per the four fundamentals of rangeland health. Standards are expressions of physical and biological conditions or degree of function required for healthy, sustainable rangelands. "Guidelines" serve as the vehicle to implement management actions related to livestock grazing to accomplish rangeland health standards. Guidelines will indicate the types of grazing methods and practices determined to be appropriate to ensure that standards can be met. The public should be an active participant in the application of these standards and guidelines.

From this Office will make the physical change to that end and have done so in the past. In the future, this information should be analyzed and not be provided to the public.

FILE NUMBER	DATE	DESCRIPTION
100-100000	1/15/00	Initial Review - 100-100000
100-100000	1/15/00	Initial Review - 100-100000
100-100000	1/15/00	Initial Review - 100-100000
100-100000	1/15/00	Initial Review - 100-100000
100-100000	1/15/00	Initial Review - 100-100000
100-100000	1/15/00	Initial Review - 100-100000

STANDARD OPERATING PROCEDURES FOR THE OFFICE OF THE ATTORNEY GENERAL

The purpose of this document is to provide a clear and concise set of guidelines for the staff of the Office of the Attorney General. These guidelines are intended to ensure that all staff members are following the same procedures and standards when performing their duties.

These guidelines are intended to be used as a reference for all staff members. It is the responsibility of each staff member to ensure that they are following these guidelines at all times.

The following are the standard operating procedures for the Office of the Attorney General. These procedures are intended to ensure that all staff members are following the same procedures and standards when performing their duties.

1. All staff members should follow the same procedures when performing their duties.
2. All staff members should ensure that they are following these guidelines at all times.
3. All staff members should ensure that they are following these guidelines at all times.

A "standard" is a set of guidelines or procedures that are used to ensure that all staff members are following the same procedures and standards when performing their duties. These guidelines are intended to ensure that all staff members are following the same procedures and standards when performing their duties.

Standards and guidelines will apply to all BLM lands within the geographic area for which they are written. Using the complete set of standards and guidelines, the local BLM range managers, in consultation with grazing permittees and other interested parties, will determine "terms and conditions" for each grazing allotment. These terms and conditions are the specific grazing practices that are appropriate for that allotment.

BLM lands vary so greatly in topography, climate, soils, water availability, size and distribution of parcels, and other factors, that local managers must have the flexibility needed to determine which grazing practices will work best in each area, and to change those practices when necessary to achieve the desired rangeland conditions.

The scientific evidence and collective knowledge of the public and rangeland managers show a wide variety of grazing effects on plants, animals and watersheds. As a result, the application of these standards and guidelines will emphasize using the best available information for a site-specific situation, and the results of historical grazing patterns should be given significant weight in any decisions about grazing practices to be followed on BLM allotments. Where historical grazing use has been compatible with meeting the standards for soils, species, riparian areas or water quality, no permanent changes should be mandated in the existing grazing patterns without substantial scientific evidence that changing the existing grazing pattern will improve the ability to achieve the standards.

For any standard, guideline, term, or condition to work, it must be capable of being achieved, based on sound science or good common sense, and be measurable, understandable, and economically feasible. There is no use in setting standards that cannot be met.

Successful application of these standards and guidelines will depend on BLM's capability to monitor rangeland conditions and implement management practices. Each Bureau office should develop a monitoring and implementation plan that sets priorities based on resource conditions, trends, and resource values.

CENTRAL CALIFORNIA STANDARDS FOR RANGELAND HEALTH

STANDARD: SOILS

Soils exhibit functional biological and physical characteristics that are appropriate to soil type, climate, and land form.

Meaning That:

Precipitation is able to enter the soil surface at appropriate rates; the soil is adequately protected against accelerated erosion; and the soil fertility is maintained at appropriate levels.

As Indicated By:

- * Ground cover (vegetation and other types of ground cover such as rock) is sufficient to protect sites from accelerated erosion.
- * Litter/residual dry matter is evident, in sufficient amounts to protect the soil surface.

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STAMPAH: BOLA

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- * A diversity of plant species, with a variety of root depths, is present and plants are vigorous during the growing season.
- * There is minimal evidence of accelerated erosion in the form of rills, gullies, pedestaling of plants or rocks, flow patterns, physical soil crusts/surface sealing, or compaction layers below the soil surface
- * Biological (microphytic or cryptogamic) soil crusts are in place where appropriate.

STANDARD: SPECIES

Viable, healthy, productive, and diverse populations of native and desired species, including special status species (Federal T&E, Federal proposed, Federal candidates, BLM sensitive, or Calif. State T&E) are maintained or enhanced where appropriate.

Meaning That:

Native and other desirable plant and animals are diverse, vigorous, able to reproduce and support the hydrologic cycle, nutrient cycles, and energy flows over space and time.

As Indicated By:

- * Wildlife habitats include seral stages, vegetation structure, and patch size to promote diverse and viable wildlife populations.
- * A variety of age classes are present for most perennial plant species.
- * Plant vigor is adequate to maintain desirable plants and ensure reproduction and recruitment of plants when favorable climatic events occur.
- * The spatial distribution and cover of plant species and their habitats allows for reproduction and recovery from localized catastrophic events.
- * A diversity of plant species with various phenological stages and rooting depths are present on sites where appropriate.
- * Appropriate natural disturbances are evident.
- * Levels of non-native plants and animals are at acceptable levels.
- * Special status species present are healthy and in numbers that appear to ensure stable to increasing populations; habitat areas are large enough to support viable populations or are connected adequately with other similar habitat areas.
- * Adequate organic matter (litter and standing dead plant material) is present for site protection and decomposition to replenish soil nutrients.

A variety of plant species with a variety of root depths is present and plants are vigorous during the growing season.

There is a general absence of woody stems in the form of a single, woody stem or a cluster of stems, and the plants are mostly or entirely herbaceous.

Herbaceous (biennial, or perennial) and woody stems are present in the plant community.

STANDARD SPECIES

These species are present in the community and are the primary species of the community. The species are listed in the table below and are numbered as follows: 1-100.

Species List:

There are many species of plants and animals in the community. The species are listed in the table below and are numbered as follows: 1-100.

As indicated by:

Herbaceous stems are present in the community and are the primary species of the community. The species are listed in the table below and are numbered as follows: 1-100.

A variety of species are present in the community and are the primary species of the community.

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A variety of species are present in the community and are the primary species of the community.

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Levels of non-woody stems and animals are in the community.

Species are present in the community and are the primary species of the community. The species are listed in the table below and are numbered as follows: 1-100.

A variety of species are present in the community and are the primary species of the community.

- * Where appropriate, biological soil crusts (also called microphytic or cryptogamic soil crusts) are present and not excessively fragmented.
- * Noxious and invasive species are contained at acceptable levels.

STANDARD: RIPARIAN

Riparian/wetland vegetation, structure and diversity, and stream channels and floodplains are functioning properly, and meeting regional and local management objectives.

Meaning That:

The vegetation and soils interact to capture and pass sediment, sustain infiltration, maintain the water table, stabilize the channel, sustain high water quality, and promote biodiversity appropriate to soils, climate, and landform.

As Indicated By:

Vegetation Attributes:

- * Vegetation cover is greater than 80% or the percentage that will protect banks and dissipate energy during high flows.
- * Age-class and structure of woody/riparian vegetation are diverse and appropriate for the site.
- * Where appropriate, shading is sufficient to provide adequate thermal regulation for fish and other riparian dependent species.
- * Where appropriate, there is adequate woody debris.
- * A diversity of plant species with various phenological stages and rooting depths is present. Root masses are sufficient to stabilize stream banks and shorelines.
- * Plant species present indicate that soil moisture characteristics are being maintained.
- * There is minimal cover of invader/shallow-rooted species.
- * Adequate organic matter (litter and standing dead plant material) is present to protect the site and to replenish soil nutrients through decomposition.
- * Point bars are vegetated.

It has been found that the most common cause of the problem is the lack of proper maintenance of the equipment.

The following steps should be taken to correct the problem:

STANDARD: 100000

It is the policy of the organization to ensure that all equipment is properly maintained and that all safety procedures are followed.

Standard 100000

The equipment used in the laboratory must be properly maintained and all safety procedures must be followed.

At 100000

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Physical Indicators:

- * Streambank stability, pool frequency, substrate sediments, stream width, and bank angles are appropriate for the stream type.

STANDARD: WATER QUALITY

Surface and groundwater complies with objectives of the Clean Water Act and other applicable water quality requirements, including meeting the California State standards.

Management Objective: For water bodies, the primary objective is to maintain the existing quality and beneficial uses of water, protect them where they are threatened (and livestock grazing activities are a contributing factor), and restore them where they are currently degraded (and livestock grazing activities are a contributing factor). This objective is of even higher priority in the following situations:

- (a) where beneficial uses of water bodies have been listed as threatened or impaired pursuant to Section 303(d) of the Federal Clean Water Act;
- (b) where aquatic habitat is present or has been present for Federal threatened or endangered, candidate, and other special status species dependent on water resources; and,
- (c) in designated water resource sensitive areas such as riparian and wetland areas.

Meaning That:

BLM will, pursuant to the Clean Water Act:

Maintain the physical, biological, and chemical integrity of waters flowing across or underlying the lands it administers;

Protect the integrity of these waters where it is currently threatened;

Insofar as is feasible, restore the integrity of these waters where it is currently impaired;

Not contribute to pollution and take action to remedy any pollution resulting from its actions that violates applicable California (including the requirements identified in Regional Basin Plans), or Tribal water quality standards or other applicable water quality requirements (e.g., requirements adopted by SWRCB or RWQCB in California, or US EPA pursuant to Section 303(d) of the Clean Water Act or the Coastal Zone Reauthorization Act). Where action related to grazing management is required, such action will be taken as soon as practicable but not later than the start of the next grazing year (in accordance with 43 CFR 4180.1).

Be consistent with the non-degradation policies identified in the Regional Basin Plans in California.

Work with the State (including the Regional Water Quality Control Boards) and U.S. EPA to establish appropriate beneficial uses for public waters, establish appropriate numeric targets for

Government reports from regulatory agencies, aerial photos, and bank angle are appropriate for the stream type.

STANDARD WATER QUALITY

Surface and groundwater monitoring will be done on the U.S. West and other specific water quality parameters including monitoring the Colorado River. Management objectives for water quality, the primary objective is to maintain the existing quality and protect water quality from any additional (and) avoid existing activities and activities that may be detrimental to water quality. The objective is to maintain the following water quality parameters:

- (a) to avoid significant degradation of water quality from existing or proposed projects in the Colorado River Basin;
- (b) to avoid significant degradation of water quality from existing or proposed projects in the Colorado River Basin;
- (c) to avoid significant degradation of water quality from existing or proposed projects in the Colorado River Basin.

Stream Flow

Flow will be maintained in the Colorado River Basin.

Stream flow is a critical component of water quality and is essential for the health of the river. The objective is to maintain the existing flow and protect it from any degradation. The objective is to maintain the following flow parameters:

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303(d)-listed water bodies, and implement the applicable requirements to ensure that water quality on public lands meets the criteria for the designated beneficial uses of the water.

Develop and implement Best Management Practices (BMPs) approved by the SWRCB to protect and restore the quality and beneficial uses of water, and monitor both implementation and effectiveness of the BMPs. These BMPs will be developed in full consultation, coordination, and cooperation with permittees and other interests.

As Indicated By:

- * The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen.
- * Achievement of the standards for riparian, wetlands, and water bodies.
- * Aquatic organisms and plants (e.g., macroinvertebrates, fish, algae, and plants) indicate support for beneficial uses.
- * Monitoring results or other data that show water quality is meeting the standard.

CENTRAL CALIFORNIA GUIDELINES FOR GRAZING MANAGEMENT:

Guideline 1: Livestock grazing operations will be conducted so that progress is made toward maintaining or promoting adequate amounts of vegetative ground cover, including standing plant material and litter to support infiltration and permeability, and maintain soil moisture storage and soil stability appropriate for the ecological sites within the management units. The ground cover should maintain soil organisms, plants, and animals to support the hydrologic and nutrient cycles, and energy flow.

Guideline 2: Implement grazing systems that regulate the timing and intensity of grazing. Continuous season-long grazing use is allowed if it has been demonstrated that it can be consistent with achieving a healthy, properly functioning ecosystem. Grazing systems should specify season of use based on plant phenology and geohydrologic processes where appropriate. On annual rangelands, mulch management should be used to define target forage use levels that will ensure that sufficient amounts of residual dry matter (RDM) or standing plant material will be maintained throughout the grazing season. Mulch levels for annual grasses should meet the requirements of Table A, whenever feasible. Mulch levels will include a "buffer" to account for RDM loss from other natural processes (decomposition, animal use, etc.). Exceptions may be approved during the green season when substantial regrowth is expected or if lower RDM levels are required to meet particular rangeland health objectives, such as reducing competition for a desired species.

Guideline 3: On Annual Range, readiness will be determined by: (1) Minimum RDM levels at the time of turnout prior to green season growth are exceeded by 200 pounds per acre; or (2) Minimum RDM levels and at least 2 inches of new growth are present in the growing season.

Guideline 4: Where appropriate, use grazing systems that maintain the presence and distribution of microsites for seed germination.

10/11/1987
The following are the objectives of the project:
1. To determine the quality and quantity of water available for irrigation.
2. To determine the quality and quantity of water available for domestic use.
3. To determine the quality and quantity of water available for industrial use.
4. To determine the quality and quantity of water available for power generation.
5. To determine the quality and quantity of water available for navigation.

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CENTRAL CALIFORNIA CREDIT RISK MANAGEMENT

Objective 1: To determine the quality and quantity of water available for irrigation.
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Objective 3: To determine the quality and quantity of water available for industrial use.
Objective 4: To determine the quality and quantity of water available for power generation.
Objective 5: To determine the quality and quantity of water available for navigation.

Guideline 5: Perennial plant utilization should be limited to appropriate levels of the current year's growth as indicated in Table A, unless it has been proven that this level of use is incompatible with the continued existence of the plant.

Management changes will be implemented (e.g., reductions in stocking rate or another management change) if utilization guidelines on the average of the upland key areas across the pasture (or allotment if there is only one pasture) are exceeded for 2 consecutive years or in any 2 years out of every 5 years. In addition, at least 70% of upland key areas on the pasture (or allotment) are not to exceed maximum utilization guidelines in most years. Because of the potential long-term damage to perennial grass species associated with severe grazing, severe grazing use (>70% utilization) in any upland key area in any year will result in a management change the following year. If any particular key area fails to meet the guidelines for more than 2 consecutive years, then management action will be taken to remedy the problem in the area of the allotment that key area represents. The average (mean) utilization on key species will be estimated at each key area and used to determine if the guidelines have been met. There are indications that the median may be a better statistic to use than the mean; we will calculate both statistics from the same data sets and make a determination on which statistic to use after examining the data over a period of a few years. See Appendix 20 of the FEIS for further discussion on this issue.

For allotments not meeting or making significant progress toward meeting the standards (and for which lower utilization levels of perennial upland species would be expected to help move these allotments toward the standards), utilization data already in hand will be used to determine whether a management change is necessary. Thus, for example, if utilization on a particular key area has exceeded the thresholds of Table A for the two years previous to the approval of these standards and guidelines, a management change will be implemented prior to the first grazing year following this approval. In addition to implementing management changes that are expected to bring utilization levels within threshold values, close monitoring will follow to ensure that the grazing use levels are not exceeded during the grazing period following the management changes. If utilization levels are exceeded or expected to be exceeded during this period, a reduction or curtailment of further grazing in the area represented by the key area will be required for the remainder of the grazing season. In addition, further management changes will be implemented prior to the start of the next grazing season to bring utilization levels within thresholds.

Guideline 6: Implement grazing systems that permit existing native species to complete entire life cycles and sustain the spatial distribution of microsites necessary for seed germination at intervals sufficient to maintain the viability of the species.

Guideline 7: Use grazing systems that are compatible with the persistence of desired species. Grazing use should provide appropriate levels of plant matter that will promote the existence of desirable plants and animals.

Guideline 8: Native species are recommended for all revegetation and enhancement projects unless they are not readily available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions and biological health.

Guideline 9: Within identified deer concentration areas there will be no more than 20 percent utilization of annual growth on key browse species prior to October 1.

Guideline 10: Periods of rest from livestock grazing or other avoidable disturbances should be provided during/after episodic events (e.g., flood, fire, drought) and during critical times of plant growth needed to achieve proper functioning conditions, recovery of vegetation, or desired plant community.

Guideline 2: Financial plan objectives should be limited to appropriate levels of the company's growth as indicated in Table 1. Unless a business plan is developed that is compatible with the continued existence of the plan.

Management changes will be implemented as a result of the company's financial performance. If the company's financial performance is poor, the company should consider the possibility of a change in management. The company should also consider the possibility of a change in ownership. The company should also consider the possibility of a change in the company's business plan. The company should also consider the possibility of a change in the company's financial plan. The company should also consider the possibility of a change in the company's growth rate. The company should also consider the possibility of a change in the company's risk level. The company should also consider the possibility of a change in the company's capital structure. The company should also consider the possibility of a change in the company's dividend policy. The company should also consider the possibility of a change in the company's employee compensation plan. The company should also consider the possibility of a change in the company's environmental policy. The company should also consider the possibility of a change in the company's social responsibility policy. The company should also consider the possibility of a change in the company's corporate governance policy. The company should also consider the possibility of a change in the company's information technology policy. The company should also consider the possibility of a change in the company's legal and regulatory policy. The company should also consider the possibility of a change in the company's public relations policy. The company should also consider the possibility of a change in the company's security policy. The company should also consider the possibility of a change in the company's insurance policy. The company should also consider the possibility of a change in the company's tax policy. The company should also consider the possibility of a change in the company's intellectual property policy. The company should also consider the possibility of a change in the company's data privacy policy. The company should also consider the possibility of a change in the company's cybersecurity policy. The company should also consider the possibility of a change in the company's sustainability policy. The company should also consider the possibility of a change in the company's human resources policy. The company should also consider the possibility of a change in the company's procurement policy. The company should also consider the possibility of a change in the company's logistics policy. The company should also consider the possibility of a change in the company's manufacturing policy. The company should also consider the possibility of a change in the company's distribution policy. The company should also consider the possibility of a change in the company's sales and marketing policy. The company should also consider the possibility of a change in the company's customer service policy. The company should also consider the possibility of a change in the company's product development policy. The company should also consider the possibility of a change in the company's research and development policy. The company should also consider the possibility of a change in the company's innovation policy. The company should also consider the possibility of a change in the company's strategic planning policy. The company should also consider the possibility of a change in the company's risk management policy. The company should also consider the possibility of a change in the company's crisis management policy. The company should also consider the possibility of a change in the company's business continuity policy. The company should also consider the possibility of a change in the company's disaster recovery policy. The company should also consider the possibility of a change in the company's business resilience policy. The company should also consider the possibility of a change in the company's business recovery policy. The company should also consider the possibility of a change in the company's business transformation policy. The company should also consider the possibility of a change in the company's business model policy. The company should also consider the possibility of a change in the company's business strategy policy. The company should also consider the possibility of a change in the company's business vision policy. The company should also consider the possibility of a change in the company's business mission policy. The company should also consider the possibility of a change in the company's business values policy. The company should also consider the possibility of a change in the company's business culture policy. The company should also consider the possibility of a change in the company's business ethics policy. The company should also consider the possibility of a change in the company's business integrity policy. The company should also consider the possibility of a change in the company's business transparency policy. The company should also consider the possibility of a change in the company's business accountability policy. The company should also consider the possibility of a change in the company's business responsibility policy. The company should also consider the possibility of a change in the company's business stewardship policy. The company should also consider the possibility of a change in the company's business leadership policy. The company should also consider the possibility of a change in the company's business excellence policy. The company should also consider the possibility of a change in the company's business innovation policy. The company should also consider the possibility of a change in the company's business growth policy. The company should also consider the possibility of a change in the company's business success policy. The company should also consider the possibility of a change in the company's business achievement policy. The company should also consider the possibility of a change in the company's business fulfillment policy. The company should also consider the possibility of a change in the company's business happiness policy. The company should also consider the possibility of a change in the company's business well-being policy. The company should also consider the possibility of a change in the company's business quality of life policy. The company should also consider the possibility of a change in the company's business life expectancy policy. The company should also consider the possibility of a change in the company's business life satisfaction policy. The company should also consider the possibility of a change in the company's business life expectancy policy. The company should also consider the possibility of a change in the company's business life satisfaction policy.

Guideline 3: Financial plan objectives should be limited to appropriate levels of the company's growth as indicated in Table 1. Unless a business plan is developed that is compatible with the continued existence of the plan.

Guideline 4: Financial plan objectives should be limited to appropriate levels of the company's growth as indicated in Table 1. Unless a business plan is developed that is compatible with the continued existence of the plan.

Guideline 5: Financial plan objectives should be limited to appropriate levels of the company's growth as indicated in Table 1. Unless a business plan is developed that is compatible with the continued existence of the plan.

Guideline 6: Financial plan objectives should be limited to appropriate levels of the company's growth as indicated in Table 1. Unless a business plan is developed that is compatible with the continued existence of the plan.

Guideline 7: Financial plan objectives should be limited to appropriate levels of the company's growth as indicated in Table 1. Unless a business plan is developed that is compatible with the continued existence of the plan.

Guideline 8: Financial plan objectives should be limited to appropriate levels of the company's growth as indicated in Table 1. Unless a business plan is developed that is compatible with the continued existence of the plan.

Guideline 11: Grazing management practices will allow for the reproduction of species that will maintain riparian-wetland functions, including energy dissipation, sediment capture, groundwater recharge, streambank stability, the hydrologic cycle, nutrient cycle, and energy flow.

Guideline 12: Grazing practice should maintain a minimum herbage stubble height on all stream-side, riparian and wetland areas at the end of the growing season. There should be sufficient residual stubble or regrowth at the end of the growing season to meet the requirements of plant vigor maintenance, bank protection, and sediment entrapment (Table A).

Management changes will be implemented (e.g., reductions in stocking rate or another management change) if stubble heights on the average of the key riparian areas across the pasture (or allotment if there is only one pasture) fall below the guidelines for 2 consecutive years or in any 2 years out of every 5 years. In addition, at least 70% of riparian key areas on the allotment are to exceed minimum stubble heights in most years. If any particular key area fails to meet the guidelines for more than 2 consecutive years, then management action will be taken to remedy the problem in the area of the allotment that key area represents. Because stream banks may be inadequately protected by heavy use in any one year and because stubble heights below 3 inches result in cattle shifting their preference to shrubs, stubble heights below 2 inches in any one year will require a management change in the following year.

The mean stubble height on key riparian species will be estimated at each riparian key area and used to determine if the guidelines have been met. There are indications that the median may be a better statistic to use than the mean; we will calculate both statistics from the same data sets and make a determination on which statistic to use after examining the data over a period of a few years. See Appendix 20 of the Final EIS for further discussion on this issue.

For allotments not meeting or making significant progress toward meeting the standards (and for which higher stubble would be expected to help move these allotments toward the standards), stubble height data already in hand will be used to determine whether a management change is necessary. Thus, for example, if stubble heights on a particular key area have fallen below the thresholds of Table A for the two years previous to the approval of these standards and guidelines, a management change will be implemented prior to the first grazing year following this approval. In addition to implementing management changes that are expected to bring stubble heights within threshold values, close monitoring will follow to ensure the grazing use levels are not exceeded during the grazing period following the management changes. If utilization levels are exceeded or expected to be exceeded during this period, a reduction or curtailment of further grazing in the area represented by the key area will be required for the remainder of the grazing season. In addition, further management changes will be implemented prior to the start of the next grazing season to bring utilization levels within thresholds.

Guideline 13: Water sources, wetlands and riparian areas may be fenced to reduce impacts from livestock.

Guideline 14: The development of water sources will maintain ecologic and hydrologic function and processes.

Guideline 15: Locate salt blocks and other supplemental feed well away from riparian/wetland areas.

Guideline 16: Locate new livestock handling and/or management facilities outside of riparian/wetland areas. For existing livestock handling facilities inside riparian areas, ensure that facilities do not prevent attainment of standards. Limit livestock trailing, bedding, watering, loading, and other handling efforts to those areas and times that will not retard or prevent attainment of standards.

Guideline 11: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Guideline 12: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Guideline 13: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Guideline 14: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Guideline 15: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Guideline 16: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Guideline 17: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Guideline 18: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Guideline 19: Current position should remain a constant, but any change should be on all streams. The current position should be the end of the growing season. This should be followed by a stable or slightly increasing trend in the growing season to meet the requirements of plant vigor maintenance, but not to exceed the maximum (Table 1).

Table A: Forage Utilization and Moisture Management Requirements

Forage Type	Plant Community	Stem: Leaf Ratio	Minimum Residual Dry Matter (DM)	Maximum Utilization of Key Parameters (%)
4-10 inches	California annual grassland	<25% 25-45% >45%	200 150 100	75-85%
10-40 inches	California annual grassland	<25% 25-45% >45%	400 300 200	75-85%
	Oak woodlands	<15% (100/200) >15% (425/21)	700-900** 1000-1200**	
6-30 inches	Sagebrush-grasslands, semi-dry to dry grass and shrublands, Pinyon-juniper woodlands, Cool season grasses	NA	NA	50-60%
	California forest, woodlands, shrublands	NA	NA	30-40%
	Alpine tundra	NA	NA	70-75%
	Sub-Tropical Shrubland	NA	NA	25-35%
4-40 inches	Subtropical grasslands	NA	4-6 inch stubble height*	15-45% DM, 10-20% DM, 0-30% DM

* Minimum to be present at full water capacity
 ** Higher utilization is not possible due to low DM content, limited water stress growth, and need for an animal class
 † Stubble height and ground utilization levels are critical to animal health. Should be adjusted to the water stress of growing crop and plant phenology. In some circumstances a water stress may be the alternative, reduce the water stress to the maximum possible
 ‡ Forage plant utilization is dependent on stubble height as well as the amount of water available to the plant. DM is dependent on the DM content and utilization rate of the animal. Forage quality is dependent on the DM content of the plant
 ††† Utilization is dependent on the water stress, reduced plant utilization should be expected when 25-35% water stress growth which has been measured at 100-1200 DM per growing season of 100

Table A: Forage Utilization and Mulch Management Requirements				
Precipitation	Plant Community	Slope, Elevation	Minimum Residual Dry Matter* (lbs/ac)	Maximum Utilization of Key Perennials, #, ##
4-10 Inches	California annual grassland	<25% 25-45% >45%	200 250 350	25-40%
10-40 Inches	California annual grassland, Oak woodlands	<25% 25-45% >45% <15%, 1000-2500' >15%, >2500'	400 600 800 700-900** 1000-1200**	30-45%
8-30 Inches	Sagebrush grassland, semi-desert grass and shrubland, Pinyon-juniper woodland, Cool season pasture	NA	NA	30-40%
	Coniferous forest, mountain shrubland	NA	NA	30-40%
	Alpine tundra	NA	NA	20-30%
	Salt Desert Shrubland	NA	NA	25-35%
4-40 Inches	Riparian areas, wetlands	NA	4-6 inch stubble height #	35-45% herbs, 10-20% shrubs, 0-20% trees

* Minimum to be present at fall/winter green-up.

** Higher minimum is for sites that are: in unsatisfactory condition, grazed during active growth, not rested, or on steeper slopes.

Stubble height and percent utilization levels are initial values that should be adjusted to consider timing of grazing use and plant phenology, resource conditions and a site's resiliency at the allotment, pasture or site-specific location. Perennial plant utilization levels and stubble heights are based on a literature review by Holechek (1988, 1991), Holechek et al. (1998) and Willoughby (see the Annotated Bibliography on Utilization in the FEIS).

On sites in unsatisfactory condition and/or trend, perennial plant utilization should be no more than 15-25% current annual growth where less than one period of rest is provided per growing season of use.

Table A: Minimum and Maximum Temperature Requirements

Temperature	Minimum	Maximum	Minimum	Maximum
(Degrees F)	(Degrees F)	(Degrees F)	(Degrees F)	(Degrees F)
4-10 inches	30	45	30	45
10-15 inches	30	45	30	45
15-20 inches	30	45	30	45
20-25 inches	30	45	30	45
25-30 inches	30	45	30	45
30-35 inches	30	45	30	45
35-40 inches	30	45	30	45
40-45 inches	30	45	30	45
45-50 inches	30	45	30	45
50-55 inches	30	45	30	45
55-60 inches	30	45	30	45
60-65 inches	30	45	30	45
65-70 inches	30	45	30	45
70-75 inches	30	45	30	45
75-80 inches	30	45	30	45
80-85 inches	30	45	30	45
85-90 inches	30	45	30	45
90-95 inches	30	45	30	45
95-100 inches	30	45	30	45

Minimum and maximum temperature requirements are listed in Table A. The minimum temperature requirement is 30 degrees Fahrenheit and the maximum temperature requirement is 45 degrees Fahrenheit. These requirements apply to all temperatures listed in Table A.

Guideline 17: Implement grazing systems that will promote compliance with the Water Quality Standards.

- d. Apply the management practices recognized and approved by the State of California as Best Management Practices (BMPs) for grazing related activities to protect and maintain water quality.
- e. In watersheds draining into water bodies that have been listed or are proposed for listing as having threatened or impaired beneficial uses, and where grazing activities may contribute to the pollutants causing such impairment, the management objective is to fully protect, enhance, and restore the beneficial uses of the water.

Guideline 18: The plan for grazing on any allotment must consider other uses (recreation, wildlife, mineral resource development, etc.) and be coordinated with other users of the public lands so that overall use does not detract from the goal of achieving rangeland health.

4. IMPLEMENTATION

BLM will fully implement the grazing standards and guidelines as directed in the rulemaking. The rule states that, "The authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining that grazing practices or levels of grazing use on public lands are significant factors in failing to achieve the standards and conform to the guidelines...."(43 CFR 4180.2(c)).

Determination of the "appropriate action," and the actual scheduling of the implementation, will be the responsibility of the local Field Managers. However, it will be done using the priority system described in Appendix 1.

5. ASSESSMENTS and MONITORING

Field Offices will conduct assessments of all allotments according to the priority described in Appendix 1. All allotments will be assessed within five years of the approval of these Standards and Guidelines by the Secretary of the Interior. These assessments will be done using an interdisciplinary approach, and the findings and reasons for the findings will be documented. The format and content of this documentation will be left to the discretion of the individual Field Manager. (Examples are in the Final EIS.)

Field Offices will monitor allotments according to the priority described in Appendix 1. The monitoring will be done using an interdisciplinary approach, using methods described in Appendix 2.

Rangeland health conditions will be reported annually for each grazing allotment. This information will include the determinations of rangeland health conditions through assessments and monitoring and the progress made towards meeting rangeland health standards. Specifically, for each allotment an identification will be made of what standards, if any, are not met or where significant progress is not being made toward meeting the standard; etc.; what progress has been made regarding determining and implementing needed management changes; and the results of making the management changes as determined from monitoring information. Additionally, any changes in the management categories of the allotments will be identified and an explanation of the reasons for the change will be made.

- 1. Apply the management practices suggested and approved by the State of California as Best Management Practices (BMPs) for preventing sediment and erosion on the site.
- 2. In watersheds having two water bodies that have been listed as impaired for listing as being impaired in impaired biological, chemical, and physical water quality objectives as the pollutants causing such impairment, the management objective is to fully protect, enhance, and restore the beneficial uses of the water.

Guideline V: The plan for funding an approved water quality improvement project, which includes a detailed description of the project and the estimated cost of the project.

4. IMPLEMENTATION

BLM will fully implement the funding program as described in the plan. The plan states that "the estimated cost of the project is \$1,000,000 and the estimated cost of the project is \$1,000,000. The plan also states that the project will be completed by the end of the fiscal year 2000." The plan also states that the project will be completed by the end of the fiscal year 2000.

Implementation of the project will be completed by the end of the fiscal year 2000. The plan also states that the project will be completed by the end of the fiscal year 2000.

5. ASSESSMENT AND MONITORING

Field Office will conduct monitoring of the project as described in the plan. The plan states that "the project will be completed by the end of the fiscal year 2000." The plan also states that the project will be completed by the end of the fiscal year 2000.

Field Office will monitor the project as described in the plan. The plan states that "the project will be completed by the end of the fiscal year 2000." The plan also states that the project will be completed by the end of the fiscal year 2000.

Field Office will monitor the project as described in the plan. The plan states that "the project will be completed by the end of the fiscal year 2000." The plan also states that the project will be completed by the end of the fiscal year 2000.

The above information will be gathered at the Field Office which administers the respective allotment(s). A summary of this information will be consolidated for all of the allotments in the state (exclusive of the California Desert District) and made available to the public annually.

6. PUBLIC INVOLVEMENT and RESPONSE to PROTESTS

BLM has had extensive public involvement throughout the process of developing the Standards and Guidelines. Early phases of this involvement were described in the Draft EIS, and in Chapter 5 of the Final EIS. Further, we have consulted extensively with the three Resource Advisory Councils(RAC) on content and wording of the Standards and Guidelines.

As stated in the Final EIS, "following the comment period on the draft EIS, the RAC members were sent copies of all of the comment letters. The RACs discussed the comments and the draft EIS in their meetings. Representatives of the three RACs then met with BLM staff in a workshop setting and made recommendations for modification of their original proposals."

Comments made by the public following the Draft EIS were individually analyzed by BLM, and responded to in the Final EIS. The Proposed Action (Alternative 5) in the Final EIS was based upon the original RAC proposals, with changes suggested by the RACs and by BLM, based upon analysis of the public comments. There were several meetings with the Susanville RAC and other interested parties prior to issuing the Final EIS because there were items in the Standards and Guidelines that caused concern to RAC members and ranchers in NE California and NW Nevada.

Following release of the Final EIS, BLM received 5 protests, two of which applied to Central California. The major concerns were that there were changes made in the Final EIS that the public had not been allowed to review in the Draft; that a protestor did not like the water quality guidelines; that there was no "no grazing" alternative; and, that the Bureau does not have enough staff to implement the Standards and Guidelines.

As a result of these protests, BLM has added some language to this ROD to clarify how the standards and guidelines will be implemented. However, no substantive changes have been made to the Central California Standards and Guidelines from that contained in the Final EIS. Based on the clarification language, three of the protestors subsequently withdrew their protests. The remaining two protests were dismissed by the Director of BLM, who sent letters to the two protestors explaining the reasons for the dismissals.

The above information will be entered in the Field Office which administers the respective standards. A summary of the information will be consolidated for all of the information in the state (exclusive of the California Desert District) and made available to the public annually.

6. PUBLIC INVOLVEMENT and RESPONSE to PROTESTS

BLM has had extensive public involvement throughout the process of developing the standards and Guidelines. Public input of the involvement was provided in the Draft EIS, and in Chapter 3 of the final EIS. Further, we have consulted extensively with the Resource Advisory Committee (RAC) on content and timing of the Standards and Guidelines.

As noted in the Draft EIS, following the comment period on the Draft EIS, the RAC members were sent copies of all of the comment letters. The RAC discussed the comments and the Draft EIS in their meetings. Representatives of the Draft EIS also met with BLM staff in a workshop setting and made recommendations for modification of their original proposals.

Comments made by the public following the Draft EIS were individually analyzed by BLM and responded to in the Final EIS. The Proposed Action (Alternative 2) in the Final EIS was based upon the original RAC proposals and changes suggested by the RAC and by BLM, based upon analysis of the public comments. There were several meetings with the Southern Nevada and other interested parties prior to issuing the Final EIS because there were items in the Standards and Guidelines that caused concern to RAC members and members of the California and Nevada chapters.

Following release of the Final EIS, BLM received 2 protests, two of which applied to Central California. The protest comments were that there were changes made in the Final EIS that the public had not seen. It was in review in the Draft that a protestor did not like the water quality guidelines that there was no "strong" statement, and that the protestor did not have enough staff to implement the Standards and Guidelines.

As a result of these protests, BLM has added some language to the ROP to clarify how the standards and guidelines will be implemented. However, no substantive changes have been made to the Central California Standards and Guidelines from the content in the Draft EIS. Based on the clarification language, most of the protestors subsequently withdrew their protests. The remaining two protests were handled by the Director of BLM, who sent letters to the two protestors explaining the reasons for the decisions.

APPENDIX 1: IMPLEMENTATION

The fallback standards (43 CFR 4180.2(f)(1)) have been in effect in since August 12, 1997. An initial screening of allotments was made, based on existing information, to determine the status of each allotment with respect to meeting the fallback standards. Each allotment was placed into one of four categories as follows:

- Category 1: Areas where one or more standards are not being met, or significant progress is not being made toward meeting the standards(s), and livestock grazing is a significant contributor to the problem.
- Category 2: Areas where all standards are being met, or significant progress is being made toward meeting the standard(s).
- Category 3: Areas where the status for one or more standards is not known, or the cause of the failure to not meet the standard(s) is not known.
- Category 4: Allotments where one or more of the standards are not being met or significant progress is not being made toward meeting the standards due to causes other than (or in addition to) livestock grazing activities. (Those allotments where current livestock grazing is also a cause for not meeting the standards are included in Category 1 in addition to this category.) The authorized officer should take appropriate action based on regulation or policy; however, these actions not related to livestock grazing are outside the scope of this implementation plan and will not be addressed in this document.

An assumption has been made by the BLM field managers that, with few possible exceptions, the implementation needed for the regulatory fallback standards and guidelines will essentially be the same as for any anticipated set of final approved standards and guidelines implemented pursuant to this Record of Decision (ROD). Consequently, the categorization of allotments under the standards in this ROD is likely to be the same as the categorization under the fallback standards and guidelines. Existing allotment assessments and their resulting determinations as to category will be reviewed to ensure the determination is correct under the standards set in place by this ROD.

New allotment assessments, reviews of existing allotment assessments, and determination of allotment category will be conducted in full consultation, coordination, and cooperation with permittees and other interests.

We intend to conduct assessments on all allotments within the next 5 years. First priority for these allotment assessments will be given to those allotments where we already know or suspect one or more of the standards is not being met. These include those allotments placed in Category 1 under the fallback standards and those allotments currently in Category 3 that we have reason to believe may not be meeting standards. After these allotments have been assessed, the remaining allotments will be assessed using the BLM I, M, and C priority management system, with first priority to I, second to M, and last to C.

For those allotments where the standards are not being met (Category 1), management actions will be implemented to correct the situation prior to the next grazing season turn-out period for the allotment. The management options will be determined in full coordination, consultation, and cooperation with permittees and other interests.

APPENDIX B IMPLEMENTATION

The following standards (S) and indicators (I) were used in effect in 1997. An initial grouping of standards was made based on a content analysis to determine the nature of each standard with respect to meeting the highest standards. Each standard was placed into one of four categories as follows:

Category 1: Areas where the standards are being met, or significant progress is not being made toward meeting the standards, and research showing a significant contribution to the problem.

Category 2: Areas where the standards are being met, or significant progress is being made toward meeting the standards.

Category 3: Areas where the standards are not being met, or the nature of the failure to meet the standards is not known.

Category 4: A list of areas where the standards are not being met, or significant progress is not being made toward meeting the standards due to research that is in addition to the standards. (These standards were placed in Category 4 in addition to the standards for which the standards are included in Category 1 in addition to the standards.) The standards of this category should not be used as a basis for research or policy-making. These standards are listed in Appendix B, and the nature of the standards and the research that will be conducted in this document.

An example of the standards for the 1997 standards is the 1997 standards for the standards. The standards for the standards and indicators are listed in the standards for the standards. The standards for the standards and indicators are listed in the standards for the standards. The standards for the standards and indicators are listed in the standards for the standards. The standards for the standards and indicators are listed in the standards for the standards.

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Monitoring will be conducted to evaluate the progress towards improving rangeland health and to evaluate the success of the specific management measures applied.

APPLICATION OF GUIDELINES

Once the guidelines are approved by the Secretary of the Interior, they will be applicable to the management of livestock grazing on all allotments not meeting the health standards. Some guidelines will be applicable regardless of the specific rangeland health condition, as they are designed to help protect and sustain rangeland health and are not intended to be applied only to remedy problems. Many of the guidelines will need to be more specifically identified and then applied as terms and conditions of a permit or lease, based upon the specific needs for meeting rangeland health standards. There will be instances where specific terms and conditions will be applied to grazing use authorizations for reasons other than those directly related to rangeland health, such as to accommodate other resource needs and land uses or to meet administrative requirements. Examples of this may include protecting cultural resource sites, requiring a specific breed of livestock to be used that is compatible with the needs of other permittees or lessees using the same allotment, or for meeting various regulatory requirements for grazing administration purposes. In some instances, existing terms and conditions will be carried over from previously made plans and commitments, such as those identified in allotment management plans or coordinated management plans. In these instances, the terms and conditions may or may not be related to rangeland health needs.

Any terms or conditions specified for a permit or lease must be consistent with and support appropriate BLM land use plans or other land use plans applicable to the public lands. BLM will also adhere to requirements such as those identified as terms or conditions from a biological opinion for protecting the habitat of a plant or animal under the Endangered Species Act.

Terms and conditions will be applied to grazing permits, leases, or other grazing authorizations as the authorized officer (Field Manager) determines the need. The determination of what terms and conditions will be applied will be made in consultation with the respective permittees/lessees and other interested parties involved in the particular allotment. The same process will be used for making needed changes to any existing terms and conditions. Information from assessments and evaluations of monitoring data will be used to determine the management changes needed. Management options that would be expected to move allotments toward meeting the standards will be determined in full coordination, consultation, and cooperation with permittees/lessees and other interested parties.

Alternative management changes will be considered and evaluated through the NEPA process prior to making final determinations. It is anticipated that in most instances, the terms and conditions will be identified cooperatively and be agreed upon by the affected permittee/lessee and all interested parties. Where an agreement cannot be reached, then a formal decision (which is appealable) will be issued.

If reductions in permitted use are necessary to achieve the standards or meet the guidelines, the animal unit months (AUMs) by which the permitted use is reduced will be held in suspension. Once the authorized officer determines that rangeland health has recovered to an extent that all or part of the suspended permitted use can be restored, this suspended permitted use shall first be apportioned in satisfaction of suspended permitted use to the permittee(s) or lessee(s) authorized to graze in the allotment in which the forage is available (this is in accordance with 43 CFR 4110.3-1(b)).

REPORTING PROGRESS IN RANGELAND HEALTH ACHIEVEMENTS

Rangeland health conditions will be reported annually for each grazing allotment. This information will include the determinations of rangeland health conditions through assessments and monitoring and the progress made towards meeting rangeland health standards. At a minimum the report will identify, by allotment: (1) what standards, if any, are not being met; (2) whether significant progress is being made toward meeting those standards that are not currently being met; (3) the magnitude of those standards not being met, in terms such as acres, miles of stream, number of sites, etc.; (4) the progress that has been made in determining and implementing needed management changes; and (5) the results of making the management changes as determined from monitoring and assessment information. Additionally, any changes in the management categories of the allotments will be identified, accompanied by an explanation of the reasons for the change.

The above information will be gathered at the field office which administers the respective allotment(s). A summary of this information will be consolidated for all of the allotments within the EIS area and made available to the public annually.

Tables were provided in the Final EIS that showed all allotments in the State and the category to which they were assigned in 1997. Since that list was compiled, management changes have been implemented and additional assessment and monitoring work has been completed that makes those lists obsolete. When the annual report is compiled each year, an updated list of all allotments, by category, will be provided as part of the report.

Throughout all processes the public is encouraged to participate in the identification of rangeland health conditions, developing management remedies, monitoring results, and reviewing progress towards achieving rangeland health standards.

REPORTING PROCEDURE IN RANGELAND HEALTH ASSESSMENT

Reporting results and conclusions will be reported monthly for each grazing allotment. This information will include the determination of whether or not conditions that require assessment, and monitoring and the progress made toward meeting required health standards. As a minimum the report will identify by allotment (1) what standards it may or may not meet (2) whether significant progress is being made toward meeting these standards that are not currently being met (3) the magnitude of these standards not being met, or those that are being met, and (4) the progress that has been made in monitoring and implementing needed management changes, and (5) the results of making the management changes as determined from monitoring and assessment information. Additionally, any changes in the management practices of the allotments will be identified, accompanied by an explanation of the reason for the change.

The above information will be prepared at the field office which administers the respective allotment. A summary of the information will be consolidated for all of the allotments within the LIS area and made available to the public through the BLM website.

Public access to the BLM website will be provided to the public and the categories in which the data were collected in 1997. Since that time, the data have been updated and the categories have been expanded and additional information has been added that makes them more useful. When the annual report is generated each year, we updated list of all allotments by category, will be provided as part of the report.

Throughout the process, the public is encouraged to participate in the identification of important health conditions, to identify potential monitoring needs, and to provide input on the health standards.

APPENDIX 2: ASSESSMENT AND MONITORING

Assessment to Determine if Allotments are Meeting Standards

“Assessment” means the analysis, synthesis, and interpretation of information, including monitoring data, to characterize the health of an allotment or other management unit. Gathering new information in the field may be necessary as part of the assessment process. “Monitoring” means the periodic gathering of information.

In some cases, quantitative monitoring data, gathered over a period of years, may be essential to determine whether an area meets the standards and whether livestock grazing is a significant factor contributing to a failure to meet the standards. However, quantitative monitoring data is not always required to make these determinations nor to implement actions to improve grazing management. The preamble to the 1995 grazing regulations (BLM 1995) states that managers may “use a variety of information, including monitoring records, assessments, and knowledge of the locale.” The 1995 regulations also require the manager to “reduce permitted grazing use or otherwise modify management practices...when monitoring or field observations show grazing use or patterns of use are not consistent with the provisions of 43 CFR subpart 4180” (43 CFR 4110.3-2(b); subpart 4180 includes the standards and guidelines). Changes in permitted use are to be “...supported by monitoring, field observation, ecological site inventory, or other data acceptable to the authorized officer.” Therefore, actions needed to improve grazing management in order to comply with guidelines or meet standards should not be delayed solely because monitoring data are lacking. Rangelands will not be allowed to deteriorate while prolonged monitoring studies are conducted, when reliable indicators of rangeland health demonstrate a need for corrective action.

Assessments should employ the minimum information needed to determine whether the standards are being met and whether livestock grazing is a significant factor in failing to meet the standards. All resource information or data collected should be tied directly to the standards, guidelines, or resource objectives.

Field Offices will conduct assessments of all allotments according to the priority described in Appendix 1. These assessments will be done using an interdisciplinary approach, and the findings and reasons for the findings will be documented. The format and content of this documentation will be left up to individual Field Managers, but the form used by the Eagle Lake Field Office (Appendix 24 in the Final EIS) is one example of the type of documentation that could be employed.

The term “assessment,” when used by itself, has the meaning described above; that is, it considers all available information, whether from inventory, monitoring, or qualitative assessments. “Qualitative assessment” refers to a particular method used to rapidly assess whether allotments or areas within allotments are meeting standards. The Proper Functioning Condition (PFC) procedure is the qualitative assessment method that is applied to riparian/wetland areas (BLM 1993b and 1994). The Qualitative Procedure to Assess Rangeland Health (Appendix 25 in the Final EIS) is the qualitative method that will be applied to upland rangelands. The use of these procedures, and their relationship to monitoring, will be discussed in more detail below.

APPENDIX 2 ASSESSMENT AND MONITORING

A summary of the assessment and monitoring standards

"The assessment and monitoring standards are designed to ensure that the assessment and monitoring process is consistent with the requirements of the Environmental Protection Act 1990 and the Environmental Assessment Regulations 1988. The assessment and monitoring process should be carried out in a systematic and consistent manner, and should be carried out at regular intervals. The assessment and monitoring process should be carried out in a systematic and consistent manner, and should be carried out at regular intervals. The assessment and monitoring process should be carried out in a systematic and consistent manner, and should be carried out at regular intervals.

In some cases, qualitative monitoring data gathered over a period of years may be used to determine whether or not the standards are being met. However, quantitative monitoring data is not always sufficient to determine whether or not the standards are being met. In some cases, qualitative monitoring data gathered over a period of years may be used to determine whether or not the standards are being met. However, quantitative monitoring data is not always sufficient to determine whether or not the standards are being met. In some cases, qualitative monitoring data gathered over a period of years may be used to determine whether or not the standards are being met. However, quantitative monitoring data is not always sufficient to determine whether or not the standards are being met.

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The assessment and monitoring process should be carried out in a systematic and consistent manner, and should be carried out at regular intervals. The assessment and monitoring process should be carried out in a systematic and consistent manner, and should be carried out at regular intervals. The assessment and monitoring process should be carried out in a systematic and consistent manner, and should be carried out at regular intervals. The assessment and monitoring process should be carried out in a systematic and consistent manner, and should be carried out at regular intervals.

Application of Traditional Rangeland Monitoring to Assessing Whether Standards are Being Met

Many rangeland monitoring studies have been in place and read on a regular basis by BLM personnel in California for many years. These studies involve using qualitative or quantitative procedures, or both, and often are directed at determining the condition and trend of key species in key areas. The basic types of studies, as well as the use of the key species and key area approach, are described in Chapter 3, Section 3.2.5, of the Final EIS. The purpose of these studies has primarily been to determine if management objectives relative to particular grazing allotments are being met or if the trend is toward meeting these objectives. For example, a management objective might be to increase the frequency of a key species such as squirreltail (*Elymus elymoides* ssp. *elymoides*) by 10% in Pasture A of Allotment Z in 5 years. Some method of frequency monitoring is then set up in one or more key areas in Pasture A and read on a regular basis (this could be annually but might be once every five years; in this example the frequency of monitoring would have to be at least every five years). In another example, the objective might be to increase the basal cover of the key species bluebunch wheatgrass (*Pseudoregneria spicata* ssp. *spicata*) in Pasture B of Allotment X by 5 percent over the next 6 years. A method of monitoring that measures cover is then set up in one or more key areas of Pasture B and read on a regular basis (this could be annually or on some other schedule, but must be at least every 6 years).

Management objectives have not always been directed at key species. Objectives to increase the total vegetation cover on particular pastures or allotments have also been applied, as well as objectives to decrease the cover of shrubs or trees. In both of these examples, monitoring methods are chosen that measure or estimate cover. These methods might be quantitative in nature or qualitative; the latter might involve taking photographs, either on the ground or aurally.

A second monitoring objective of traditional rangeland monitoring has been to determine the "condition and trend" of rangelands. The condition is determined by comparing the current species composition and production of a given ecological site to the species composition and production of the potential natural community of that site (see Chapter 3, Section 3.3.3 in the Final EIS for a more complete description of the process). Trend is recorded as upward, downward, or static, based on whether species composition and production are moving toward, away, or not at all, respectively, from the potential natural community. Ecological site inventory (ESI) is used to determine condition at any one point in time. A second ESI can then be used to determine trend; other monitoring studies, however, can also be used for this purpose, if they yield information on species composition.

Although much of the monitoring currently being conducted will have applicability to determining the effectiveness of implementation of the rangeland standards, some old methods will have to be modified and new methods introduced. This is because the standards require monitoring of certain rangeland attributes that are not assessed under current methodology.

Table 1 is a list of rangeland attributes that may be assessed in order to determine whether standards are being met.

Application of Traditional Management Monitoring to Assessing Whether Standards are Being Met

Many traditional monitoring methods have been in place and used on a regular basis by the M... (California for many years). These methods involve qualitative or quantitative procedures, as well as often are limited to determining the content and level of key species in key areas. The basic types of data, as well as the use of the key species and key area approach, are described in Chapter 3, Section 3.2.2 of the Final EIS. For purposes of this section, the primary focus is to determine if management objectives related to particular grazing allotments are being met or if the trend is toward meeting those objectives. For example, a management objective might be to increase the frequency of a key species such as riparian silverspot (15 years of analysis and objectives by 1975 in Figure A of Attachment 2) in 5 years. Some trends of frequency monitoring is then set up to see if there is a trend in Figure A and each of the other four (this could be annual, but might be every 5 years). In this example, the frequency of monitoring would be every 5 years. In another example, the objective might be to increase the total count of the key species blue-winged teal (which migrates between riparian areas and upland areas) in Figure B of Attachment 2 by 1 percent over the next 5 years. A trend of monitoring that measures cover is then set up to see if there is a trend in Figure B and each of the other four (this could be annual, or on some other schedule, but must be at least every 5 years).

Management objectives have not always been checked at the regular intervals to determine if objectives are being met or if there is a trend. Also, the objectives, as well as the methods to check the trend of data or data, in both of these examples, monitoring methods are often limited to certain areas. These methods might be qualitative in nature or quantitative, the latter might involve taking measurements, such as the ground at certain points.

A trend monitoring objective of traditional management monitoring has been to determine the "condition and trend" of riparian areas. This objective is determined by comparing the current species composition and condition of a given riparian area to the species composition and condition of the potential natural community of that area. In the Final EIS for the Final EIS for a more complete description of the approach, Figure 3.2.2 is included as Appendix D, and it is noted on whether species composition and condition are being monitored, as well as the frequency of monitoring from the potential natural community. The approach to monitoring (EIS) is used to determine condition in any one point in time. A trend EIS can then be used to determine how the riparian area is changing over time. However, the EIS can be used for the purpose of determining information on species composition.

Although much of the monitoring currently being conducted will have a qualitative trend to determine the effectiveness of implementation of the standard standards, some of the methods will have to be modified and new methods introduced. This is because the standards require monitoring of certain riparian areas, which is not a trend or trend monitoring.

Table 1 is a list of riparian standards that may be needed in order to determine whether standards are being met.

Table 1. List of rangeland attributes that may be assessed in order to determine whether standards are being met, along with the actual wording of the indicator(s) to which each attribute applies (parentheses following each indicator show the standard to which it applies). Several indicators apply to more than one attribute and therefore are listed under each of the appropriate attributes.

7. Ground cover
 - a. "Vegetation and other types of ground cover such as rock" (Soils)
 - b. "Spatial distribution and cover of plant species and their habitats allows for reproduction and recovery from localized catastrophic events" (Species)
 - c. "Vegetation cover is greater than 80% or the percentage that will protect banks and dissipate energy during high flows" (Riparian)
 - d. "There is minimal cover of invader/shallow-rooted species" (Riparian)
 - e. "Point bars are vegetated" (Riparian)

8. Litter/residual dry matter
 - a. "Litter/residual dry matter is evident, in sufficient amounts to protect the soil surface" (Soils)
 - b. "Adequate organic matter (litter and standing dead plant material) is present for site protection and decomposition to replenish soil nutrients" (Species)
 - c. "Adequate organic matter (litter and standing dead plant material) is present to protect the site and to replenish soil nutrients through decomposition" (Riparian)

9. Plant species diversity
 - a. "A diversity of plant species, with a variety of root depths, is present and plants are vigorous during the growing season" (Soils)
 - b. "A diversity of plant species with various phenological stages and rooting depths is present on sites where appropriate" (Species)
 - c. "Where appropriate, species composition contributes to the desired plant community objectives" (Species)
 - d. "A diversity of plant species with various phenological stages and rooting depths is present." (Riparian)
 - e. "Plant species present indicate that soil moisture characteristics are being maintained" (Riparian)

10. Plant vigor
 - a. "A diversity of plant species, with a variety of root depths, is present and plants are vigorous during the growing season" (Soils)
 - b. "Plant vigor is adequate to maintain desirable plants and ensure reproduction and recruitment of plants when favorable climatic events occur" (Species)

Table 1. Least favored attributes that may be assessed in order to determine whether conditions are being met along with the actual wording of the indicators on which each attribute applies. (The numbers following each indicator show the number to which it applies. Several indicators apply to more than one attribute and therefore are listed under each of the attributes indicated.)

Attribute	Indicator
1. Ground cover	a. "Vegetation and other types of ground cover such as snow" (Goals)
	b. "General distribution and cover of plant species and their habitat allows for production and recovery from localized catastrophic events" (Species)
	c. "Vegetation cover is greater than 80% or the bare surface that will prevent bank and slope erosion during high flows" (Habitat)
	d. "There is minimal cover of non-vascular bryophytes" (Species)
	e. "There is no vegetation" (Species)
2. Litter and detritus	a. "Litter and detritus is present in sufficient amounts to protect the soil surface" (Goals)
	b. "Litter and detritus is present in sufficient amounts to protect the soil surface" (Goals)
	c. "Litter and detritus is present in sufficient amounts to protect the soil surface" (Goals)
	d. "Litter and detritus is present in sufficient amounts to protect the soil surface" (Goals)
3. Plant root density	a. "A diversity of plant species with a variety of root depths is present and plants are vigorous during the growing season" (Goals)
	b. "A diversity of plant species with various root depths is present and plants are vigorous during the growing season" (Goals)
	c. "A diversity of plant species with various root depths is present and plants are vigorous during the growing season" (Goals)
	d. "A diversity of plant species with various root depths is present and plants are vigorous during the growing season" (Goals)
	e. "A diversity of plant species with various root depths is present and plants are vigorous during the growing season" (Goals)
	f. "A diversity of plant species with various root depths is present and plants are vigorous during the growing season" (Goals)
4. Plant vigor	a. "A diversity of plant species with a variety of root depths is present and plants are vigorous during the growing season" (Goals)
	b. "There is evidence of vigorous growth of plants and other vegetation" (Species)

Table 1, continued

11. Soil crusts
 - a. "Biological (microphytic or cryptogamic) soil crusts are in place where appropriate" (Soils)
 - b. "Where appropriate, biological soil crusts (also called microphytic or cryptogamic soil crusts) are present and not excessively fragmented" (Species)
12. Plant structure
 - a. "A variety of age classes are present for most perennial plant species" (Species)
 - b. "Age-class and structure of woody/riparian vegetation is diverse and appropriate for the site" (Riparian)
 - c. "Wildlife habitats include seral stages, vegetation structure, and patch size to promote diverse and viable wildlife populations" (Species)
13. Spatial distribution of plants and their habitats
 - a. "Spatial distribution and cover of plant species and their habitats allows for reproduction and recovery from localized catastrophic events" (Species)
 - b. "Wildlife habitats include seral stages, vegetation structure, and patch size to promote diverse and viable wildlife populations" (Species)
14. Natural disturbances

"Appropriate natural disturbances are evident." (Species)
15. Non-native plants and animals, including noxious and invasive species

"Levels of non-native plants and animals are at acceptable levels" (Species)
16. Special status species

"Special status species are healthy and in numbers that appear to ensure stable to increasing populations; habitat areas are large enough to support viable populations or are connected adequately with other similar habitat areas" (Species)
17. Tree and shrub canopy cover

"Where appropriate, shading is sufficient to provide adequate thermal regulation for fish and other riparian dependent species" (Riparian)
18. Woody debris

"Where appropriate, there is adequate woody debris" (Riparian)
19. Root masses

"Root masses are sufficient to stabilize stream banks and shorelines" (Riparian)

Table 1. continued	
11	Soil crusts a. "Biological (microphytic or macrophytic) soil crusts are in places where significant soil crusts are present and are taxonomically distinct." (Species) b. "Where a crustate biological soil crust (also called cyanobiotic or algal) soil crusts are present and are taxonomically distinct." (Species)
12	Plant remains a. "A variety of age classes are present in the most recent plant species." (Species) b. "The size and number of woody vegetative specimens is different and significant for each age class." (Species) c. "Within each age class, vegetative structure, and plant size is different between and within populations." (Species)
13	Plant distribution of plants and their behavior a. "Spatial distribution and cover of plant species are different between sites for each age class." (Species) b. "Within each age class, vegetative structure, and plant size is different between and within populations." (Species)
14	Plant dispersal a. "Aggregates of plant dispersal are different." (Species) b. "The size and number of plant dispersal are different between sites." (Species) c. "Levels of dispersal of plant and animal are different." (Species)
15	Plant site species a. "Plant species are different and in numbers that report to each site as different." (Species) b. "The number of plant species are different between sites." (Species) c. "The number of plant species are different between sites." (Species)
16	Plant site species cover a. "When appropriate, showing is sufficient to meet the objective of the investigation for the site." (Species) b. "The number of plant species are different between sites." (Species)
17	Plant site species cover a. "When appropriate, showing is sufficient to meet the objective of the investigation for the site." (Species) b. "The number of plant species are different between sites." (Species)
18	Plant site species cover a. "When appropriate, showing is sufficient to meet the objective of the investigation for the site." (Species) b. "The number of plant species are different between sites." (Species)
19	Plant mass a. "Plant mass are sufficient to stabilize ground banks and structures." (Species)

Table 1, continued

20. Streambank stability
“Streambank stability, pool frequency, substrate sediments, stream width, and bank angles are appropriate for the stream type (using Rosgen’s Streambank Classification System)” (Riparian)
21. Pool frequency
“Streambank stability, pool frequency, substrate sediments, stream width, and bank angles are appropriate for the stream type (using Rosgen’s Streambank Classification System)” (Riparian)
22. Substrate sediments
“Streambank stability, pool frequency, substrate sediments, stream width, and bank angles are appropriate for the stream type (using Rosgen’s Streambank Classification System)” (Riparian)
23. Stream width/depth
“Streambank stability, pool frequency, substrate sediments, stream width, and bank angles are appropriate for the stream type (using Rosgen’s Streambank Classification System)” (Riparian)
24. Bank angles
“Streambank stability, pool frequency, substrate sediments, stream width, and bank angles are appropriate for the stream type (using Rosgen’s Streambank Classification System)” (Riparian)
25. Chemical constituents of water
“The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)
26. Water temperature
 - a. “The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)
 - b. “Where appropriate, shading is sufficient to provide adequate thermal regulation for fish and other riparian dependent species” (Riparian)
27. Nutrient loading
“The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)

20	Stabilization systems	"Stabilization systems, pool frequency, substrate sedimentation, stream width, and bank stability are appropriate for the stream type (using Korman's Streambank Classification System)" (Korman)
21	Pool frequency	"Stabilization systems, pool frequency, substrate sedimentation, stream width, and bank stability are appropriate for the stream type (using Korman's Streambank Classification System)" (Korman)
22	Substrate sedimentation	"Stabilization systems, pool frequency, substrate sedimentation, stream width, and bank stability are appropriate for the stream type (using Korman's Streambank Classification System)" (Korman)
23	Stream width	"Stabilization systems, pool frequency, substrate sedimentation, stream width, and bank stability are appropriate for the stream type (using Korman's Streambank Classification System)" (Korman)
24	Bank erosion	"Stabilization systems, pool frequency, substrate sedimentation, stream width, and bank stability are appropriate for the stream type (using Korman's Streambank Classification System)" (Korman)
25	Channel dimensions of water	The following do not exceed the applicable requirements: channel dimensions, bank stabilization, substrate sedimentation, substrate sedimentation, substrate sedimentation, and substrate sedimentation (Water Quality)
26	Water temperature	The following do not exceed the applicable requirements: channel dimensions, bank stabilization, substrate sedimentation, substrate sedimentation, substrate sedimentation, and substrate sedimentation (Water Quality)
27	Channel bedrock	The following do not exceed the applicable requirements: channel dimensions, bank stabilization, substrate sedimentation, substrate sedimentation, substrate sedimentation, and substrate sedimentation (Water Quality)

Table 1, continued

28.	Fecal coliform “The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)
29.	Turbidity “The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)
30.	Suspended sediment “The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)
31.	Dissolved oxygen “The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)
32.	Aquatic and riparian organisms “Aquatic organisms and plants (e.g., macroinvertebrates, fish, algae, and plants) indicate support for beneficial uses” (Water Quality)
33.	Soil erosion “There is minimal evidence of accelerated erosion in the form of rills, gullies, pedestaling of plants or rocks, flow patterns, physical soil crusts/surface sealing, or compaction layers below the soil surface” (Soils)

Monitoring of Vegetation and Physical Attributes

Vegetation monitoring (including soil crusts). Table A.22.2 in the Final EIS lists the trend monitoring methods currently in use or described in the Interagency Technical Reference, Sampling Vegetation Attributes (BLM et al. 1996a) and the plant and vegetation attributes they measure. Of the attributes listed in Table 1 in this appendix, the following can be monitored using a combination of the methods from the technical reference:

- Ground cover
- Litter/residual dry matter
- Plant species diversity
- Plant vigor
- Soil crusts
- Plant structure
- Spatial distribution of plants and their habitats

Table 1 continued

28	Local culture The following list of local culture items was prepared by the author and is intended to be used as a guide for local culture items. (Water Quality)
29	Local culture The following list of local culture items was prepared by the author and is intended to be used as a guide for local culture items. (Water Quality)
30	Local culture The following list of local culture items was prepared by the author and is intended to be used as a guide for local culture items. (Water Quality)
31	Local culture The following list of local culture items was prepared by the author and is intended to be used as a guide for local culture items. (Water Quality)
32	Local culture The following list of local culture items was prepared by the author and is intended to be used as a guide for local culture items. (Water Quality)
33	Local culture The following list of local culture items was prepared by the author and is intended to be used as a guide for local culture items. (Water Quality)

Maintenance of Vegetation and Physical Features

Vegetation maintenance is a critical component of the riparian habitat. The following list of maintenance items was prepared by the author and is intended to be used as a guide for local culture items. (Water Quality)

- 1. Ground cover
- 2. Riparian shrubs
- 3. Riparian trees
- 4. Riparian grasses
- 5. Riparian sedges
- 6. Riparian forbs
- 7. Riparian ferns
- 8. Riparian mosses
- 9. Riparian lichens
- 10. Riparian fungi
- 11. Riparian invertebrates
- 12. Riparian vertebrates

- Natural disturbances (although not specifically identified by a column heading on Table A.22.2, these can be tracked under the heading "spatial distribution")
- Non-native plants (these can be monitored by measuring or estimating density, frequency, or cover)
- Special status plants (these can be monitored by measuring or estimating density, frequency, or cover)
- Tree and shrub canopy cover

Note, however, that in some cases these attributes are not measured or estimated as part of the standard procedure. For example, the typical way in which the Daubenmire method (which estimates canopy cover in either 6 or 10 categories in a series of plots) is used yields measurements of the cover of bare ground, vegetation, litter, gravel/rock, as well as frequency and species composition. Other attributes, such as the cover of biological, physical, and chemical crusts, cryptogams, production, and vigor *can* be incorporated into the standard procedure with proper planning.

Monitoring of Guidelines Associated with Utilization, Residue, and Stubble Heights. For the reasons given in Section 3.2.5 in the Final EIS, it is important to set and monitor guidelines on utilization levels, minimum residues, and minimum stubble heights. Existing monitoring of utilization, residue, and stubble heights will continue, and new studies will be established as needed. On upland perennial rangelands not meeting the standards, utilization will be measured on key species in key areas, with the average (mean) utilization used to assess whether the portion of the allotment or pasture represented by the key area is meeting the utilization guideline (there are indications that the median may be a better statistic to use than the mean; we will calculate both statistics from the same data sets and make this determination after examining the data over a period of a few years). We recognize that residue, in terms of stubble height and litter, is a better measure of utilization in upland perennial grass communities than percent utilization, but we do not have sufficient information at this time to develop guidelines that use these attributes. We intend to investigate this matter further, however, as time and funding permit, and to eventually replace the utilization guidelines on perennial uplands (which specify percent of key species removed) with guidelines specifying minimum amounts of residue to be left. A very preliminary study proposal is given in Table 2.

Researcher must be able to identify the variables being measured in a column headed as Table 2.1.1. These can be divided into the following "general categories":

- 1. Physical characteristics (e.g., length, weight, etc.)
- 2. Chemical characteristics (e.g., pH, conductivity, etc.)
- 3. Biological characteristics (e.g., growth rate, survival, etc.)
- 4. Behavioral characteristics (e.g., feeding rate, etc.)
- 5. Physiological characteristics (e.g., heart rate, etc.)
- 6. Psychological characteristics (e.g., learning, etc.)
- 7. Environmental characteristics (e.g., temperature, etc.)

It is important to note that these characteristics are not measured or estimated as part of the standard procedure. For example, the physical characteristics of the organism are measured in order to determine the level of care given in order to respond to a given situation. Other characteristics, such as growth rate, survival, etc., are measured as part of the standard procedure. For example, the growth rate of an organism is measured in order to determine the level of care given in order to respond to a given situation.

Measurement of the characteristics associated with the following: Behavior, Growth, and Survival. For the reasons given in Section 2.1.1 in the first EIS, it is important to set and monitor parameters on different levels. Behavioral characteristics and growth rate are the most important. Behavioral characteristics are measured in order to determine the level of care given in order to respond to a given situation. Growth rate is measured in order to determine the level of care given in order to respond to a given situation. Survival is measured in order to determine the level of care given in order to respond to a given situation. The following table shows the relationship between the characteristics and the level of care given in order to respond to a given situation.

Table 2. Preliminary Study Proposal: Developing Residue and Stubble Height Guidelines for Major Vegetation Types in the Great Basin

Objective: Develop upland residue and stubble height guidelines for the major vegetation types in the Great Basin

- Conduct a literature review.

This review would look at material published in peer-reviewed publications and “gray” literature as well as information collected by field offices. In addition, range scientists at universities and in other agencies (e.g., NRCS, ARS, Forest Service) would be interviewed.

- Conduct the following study.

A study would be conducted to fill in the gaps in information that are expected to exist following the literature review. Over a period of several years the residue left following known levels of utilization will be measured at several sites in different vegetation types. This will entail measuring total above ground production in ungrazed areas (using either cages or exclosures), measuring utilization after the grazing season on key species, and measuring the amount of standing and fallen dead plant material (separately) at that level of use. The stubble heights of key species will also be measured, both in grazed and ungrazed condition. Photographs will be taken both of the key species and the landscape, both in grazed and ungrazed areas. As much as possible, sites should be selected that are close to existing weather stations (NOAA, RAWS stations, etc.) so the total production can be related to the amount of precipitation received.

The study should be conducted over several years in order to show a range of residue, stubble heights, and utilization levels as related to different amounts of precipitation. This study should enable field personnel to develop either State or regional guidelines on the appropriate residue and stubble height levels that should be left following grazing.

Following is a list of the utilization and residue studies from the Interagency Technical Reference, *Utilization Studies and Residual Measurements* (BLM et al. 1996b) that may be applied to public lands within the EIS area:

Browse Utilization Methods:

- Twig Length Measurement Method
- Cole Browse Method
- Extensive Browse Method

Residue Measuring Methods

- Stubble Height Method
- Visual Obstruction Method
- Comparative Yield Method

Herbaceous Utilization Methods

- Paired Plot Method
- Ocular Estimate

Table 1. Field-based Study Design, Researcher Roles and Study's Field Objectives
for the Study's Research Types in the Great Plains

Objective	Researcher's Role	Study Design
Develop spatial models and identify key factors for the major vegetation types in the Great Plains	Field-based research	Field-based research
Develop a vegetation model	Field-based research	Field-based research
The study would have a central objective in post-reviewed publications and "gray" literature as well as information collected by field officers. In addition, large scientific conferences and other agencies (e.g., ARS, ARS, Forest Service) would be interested.	Field-based research	Field-based research
Conduct an inventory study	Field-based research	Field-based research
A study would be conducted in all of the types in the inventory that are expected to exist between the vegetation types. Over a period of several years the results for different vegetation types of vegetation will be compared at various sites in different vegetation types. This will include measuring plant growth, production or biomass and other factors (such as soil water, soil nutrients, etc.) within the growing season on key species and measuring the amount of standing and downed plant material (especially for the level of soil). The number of key species will also be measured, both in ground and aerial conditions. These species will be taken into the field and the biomass, both in ground and aerial conditions. As much as possible, they should be selected that are also in existing studies (NOAA, ARS studies, etc.) so the field production can be related to the amount of production.	Field-based research	Field-based research
The study should be conducted over several years in order to show a range of vegetation types and a range of species or species in relation to different amounts of precipitation. The study should include a range of species or species in relation to the different amounts of precipitation. The study should include a range of species or species in relation to the different amounts of precipitation.	Field-based research	Field-based research

Following is a list of the authors and research studies from the Interagency Technical Reference... (The text is very faint and difficult to read.)

- 1. [Faint text]
- 2. [Faint text]
- 3. [Faint text]
- 4. [Faint text]
- 5. [Faint text]
- 6. [Faint text]
- 7. [Faint text]
- 8. [Faint text]
- 9. [Faint text]
- 10. [Faint text]

- Key Species Method
- Height-Weight Method
- Actual Weight Method
- Grazed-Class Method
- Landscape Appearance Method

Exact methods to be used to monitor utilization, residue, and stubble heights will be determined by the Field Offices.

The above utilization and residue monitoring studies are usually applied to key areas (see the glossary in the Final EIS for a definition of key area and the discussion of key areas in Chapter 3, Section 3.2.5 of the Final EIS). Utilization pattern mapping is another important monitoring tool. This method entails canvassing the entire allotment or individual pasture and mapping the area into several classes based on the level of utilization (e.g., no use, light use, moderate use, and heavy use) on key species (see Chapter 3, Section 3.2.5 for more information). These studies will continue where necessary.

Actual use monitoring. Actual use studies (BLM 1984) are another form of traditional range monitoring that will continue. These studies track the actual use made by livestock in pastures and/or allotments based on the numbers of livestock and the length of time livestock are present. These numbers are usually provided by lessees/permittees but are sometimes also estimated from counts by BLM professionals. The actual use made by other herbivores such as wild horses and burros and wildlife is often estimated as well. These data are important in determining what changes should be made when objectives and standards are not being met.

Climate monitoring. It is important to consider climate when interpreting monitoring data. Climate monitoring most often consists of compiling precipitation and temperature information collected by the National Oceanic and Atmospheric Administration at the many weather stations in the EIS area. In some cases, precipitation data are collected through the placement of rain gauges in allotments. Additionally, both temperature and precipitation data are collected from 14 Remote Automated Weather Stations (RAWS) within the EIS area.

Riparian-wetland monitoring. The vegetation attributes of riparian-wetland areas are monitored using one or more of the techniques described in Table A.22.2 in the Final EIS. The Greenline Riparian-Wetland Monitoring Method (BLM 1993a) is also used by some field offices. The following physical attributes are also monitored on some riparian-wetland areas:

- Bankfull discharge
- Sinuosity
- Riparian zone width
- Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris)
- Width/depth ratio

Use of Qualitative Assessments to Determine if Standards are Being Met

As noted above, traditional range monitoring studies can help assess whether standards are being met. The standards, however, call for the assessment of indicators that are not addressed by these traditional monitoring studies. Where the status of these indicators cannot be inferred from existing monitoring information, other monitoring or assessment methods must be employed. The following qualitative

assessment procedures were developed to rapidly assess all the physical and biological components of rangeland health.

Qualitative Upland Assessment. For uplands, the qualitative assessment method will be used. Although a technical reference has not yet been finalized on the method, a draft has been prepared and field tested. The details were given in Appendix 25 in the Final EIS. Field Offices may adapt this method as necessary to meet local needs. The results of the qualitative assessment will be used in conjunction with all other available information to determine if an allotment is meeting the standards. If it is not, and does not appear to be making significant progress toward meeting the standards, and grazing has been determined to be a significant factor, changes will be made to the management of livestock grazing. To assess whether these management changes are effective in moving toward meeting the standards, monitoring will be initiated (or, if already being conducted, will be continued) that is directed toward those indicators that caused the allotment to not meet the standards. For example, if the qualitative assessment indicates that insufficient litter is present, subsequent monitoring will focus on measuring the amount of litter (either the cover of litter or the amount in weight of litter).

Qualitative Riparian/Wetland Assessment. A qualitative procedure, called proper function condition (PFC) assessment (see Appendix 23 of the Final EIS), is already in place to help assess whether riparian and wetland areas are meeting the standards (BLM 1993b and 1994). This PFC assessment has already been applied to many riparian/wetland areas within the EIS area. Its use will be continued. Just as with the upland qualitative assessment procedure, when the PFC results in one or more indicators being responsible for an allotment not meeting the standards, subsequent monitoring will focus on those indicators. For example, if the width/depth ratio is the main reason a stream is determined to be not meeting the standard of proper functioning condition, subsequent monitoring would focus on the width/depth ratio of the stream.

Wildlife Monitoring for Rangeland Health

The standards for rangeland health include a "species" standard. They also include several indicators of animal habitats and populations that are attributes of a healthy rangeland ecosystem. These indicators can be divided into those related to habitat, and those related to animal populations. The habitat indicators include habitat seral stages, vegetation structure and patch size, spatial distribution of habitats, habitat size, how habitats are connected, and the habitat's ability to support viable populations. The animal population indicators include the spatial distribution of animals, special status species numbers, stable to increasing populations, viable populations, and levels of non-native animals.

The BLM recognizes that determining the biodiversity health for each allotment is an impossible task involving the gathering of species-specific data at many locations and scales. However, a more achievable option is to design monitoring programs that evaluate ecosystem components, structures and processes as indicators of a habitat's *capability* to support healthy animal communities. We would then rely on focused studies to more directly monitor species of management concern.

There are different scales of monitoring and management to evaluate the relationships between habitat management from livestock grazing and animal populations. It is critical to evaluate the assumptions that habitat management at the allotment (or pasture) level will actually affect animal presence and abundance at the monitoring site(s). It is necessary to determine the appropriate scale of monitoring: coarse scale regional monitoring of several allotments for some animal community indicators; fine scale monitoring at the allotment level for some special status, game animals, and keystone species; and site-specific scale for some special status species and ecosystem health indicators that are restricted to very small habitat areas. Monitoring plans should consider these issues of scale when designing allotment monitoring programs.

assessment procedures were developed to rapidly assess all the physical and biological components of

Qualitative Impact Assessment. For example, the qualitative assessment method will be used. Although a test and reference has not been finalized on the method, a test has been prepared and field tests. The details were given in Appendix 2 in the final IIA. Field tests were also the method of reference to your field work. The results of the qualitative assessment will be used in conjunction with all other available information to determine if an alteration is meeting the standards. If it is not, and does not appear to be meeting significant progress toward meeting the standards and having the same attention to the significant factors, changes will be made to the management of livestock grazing. To assess whether these management changes are effective in moving toward meeting the standards, monitoring will be initiated as it already being conducted, will be conducted that is directed toward the standards that caused the alteration in the first place. For example, if the qualitative assessment indicates that livestock grazing is present, subsequent monitoring will focus on assessing the amount of time within the cover of forest or the amount in weight of forest.

Qualitative Impact Assessment. A qualitative assessment, called project function condition (PFC) assessment (see Appendix 3 of the final IIA) is used to help assess whether riparian and wetland resources meeting the standards (1974 and 1994). The PFC assessment has already been applied to many riparian and wetland areas within the IIA area. The results will be compared, along with the riparian assessment procedure, with the PFC results in two or more indicators being reported for an alteration not meeting the standards. Subsequent monitoring will focus on those indicators. For example, if the wetland PFC is the main reason a stream is determined to be not meeting the standards of project function condition, subsequent monitoring would focus on the wetland area of the stream.

27. Data Collection for Riparian Health

The standards for riparian health include a "report" standard. They also include several indicators of riparian health and riparian function that are indicators of a healthy riparian ecosystem. These indicators can be divided into three related to habitat and those related to animal populations. The habitat indicators include stream bank stability, stream bank erosion and bank size, stream channel stability, stream bank vegetation cover, and the riparian's ability to support native animal populations. The animal population indicators include the number of animals, species diversity, and level of non-native animals.

The IIA requires the following: the biodiversity health for each alteration is an indicator of riparian health. The gathering of data on many factors and scales. However, a more detailed report is to be provided to the riparian assessment committee, riparian and riparian as indicators of a healthy riparian system. We would then rely on riparian health as a secondary indicator of riparian health.

There are different scales of monitoring and management to evaluate the relationship between habitat management and riparian health and animal populations. It is critical to evaluate the riparian health management at the alteration level will actually affect riparian health and abundance as the monitoring scale. It is necessary to determine the appropriate scale of monitoring, as well as the riparian health management for each alteration. For each alteration, the scale monitoring at the alteration level, the same general goals, same methods, and specific scales for each alteration. The riparian health indicators that are restricted to very small habitat areas are those that are specific to the alteration level. The riparian health indicators that are restricted to very small habitat areas are those that are specific to the alteration level when designing riparian management programs.

Habitat mapping and vegetation monitoring would usually suffice to evaluate whether the allotments are providing *adequate opportunities* for wildlife communities in meeting the standards. Spot checking for selected species at the appropriate habitats over several allotments would evaluate rangeland health for many species. At a finer scale of analysis, population censuses at the allotment scale may be needed to determine if the standards are being met. This finer scale monitoring would be directed at special status animals or at species with a very restricted habitat requirement as a rangeland health indicator.

Most allotment monitoring will evaluate the habitat capability for species of management concern. Vegetation characteristics of habitat structure (for example, ground cover, vertical layering, form of trees and shrubs), plant composition, age structure of plants (young, reproducing, old, or decadent trees or shrubs), plant vigor, and the distribution of plant communities across the landscape will be the focus of BLM's monitoring.

Field assessments should emphasize the use of habitat quality checklists to identify significant problems at the appropriate scale (allotment or landscape levels). These checklists can be designed to evaluate habitat quality for a particular species, group of species, or general animal community composition. The elements of such a checklist are given in Table 3. More focused studies or monitoring protocols may be developed where habitat monitoring indicates standards are not being met and where management priority is high.

The BLM will consider existing information on soils, habitats, scientific literature, historic records, fire history, and disturbance regimes to assess habitat capability. When more detailed information regarding a particular species is required, wildlife information systems and species records may be used to conduct assessments of habitat quality for animals of management concern. The California Wildlife Habitat Relationships System (CWHR) and Habitat Evaluation Procedures (HEP) models may be used for these assessments. These models are based on the assumptions that through habitat assessments, habitat capability (quality) for a particular species or group of species can be determined. The California Natural Diversity Data Base will be used to help assess the significance of BLM actions on special status animal species and rare plant communities.

The rangeland health indicators for animal (wildlife) populations cannot be assessed separately for each species. Evaluating animal numbers and distributions for each species would require an extensive amount of monitoring of hundreds of animal species, a task far beyond the capability of the BLM and our State and private management partners. Instead, monitoring must be focused on a subset of animal "indicator" species that represent wildlife communities and populations in general as indicators of ecosystem health. While this method of monitoring has been criticized as flawed since each species has its own niche in the ecosystem that cannot be represented by another species, this approach gives the BLM the opportunity to focus wildlife monitoring within our capability. The indicator species may be threatened or endangered, game animals, species of regional or special concern, keystone species, abundant, or rare. The selection of the indicator species will depend on the allotment management objectives, land use plan objectives, and/or BLM commitments to regional plans. The monitoring of the indicator species may include general distribution or abundance surveys or more focused research to better evaluate the relationships between the animals and their habitats and grazing effects. In many cases, data collection may not be required within each allotment, but across the landscape in habitats with similar characteristics.

habitat mapping and vegetation monitoring would usually require to evaluate whether the allotment are providing adequate opportunities for wildlife conservation in meeting the standards. Spot checking for wetland species at the allotment level over several allotments would evaluate targeted habitat for many species. At a first stage of analysis, population estimates of all species would be needed to determine if the standards are being met. The first stage monitoring would be limited to special status animals or species with a very restricted habitat requirement or a restricted habitat distribution.

Other allotment monitoring will evaluate the habitat capability for species of management concern. Vegetation characteristics of habitat structure (for example, ground cover, vertical structure, form of trees and shrubs, plant composition, etc) and other factors such as soil type, aspect, etc. will be the focus of studies. This report and the distribution of plant communities across the landscape will be the focus of this monitoring.

Field monitoring should evaluate the use of habitat quality indicators to identify significant problems at the allotment level. Indicators for wetland species, such as those listed in Table 1, can be designed to evaluate habitat quality for a particular species group or general animal community composition. The elements of a checklist are given in Table 2. Other factors such as monitoring protocols may be developed when habitat monitoring indicates animals are not being met and where management priority is high.

The HLM will consider relevant information on each allotment, including historical records, the history and distribution patterns to assess habitat capability. When more detailed information regarding a particular species is required, wildlife monitoring systems and protocols may be used to conduct assessments of habitat quality. The use of management concern (the Critical Wildlife Habitat Technology System (CWTS)) and habitat condition (HLM) models may be used for these assessments. These models are based on the assumptions that through habitat assessments, habitat capability (ability for a particular species or group of species) can be determined. The Critical Wildlife Habitat model will be used to help assess the significance of HLM areas of special status animals species and any plant communities.

The targeted habitat indicators for animals will be selected separately for each species. Monitoring systems and protocols for each species will require an evaluation of monitoring systems of habitats of special status, a list for beyond the capability of the HLM and out of range and provide management protocols. Habitat monitoring must be based on a survey of animal "habitat" areas that represent wildlife communities and populations in general or indicators of population health. The use of monitoring has been conducted in many areas and species has the opportunity to learn wildlife monitoring within our capability. The indicator species may be developed to evaluate special status of general or special concern, for each species. Species in this category will depend on the allotment management objectives and the plan objectives, with HLM commitments to regional plans. The monitoring of the habitat areas may include general distribution of habitats surveys or more focused research to better evaluate the relationship between the animals and their habitats and grazing effects. In some cases, data collection may not be required within each allotment, but across the landscape in habitat with special characteristics.

Table 3. Elements of a Biodiversity and Species Checklist for Wildlife.

Habitats

CWHR Habitats and seral stage(es) present:

Habitat composition and seral stages related to management objectives:

- Seral stages meet management objectives
- Plant community composition indicates good rangeland health
- Native species present at acceptable levels
- Non-native species at acceptable levels
- Invasive weeds at acceptable levels

Habitat structure related to management objectives:

- Plant cover is adequate, within natural range
- Plant height adequate: herbaceous shrub trees
- Plant density is adequate
- Plants distributed normally
- Ground cover is within normal range
- Age-class indicates community maintenance
- Form-class indicates normal growth characteristics

Distribution of Habitats across landscape:

- Patch size is adequate
- Fragmentation is not excessive
- Habitats are connected within site capability

Species

Management indicators selected:

Habitats meet requirements of indicator species:

- Elements are considered acceptable:
- Elements lacking:

Key management areas present:

- Listed species habitats
- Riparian
- Wetlands
- Seasonal ranges (winter, migratory, calving/fawning, etc)
- Breeding/nesting sites

Table 2. Elements of a Performance and Quality Checklist for Health

Section	Item
Health	1. Work hours and work-rest schedule
	2. Health programs and services related to management objectives
	3. Management management objectives
	4. An overall management objective for health
Health	1. Health programs and services at acceptable levels
	2. Health programs at acceptable levels
	3. Health programs at acceptable levels
	4. Health programs at acceptable levels
	5. Health programs at acceptable levels
	6. Health programs at acceptable levels
	7. Health programs at acceptable levels
	8. Health programs at acceptable levels
	9. Health programs at acceptable levels
	10. Health programs at acceptable levels
Health	1. Health programs at acceptable levels
	2. Health programs at acceptable levels
	3. Health programs at acceptable levels
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Health	1. Health programs at acceptable levels
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	4. Health programs at acceptable levels
Health	1. Health programs at acceptable levels
	2. Health programs at acceptable levels
	3. Health programs at acceptable levels
	4. Health programs at acceptable levels

Table 3, cont.

Focused Studies

Focused studies in progress:

Focused studies needed:

Evaluation:

Habitats are meeting management objectives

Habitats promote diverse and viable wildlife populations

 Seral stages present Composition

 Structure Distribution

Habitats can withstand catastrophic events (flood/fire/windstorm)

Species present indicate healthy ecosystem function

Habitats meeting species/diversity standards

Habitats not meeting species/diversity standards

Livestock grazing/management is (is not) significant factor

Management changes needed to meet standards

Water Quality Assessment and Monitoring

Most often, when riparian areas and wetlands are healthy, the quality of water for most beneficial uses meets standards. Many of the attributes assessed and monitored for riparian and wetland areas also affect the quality of the water, at least indirectly. There are exceptions, however, where this may not always be true, particularly with regard to the chemistry and physical properties of the water. Biological assessments and monitoring of aquatic organisms in water bodies serve to identify important attributes reflecting the quality of water for many beneficial uses and will be used when it is determined that the quality of the water may be in question.

In most situations BLM will depend upon the State and Regional water quality agencies to either identify, or assist BLM in identifying, where water quality is impaired or has a high probability of being impaired. For those areas where livestock grazing activities on public land are known to cause or are suspected of causing water quality impairment, BLM will closely coordinate with these agencies in obtaining any needed water quality monitoring and assessment information. Where sufficient information is not available, BLM will also closely coordinate with these agencies in the selection and design of the attributes to be assessed and monitored by BLM. Since the states have primary responsibility and primacy regarding the Clean Water Act and the Safe Drinking Water Act, it is important that any water quality assessment or monitoring information obtained by BLM meet the acceptance of those state agencies responsible for identifying the specific requirements of those Acts.

Table 2

Focus Area	Key Objectives
Water Quality	Improve water quality and protect the health of the people who depend on it.
Water Quantity	Ensure sufficient water quantity for all uses, including agriculture, industry, and domestic use.
Water Access	Ensure that all people have access to clean, safe drinking water.
Water Infrastructure	Invest in water infrastructure to improve efficiency and reduce losses.
Water Pollution	Reduce water pollution from agricultural, industrial, and domestic sources.
Water Conservation	Promote water conservation practices to reduce demand and protect resources.
Water Governance	Strengthen water governance and regulatory frameworks.
Water Services	Improve the quality and reliability of water services provided to the public.
Water Security	Enhance water security and resilience to climate change and other risks.
Water Equity	Ensure that water resources are distributed equitably and sustainably.
Water Innovation	Promote innovation in water technologies and management practices.
Water Education	Improve public awareness and understanding of water issues.
Water Research	Support research to advance water science and technology.
Water Policy	Develop and implement effective water policies and legislation.
Water Planning	Integrate water into national and regional development planning.
Water Cooperation	Encourage cooperation between countries and stakeholders.
Water Resilience	Build resilience to water-related risks and shocks.
Water Sustainability	Ensure that water resources are managed sustainably for future generations.

Water Quality Assessment and Monitoring

Water quality assessment and monitoring are essential for ensuring that water resources are protected and that water is safe for use. This involves regular testing of water for various parameters, including pH, turbidity, and the presence of harmful substances. Monitoring also helps to identify trends and detect any changes in water quality over time. Data from monitoring programs can be used to inform water management decisions and to identify areas where further action is needed to improve water quality.

In addition, water quality assessment and monitoring can help to identify sources of pollution and to develop strategies to reduce pollution. For example, if monitoring shows that water quality is declining in a particular area, this could indicate that there is a problem with a nearby factory or farm. By identifying the source of the pollution, it is possible to take steps to reduce or eliminate the pollution. Water quality assessment and monitoring are also important for protecting public health and the environment. Clean water is essential for drinking, and it is also important for the health of ecosystems. By ensuring that water is clean and safe, we can protect both human health and the environment.

Effectiveness Monitoring of Guidelines

Effectiveness monitoring is used to evaluate whether a particular activity, when carried out as planned, results in the desired effect (MacDonald et al. 1991). In the context of rangeland standards and guidelines, effectiveness monitoring will be used to evaluate whether guidelines, if followed, result in either meeting or making progress toward meeting the standards. This type of monitoring will be employed when the other types of monitoring and assessment discussed in this appendix determine that progress is not being made toward meeting standards despite compliance with guidelines. For example, a grazing system is implemented in order to move an allotment toward meeting standards, but after five years of monitoring no progress is detected. The management system will then be evaluated to determine why it is not producing the desired effects and changed accordingly. Utilization and stubble height guidelines provide another example. If, after several years of compliance with these guidelines, allotments are not moving toward meeting standards, these guidelines will be evaluated and supplanted by new ones as appropriate.

Application of New Technology to Monitor and Assess Rangeland Health

Traditional transect-based techniques for measuring vegetation and other indicators of rangeland health provide detailed information at a plot level. Care must be used when using plot-based measurements to characterize large areas because of problems in extrapolating information from small samples to large areas. Methods for assessing rangeland health at multiple scales are currently in their infancy. The use of remotely-sensed data, primarily satellite imagery, will hopefully become a rapid and inexpensive method for measuring rangeland health on larger areas.

One pilot effort recently initiated in the northeastern portion of the EIS area is a cooperative project between BLM, the National Resource Conservation Service, and the Forest Service's Pacific Northwest Experiment Station. It involves the transitioning from traditional Soil Surveys to Resource Surveys, which are multi-resource, map-based surveys of soil, vegetation, water, and wildlife characteristics. Part of the project will include development of a set of tools that will be designed to assess rangeland health at multiple scales and areal extent.

As new methodologies such as this one are developed, they will be applied to monitoring and assessing rangeland health standards within the EIS area.

Monitoring and Assessment Plans

Each Field Office will develop a plan that will direct its monitoring and assessment activities relative to making determinations on whether standards are being met, whether progress is being made toward meeting the standards if they are not currently being met, and whether livestock grazing is the reason for standards not being met. These plans need not be elaborate, but at a minimum they will include a list of the attributes that will be monitored, the monitoring methods that will be used (with reference to a complete description of the method), the allotments that will be monitored using these methods, the frequency at which the allotments will be monitored, and how often interdisciplinary assessments will be made of all the information collected (including monitoring data, qualitative assessment information, inventory data, etc.). A monitoring and assessment schedule will also be included. These monitoring and assessment plans will be made available to all interested parties.

REFERENCES

Effectiveness evaluation is used to determine whether a particular activity, when carried out as planned, results in the desired effect (McDonald et al. 1991). In the context of program standards and guidelines, effectiveness evaluation will be used to evaluate whether guidelines, if followed, result in either more or better program results than the standards. The type of monitoring will be determined by the type of monitoring and assessment discussed in this appendix. Assessment that involves a long-term study of program results will use the type of monitoring discussed in this appendix. For example, a program is implemented in order to have an impact on the health of the community, but after five years of monitoring the program is stopped. The program and system will then be reviewed to determine why it is not producing the desired effects and changed accordingly. Evaluation and similar types of guidelines provide useful examples. If the program is stopped, then guidelines will be evaluated and updated if necessary to reflect the changes.

Application of the Technology to Monitor and Assess Program Health

Traditional health-related activities are measured using the monitoring techniques and other indicators of program health. These include indicators at a program level. Data may be used when using self-report measurements to determine program health. Indicators of program health are indicators in their own right. The use of health-related data, primarily, is to help identify areas that need attention. The use of health-related data, primarily, is to help identify areas that need attention.

The plan often (usually) included in the evaluation portion of the EIS and is a comprehensive program. The plan often (usually) included in the evaluation portion of the EIS and is a comprehensive program. The plan often (usually) included in the evaluation portion of the EIS and is a comprehensive program.

A new methodology will be developed, they will be applied to monitoring and assessing program health and will be used to monitor and assess program health.

Monitoring and Assessment Plan

Each plan often will include a plan that will show its treatment and assessment activities relative to monitoring and assessment. The plan often will include a plan that will show its treatment and assessment activities relative to monitoring and assessment. The plan often will include a plan that will show its treatment and assessment activities relative to monitoring and assessment.

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