

## ACRONYMS AND ABBREVIATIONS

<b>ACEC</b>	Area of Critical Environmental Concern
<b>AD</b>	Administrative Determination
<b>AMP</b>	Allotment Management Plan
<b>AUM</b>	Animal Unit Month
<b>BCWC</b>	Bully Creek Watershed Coalition
<b>BLM</b>	Bureau of Land Management
<b>C</b>	Custodial allotments
<b>CFR</b>	Code of Federal Regulation
<b>DRFC</b>	Desired Range of Future Condition
<b>EA</b>	Environmental Assessment
<b>EIS</b>	Environmental Impact Statement
<b>FARD</b>	Functioning At Risk Downward
<b>FARN</b>	Functioning At Risk Not Apparent
<b>FARU</b>	Functioning At Risk Upward Trend
<b>FFR</b>	Fenced federal range
<b>FLPMA</b>	Federal Land Policy and Management Act
<b>FY</b>	Fiscal year (October 1 through September 30 annually)
<b>GWEB</b>	Governor's Watershed Enhancement Board
<b>HMA</b>	Herd Management Area
<b>HUC</b>	Hydrologic unit code
<b>I</b>	Improve allotments
<b>ICBEMP</b>	Interior Columbia Basin Ecosystem Management Project
<b>ID</b>	Interdisciplinary
<b>IMP</b>	Interim Management Policy
<b>LAMP</b>	Landscape Area Management Project
<b>M</b>	Maintain allotments
<b>MOWC</b>	Malheur-Owyhee Watershed Council
<b>MFP</b>	Management Framework Plan
<b>NEPA</b>	National Environmental Policy Act
<b>NF</b>	Non-functioning
<b>NRCS</b>	Natural Resources Conservation Service
<b>ODA</b>	Oregon Department of Agriculture
<b>ODEQ</b>	Oregon Department of Environmental Quality
<b>ODFW</b>	Oregon Department of Fish and Wildlife
<b>OR</b>	Oregon
<b>PFC</b>	Proper Functioning Condition
<b>PL</b>	Public Land
<b>PV</b>	Private
<b>RAC</b>	Resource Advisory Council
<b>RNA</b>	Research Natural Area
<b>RPS</b>	Rangeland Program Summary
<b>SEORMP</b>	Southeastern Oregon Resource Management Plan
<b>SRH</b>	Standards for Rangeland Health
<b>USDA</b>	U.S. Department of Agriculture
<b>USDI</b>	U.S. Department of the Interior
<b>USFWS</b>	U.S. Fish and Wildlife Service
<b>VDMP</b>	Vale District Monitoring Plan
<b>VRM</b>	Visual Resource Management
<b>WQMP</b>	Water Quality Management Plan
<b>WSA</b>	Wilderness Study Area
<b>WSRS</b>	Wild and Scenic River System

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# **BULLY CREEK LANDSCAPE AREA MANAGEMENT PROJECT (LAMP)**

## **1.0 INTRODUCTION**

The Bully Creek Landscape Area Management Project (LAMP) within the Malheur Resource Area, Vale District, Bureau of Land Management (BLM), represents ground-level resource planning for public land consistent with the management direction of two larger, broad-scale planning documents. These two documents are the *Interior Columbia Basin Ecosystem Management Project (ICBEMP) Eastside Draft Environmental Impact Statement* (USDA/USDI 1997) and the draft *Southeastern Oregon Resource Management Plan/Environmental Impact Statement* (SEORMP/EIS) (USDI/BLM 1998b). When all phases of planning have been completed, there will be three levels of planning documents: (1) ICBEMP covering a multi-state region; (2) SEORMP/EIS at the sub-regional level in southeastern Oregon; and (3) LAMP at the landscape (subbasin) level. This LAMP incorporates the science, best management practices, and intent identified in both upper levels of the broad-scale planning documents. The LAMP does not reiterate the findings or analysis already presented in those documents, but will reference pertinent sections of those documents, as necessary, for supporting text.

Since this LAMP precedes the final publication of ICBEMP (USDA/USDI 1997) and SEORMP/EIS (USDI/BLM 1998b), these are not the decision documents driving BLM's recommendations and subsequent decisions regarding management of natural resource values within the Bully Creek landscape area. As a result, the LAMP relies on the analysis of significant impacts and management direction and is consistent with the *Ironside Management Framework Plan* (USDI/BLM 1980a, 1980b) and the *Rangeland Program Summary* (USDI/BLM 1982). This LAMP is developed only for public land administered by the BLM within the Bully Creek landscape area.

### **1.1 Purpose and Need**

The purpose for developing the LAMP is to (1) assess ecosystem and resource values such as water quality and quantity and riparian, aquatic and upland habitats on a broader watershed-based scale than the traditional allotment and pasture levels; (2) coordinate planning and project development with the Bully Creek Watershed Coalition (BCWC) and the Malheur-Owyhee Watershed Council (MOWC) who have written management plans for private land within the same landscape area; and (3) address known criteria in one document to build efficiency into the planning process and focus limited staffing and funding to on-the-ground actions.

The need for developing the LAMP is to comply with laws, mandates, regulations, policies and Executive Orders in directing multiple-use management on public land. Among these directives is the need to (1) develop Water Quality Management Plans (WQMPs) and meet Oregon Department of Environmental Quality (ODEQ) standards for water quality (ODEQ 1997) in compliance with the Clean Water Act; (2) implement the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management* (SRH) (USDI/BLM 1997); and (3) conduct allotment evaluations and address livestock grazing through

the Allotment Management Plan (AMP) process. In addition, several broad-scale planning documents (ICBEMP, SEORMP/EIS), once finalized, are expected to contain specific requirements for their implementation including *Subbasin Review and Ecosystem Analysis at the Watershed Scale* (USDA/USDI 1997).

Table 1 shows the components and criteria of various plans and evaluations addressed by this LAMP.

**Table 1. Components and Criteria of Various Plans and Evaluations addressed in the LAMP**

WATER QUALITY MANAGEMENT PLAN	ALLOTMENT EVALUATION RANGELAND HEALTH ASSESSMENT	SUBBASIN REVIEW	ECOSYSTEM ANALYSIS AT THE WATERSHED SCALE
Condition Assessment Problem Description	Characterize Allotments, Authorized Use  Describe Current Resource Conditions	Characterize the Subbasin	Characterize the Watershed  Describe Current and Reference Conditions
Identify Goals/Objectives	Identify Standards/Objectives/Issues	Identify Issues at Broad and Smaller scales, and Subbasin Scale	Identify Key Issues and Questions
Identify Responsible Participants  Public Involvement	Involve Permittees/Public	Form Interagency Team	Interdisciplinary Team/ Interagency Team Tribes/State/Local Govt/Public
Monitoring /Evaluation	Synthesize/Interpret Data  Determine if: Rangeland Standards, Management Objectives are Being Met  Determine Cause of Non-attainment		Synthesize/ Interpretation of Information
Develop Recommendations	Develop Recommendations		Develop Recommendations
Timeline for Implementation		Prioritize Activities	Priority Setting

Source : Bully Creek Identification Team, Malheur Resource Area, Vale BLM District, 1998.

Within the landscape area, there are 12 I (improve) and M (maintain) allotments that have approved AMPs. The LAMP would describe new grazing schedules for these 12 allotments plus the 8 C (custodial) allotments within the LAMP area.

In accordance with the grazing regulations (43 CFR 4180), BLM is required to implement the SRH and

Guidelines for Grazing Management as developed for Oregon and Washington (USDI/BLM 1997) by the Southeast Oregon Resource Advisory Council (RAC). The RAC identified five standards (see Table 2) that define minimum resource conditions to be achieved and maintained for public rangelands.

**Table 2. Standards for Rangeland Health**

Standard 1	Watershed Function- Uplands	Upland soils exhibit infiltration and permeability rates, moisture storage and stability that are appropriate to soil, climate and landform
Standard 2	Watershed Function Riparian/Wetlands Areas	Riparian-wetland areas are in proper functioning physical condition appropriate to soil, climate and landform.
Standard 3	Ecological Processes	Healthy, productive, and diverse plant and animal populations and communities appropriate to soil, climate and landform are supported by ecological processes of nutrient cycling, energy flow and the hydrologic cycle.
Standard 4	Water Quality	Surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.
Standard 5	Native, T&E Locally Important Species	Habitats support healthy, productive and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate and landform.

Source : (USDI/BLM 1997)

The Malheur Resource Area prioritized and grouped grazing allotments in the Resource Area into nine landscape areas based upon resource issues, conditions and concerns. This LAMP is one in a series of nine to be developed for public land within the Malheur Resource Area. Whenever feasible, watershed and subbasin boundaries were combined in delineating a landscape boundary. This prioritization and grouping has been reviewed by the RAC and interested publics and will allow for SRH assessment and implementation for all allotments within the Resource Area within a 10-year time frame. Assessment means the analysis, synthesis and interpretation of information, including monitoring data, to characterize the health of an allotment, pasture or other management unit and determine if these units are meeting or making significant progress toward meeting standards and are conforming to guidelines. The assessment is similar to the allotment evaluation as previously used in the rangeland management program to evaluate whether or not grazing management is meeting resource objectives. Assessment of a landscape area is a two-step process; step one is the data collection and step two is for analysis and determination of conformance with SRH. The assessment process in the Bully Creek landscape area began in 1998. The data summaries, analysis and determinations are a part of this LAMP as summarized in Appendix C. Implementation of SRH involves the following step-down process:

- evaluate the desirability of existing vegetation trends and condition
  - conduct assessments to determine if areas meet, make significant progress toward or fail to achieve SRH;
    - if failing to achieve SRH, determine if current grazing is a significant factor;

- c if current grazing is a sign. factor, take appropriate action by modifying terms and conditions of permits, authorizations and/or activity plans.

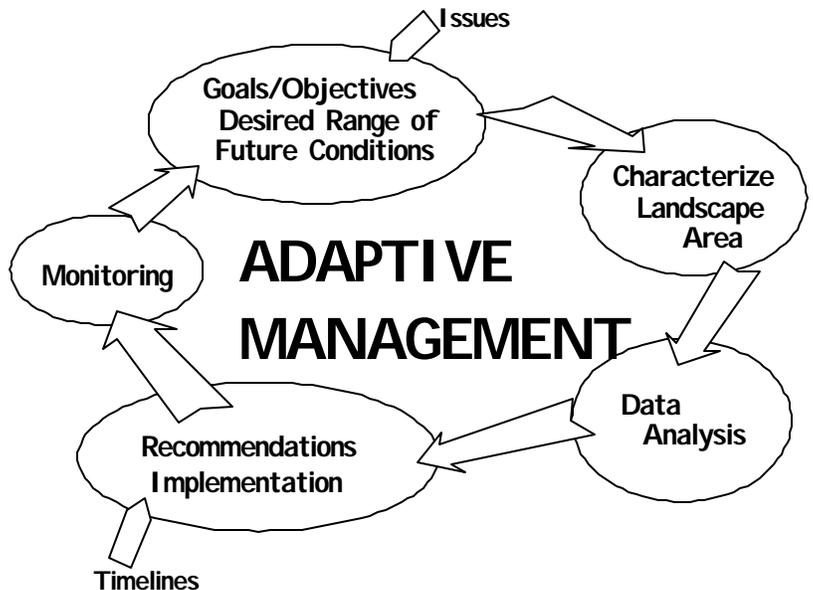
## 1.2 Description of the Landscape Area

In general, landscape areas are defined by combining subbasin and grazing allotment boundaries with similar issues of concern. Where allotments straddled subbasin boundaries, the allotments were included or excluded from the landscape area, depending upon issues and other management considerations. Issues of concern for the landscape area were identified in cooperation with ranchers and other interested publics. Issues identified at the landscape level would be addressed at the allotment level rather than the watershed scale. Management actions applied at this allotment level are more appropriate for rangeland improvement.

The Bully Creek landscape area is located northwest of Vale, Oregon. It includes eight watersheds in the Bully Creek subbasin and a portion of one watershed in the Lower Malheur subbasin. There are 20 grazing allotments comprising 108 pastures managed by the BLM within the landscape area (see Table 5). The landscape area consists of 386,300 acres, of which 268,800 acres are public land (see Appendix B, Map B-1).

## 1.3 Relevant Planning Documents

The *Scientific Assessment* (USDA/FS 1996a) and *Summary of Scientific Findings* (USDA/FS 1996b) from the draft ICBEMP (USDA/USDI 1997) provided the broad-scale science used during the landscape area assessment. This process was aided by incorporating the findings from the *Bully Creek, Willow Creek and Lower Malheur River Subbasin Review* (USDI/BLM 1998a) and the draft SEORMP/EIS (USDI/BLM 1998b). The *Bully Creek Watershed Assessment and Strategy* (BCWC et al. 1997) and the draft *Malheur Basin Watershed Action Plan and Assessment* (MOWC 1998), two documents addressing watershed management activities on private land within the Bully Creek subbasin, were consulted and referenced during development of the LAMP. The guidelines from the draft and final *Ironside Grazing Management Environmental Impact Statement* (USDI/BLM 1980a, 1980b) and the *Rangeland Program Summary, Record of Decision for the Ironside EIS Area* (USDI/BLM 1982) have also been consulted. At present, management actions are addressed under the *Malheur Resource Area Management Framework Plan*, (USDI 1979).



## 1.4 Adaptive Management

Adaptive management, as applied in the LAMP, can be depicted in the accompanying illustration. This is a continuing process that ensures management strategies will be adjusted to meet goals and objectives through planning, implementation, monitoring and evaluation. The process emphasizes results and makes adjustments when needed. A continual feedback loop based on new information allows for mid-course corrections to standards, guidelines and underlying assumptions in order to meet planned goals and objectives. It also provides a model for adjusting goals and objectives as new information develops.

## 2.0 GOALS AND RESOURCE ISSUES

Seven broad goals were identified for the Bully Creek Landscape area which relate directly to goals described in large- and mid-scale planning documents (draft ICBEMP (USDA/USDI 1997), draft SEORMP/EIS (USDI/BLM 1998b) and the two watershed assessments which address private land (BCWC et al. 1997; MOWC 1998). The broad goals which serve as a link between the larger adjoining ecosystems and the landscape area are listed below and have been addressed during various public meetings:

- C Improve BLM's ability to manage natural resources on a landscape basis.
- C Sustain, and where necessary, restore priority plant and animal habitats including riparian areas, priority watersheds and rangeland ecosystems.
- C Emphasize the control of noxious weeds and undesirable non-native plants.
- C Provide diverse recreational and educational opportunities within the capability of the ecosystems in the landscape area.
- C Reduce hazardous fuels to improve the health of vegetation communities.
- C Manage natural resources consistent with treaty and trust responsibilities to American Indian tribes.
- C Provide a predictable, sustained flow of economic benefits within the capability of the ecosystems in the landscape area.

Stepping down from the broad goals, eight resource issues were addressed in the overall assessment of the landscape area. Although the issues are described separately, they are inherently linked to each other in terms of ecosystem management. The resource issues were identified through a series of scoping meetings, in coordination with interested and affected publics and in reviewing data and other existing and draft planning documents. The following eight issues with their specific goals and descriptions address the seven broad LAMP goals described above. They are not listed in priority order.

### Issue 1: Water Quality/Quantity

**Issue:** BLM manages streams or stream segments where the current water quality doesn't meet the State of Oregon's water quality standards developed to be in compliance with the Clean Water Act.

**Description:** In the lower part of the landscape area, Bully Creek has documented algae growth and eutrophic conditions resulting in diurnal fluctuations in dissolved oxygen and pH. Bacteria has been documented in Bully Creek from Westfall to the reservoir, and high nutrient levels and possible sediment, temperature and habitat issues are also suspected throughout the area. Other streams are deficient for water temperature, pH, fecal coliform and other factors.

**Goals:** Improve water quality and meet state standards in compliance with the Clean Water Act. Increase natural upstream water storage for late-season use and more consistent releases for downstream needs.

## **Issue 2: Vegetation Composition, Structure, Diversity and Productivity**

**Issue:** Current vegetation composition, structure, diversity and composition levels do not meet the BLM's SRH and are deficient in portions of the landscape area in meeting the forage requirements of livestock and wildlife. Portions of the landscape area also lack the cover necessary to stabilize the soils, slow surface runoff, control erosion and slow the invasion of undesirable plants.

**Description:** Upland vegetation provides the foundation for many resource uses of public land. Structurally and vegetatively diverse communities provide habitat for wildlife and forage for domestic animals. They also contribute to species diversity across the landscape. A healthy cover of perennial vegetation stabilizes the soil, maintains infiltration of precipitation, slows surface runoff, controls erosion, ensures clean water entering adjacent streams and enhances the visual quality of public land. Forage produced on public land is made available to grazing wildlife and livestock.

**Goals:** Restore, maintain or improve the diversity, distribution and abundance of native plant species and communities, as well as desirable introduced plant communities. Provide for their normal function in soil stabilization and nutrient, water and energy cycles. Maintain or restore connections between similar habitats to reduce fragmentation of specific communities.

## **Issue 3: Fisheries/Aquatic Habitat**

**Issue:** Portions of streams capable of supporting fish and other aquatic species currently can not due to poor riparian habitat conditions affecting water quality standards for temperature, sediments and pollutants.

**Description:** The condition of fisheries habitat is related to riparian/wetland areas and stream channel characteristics. Proper functioning riparian vegetation moderates water temperatures, adds bank structure to reduce erosion and provides overhead cover for fish. Floodplains with intact plant communities dissipate stream energy and store water for later release. Correct stream channel characteristics provide rearing areas for juvenile fish. Water quality factors such as temperature, sediment and dissolved oxygen affect fisheries habitat.

**Goals:** Restore, maintain or improve habitat to provide for diverse and self-sustaining communities of fish and other aquatic organisms. Manage habitat to maintain distribution of native species

allowing for natural dispersal and movement between watersheds and promote species interactions that are part of the ecosystem processes while providing opportunities for recreational fishing.

#### **Issue 4: Riparian/Wetland Areas**

**Issue:** Portions of perennial and intermittent streams and associated riparian vegetation are not functioning properly according to BLM SRH.

**Description:** Riparian/wetland areas are locally important since many watersheds in the landscape area currently lack perennial streams. Those existing perennial and intermittent streams are limited in their potential to improve due to past and current grazing practices, increased elk populations, topography, shallow soils, flash floods and low precipitation. Many streams with perennial or intermittent flow do not provide adequate vegetation to maintain and/or support a properly functioning riparian habitat. Streams supporting redband trout and other native fish require proper functioning riparian ecosystems to meet state water quality standards for temperature, sediment and pollutants.

**Goals:** Ensure riparian/wetland areas achieve, at a minimum, proper functioning condition (PFC) to dissipate energy from high water flows, reduce erosion, improve water quality, filter sediment, improve floodwater retention and groundwater recharge, provide habitat for fish and wildlife populations and support greater biodiversity.

#### **Issue 5: Weeds**

**Issue:** Class A weed infestations continue to expand within the LAMP area, deteriorating resource values and hindering the reestablishment of native plant species.

**Description:** Public and private land within the Bully Creek landscape area exhibit moderate to high vulnerability to weed invasions. Weed dispersal has been intensified by both human and environmental factors (vehicles, road system, livestock, wildlife, flooding, irrigation water, etc.). Establishment and dominance of weedy species typically results in deteriorated resource values. Management actions which resolve other resource issues (prescribed fire or juniper invasion) are complicated by the increased short- and long-term susceptibility of treated land to weed invasion.

**Goal:** Reduce the occurrence of new noxious weed infestations across the landscape and reduce or eliminate existing populations of Class A weeds.

#### **Issue 6: Wildlife Habitat**

**Issue:** Portions of the LAMP area do not meet the SRH for wildlife lacking the appropriate habitat composition and diversity to meet the year-long needs of wildlife.

**Description:** Many habitat types were and continue to be impacted by historic and ongoing activities such as grazing practices, agricultural clearing, reservoirs, fire management and human

development. Today, habitat degradation of big game winter range forces deer, pronghorn and elk to move onto private agricultural land resulting in economic losses. Several species currently on Federal and state lists, including sage grouse, occur within the landscape area. BLM cooperates with ODFW, USFWS, adjoining landowners, livestock permittees and others to maintain or improve wildlife habitat for all species.

**Goals:** Maintain or restore habitat for healthy, productive and diverse populations of wildlife, ensuring habitat requirements for viable populations are maintained and not adversely impacted by management actions. Emphasize management of Federally listed, proposed and candidate species, state listed species, BLM sensitive species and species protected by international treaties and species used for recreational and subsistence activities. Work with Oregon Department of Fish and Wildlife (ODFW) to develop population goals for resident species consistent with habitat potential and with U.S. Fish and Wildlife Service (USFWS) on habitat management for Federally listed, proposed and candidate species.

### **Issue 7: Juniper Invasion**

**Issue:** Juniper has expanded beyond pre-fire suppression patterns decreasing forage and habitat for wildlife and livestock and potentially increasing soil erosion.

**Description:** BLM and other collaborators are concerned with expanding juniper acreages, increased erosion potential, loss of moisture in deeper soils and decreased rangeland forage and habitat for sage grouse, pronghorn and livestock. Juniper removal is complicated by control costs and an uncertain amount of economic benefit. Removal often results in increased weed invasion and erosion potential following fire, mechanical control or chemical application. In addition, there are unknown effects from some control activities to wildlife populations such as sage grouse (due to a loss of shrub communities) and big game species which are of high value to local residents.

**Goal:** Reduce juniper in areas where it has expanded beyond pre-suppression distribution.

### **Issue 8: Recreation**

**Issue:** Increased numbers of people are using the public land for recreation straining some resources and causing conflicts with traditional uses.

**Description:** Within the landscape area, local people, including the Tribes, feel strongly about the importance of public land for recreation and subsistence fishing/hunting. The close proximity of Bully Creek Reservoir, a large irrigation reservoir on non-BLM land, allows easy access to trout and warm water fisheries. Of lower value are existing rangeland stockponds and small streams on public land. Hunting big game and upland game birds is also highly valued. Common species include mule deer, elk, pronghorn, chukar and sage grouse on public land and pheasant, quail and waterfowl on private land. Observing wildlife is a growing interest with focus on big game and bird species.

**Goals:** Create diverse recreational opportunities for local and regional publics. Balance recreation and subsistence opportunities for all users, while restoring and protecting natural resources and ecosystem health.

### **3.0 DESIRED RANGE OF FUTURE CONDITIONS**

The Desired Range of Future Conditions (DRFCs) for the landscape area are described in the draft SEORMP/EIS (USDI/BLM 1998b). The DRFCs portray the land, resource and socio-economic conditions expected in 50 to 100 years as the LAMP objectives (described below) are achieved. The intent of these objectives is to move the ecosystem and its components towards DRFCs where there are identified deficiencies or to maintain current conditions at DRFCs.

### **4.0 LAMP OBJECTIVES**

There are five primary objectives for the Bully Creek LAMP which address the prominent resource concerns within the landscape area. Those issues and resources not specifically addressed by a primary objective (e.g., special status species) are covered by habitat needs, or by more site-specific objectives applied on an allotment and/or pasture basis. Planned results are expected within a 10-year time period. Achieving the objectives would be measured by maintaining static trends (at a minimum) in habitats meeting the SRH and/or obtaining upward trends in habitats not meeting these standards.

#### **RIPARIAN/WETLAND VEGETATION COMMUNITIES**

Maintain (if meeting SRH) or improve (if not meeting SRH) riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian/wetland areas and achieve water quality standards for beneficial uses as established by ODEQ.

#### **INDIVIDUAL SEEDINGS**

Based on site-specific circumstances, one or more of the following objectives would be applied to a seeded area:

1. Improve the productivity and vigor of the non-native seeding while maintaining the structural composition and improving species diversity of vegetation communities consistent with DRFCs identified in the land use plan.
2. Improve the productivity and vigor of the non-native seeding while improving the structural composition and improving species diversity of vegetation communities consistent with DRFCs identified in the land use plan.
3. Maintain the productivity and vigor of the non-native seeding while maintaining the structural composition and improving species diversity of vegetation communities consistent with DRFCs identified in the land use plan.
4. Improve the ecological condition of the non-native seeding by implementing actions to enhance the dominance of native perennial grass species while maintaining the structural composition and improving species diversity of vegetation communities consistent with DRFCs in the land use plan.

## **UPLAND VEGETATION COMMUNITIES**

Maintain (if meeting SRH) or improve (if not meeting SRH) the health, structure and diversity of upland native vegetation within site capabilities.

## **WEEDS**

Control proliferation of existing noxious weeds on an annual basis.

## **WILDLIFE**

Maintain (if meeting SRH) or improve (if not meeting SRH) wildlife habitats, ensuring spacial distribution of native plant communities and animal habitats across the landscape with a density and frequency of species suitable to ensure reproductive capability and sustainability.

Specific allotment and pasture management objectives are located in Appendix C.

## **5.0 CHARACTERIZATION OF THE LANDSCAPE AREA**

### **5.1 Topography/Climate**

The Bully Creek Landscape Area varies from 2,500 feet in elevation near Bully Creek Reservoir to 6,400 feet on Cottonwood Mountain. The fringe of mountains to the west, including Ironside Mountain and Castle Rock, collects moisture deposited in the form of snow and rain from fall through early spring, resulting in mesic conditions at high elevations. Annual precipitation ranges from 14 inches in the western portion of the landscape area to 8 inches at the eastern edge, reflecting the more arid conditions at low elevations.

### **5.2 Air Quality**

Air quality in the landscape area is good (airshed rating is Class II) with prevailing westerly winds. Dust and smoke occasionally impact air quality in the landscape area. Additional information related to climate and air resources is described in the draft SEORMP/EIS (USDI/BLM 1998b).

### **5.3 Geology**

The landscape area is situated within portions of three physiographic provinces: (1) the Blue Mountain Province in the north and northwest; (2) the Basin and Range Province in the northeast, central, and southern regions; and (3) the Snake River Plain Province in the southeast (Orr et al. 1992). Dominant rock types found over approximately 60 percent of the area consist of Miocene and Pliocene basalt flows and pyroclastic deposits (Walker and MacLeod 1991). This volcanic activity included andesitic materials on the eastern end of the landscape area. Substantial amounts of Miocene-Pliocene rhyolitic material are also found, including a large domal complex in the southwestern portion of the area in the vicinity of Swamp and

Gregory Creeks. A large deposit of Pliocene tuffaceous lake sediments is concentrated in the central region near Westfall. These deposits include tuff, breccia, fluvial tuffaceous sandstone, siltstone and mudstone, air-fall and water deposited vitric ash, fluvial sandstone, conglomerate and diatomite (Brooks and O'Brien 1992). Some of these sediments are capped by basalt flows and pyroclastic deposits or show evidence of hydrothermal activity. In addition to igneous formations, the extreme western end of the area is made up of pre-Tertiary metamorphic formations. The metamorphic rocks are mostly shale with high amounts of lime and silica.

#### **5.4 Energy and Mineral Resources**

Energy and mineral resources known or suspected to occur in the landscape area consist of geothermal resources, diatomite, hot-springs gold/mercury, porphyry copper-gold-molybdenum, vein gold, uranium, oil, gas and a variety of mineral materials. Intermittent mineral exploration has occurred in the area for over 80 years, mainly involving attempts to develop the low quality diatomite deposits situated in the southeastern portion of the area between Harper and Westfall. There has been little interest in any mineral resources other than three deep (>1,000 feet) geothermal exploration wells near Bully Creek Reservoir, "paver" rocks from Cottonwood Mountain and the occasional removal of small quantities of gravel from a BLM-designated community pit along Indian Creek.

At present, there are over 100 mining claims within portions of five allotments (see Appendix A, Table A-1). All have been located for diatomite and are contained in four separate blocks. Active exploration/development is occurring on only one block of claims, the E/B group, which is operating under a current Notice of Operations (less than 5 acres of surface disturbance); at present, only the Bully Creek Seeding/Allotment #2 is affected. Four other Notices are currently on file with BLM; three have been abandoned, including the claims, and the fourth has been inactive for several years. Given the past mining history of the landscape area, energy and mineral exploration/development activity is not expected to change significantly in the future.

#### **5.5 Soils**

Soil information in the landscape area, especially on the higher elevation rangeland, is limited. Soil surveys have focused mainly on irrigable land (Lovell et al. 1969; Cox and Stoneman 1977; Malheur County Planning Office 1978; Lovell 1980), and a third order survey has yet to be completed. Other planning documents use existing surveys in combination with professional observations to derive soil information for the entire area (Malheur County Planning Office 1981; BCWC et al. 1997; MOWC 1998). Soils in the area have derived mainly from sedimentary deposits and volcanic activity (Lovell et al. 1969). Sedimentary deposits weather into sandy- or fine-textured, highly erosive soils. Volcanic rocks weather into various textured soils including some which are sticky and fine-textured. The arid climate and high silica and calcium carbonate content of many of the soils creates a cemented or indurated layer or hardpan (Soil Survey Staff 1998). Expression and thickness of these hardpans increases with distance from a stream and floodplain. In general, more soil development tends to occur on the uplands than in the floodplains and terraces.

Climate influences soil moisture regimes which vary from aridic (Soil Survey Staff 1998) conditions in lower

elevations (east) to xeric conditions in higher elevations (north and west). Soil temperatures range from mesic in the east, to frigid in the west. Climate also influences the soil types found on: (1) floodplains, alluvial deposits and terraces; (2) grass-shrub uplands, lava plateaus and dissected sediments; and (3) forested uplands (Lovell et al. 1969; Malheur County Planning Office 1978).

## **5.6 Vegetation**

The landscape area lies within the sagebrush steppe vegetative zone within the northernmost fringe of the Owyhee Uplands physiographic province and the southernmost extent of the Blue Mountain physiographic province (Franklin and Dyress 1973). A rich mosaic of vegetative types is present within this sagebrush-dominated landscape.

### Upland Vegetation Types and Patterns

In 1977, a partial soil/vegetation inventory was conducted by BLM on public land within the landscape area (USDI/BLM 1977). Soil and vegetation were classified based upon soil depth, moisture, aspect, slope and dominant grass, shrub and tree species. Identified vegetation types reflect a gradient of climate and soil from arid salt desert and annual grass communities at low elevations near Westfall to mesic, partly forested areas near the headwaters of Bully Creek (see Appendix A, Tables A-2 and A-3). This inventory was general and, for example, did not distinguish between stiff sagebrush and low sagebrush community types on similar soils and topography. The 1977 inventory was supplemented with on-site observations during the 1998 SRH assessment to identify small but important plant communities, such as the squaw apple community within the Droughty Rolling Hills and Droughty North Exposure vegetation types.

Dominant plant species found on upland sites are listed in Appendix A, Table A-4. A complete list of Vale District plants is on file at the BLM office. The relative amounts and mix of species vary, based on soil type and depth, precipitation and historic use. Upland sites in degraded condition are often characterized by having (1) few to none of the larger native bunch grasses; (2) high densities and cover of big sagebrush, gray rabbitbrush or green rabbitbrush; (3) high densities of exotic species such as cheatgrass, bur buttercup, tumble mustard, Russian thistle or whitetop; and (4) Western juniper invasion in more mesic areas (see Appendix B, Map B-2).

### Riparian and Wetland Vegetation

Inventories were conducted along most major drainages in 1997 and 1998 to locate riparian areas and assess their condition based on SRH (see Appendix B, Map B-3). Stream reaches in recovering or PFC typically support tree species such as willow, quaking aspen, cottonwood and water birch or shrubby species including coyote willow, golden currant, mock orange and wild rose. Properly functioning riparian areas also contain several species of native grasses, sedges and rushes. There are stream segments that have lost or are losing native vegetation, including shrub and aspen communities in high elevations. Some riparian areas are being invaded by noxious weeds and other exotic species, indicating disturbed or nonfunctioning stream systems. A comprehensive list of riparian vegetation found in the landscape area is on file at the BLM Vale District Office.

## Modified Vegetation Communities

During the 1960's, the BLM initiated the Vale Project which proposed specific treatments for halting range deterioration (Heady and Bartolome, nd). Prior to 1962, no more than 0.1 percent of the rangeland in the Vale District (6.5 million acres) had received range improvement treatments which included about 30,000 acres of brush control by spraying, plowing and seeding and seeding after wildfires. The selection of sites for treatment was based upon the potential for improvement. Between 1962-1973, approximately 16,500 acres within the landscape area were sprayed with herbicides to kill sagebrush and release native grasses or were seeded with crested wheatgrass. Sagebrush has reestablished to varying degrees in all crested wheatgrass seedings in the landscape area; however, most of the treated areas still have reduced perennial grass and forb understories. Other modified communities include high elevation areas where fire suppression has resulted in western juniper expansion onto range sites. Riparian communities have lost many aspen and willow stands. Reason for these losses include the encroachment of western juniper and exotic weeds as a result of heavy grazing by livestock and wildlife, reduced fire frequency and downstream agricultural practices affecting the hydrologic function of streams.

## Special Status Plant Species

Few comprehensive plant inventories have been conducted in the landscape area. Several minor inventories were concentrated in the diatomaceous ash deposits between Harper and Westfall. There are two BLM tracking species listed in the Oregon Natural Heritage Program's guide (1997): the ochre-flowered buckwheat and Malheur cryptantha. A new species of groundsel may have been discovered in 1998 in Mesa Pasture of Allotment #2. No proposed or listed threatened or endangered plant species and no Federal candidate plant species being considered for listing under the Endangered Species Act have been identified.

## **5.7 Weeds**

Although a variety of weeds occur in the landscape area, an extensive inventory has not been conducted to determine the number of species or the extent of weed invasion. Many annual weeds have become naturalized in the landscape area and are beyond the scope of any control effort. Russian and spotted knapweed are the species with the highest priority for control known to occur in the area. Russian knapweed is well established near Hanna Station and Becker Ranch and is radiating along the network of secondary roads. Small isolated sites with spotted knapweed have been found along the road system from Sheep Rock Springs to Puckett Creek and along South Bully Creek Road. Whitetop is considered a low priority noxious weed due to its abundance; however, it is controlled when found in isolated spots within previously non-infested areas. This species is well established in riparian and upland sites at all elevations, especially around ranches and old homesteads. A list of weed species in and surrounding the landscape area is found in Appendix A, Table A-5. Noxious weed management guidelines are found in various environmental documents and statewide strategies (USDI/BLM 1985, 1987, 1989, 1994).

## 5.8 Fire History and Management

Fire regimes within the landscape area have been largely influenced by weather patterns, available fuel, and the presence of people during the critical fire season. The amount of available fuel is the only factor directly or indirectly impacted by BLM management actions. Management practices, such as wildfire suppression and livestock grazing, change vegetation distribution, composition and structure on both rangeland and forested sites and alter natural fire regimes.

Decreased fire frequency at high elevations in the landscape area has caused conifer encroachment at forest-steppe boundaries and higher tree density in former savanna-like stands of juniper and ponderosa pine. The density of shrubs in mountain big sagebrush communities has increased at the expense of grasses and forbs. Similarly, reduced fire frequencies at mid-elevations resulted in higher coverage of Wyoming big sagebrush and reduced grasses and forbs in the understory. Western juniper has increased in some of these mid-elevation areas, but at a slower rate due to the reduced available moisture. In contrast, increased fire frequency in low elevations has resulted in the dominance of exotic annual grasses such as cheatgrass.

From 1980 through 1998, four wildland fires have occurred in the landscape area, burning a total of 8,000 acres (see Table 3). The fire which burned in 1997 overlapped a portion of the 1989 burn. One prescribed burn was conducted in October, 1983, in the Richie Flat Allotment/North Ridge Pasture, where 360 acres of Wyoming big sagebrush burned in a patchy configuration. An Environmental Assessment (EA) has been completed for a prescribed burn in East and West Crow Creek Pastures of the Rail Canyon Allotment (EA-OR-030-980014 - BLM 1998), with implementation of this multi-year project in 1998.

**Table 3. Wildland and Prescribed Fires in the Bully Creek Landscape Area, 1980 - 1998.**

Year	Type of Burn	Acreage	Allotment(s)/Pasture(s) Impacted	Allotment/Pasture #
1983	prescribed	360	Richie Flat/North Ridge	10214/02
	wildland	1,653	Willow Basin/Willow Basin Creek Willow Basin/Bully Creek Willow Basin/Fenced Federal Range	10222/07 10222/08 10222/11
1989	wildland	2,268	Allotment #2/Wildhorse	10201/04
1990	wildland	1,823	Allotment #2/Mountain Boston Horse Camp/Boston Horse Camp	10201/08 00113/01
1997	wildland	2,256	Allotment #2/Wildhorse Bully Creek/Bully Creek	10201/04 00132/01

Source : Bully Creek Identification Team, Malheur Resource Area, Vale BLM District, 1998.

## 5.9 Hydrology

Drainages in the upper elevations of the landscape area are characterized by steep mountainous side slopes, narrow canyons and high gradient streams. Low elevations are characterized by rolling hills, broad alluvial

bottoms and low gradient streams. Of the 940 estimated perennial, intermittent and ephemeral stream miles in the landscape area, 535 miles (57 percent) occur on public land.

Stream flows, water quality and bank stability have been substantially modified due to a combination of factors such as fire suppression, roads, livestock, wildlife and non-native plant invasions. The lack of riparian vegetation and bank stability prevents stream systems from functioning properly and creates systems that cannot dissipate energy, filter sediment, retain soil-water and/or recharge groundwater. Streams that are not functioning properly continue to unravel, resulting in increases of water temperatures and soil erosion while decreasing vegetative productivity, habitat and water quality.

Two major peak flows from snowmelt occur between February and April, generally with the first peak flow larger but of shorter duration than the second. There are frequent summer peak flows that occur in direct response to scattered summer storms. Properly functioning streambank vegetation and stream channel characteristics are important in controlling these peak flows. High flows within streams that are not properly functioning can lead to channel incision, bank deterioration, sediment transport and increased peak flows. Many of the streams are incised as a result of the loss of soil, riparian vegetation and stream channel characteristics which have lessened the ability of the floodplain to store water.

Decreased watershed flows during mid-to-late summer can generally be attributed to climatic conditions, historic lowering of the alluvial water tables, irrigation diversions, stream bank deterioration, and removal and continued absence of riparian vegetation. The main limiting factor for lower summer flows is reduced water storage in alluvial bottoms throughout the entire system. Reduced storage occurs in all drainages that can be characterized as containing deeply incised stream channels, floodplains and stream terraces which are discontinuous and unstable and where xeric vegetation has encroached upon subirrigated valley bottoms.

## **5.10 Water Quality**

All waters within the landscape area that originate on public land eventually flow through private land before entering the Snake River. The quantity of water generated on public land is limited by annual precipitation, but the utility of what collects can be improved by land management practices. Water quality/quantity is expected to improve as upland and riparian ecosystems improve.

The following is a list of 303(d) listed streams as determined by ODEQ. Further information on the listing process is available in the SEORMP.

- Bully Creek, Bully Creek Reservoir to Westfall, dissolved oxygen, pH
- Pole Creek, Mouth to Headwaters, temperature

Long-term water quality data are sparse for the entire landscape area. Several streams in the landscape area have been placed on the 303(d) list. This list is a result of the 1972 Clean Water Act whereby the State of Oregon is required to identify water bodies that do not meet water quality standards. Severe water quality, resulting from non-point source pollution, has been identified in Bully Creek from Westfall to the Bully Creek Reservoir, and Pole Creek (Oregon Statewide Assessment of Nonpoint Sources of Water

Pollution Report, 1988). (see Table 4). This rating impacts the beneficial uses determined for this area; specifically water quality, fisheries, aquatic habitat, and water contact recreation. Although water quality impacts have been identified for only two stream segments, other streams in the landscape area exhibit all or many of the same non-point source pollution problems.

**Table 4. Non-point Source Pollution Problems, Probable Causes and Identified Uses**

Non-point Source Pollution Problems	Probable Causes	Identified Uses Resulting in Probable Causes
Excessive levels of nutrient loading, turbidity, sediment, and streambank erosion.	-Surface erosion. -Decreased surface permeability. - - Elimination of thermal cover along streams.	General Uses: water withdrawal, base flow depletion, reservoir storage, physical alterations of the channel (channelization and/or wetland drainage), pumping of aquifers, bank filling and dredging, and placement of instream structures.
Decreased levels of dissolved oxygen and stream flow.	-Structures on shores and streambanks. -Human or animal traffic (roads and trails). -Decline in alluvial water. -Changes in stream flow patterns.	Waste Disposal & Chemical Use: chemical application and irrigation return flows.
Insufficient stream structure.		Land Uses: livestock grazing, irrigated agriculture, and residential & commercial construction.

Source : (USDI/BLM 1997)

### 5.11 Wildlife Species and Habitat

Common wildlife species within the landscape area include mule deer, pronghorn, elk, black-tailed jackrabbits, sage grouse, meadow larks, red-tailed hawks and barn swallows. Many species such as black-tailed jackrabbits remain year-long in one area. Others, such as mule deer, elk, sage grouse and pronghorn make seasonal elevation changes in response to weather conditions (see Appendix B, Map B-4). Some species, such as barn swallows, breed locally but travel to Central or South America for winter.

BLM’s management of wildlife species focuses on habitat needs and conditions. Many habitat types within the landscape area were severely impacted by historic activities such as livestock grazing, agricultural clearing, reservoirs, roads, and fire management. Some wildlife habitats are still being disrupted or diminished by ongoing activities. When this happens, as is currently the case with diminished winter big game habitat, mule deer and elk move off public land onto private agricultural property, resulting in economic losses to landowners. The BLM works with ODFW, adjoining landowners, livestock permittees and others to maintain or improve habitat for each species. Management objectives for each big game unit have been established by ODFW for mule deer and pronghorn. Forage demand for these big game species in each grazing allotment is described in the draft SEORMP/EIS, Appendix E (USDI/BLM 1998b).

#### Special Status Animals

Special status animals likely to occur within the landscape area are listed in Appendix A, Table A-6. These

species are given priority consideration in BLM management decisions. BLM is required by law to manage land to recover populations of species listed as endangered or threatened and to manage all species to avoid the need for future listing under the Endangered Species Act.

Columbia spotted frogs, a Federal candidate species, are present in the upper part of several riparian areas. They require special habitat conditions such as deep perennial pools and either abundant emergent vegetation or floating algae mats. Bald eagles regularly winter at Bully Creek Reservoir and along the lower sections of Bully Creek. Generally, they require large trees or high cliffs for roosting, a population of either waterfowl or medium-sized fish for food, and freedom from frequent disturbances.

Due to long-term population declines in sage grouse numbers across the West the need for additional Federal protection of this species currently is being reviewed. Published studies have documented that nesting sage grouse require patchy sagebrush with a canopy cover ranging between 15-30 percent and a herbaceous understory canopy cover ranging between 3-10 percent to reduce predation rates (Wakkinen, 1990; Connelly et al, 1991; Gregg, 1992; DeLong et al, 1995). In addition to the canopy cover requirements, these studies have also documented the need for the herbaceous understory to range between 7 to 9 inches tall, as measured during the summer nesting season (March through May). Pastures within 2 miles of sage grouse leks would have these nesting habitat management standards applied.

During winter, sage grouse feed exclusively on sagebrush leaves depending on tall sagebrush that is available above the snow for forage and protection from winter weather and predators. The BLM applies the Western States Sage Grouse Guidelines (1974, 1982) to activities that could affect sage grouse habitat. Appendix B, Map 5 shows the location of wintering bald eagle habitat and the known sage grouse leks within the landscape area.

## **5.12 Fisheries and Aquatic Habitat**

Fisheries habitat includes perennial and intermittent streams and lakes that support fish through at least a portion of the year. There are 940 miles of stream (535 miles occur on public land) and 95 surface acres of reservoir, some of which provides fisheries habitat in the landscape area. Streams across public land provide habitat for eight native fish species and several introduced non-native fishes. ODFW periodically stocks a coastal strain of hatchery rainbow trout in certain BLM reservoirs. In most of these reservoirs, spawning habitat is lacking and natural reproduction does not occur. ODFW no longer routinely stocks warm water fishes, but bass, sunfish, and catfish species have become established in Bully Creek Reservoir and probably in streams near the reservoir. See Appendix A, Table A-7 for a list of native and non-native fish species known to occur within the landscape area.

Current distribution of stream fish in the landscape area is primarily influenced by summer water temperatures and flow levels. Maximum water temperatures are significantly higher in downstream areas than at the headwaters and, consequently, cold water species such as redband trout and sculpins are restricted to higher elevations in summer. Several factors contribute to high stream temperatures: (1) summer flows can be extremely low or intermittent, and low water volumes heat up easily; (2) irrigation diversions can further reduce flow, and water returning from irrigated fields can be warmer than the source stream; and (3) scarcity of riparian canopy increases solar heating. Riparian vegetation not only shades

water from hot summer sunlight, but also stores and cools subsurface water by trapping moisture and sediments in its matted root systems.

Bank stability and sediment loads also affect fish distribution. Lack of riparian vegetation has destabilized stream banks, causing accelerated erosion, channel downcutting and increased inputs of sediment. Rapid sediment deposition in Bully Creek Reservoir since its construction in 1963 attests to the high sediment load of basin streams. Fish such as trout and sculpin are intolerant of high sediment levels that bury eggs and suffocate fry.

A fish of special concern in the landscape area is the interior redband trout, the only native game species in the basin. During low flow periods, redband trout are found primarily in headwater areas in fragmented populations. Although this rainbow trout subspecies is adapted to warm, arid rangeland streams, high water temperatures in downstream reaches limit its summer distribution. Trout distribution during fall, winter and spring is less fragmented because higher flows and lower temperatures allow fish to use more stream corridors. During spring it is possible that individuals can move throughout the basin.

Known distribution of redband trout in the basin is based on a single ODFW inventory (Elle 1961) and subsequent observations by biologists. Trout occur in upper Bully Creek, upper Clover Creek, Upper and West Fork Upper Cottonwood creeks, South Fork Indian Creek, Lower Cottonwood Creek, and possibly Reds Creek. Genetic analysis of Lower Cottonwood and South Fork Indian Creek trout indicates that hybridization with hatchery rainbow trout has occurred in these two populations (Currens 1994). Although most wild trout in Bully Creek basin exhibit the morphological and physiological characteristics of interior redband trout, it is likely that “pure” redband populations no longer exist in the basin.

Hatchery rainbow trout are stocked annually by ODFW into five BLM reservoirs (Allotment #3, Peavine, Pence Spring, South Cottonwood, and South Mountain) and occasionally Bully Creek Reservoir. Rainbow trout have escaped reservoirs and survived to spawn with native redband trout in nearby streams, generating genetically mixed trout populations with varying percentages of hybrid genes. The goal of the stocking program is to provide angler opportunities in mountain reservoirs. Anglers from Vale/Ontario and Idaho utilize this fishery, and some of the small reservoirs are locally quite popular.

Besides trout, the other cold water-dependent fish species are sculpins. Little is known about their distribution because they are secretive and rarely identified in inventories. Sculpins were found only in Upper Cottonwood Creek in 1961. Because their habitat requirements are similar to trout, they are likely confined to headwater areas where stream temperatures and sediment loads are lowest.

Other dominant native fishes in Bully Creek basin include speckled and longnose dace, bridgelip sucker, and redband shiner. Because these are warmwater species and tolerate a range of stream temperatures and turbidities, they are abundant in mainstream reaches and streams lower in the basin and overlap with redband trout and sculpin in some headwater areas. Currently, there are no management concerns with these fishes.

Streams, reservoirs and wetlands in the area provide habitat for a diversity of aquatic organisms as well as for fish. Amphibians are especially vulnerable to habitat degradation and can be impacted by loss of

riparian vegetation, reduced flows, and the presence of exotic predators such as non-native fish or bullfrogs. Three native amphibians in this landscape area are listed as sensitive species (See Appendix A, Tables A-6 and A-8).

### **5.13 Wild Horses**

There are no wild horse herd management areas (HMA's) within the Bully Creek landscape area. Wild horses may wander into the landscape area from the adjacent Hog Creek HMA but management prescriptions require the horses be returned to the HMA. An appropriate management level has been established for the Hog Creek HMA to ensure public land resources, including wild horse habitat, are maintained in satisfactory, healthy condition, and unacceptable impacts to these resources are minimized. This appropriate management level and associated monitoring and gathering of excess wild horses should also ensure that resource values within the Bully Creek landscape area are unaffected by the wild horse program.

### **5.14 Grazing Use, Schedules and Existing Rangeland Improvement Projects**

Grazing is the predominant land use within the landscape area. Of the 20 allotments, 9 are in the I (Improve) category, 3 are in the M (Maintain) category and 8 are in the C (Custodial) category. The 20 allotments contain 108 pastures (see Table 5). These categories are designed to concentrate public funds and management efforts on allotments with the most significant resource conflicts and the greatest potential for improvement. *The Ironside Environmental Impact Statement and Rangeland Program Summary* (USDI/BLM 1980a, 1980b, 1982) described proposed grazing systems for all I and M allotments. These systems were developed and implemented through an AMP and subsequent permit or lease, in coordination with permittees and other concerned parties. Existing AMPs not only describe a grazing schedule, but specific allotment or pasture specific objectives and any rangeland improvement projects necessary to fully implement the AMP to meet resource management objectives.

Criteria for flexibility of livestock turnout prior to April 1 or extension of use beyond October 31 is identified in Appendix A, Table A-11. Pasture move dates may vary from the defined schedule up to 4 days on each side of the identified pasture move date. Move dates outside of these general limits of flexibility due to climatic conditions, exceeding identified utilization levels (see Table 7) or other factors would be considered by BLM staff in a timely manner. To be authorized, move dates outside the general limits of flexibility must be consistent with meeting resource management objectives.

Past Malheur Resource Area (MRA) planning decisions or agreements have excluded livestock from grazing public land for the specific purpose of protecting resource values or facilities from livestock impacts. Examples include, but are not limited to, identified riparian vegetation communities adjacent to streams, reservoirs, springs, and wetlands; developed water sources; special status species habitat; Areas of Critical Environmental Concerns (ACECs); recreation sites; archaeological sites; research and study plots; and administrative sites. The following exclusion areas are located within the Bully Creek landscape area : (the "No Data" entries need future management identified with options including maintaining them as exclusion areas or dropping them with recommendations for new management)

Allotment #2 (the following two exclusion areas have been combined into the Rocke Pasture)

Cottonwood Wildlife Stream Exclosure- 497 Acres

0201 Riparian Stream Exclosure - 446 Acres

Allotment #3

N. Black Canyon Pasture - Pence Spring Fence Exclosure - 2 Acres

Indian Creek Pasture - South Fork Indian Creek Spring Exclosure - No Data

W. Cottonwood Seeding - Allotment #3 Reservoir Exclosure - 11 Acres

Indian Creek Pasture - Zotto Reservoir Exclosure - 38 Acres.

Richie Flat Allotment -

E. Log Creek Pasture - Reds Creek 3-Way Upland Exclosure - No Data

**Table 5. Grazing Allotments and Other Land**

Allotment Number	Allotment Name	Number of Pastures	Category	Acres PL <sup>2</sup>	Acres PV <sup>3</sup>	Acres BR <sup>4</sup>	Acres ST <sup>5</sup>	Total Acres
00113	Boston Horse Camp	1	C	707	1,420			2,127
00132	Bully Creek	1	M	5,095	7,281	483		12,859
00134	Juniper Mountain	1	C	788	2,262			3,050
00144	Cow Creek	1	C	2,851	4,766			7,617
00227	Westfall	1	M	1,673	4,943			6,616
00228	Scratch Post Butte	1	C	1,012	8,542		158	9,712
00244	Post Creek Individual	1	C	816	4,292			5,108
10140	Cottonwood Creek	1	I	738	623			1,361
10141	Ferriers Gulch	1	C	354	4,232			4,586
10201	Allotment #2	20	I	48,500	7,665	371		56,536
10202	Allotment #3	30	I	77,694	15,117		94	92,905
10205	Rail Canyon	10	I	22,639	3,879			26,518
10210	Clover Creek Individual	1	C	3,459	12,937			16,396
10213	West Clover Creek	1	C	2,713	7,520			10,233

Allotment Number	Allotment Name	Number of Pastures	Category	Acres PL <sup>2</sup>	Acres PV <sup>3</sup>	Acres BR <sup>4</sup>	Acres ST <sup>5</sup>	Total Acres
10214	Richie Flat	7	I	17,506	2,233			19,739
10215	Brian Creek	4*	I	4,817	91			4,908
10218	Buckbrush	8	I	20,067	949			21,016
10222	Willow Basin	11	I	43,455	6,542			49,997
10223	Lava Ridge	6	I	11,069	1,224			12,293
20104	West Bench	2	M	626				626
	Acreage outside allotments			2,244	19,273		618	22,135
Totals:	20 Allotments	109		268,823	115,791	854	870	386,338

Source : Bully Creek Identification Team, Malheur Resource Area, Vale BLM District, 1998.

- Notes:
- <sup>1</sup> Category of allotment management - C (Custodial), I (Improve), M (Maintain)
  - <sup>2</sup> Public land
  - <sup>3</sup> Private land
  - <sup>4</sup> Bureau of Reclamation land
  - <sup>5</sup> State land

\* The Mountain pasture in Brian Creek Allotment has been proposed to be divided into 2 new pastures - the north and south Mountain pastures and the number of pastures in the Table 5 reflects the proposed change from 3 to 4.

Data collected during the 1998 field season, along with historic data, were used to describe the existing condition of the 20 grazing allotments and their pastures (Appendix C). Currently 70 of the total 109 pastures have developed grazing systems. The remaining 39 pastures are either exclosures that are not grazed, fenced federal range not scheduled for grazing, or pastures in custodial allotments that are grazed in conjunction with private land. A listing of all existing rangeland improvement projects is contained in Appendix A, Table A-9. The allotments and pastures are illustrated in Appendix B, Map B-6.

## 5.15 Recreation and Visual Resources

There are no developed recreation facilities on public land within the landscape area. Dispersed hunting and associated motorized vehicle-supported camping are the primary recreation activities. The habitat types in the landscape area support wildlife populations which receive some of the greatest hunting pressures within the MRA. Other activities include driving for leisure, photography, wildlife observation, and rockhounding. Much of the nominal recreational off-road vehicle driving is incidental to hunting activities. ODFW big game data are referenced to support estimates of recreation levels on public land within the area.

The Federal Land Policy and Management Act (FLPMA) of 1976 requires the BLM to consider the effects of management actions on the visual quality of the landscape. Public land is inventoried and assigned

a Visual Resource Management (VRM) class according to the relative value of the visual resources. To maintain the management objective of a VRM class, the BLM's visual contrast rating system is employed for proposed individual projects and activities to analyze and mitigate visual impacts to the existing landscape. Public land in the landscape area are currently classified as VRM Class II within the Beaver Dam Creek Wilderness Study Area (WSA) and South Fork Indian Creek study stream for the Wild and Scenic River System (WSRS) (USDI/BLM 1998b). The remainder of the landscape area is classified as VRM Classes III and IV. The upper- and lower-most reaches of the landscape area have the highest levels of visual sensitivity.

## **5.16 Special Management Areas**

### Wilderness Study Area

Nearly 18,480 acres of the 19,580-acre Beaver Dam Creek (WSA, OR-3-27) lies in the western portion of the landscape area, while the remaining acreage extends west of the landscape area boundary (see Appendix B, Map B-7). It was designated a WSA by the BLM in 1980 as a result of a Congressionally mandated wilderness review program. Until Congress decides to designate Beaver Dam Creek as a Wilderness Area or release all or a portion of the WSA, BLM manages the WSA in accordance with the agency's Interim Management Policy for Land Under Wilderness Review (IMP, USDI/BLM 1995) so as not to impair its suitability for preservation as wilderness. If designated a Wilderness Area, the primary and secondary wilderness values of the WSA will be preserved and protected. These values include naturalness, outstanding opportunities for solitude, primitive and unconfined recreation, juniper steppe woodland areas, a variety of vegetative communities, and certain non-game and game species. Within the landscape area, portions of three grazing allotments overlap the WSA (see Table 6). Under current BLM management direction, livestock grazing would continue in a WSA or Wilderness Area. Existing rangeland improvements within the WSA include livestock fencing, four developed springs, and one reservoir. Motorized equipment is permitted for maintenance of developed springs and the reservoir within the WSA if determined by BLM to be the minimum tool necessary to accomplish the work.

**Table 6. Grazing Allotments Associated with the Beaver Dam Creek WSA**

Allotment/Pasture	Allotments/Pastures Associated with the WSA (Acres)			Public Land Acreage of WSA by Allotment/ Pasture
	PL <sup>1</sup>	PV <sup>2</sup>	Total	
Rail Canyon	22,639	3,879	26,518	6,975
Lost Creek FFR	824	1,605	2,429	394
Kitten Canyon	6,115	78	6,193	4,872
West Chastain	3,019	628	3,647	1,709
West Clover Creek				
West Clover	2,713	7,520	10,233	394
Willow Basin	43,455	6,542	49,997	11,109
Willow Basin	9,005	86	9,091	1,622
Bully Creek	10,015	1,026	11,041	8,366
FFR (09)	2,751	2787	5,538	57
FFR (11)	1,104	983	2,087	1,064

Source : Bully Creek Identification Team, Malheur Resource Area, Vale BLM District, 1998.

Notes: <sup>1</sup> PL - public land    <sup>2</sup> PV - private

Additional information regarding the Beaver Dam Creek WSA is in *Oregon Wilderness Final Environmental Impact Statement* (USDI/BLM 1989) and *Oregon Wilderness Study Report* (USDI/BLM 1991).

Areas of Critical Environmental Concern

Two areas identified as potential Areas of Critical Environmental Concern/Research Natural Areas (ACECs/RNAs) have been described in the draft SEORMP/EIS (USDI/BLM 1998b) (see Appendix B, Map B-7). North Ridge Bully Creek ACEC/RNA would include 1,569 acres (Draft SEORMP/EIS, Alternative C) in the Richie Flat Allotment/North Ridge Pasture. The relevant and important values for which the ACEC has been proposed are the excellent representations of a big sagebrush/Thurber needlegrass community, big sagebrush/threetip sagebrush/Idaho fescue community and sage grouse and their associated habitat. South Ridge Bully Creek ACEC/RNA would include 841 acres (Draft SEORMP/EIS, Alternative C) predominantly in the Richie Flat Allotment/South Ridge Pasture with a small corner in the northeastern part of Lava Ridge Allotment. The relevant and important values for which the ACEC/RNA has been proposed are the excellent representations of a big sagebrush/Thurber needlegrass community, big sagebrush/squaw apple/Idaho fescue community and the associated habitats for sage grouse and loggerhead shrikes.

Wild and Scenic River System (WSRS)

There are no designated components of the national WSRS within the landscape area. BLM has determined a 2 mile study segment of South Fork Indian Creek is eligible for possible inclusion in the

WSRS with a tentative river classification of wild. The suitability evaluation of this stream segment for possible designation is currently being conducted in the Draft SEORMP/EIS

(USDI/BLM 1998b) which describes the segment as non-suitable under Alternative C. Additional information can be found in case files at the BLM Vale District Office.

### **5.17 Socio-Economic Values**

Public land in the landscape area is managed for a wide array of social and economic benefits for local, regional and National publics. Within the landscape area, livestock forage has a high economic value. Public land produces forage supporting approximately 43,000 animal unit months (AUMs) of active use and 5,000 AUMs of suspended use. As of 1994, the active AUMs supported 3.6 percent or approximately 5,100 beef cattle of the estimated 170,000 beef cattle in Malheur County (USDI/BLM 1998b). Livestock sales generated an estimated \$1.8 million dollars of the \$50.3 million dollars in Malheur County. The BLM recognizes the importance of custom and culture, and the need to balance these values while ensuring the sustainability of multiple resources.

Water production, storage and transport are important functions of the landscape area for ecosystem health and for local water users with an average of 38,800 acre-feet of water produced per year (BCWC et al. 1997). Within the LAMP area, public land comprises about 70 percent (268,800 acres of the total 386,300 acres) of the land mass and a corresponding amount of the water generated each year. Several thousand acres of irrigated farm and pasture land are located in the landscape area and are supported by flood irrigation, wells or small reservoirs.

Recreation opportunities (hunting, fishing, dispersed camping and various other day-use activities) are important locally and regionally. These kinds of recreational opportunities are not unique to the Bully Creek landscape area although the area provides a relatively uncrowded place to enjoy them. The primary users come from local communities but regional visitors, especially those from the Boise area and the Willamette Valley, are increasing.

### **5.18 Cultural Resources**

#### Prehistoric

The Native people of the Northern Great Basin practiced their ancestral lifeways into the 19th century and were heirs to an extremely ancient cultural tradition. Their technology was effective and efficient, utilizing many multi-functional, light-weight and expendable tools. Gathering activities are attested to by digging sticks, carrying baskets, and milling stones, and hunting is represented by the atlatl and dart, bow and arrow, stone projectile points, stone knives and scrapers. Cultural resources associated with the prehistoric use of this project area consists of rock art; rock shelters; rock structures (cairns, alignments etc.); habitation sites around springs; small camps at stream-side meadows and on alluvial deposits at junctions of tributary streams; quarries of fine-grained basalt, obsidian, chalcedony and jasper; flaking stations on high points with good vantage; and sacred sites.

## Historic

Cultural resources associated with the historic use of this area are tied to landforms as transportation corridors: wagon roads, historic homesteads, early irrigation project features, early mining activity areas, and remains of stage and telegraph stations. Exploration into this area by white Europeans began in the early 1830's. In 1845, Stephen Meek guided a train of 214 wagons up the Malheur River into central Oregon. The route of Meek's Cutoff crosses through the landscape area, heading west from Vale to Harper, then north to Westfall and continuing westward. When miners searching for gold in the area were unsuccessful, they turned to farming and livestock production, particularly in the lower valleys, grassy hills and the many drainages that eventually flowed into the Malheur River. The Ontario to Burns Freight Road, in operation from 1844-1913, crossed through the landscape area going northwest out of Westfall. Hanna Stage Station is located on this road.

In 1872, the Malheur Indian Reservation was established at Fort Harney. Originally the reservation covered 1,778,560 acres and contained grazing land. The western half of the landscape area is located within the old treaty boundaries of this reservation. Since 1883, all of these land, except 320 acres on which the old military post of Camp Harney stood, were restored to public land.

During the 1880's, small communities were established near reliable water sources, and during the 1890's, production of both cattle and sheep prospered. A rapid increase in population occurred in the northern part of Malheur County between 1930 and 1950 as a result of the development of the Vale and Owyhee Irrigation projects.

### **5.19 Paleontology**

At present, there are no identified locations of fossil flora or fauna within the landscape area. However, the exploration for fossil localities has been limited, and would probably be confined to Pliocene, Miocene or Pleistocene age soils. It may be likely that sediments associated with old lake beds may contain fish or other marine animal remains since they have been located in similar old lake sediments at Beulah Reservoir and south of Vale.

### **5.20 Access**

In general, all roads across public land in the landscape area are open to travel by the public unless they are closed specifically for management purposes or during an emergency(see Appendix B, Map B-3). There are no Interstate highways located within the landscape area. Approximately 3 miles of U.S. Highway 20 form the southern boundary of a portion of the landscape area. Over 20 roads across public and private land in the landscape area have been assigned a name and number by Malheur County (*Oregon State Highway Division, 1973*).

The BLM Vale District currently holds 28 easements on portions of roads located on private land in Malheur County, half of which are open to public travel. Two other easements for administrative access on

portions of roads in Malheur County are held by the BLM Winnemucca District Office. Of these, nine are located within the LAMP area; two are open to public access, while the other seven are for administrative access only. The Access subsection of the Land and Realty section of the draft SEORMP indicates that road easements are normally acquired to provide administrative access to facilitate management (Chapter 2-92). The provision of public access is listed as another purpose to acquire access easements. Critical access needs, which have been identified by the public and various government agencies, include several locations within the landscape area (USDI/BLM 1998b, Map-Land-1). A transportation management plan would be developed to guide and direct future transportation management decisions (USDI/BLM 1998b).

## **6.0 DATA COLLECTION AND ANALYSIS**

In order to formulate management recommendations in light of the current resource condition, numerous data were collected across the Bully Creek landscape area in the summer of 1998. These data were combined with and compared to data collected in earlier years to determine vegetative health trends, identify locations of specific resource problems, and lead to management actions that would achieve the goals and objectives of the LAMP.

One or more allotment evaluations have been conducted in the past for all I and M allotments. Grazing management changes were implemented where feasible or necessary to solve identified resource problems. The most recent evaluations for the following allotments were:

- 1987: Brian Creek
- 1989: Bully Creek
- 1991: Lava Ridge
- 1993: West Bench, Allotment #3
- 1994: Allotment #2, Richie Flat
- 1995: Rail Canyon, Cottonwood Creek, Buckbrush, Westfall, Willow Basin

### **6.1 Data Collection**

For upland pastures, including crested wheatgrass seedings, the dates and numbers of livestock grazed (actual use) have been collected for many years. Utilization of key forage grasses, including bluebunch wheatgrass, Thurbers needlegrass, Idaho fescue, and crested wheatgrass, has been evaluated yearly in most pastures following livestock removal. At least one permanent trend plot, consisting of a 3' x 3' photo plot, a 100' line intercept study (basal area cover of grasses, canopy cover of shrubs) and several photographic stations were established in the early 1970's in most upland pastures across the landscape. These 36 plots were read in 1998, many for the third or fourth time, so trends could be determined and evaluated in view of objectives over the short-term (since the last reading) and the long-term (since the first reading). Professional judgment, consisting of the evaluation of field professionals who have spent considerable time in the area, was also used to evaluate upland trend. In addition, uplands were assessed for overall physical and biotic functioning using the SRH indicators (Standards 1 and 3).

Nearly all riparian areas were assessed using the guidelines for riparian PFC (USDI/BLM, 1993) which is

Standard 2 of the SRH. Portions of many streams in the landscape area have been photographed using low level aerial color infrared or true color photography. Some streams have more than one year of aerial photo coverage that can be used in determining riparian trend. Ground photo points, established at key riparian locations, were rephotographed on streams that have been studied before or established on newly identified riparian areas. Riparian trend was determined by comparing aerial photos and ground photo points as well as using professional judgment or the evaluation of the field professionals.

Water quality (Standard 4) was addressed through all of the SRH indicators. Since water quality is directly and indirectly related to the watershed function of uplands, function of riparian areas, ecological processes of uplands and wildlife habitats, improvements in the SRH will benefit water quality. Assessment of Standard 4 was done by determining if the factors contributing to not functioning properly for Standards 1, 2, 3 and 5 were affecting water quality.

Conditions of uplands for wildlife values were assessed using the SRH indicator (Standard 5). Inventories have been conducted over many years to locate sage grouse leks. ODFW provided information regarding big game species winter ranges. Big game and special status species were noted when observed during assessments of SRH, and in-house records were incorporated.

## **6.2 Results of Data Analysis**

An interdisciplinary team evaluated all available data collected to monitor resource response to management actions on a pasture and allotment basis. Summaries of trend findings, SRH assessments for Standards 1, 2, 3 and 5, and other issues of concern (e.g., noxious weeds, juniper invasion) are found in Appendix C for each allotment and pasture. For all standards for rangeland health which fail to meet PFC, the current contribution of livestock was identified and is displayed in Appendix C. An assessment was also made of the effectiveness of management actions implemented since the last allotment evaluation.

Upland vegetation trend plots, exclusive of crested wheatgrass seedings, show that of the 36 plots present, 22 across the landscape area are moving toward current upland management objectives, and 14 are not moving toward objectives. With the exception of Richie Flat, which uniformly shows upward trends, every allotment contains pastures showing both upward trends and trends failing to meet upland management objectives. Allotment and pasture-specific summaries of trend are provided in Appendix C.

There are 16 seeded areas in the landscape area. Most have lost significant amounts of crested wheatgrass basal area cover since the early 1980's. There has been a corresponding increase in sagebrush canopy cover in this same period of time in many of these seedings, resulting in a decreasing long-term trend in these areas. However, short-term trends indicate that crested wheatgrass cover has stabilized at a new low or is now slightly increasing in nine of the pastures, while continuing to decline in five. Only two seeded pastures, those in the Richie Flat Allotment, showed strong upward trends in cover of crested wheatgrass with declining or modest gains in cover

of sagebrush over the long-term. The increased shrub component in many of these seedings has enhanced their value for wildlife. Pasture-specific summaries are provided in Appendix C.

An evaluation of the actual use and utilization adjusted for climate show that the carrying capacity of most allotments is within the range of authorized use.

For Standard 1 (upland watershed function) of SRH, of the 109 total pastures, 20 pastures in 6 allotments showed deficiencies at 40-75 percent of the sites assessed and were not meeting the standard. The remaining 89 pastures are meeting Standard.1 of SRH and would continue to move towards DRFC under current grazing management practices.

For Standard 2 (riparian-wetland function), a total of 56 pastures out of 109 in all allotments were identified as having riparian resources in 1998. Prior to 1998, 12 pastures had been identified as having riparian resources (Appendix B, Map 8). Forty four new riparian areas were identified in the course of the 1998 evaluations. Forty seven of the 56 total pastures were evaluated as not meeting Standard 2 for SRH. Twenty two of these 47 pastures did not meet the standard as a result of current grazing management practices while the remaining 25 pastures did not meet standard due to other factors.

Of the 210 miles of lotic riparian vegetation communities adjacent to perennial and intermittent streams identified in the landscape area, the Standard 2 assessment identified 48 miles (23 percent) of the stream reaches to be PFC and 49 miles (23 percent) to be FARU (functioning at risk-upward trend). Portions of 57 miles (27 percent) of the stream reaches were FARN (functioning at risk-not apparent trend). Thirty five miles (17 percent) were FARD (functioning at risk-downward trend) and the remaining 21 miles (10 percent) of stream reaches were NF (non-functional) where livestock use has been identified as a factor limiting attainment of function. The NF sections of streams are predominantly concentrated around a stream system in Allotment #3.

Twenty pastures out of the total 109 present were identified as containing an aspen resource. Almost all aspen stands within the landscape area are declining in health. Indications of decline include decadent and dead trees with little or no reproduction. Heavy utilization on the few reproductive shoots produced in these stands was observed at numerous sites. All monitoring methods, including ground photos, low level aerial photography and riparian evaluations, show downward trends for aspen.

For Standard 3 (ecological processes), four allotments, Allotment #2, Brian Creek, Buckbrush and Lava Ridge, showed deficiencies at more than 40 percent of the sites assessed. All allotments except Bully Creek and Cottonwood Creek showed deficiencies at one or more sites assessed for this standard.

For Standard 4 (water quality), two stream segments have been identified as showing deficiencies within the landscape area. Although water quality impacts have been identified for only these two stream segments, other streams in the landscape area exhibit all or many of the same non-point source pollution problems.

Severe water quality, resulting from non-point source pollution, has been identified in Bully Creek from Westfall to the Bully Creek Reservoir, and Pole Creek (Oregon Statewide Assessment of Nonpoint Sources of Water Pollution Report, 1988). (see Table 4). This rating impacts the beneficial uses determined for this area; specifically water quality, fisheries, aquatic habitat, and water contact recreation.

Long-term water quality data are sparse for the entire landscape area.

For Standard 5 (native, T&E, locally important species), 32 out of a total of 109 pastures were identified as not meeting the standard. Eight pastures in 4 allotments (Allotment #3, Brian Creek, Willow Basin, Lava Ridge) were not meeting the standard due to current grazing management practices. The remaining 24 pastures located in the previously mentioned 4 allotments plus Bully Creek, Cottonwood Creek, Allotment #2, Rail Canyon, Richie Flat and Buckbrush were not meeting the standard due to other factors. Five of the 32 pastures did not meet standards due to both current grazing management practices and other factors. In most of the crested wheatgrass seedings, a loss of forbs and an increase of annual grasses and weeds has rendered the rangelands deficient to meet the needs of numerous wildlife species, particularly at the lower elevations. Other common problems were the increase of juniper in sage grouse habitat and poor reproduction or declines in bitterbrush or squaw apple communities important to loggerhead shrikes and mule deer.

All standards of SRH that were not met were assessed for the cause of non-attainment. Results of that assessment are found in Appendix C of the LAMP.

### **6.3 Coordination and Cooperation**

Following data collection and analysis, all livestock operators in the landscape area had the opportunity to review data specific to their allotments. Their experience and observations frequently aided in the interpretation of the data and led to discussions on better ways to correct resource problems. Grazing systems and development of projects, shown in the Section 7 have been designed to reverse the downward trends noted above and attain SRH. Several major constraints have guided the design of grazing systems (see Table 7). Where riparian values are present, grazing during the hot season is limited. Where uplands are not meeting standards for rangeland health, periodic deferment or rest from grazing should promote healthy systems. Maximum allowable utilization levels have been identified to meet the needs of sage grouse during their critical nesting season. Utilization limits have been modified from previous activity plans to limit heavy livestock use and to better maintain the health and vigor of desirable perennial species.

**Table 7. Maximum Allowable Livestock Utilization Levels**

<b>Community</b>	<b>Utilization <sup>1</sup></b>	<b>Comments</b>
Riparian	herbaceous: 6" stubble height; woody not to exceed 20% use of current year's leaders	hot season <sup>2</sup> and late season <sup>3</sup> livestock use
Upland/Native	50%	all pastures
Seedings	60%	where trend is static or upward
Seedings	50%	where trend is down
All	40%; 7-9" residue perennial grasses stubble height	within 2 miles of known sage grouse lek where livestock grazing occurs in April and May

Source : Bully Creek Identification Team, Malheur Resource Area, Vale BLM District, 1998.

Notes: <sup>1</sup> At a minimum, utilization is measured at the end of the growing season or season-of-use; whichever comes first. Utilization is ideally measured during livestock grazing in appropriate pastures to ensure standards are met.  
<sup>2</sup> Depending on elevation, hot season grazing typically runs from June 15 to September 30.  
<sup>3</sup> Depending on elevation, late season grazing typically runs from September 30 to October 31.

## **7.0 RECOMMENDATIONS AND IMPLEMENTATION**

### **7.1 Recommendations**

Following the collection and analysis of data, all livestock operators in the landscape area had an opportunity to review and discuss those data specific to their allotment(s) with BLM management specialists. If data showed that resource concerns needed to be addressed, new grazing schedules were developed with the appropriate livestock operator(s) along with proposed watershed and rangeland improvement projects.

Recommendations (proposed decisions/new management prescriptions) are designed to move the landscape area towards meeting the defined goals, objectives and DRFCs and include a variety of management actions described in Table 8. These standardized projects and implementation techniques have all been previously described and their impacts analyzed in existing planning documents (USDI/BLM 1980a, 1980b, 1982, 1998b). The proposed projects and other actions comprise resource management options available to the BLM, operators and others to assist in restoring and maintaining the desired ecosystem function. Management actions may be modified or other actions may be described for use over the course of time depending on changing concerns, goals and objectives, or upon site-specific conditions. The implications of using other actions would be addressed prior to implementation.

#### Project Prioritization

Priority for implementing management actions would depend on a number of factors: (1) magnitude of resource concern, as identified in the Subbasin Review (USDI/BLM 1998a) and in subsequent data collection and monitoring efforts; (2) cooperation of adjoining landowner and/or operator cooperation; (3)

public input; (4) available funding; and/or (5) staffing. All of these factors play a part in determining which management actions would be implemented in any one year. Projects (Appendix A, Table 10) and other actions recommended to address resource concerns were prioritized, and an implementation list was compiled for Fiscal Year (FY) 1999. Project priorities would be developed annually and reflected in annual NEPA compliance documentation.

**Table 8. Examples of Resource Management Actions**

<b>Management Actions</b>	<b>Description</b>	<b>Applicable Guidelines and Reference</b>
Structural and Land Improvement Projects	Brush control, seedings, fences, cattleguards, reservoirs, spring developments, wells, pipelines, wildlife guzzlers, prescribed burns.	Appendix S, Draft SEORMP/EIS (USDI/BLM 1998b)
Best Management Practices	Road design and maintenance, existing project maintenance, surface-disturbing activities, rights-of-way and utility corridors, forest management, fire suppression, prescribed burning, mining, wildlife habitat protection, noxious weed management, developed recreation.	Appendix O, Draft SEORMP/EIS (USDI/BLM 1998b)
<b>Livestock Grazing Management</b>		
Intensity of Grazing	Duration, numbers, season-of-use and other factors determine the intensity of grazing and its impacts. To address resource improvement, intensity of grazing (assessed through monitoring) will be the key to making adjustments in management. Utilization recommendations for the landscape area are defined in Table 7.	Appendix R, Draft SEORMP/EIS (USDI/BLM 1998b)
Flexibility Based on Range Readiness	Livestock grazing can be adjusted to result in minimal to no impacts on the growth cycle of key plant species, wildlife species, physical condition of resources and other factors. All schedules except for season long grazing may be authorized in the landscape area. Exclusion is also an option where appropriate. Livestock grazing would not be scheduled prior to April 1 unless range readiness criteria are met or allowed continue beyond October 31 unless all pasture grazing constraints are being met (see Table 7).	Appendix R, Draft SEORMP/EIS (USDI/BLM 1998)
Reduced, Increased, Suspended or Restored AUMs	Based upon resource condition and trend, as evaluated through SRH (USDI/BLM 1997) and other techniques, AUMs may be reduced, increased, suspended or restored.	Grazing Regulations Standards for Rangeland Health
Allotment Category Changes: I, M and C Allotments	If previously unknown resource concerns are discovered in an allotment, the allotment category can be changed to focus management to resolve existing or potential impacts.	BLM Policy

<b>Management Actions</b>	<b>Description</b>	<b>Applicable Guidelines and Reference</b>
Fenced Federal Range (FFR) Management	These are non-intensive management areas or custodial pastures where BLM does not specify livestock numbers, kinds of animals and period of use provided that detrimental impacts do not occur to public land. FFR areas consist of small tracts of public land that intermingle with large tracts on private land. Capability for grazing management is limited and little public resource values exist.	Ironside EIS
Public/Private Land Grazing Systems	Operators often graze adjoining private land in sequence with public land. Where cooperation is possible, and resource condition is known, consider incorporating private land into a grazing system.	

Source : Bully Creek Identification Team, Malheur Resource Area, Vale BLM Distirct, 1998.

Table 9 shows those general management actions available to resolve issues identified during the public scoping process and to meet the LAMP management objectives. Application of these individual management solutions would depend on the need identified through the Adaptive Management process. This table also shows the rationale or purpose of these actions and the benefitting issues and objectives. See Appendix A, Table A-10, for allotment/pasture specific project proposals identified to date and Appendix C for proposed grazing schedules recommended for the landscape area.

**Table 9. Management Actions - Benefitting Issues and Objectives**

<b>Management Action</b>	<b>Rationale for Action</b>	<b>Primary/Additional Benefitting Issues</b>	<b>Primary/Additional Benefitting Objectives</b>
Livestock utilization levels not to exceed 40%	Leaves critical habitat component for sage grouse	Wildlife/Water Quality, Riparian, Weeds	Upland vegetation, wildlife/riparian, seeding
Livestock utilization levels not to exceed 50%	Maintains upland/ native vegetation, and allows seedings to improve condition	Vegetation (natives and seedings)	Upland vegetation, seedings/weeds, wildlife
Livestock utilization levels not to exceed 60%	Maintains seeding condition	Vegetation (seedings)	Seedings/weeds
Retain 7-9" stubble height after grazing	Leaves critical habitat component for sage grouse nesting	Wildlife/Water Quality, Riparian, Weeds	Wildlife/riparian
Retain 6" stubble height; do not exceed 20% utilization on woody vegetation	Ensures improvement and/or maintenance of riparian vegetation	Riparian, Water Quality, Fisheries/ Weeds, Wildlife, Recreation, Juniper Invasion	Riparian/weeds, wildlife
Avoid livestock use between December-March	Leaves critical habitat component for deer/antelope winter range	Wildlife/Vegetation, Weeds, Recreation	Wildlife/upland vegetation, weeds
Limit hot/late season use	Minimizes livestock grazing impacts during critical growth periods	Riparian, Water Quality, Fisheries/ Weeds, Wildlife, Recreation, Juniper Invasion	Riparian/weeds, wildlife
Restrict utilization during hot and late seasons	Minimizes livestock grazing impacts during critical growth periods	Riparian, Water Quality, Fisheries/ Weeds, Wildlife, Recreation, Juniper Invasion	Riparian/weeds, wildlife

<b>Management Action</b>	<b>Rationale for Action</b>	<b>Primary/Additional Benefitting Issues</b>	<b>Primary/Additional Benefitting Objectives</b>
Periodic Grazing Deferment	Ensures improvement and/or maintenance of perennial grasses	Vegetation/Weeds	Upland vegetation/weeds
Range Readiness Limitations	Ensures rangeland and riparian vegetation and soils can withstand grazing pressure	Vegetation, Riparian/Water Quality, Fisheries, Weeds, Wildlife	Upland vegetation, seedings, riparian/weeds, wildlife
Sagebrush Control	Maintains composition, structure, diversity and productivity of upland vegetation	Vegetation, Wildlife/Water Quality, Weeds	Upland vegetation, seedings, wildlife/weeds
Juniper Control	Minimizes juniper invasion while improving/maintaining soil stability and vegetative diversity	Vegetation, Juniper Invasion/Water Quality, Wildlife	Upland vegetation, riparian/wildlife, weeds
Seedings-Native	Reestablishes native vegetation and diversity	Vegetation/Water Quality, Weeds	Seedings, upland vegetation/ riparian, weeds, wildlife
Seedings-Non-native	Provides forage for livestock while diverting use away from native range	Vegetation/Water Quality, Weeds	Seedings/upland vegetation
Seedings-Forbs/Shrubs	Increases vegetative composition, structure, diversity and productivity	Wildlife/Vegetation, Weeds	Upland vegetation, wildlife/ weeds
Water Developments	Improves livestock distribution and reduces grazing pressure from riparian habitats	Riparian, Vegetation/Water Quality, Fisheries, Wildlife	Riparian, upland vegetation/wildlife
Prescribed Burns-Sagebrush	Increases vegetative composition, structure, diversity and productivity	Vegetation/Wildlife	Upland vegetation/seedings, weeds, wildlife
Prescribed Burns-Juniper	Minimizes juniper invasion while improving/maintaining soil stability and vegetative diversity	Juniper Invasion, Vegetation/Water Quality, Riparian, Wildlife	Upland vegetation/ riparian, wildlife, weeds
Prescribe Burns- Annual Rangelands/Seedings	Removes annual grasses prior to revegetation; rejuvenates seedings	Vegetation /Water Quality, Weeds, Wildlife	Seedings, upland vegetation/ weeds
Prescribed Burns-Aspen	Rejuvenates/regenerates dead and dying aspen stands	Riparian, Vegetation/Water Quality, Wildlife, Juniper Invasion, Recreation	Riparian/wildlife
Prescribed Burns-Forest	Reduces stocking density, fuels and undesirable species (juniper); maintains forest health	Vegetation/ Water Quality, Riparian, Wildlife, Juniper Invasion, Recreation	Upland vegetation/riparian, wildlife, weeds
Pasture Fences	Improves livestock distribution and protects sensitive resource values	Riparian/Water Quality, Vegetation, Fisheries, Wildlife	Riparian, upland vegetation, seedings/weeds, wildlife
Exclosure Fences	Protects sensitive resource values	Riparian, Water Quality, Vegetation, Fisheries, Wildlife, Recreation	Riparian, upland vegetation, wildlife

<b>Management Action</b>	<b>Rationale for Action</b>	<b>Primary/Additional Benefitting Issues</b>	<b>Primary/Additional Benefitting Objectives</b>
Fence Removal	Improves livestock distribution and protects sensitive resource values	Riparian, Water Quality, Vegetation, Fisheries, Wildlife, Recreation	Riparian, upland vegetation, wildlife
Weed Control	Prevents spread of noxious weeds	Vegetation, Water Quality, Riparian, Weeds, Wildlife, Recreation, Fisheries	Riparian, seedings, upland vegetation, weeds, wildlife

Source : Bully Creek Identification Team, Malheur Resource Area, Vale BLM District, 1998.

### Grazing Schedules

Resource concerns by pasture are described in Appendix C. Where applicable, these concerns established generic factors or limitations placed on grazing schedules. Table 7 and Appendix A, Table A-10 explain these factors along with the utilization levels and duration descriptions. It is important to note that the duration of grazing and utilization levels are both critical factors being used to control the impacts from livestock grazing. Close attention to these factors by both the livestock permittee and the BLM would be required to ensure success in achieving the stated objectives.

Appendix C contains the recommended grazing schedules for all I and M allotments in the landscape area which would be implemented beginning in FY 2000. The schedules were developed to show resource improvement by the next scheduled analysis of monitoring data. The resource management actions contained in Table 8 were considered when developing grazing schedules. These resource management actions represent a means to attain improvement in a reasonable period of time and still address identified resource concerns. Private land in Lava Ridge and Brian Creek Allotments were included in the grazing rotation system with the operators' cooperation so both the private and public land are achieving the same objectives identified for the LAMP area.

Criteria for flexibility of livestock turnout prior to April 1 or extension of use beyond October 31 is identified in Appendix A, Table A-11. Pasture move dates may vary from the defined schedule up to 4 days on each side of the identified pasture move date. Move dates outside of these general limits of flexibility due to climatic conditions, exceeding identified utilization levels (see Table 7), or other factors would be considered by BLM staff in at the time of the request.

Move dates outside the general limits of flexibility must be consistent with meeting resource management objectives to be authorized.

Understanding resource condition across the landscape area helps in adjusting livestock pressure from one area to another, sometimes crossing allotment boundaries, to enable recovery in priority areas.

## Custodial (C) Allotments

Grazing schedules for custodial allotments would remain as authorized in conjunction with private land so long as public land management objectives continue to be met. Where there are resource concerns, such as riparian, upland or wildlife habitat, specific objectives for those resources would apply. In addition, utilization standards and follow-up monitoring would be applicable. The BLM would coordinate with those operators grazing livestock in custodial allotments, to ensure their actions do not result in downward trends in resource conditions. Resource evaluations may result in allotment category or management changes. Establishing new trend plots to collect data may be required in some cases.

## Existing Projects - Maintenance

There are numerous existing livestock projects across the landscape area (see Appendix A, Table A-9) which require periodic maintenance. These projects include cattleguards, fences, pipelines, water troughs, spring developments and reservoirs. Normal maintenance of these projects is expected to proceed as in the past; however, these projects may be reevaluated, and certain projects may be removed.

## Proposed Projects

Projects recommended for implementation are described in the 1999 Appendix A, Table A-10. In order to take advantage of funding opportunities, some of these proposed projects will be implemented during FY 1999 with separate NEPA analysis. On an annual basis, this project list would be reviewed, modified, added or dropped. Those projects scheduled for implementation in future fiscal years would be addressed for NEPA requirements in subsequent Administrative Determinations.

Proposed projects in the Beaver Dam Creek WSA and any future proposed new management actions or projects not addressed in the LAMP EA (Table 8 or 9 of this document or in Table A-10 of Appendix A respectively) would not have met NEPA requirements and would require additional impact analysis in subsequent environmental documents.

## **7.2 General Implementation Guidelines**

For all management actions, mitigation measures would be taken to avoid direct, indirect and cumulative adverse impacts to the following resources, or the projects would be abandoned.

### Wilderness Study Areas

Projects which may occur within the Beaver Dam Creek WSA must be consistent with BLM's IMP (USDI/BLM, 1995). Additional impact analysis may be required prior to a proposed project's approval.

### ACECs/RNAs

Projects which may occur within or adjacent to any designated ACEC/RNA (e.g. proposed North Ridge and South Ridge ACECs) would not conflict with the relevant and important values identified for these areas.

### Threatened and Endangered Species, and Cultural Resources

Prior to any surface disturbing activities associated with implementing projects, special status species and cultural resource inventory surveys would be conducted.

### Riparian Management

Projects which may occur within riparian conservation areas, as described in Appendix D of the draft SEORMP/EIS (USDI/BLM 1998b), would need to enhance riparian habitat or ensure habitats move towards DRFCs.

### Wildlife Habitat

Projects which may occur within key wildlife habitats (e.g., sage grouse leks, nesting or winter habitat) would be designed to enhance identified habitat characteristics and conditions as described in Appendix F of the Draft SEORMP/EIS (USDI/BLM 1998b).

### Roads

Existing vehicular ways and roads would be used, whenever possible. Any necessary off- road travel would be done in such a manner as to minimize impacts to vegetation, underlying soils, and other resources. Where determined to be needed, off-highway vehicles with large, low pressure tires would be used. Traveling through riparian areas would be avoided wherever possible.

## **8.0 MONITORING**

To complete the adaptive management cycle, monitoring would be critical to determine whether or not recommended management actions are achieving the stated goals and objectives, and moving the landscape area towards the DRFCs. The success of restoring and maintaining ecosystem function would be implemented through management actions on a site-specific basis. The conclusions drawn from these monitoring efforts would then be evaluated at the landscape scale to determine the overall health of the area. The conclusions would also be used to make recommendations on whether to continue current management or what changes need to be made in management practices to meet goals and objectives. The

results could be changes in mitigation measures, future actions, monitoring elements, objectives, standards, guidelines, or some mixture of these. The results of monitoring may lead to changes in management within the landscape area.

## **8.1 Monitoring Strategy**

Different levels of monitoring or accelerating regular monitoring cycles may be required due to prescribed fire, wildland fire, floods, drought or other climatic conditions, administrative actions or corrections related to land status, management or trespass, and other unforeseen events. All monitoring data would be promptly analyzed and applied in adaptive management. Data would continue to be available to interested or affected publics and agencies. Additional references on broad scale monitoring strategies and protocols can be found in the Appendix 3 of the Draft ICBEMP (USDA/USDI 1997).

Regular and supplemental monitoring methods would include the following (all time frames imply minimums):

### Standards for Rangeland Health

SRH assessments would be conducted at a minimum of every 10 years. Assessment would include watershed function in the uplands and riparian/wetland areas, water quality, ecological processes, and habitat for native, threatened and endangered, and locally important species. Established standards and guidelines and any subsequent modifications would be consistent with indicators in the SRH (USDI/BLM 1997).

### Upland Trend

Upland trend assessments would be conducted at a minimum of every 10 years and would include 3' x 3' photo trend plots, line intercept method and professional judgment as described in the *Vale District Monitoring Plan* (VDMP) (USDI/BLM 1983).

### Riparian Trend

Riparian trend studies would be assessed at a minimum of once every 10 years and would incorporate aerial and surface (ground) photography. Perennial and intermittent streams in the landscape area would be flown according to protocols described in the VDMP (USDI/BLM 1983). Interpretation would follow the guidelines found in *The Use of Aerial Photography to Manage Riparian-Wetland Areas TR1737-10* (USDI/BLM 1994c). Established riparian photopoints would be retaken and evaluated. As necessary, new riparian photopoints would be established.

### Herbaceous Studies

Herbaceous production studies would be conducted annually and would include utilization and actual use studies. Maximum allowable utilization levels are shown in Appendix A, Table A-7. Methods are described in the VDMP (USDI/BLM 1983). At this time, rapid assessments would be made of the adequacy of utilization levels established for sage grouse habitat needs (40 percent utilization at established transects, and 7-9 inch stubble height in nesting habitat on key grass species following regrowth).

### Ocular Monitoring

Ocular monitoring would be conducted and compliance inspection forms prepared in pastures or areas of concern on an periodic basis to provide an assessment of resource conditions and compliance with management direction.

### Supplemental Studies

Supplemental studies would be conducted as needed or periodically as budget and staffing permit. Examples include water quality and intensive riparian monitoring, green-line transects, habitat or bird species diversity (e.g., sage grouse habitat zone mapping in coordination with ODFW lek counts), and macroinvertebrate, erosion, and woody plant condition studies. The studies and monitoring techniques are described in the VDMP (USDI/BLM 1983), BLM handbooks and Technical references.

### Weed Monitoring

Monitoring weed infestations would include the annual mapping and treatment of all known and any new knapweed infestations and Class "A" invaders until the infestation is eliminated (see Appendix A, Table A-5). Other noxious weed infestations would be treated as budget and staffing permits.

## **9.0 PUBLIC INVOLVEMENT**

This LAMP is being developed in cooperation with the public and other local, county, state and other Federal agency representatives through scheduled public scoping meetings, public informational meetings, and during public review of this Draft LAMP. During this process, more than 120 individuals on our mailing list along with local watershed councils have received letters and copies of the bulletin, "*Flash Lights!*", which provided information on the progress of LAMP development and public meetings announcements. Public involvement is an ongoing process which occurs prior to and during LAMP development. It provides the public a platform to address their concerns and comments on resource issues, management objectives and recommendations.

Responsible participants as defined in the Draft SEORMP, Appendix D (USDI/BLM, 1998b) and their level of involvement in this LAMP was determined by land ownership and the position and pattern of property within the landscape area. This included BLM, other local, county, state and Federal agencies and livestock operators and other affected interests within this landscape area. A list of participants is on file at the BLM Vale District Office.

## 10.0 MAINTENANCE OF EFFORT OVER TIME

### 10.1 Timeline and Estimated Costs of Implementation

The timeline for implementing the LAMP would commence with project development in FY1999 and continue for a minimum of 10 years. Although resource improvement is expected within this 10-year period of time, it may take longer to attain the DRFCs across the entire landscape area. Therefore, the timeline would be continuous. The LAMP is dynamic, and changes in direction may be required to adapt to changes in resource conditions as well as in the social and economic environment.

The cost for implementing the LAMP would vary from year-to-year, depending on project needs, available funding sources, and other issues (Table 10). Funding needs are known for FY1999. The projects listed in Appendix A, Table A-9 would be implemented in priority order until funding has been exhausted. Costs of future projects (through year 2009) are only an estimate. The number of projects and costs should gradually taper off once resources are moving towards DFRCs. Monitoring resource trends may identify additional projects.

**Table 10. Estimated LAMP Implementation Costs**

	FY 1999	FY 2000-2004	FY 2005-2009
Project Implementation Costs	\$90,000	\$300,000	\$100,000
BLM Administrative Costs	\$20,000	\$600,000	\$600,000
Total	\$110,000	\$900,000	\$700,000

Source : Bully Creek Identification Team, Malheur Resource Area, Vale BLM District, 1998.

### 10.2 Reasonable Assurance of Implementation

The BLM is required to comply with many laws, mandates, regulations, policies and Executive Orders in directing multiple-use management on public land within the landscape area. This includes compliance with the Clean Water Act, Oregon standards for water quality, and other directives to ensure resources benefit the Nation and its economic and social needs. Management practices within the landscape area would be

designed for healthy, sustainable, and functional ecosystems as described in SRH and in the Draft SEORMP/EIS (USDI/BLM 1998b).

Implementation of the LAMP would be the responsibility of the Vale District, Malheur Resource Area staff. The goal is to jointly fund (along with watershed partners, such as the Bully Creek Coalition, GWEB, and Malheur/Owyhee Watershed Council) a Bully Creek Coordinator, who would oversee project development, monitoring, reporting functions and other responsibilities required for successful implementation.

## GLOSSARY

**Area of Critical Environmental Concern (ACEC).** Area where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect humans from natural hazards.

**Arid.** Without moisture, extremely dry.

**Aridic (soil moisture regimes).** Soils in arid climates that are dry for a large part of the year. Little leaching occurs in these soils and soluble salts accumulate in the subsurface.

**Class “A” Weeds.** A weed of known economic importance occurring in the County in small enough infestations to make eradication practicable -- or not known to occur, but its status in surrounding Counties or States makes future occurrence seem imminent.

**Class “B” Weeds.** A weed of known economic importance and of limited distribution in the County; is subject to intensive control or eradication where feasible.

**Class “C” Weeds.** A weed of known economic importance and of general distribution that should be subject to control as local conditions warrant.

**C (Custodial) category allotment.** Includes a high percentage of private land and is managed custodially while protecting existing resource values.

**Desired Range of Future Condition.** A portrayal of the land, resources, and socio economic conditions expected in 50 to 100 years if management objectives are achieved. This is a vision of the long-term condition of the ecosystem.

**Ephemeral stream.** A stream or reach of stream that flows only in direct response to precipitation. It receives no continuous supply from melting snow or other source, and its channel is above the water table at all times.

**Eutrophic.** designating a body of water in which the increase in mineral and organic nutrients has reduced the dissolved oxygen, producing an environment that favors plant over animal life.

**Fenced Federal Range (FFR).** Usually small tracts of public land, fenced into pastures with larger amounts of private land. Generally these are non-intensive management areas; however, there is some public land included in intensive management allotments (I category) which fit this definition.

**Frigid (soil temperature regime).** Soil with a mean annual temperature lower than 8EC and the difference

between mean summer and winter soil temperatures is greater than 6EC.

**Goal.** The desired state or condition that a resource management policy or program is designed to achieve a goal is usually not quantifiable and may not have a specific date by which it is to be completed. Goals are the basis from which objectives are developed.

**I (Improve) category allotment.** Managed to improve current unsatisfactory resource conditions and will receive the highest priority for funding and management actions.

**Intermittent stream.** A stream or reach of stream that flows for prolonged periods when it receives groundwater discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Landscape (subbasin) level.** A diverse land area made up of a group of interacting ecosystems that are repeated in similar manner throughout the area. The Bully Creek plan uses common watershed boundaries that share common resource values as the landscape boundary.

**M (Maintain) category allotment.** Managed to maintain current satisfactory resource conditions and will be actively managed to ensure that resource values do not decline.

**Mesic.** Moist.

**Mesic (soil temperature regime).** Soil with a mean annual temperature between 8EC and 15EC and the difference between mean summer and winter soil temperatures is greater than 6EC.

**Objective.** Planned results to be achieved within a stated time period. Objectives are subordinate to goals, are narrower in scope and shorter in range, and are more likely to be attained. Time periods for completion, and outputs or achievements that are measurable and quantifiable, are specified. (BLM Manual 1601)

**Perennial stream.** A stream in which water is present during all seasons of the year.

**Proper Functioning Condition.** The functioning condition of riparian-wetland areas is a result of interactions among geology, soil, water, and vegetation. Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve food-water retention and ground water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater diversity.

**Public Land.** Any land or interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

**Research Natural Area (RNA).** An area where natural processes predominate and which is preserved for research and education. Under current BLM policy, these areas must meet the relevance and importance criteria of ACECs and are designated as ACECs.

**Standards for Rangeland Health.** In accordance with grazing regulations (43 CFR, 4180) that govern how the BLM administers livestock grazing on public rangelands, five minimum resource standards have been identified to be achieved and maintained for public rangelands. These five include standards for soils, riparian areas, ecological processes (nutrient cycling, energy flow, and hydrologic cycle), water quality, and providing healthy habitat for special status plant and animals and species of local importance.

**Wild and Scenic River System (WSRS).** Established by the Wild and Scenic Rivers Act of 1958 to protect rivers and their immediate environments that have outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, and other similar values and are preserved in free-flowing conditions. The system provides for the designation of three types of rivers: recreation, scenic, and wild.

**Xeric (soil moisture regimes).** Soils in Mediterranean-like climates where winters are moist and cool and summers are warm and dry.

## LITERATURE CITED

- Brooks, H.C. and J.P. O'Brien. 1992. *Geology and Mineral Resources Map of the Westfall Quadrangle, Malheur County, Oregon*. Geological Map Series GMS-71, Scale 1:24,000. Oregon Department of Geology and Mineral Industries.
- Bully Creek Watershed Assessment and Strategy: Malheur County, Oregon. 1997. Prepared by the Bully Creek Watershed Coalition, Inc., Malheur Soil and Water Conservation District, U.S. Bureau of Land Management, U.S. Natural Resources Conservation Service, Oregon Department of Fish and Wildlife, Oregon State University Malheur Extension Service, and U.S. Bureau of Reclamation. 51pp.
- Connelly, J.W., W.L. Wakkinen, A.D. Apa, and K.P. Reese. 1991. Sage Grouse Use of Nest Sites in Southeastern Idaho. *J. Wildl. Management* 55:521-524.
- Cox, D. N. and D.L. Stoneman. 1977. *Soil Survey of Ironside Environmental Impact Statement Area: Selected areas within Baker and Malheur Counties, Oregon*. Earth Environmental Consultants Inc., Albuquerque, N.M.
- Currens, K. P. 1994. *Genetic analysis of rainbow trout (Oncorhynchus mykiss) from the Malheur and Owyhee Rivers*. Oregon Cooperative Fisheries Research Unit Genetics Laboratory Report 94(1).
- DeLong, A.K., J.A. Crawford, and D.C. DeLong. 1995. Relationships between Vegetational Structures and Predation of Artificial Sage Grouse Nests. *J. Wildl. Management* 59:88-92.
- Franklin J.F. and C.T. Dyress. 1973. *Natural Vegetation of Oregon and Washington*. General Technical Report PNW-8. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, Oregon.
- Gregg, M.A. 1992. Use and Selection of Nesting habitat by Sage Grouse in Oregon. M.S.Thesis. Oregon State University, Corvallis, Oregon. 46 pp.
- Heady, Harold F., and James Bartolome. No date. *The Vale Rangeland Rehabilitation Program: the Desert Repaired in Southeastern Oregon*. U.S. Department of Agriculture, Forest Service PNW-000. Portland, Oregon. Report on file, Vale District, Vale, Oregon.
- Lovell, B.B., M.G. Lindsay, J.A. Norgren, D.W. Anderson, and G.H. Simonson. 1969. *Oregon's Long-Range Requirements for Water: General Soil Map Report with Irrigable Areas, Malheur River Drainage Basin*. Appendix I-10. State Water Resources Board, Oregon State University, Corvallis, Oregon.

- Lovell, B.B. 1980. *Soil Survey of Malheur County, Oregon; northeastern part*. U.S. Department . of Agriculture, Soil Conservation Service, U.S. Gov't Printing Office: 1980-245-212/19.
- Malheur County Planning Office. 1978. *Malheur County Non-point Source Water Quality Management Planning Program*. Vale, OR.
- Malheur County Planning Office. 1981. *Final Report: Two-Year Sampling Program Malheur County Water Quality Management Plan*. Vale, OR.
- Malheur-Owyhee Watershed Council. 1998. *Draft Malheur Basin Watershed Action Plan and Assessment*.
- Oregon Department of Environmental Quality. 1997. *Guidance for Developing Water Quality Management Plans that will Function as TMDLs for Nonpoint Sources*. Oregon Department of Environmental Quality, Portland, Oregon. 20 pp.
- Oregon Natural Heritage Advisory Council. 1997. *Threatened and Endangered Plants and Animals of Oregon*. Oregon Natural Heritage Program, Portland, OR. 84 pp.
- Oregon State Highway Division. 1973. Malheur County Road Index Map. Salem, OR.
- Oregon Statewide Assessment of Nonpoint Sources of Water Pollution Report. 1988
- Orr, E.L., W.N. Orr, and E.M. Baldwin. 1992. *Geology of Oregon, 4<sup>th</sup> ed*. Kendall/Hunt Publishing Company, Dubuque, Iowa.
- Soil Survey Staff. 1998. *Keys to Soil Taxonomy*. 8<sup>th</sup> edition. USDA-NRCS, U.S. Government Printing Office, Washington, D.C.
- U.S. Department of Agriculture, Forest Service. 1996a. *Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin*. U.S. Department of Agriculture, Forest Service General Technical Report PNW-GTR-382. Portland, OR. 303 p.
- U.S. Department of Agriculture, Forest Service. 1996b. *Status of the Interior Columbia Basin, Summary of Scientific Findings*. U.S. Department of Agriculture, Forest Service General Technical Report PNW-GTR-385. Portland, OR. 144 p.
- U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior, Bureau of Land Management. 1997. *Interior Columbia Basin Ecosystem Management Project Eastside Draft Environmental Impact Statement*. Walla Walla, WA.

- U.S. Department of the Interior, Bureau of Land Management. 1977. *Ironside Ecosite Inventory in preparation for the Ironside Environmental Impact Statement (RPS - 1982)*. Vale District, Vale, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1979. *Malheur Resource Area Management Framework Plan*. Vale District Office, Vale, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1980a. *Draft Ironside Grazing Management Environmental Impact Statement. Oregon State Office (portions of the Vale and Baker Resource Areas)*. Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1980b. *Final Ironside Grazing Management Environmental Impact Statement. Oregon State Office (portions of the Vale and Baker Resource Areas)*. Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1982. *Rangeland Program Summary (RPS), Record of Decision for the Ironside EIS Area*. Vale District. Vale, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1983. *Vale District Monitoring Plan*. Vale District Office, Vale, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1985. *Northwest Area Noxious Weed Control Program EIS*. Oregon State Office. Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1987. *Northwest Area Noxious Weed Control Program EIS Supplement*. Oregon State Office, Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1989. *Oregon Wilderness Final Environmental Impact Statement*. Oregon State Office, Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1991. *Wilderness Study Report, Oregon*. Oregon State Office, Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1993. *Process for Assessing Proper Functioning Condition. Riparian Area Management technical Reference 1737-9*.
- U.S. Department of the Interior, Bureau of Land Management. 1994a. *Environmental Assessment (OR-030-89-19) and Decision Record for the Noxious Weed Control Program 1994 - 1998*. Vale District, Vale, OR.

- U.S. Department of the Interior, Bureau of Land Management 1994b. *Noxious Weed Strategy for Oregon-Washington*. Oregon State Office, Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1994c. *The Use of Aerial Photography to Manage Riparian-Wetland Areas*. TR 1737-10. Denver, CO.
- U.S. Department of the Interior, Bureau of Land Management 1995. *H-8550-1. Interim Management Policy for Land Under Wilderness Review*. Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1997. *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Land in Oregon and Washington*. Oregon State Office, Portland, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1998a. *Willow Creek, Bully Creek, Lower Malheur River Subbasin Review*. Vale District, Malheur Resource Area, Vale, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1998b. *Draft Southeastern Oregon Resource Management Plan/Environmental Impact Statement, Volumes 1 & 2*. (SEORMP/EIS). Vale District, Vale, OR.
- Wakkinen, W.L. 1990. Nest Site Characteristics and Spring-Summer Movements of Migrating Sage Grouse in Southeastern Idaho. M.S. Thesis. University of Idaho, Moscow, Idaho. 57 pp.
- Walker, G.W. and N.S. MacLeod. 1991. *Geologic Map of Oregon, Scale 1:500,000*. United States Geological Survey.
- Western State Sage Grouse Committee. 1974. *Guidelines for Habitat Protection in Sage Grouse Range, A Revision of the 1968 Guidelines Prepared by the Western States Sage Grouse Committee*. 12 pp.
- Western States Sage Grouse Committee. 1982. *Sage Grouse Management Practices*. Edited by Robert Autenrieth, William Molina and Clait Braun. 42pp.