Acknowledgements

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SEI, under contract to the department, provided technical and scientific expertise, and was responsible for most administrative aspects of the plan, including preparation and production of the draft LMP. The Geographic Information Center at California State University, Chico provided geographic information system support, compiled the spatial data and produced the aerial images and preliminary maps. Dr. Roy Buck of EcoSystems West Consulting conducted plant community mapping, compiled the plant species lists, and prepared the botanical resource report. Cultural resource specialist Scott Baxter of Past Forward Inc. conducted literature and database reviews and field surveys to compile the cultural history of the Wildlife Area.

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Hallelujah Junction Wildlife Area

Land Management Plan

PREPARED BY SUSTAIN ENVIRONMENTAL INC FOR THE

California Department of Fish and Game

North Central Region

December 2009

Printed on sustainable paper products

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H: Range Management Guidelines

I: Online Data Resources for Biological Monitoring and Adaptive Management (Hyperlinked)

J: Regional Habitat Conservation Planning Resources (Hyperlinked)

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State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

Hallelujah Junction Wildlife Area Land Management Plan

Sierra and Lassen Counties, California

UPDATED:
DECEMBER 2009

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Regional Manager Date

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Deputy Director Date

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I. INTRODUCTION

About the California Department of Fish and Game I:1

About the Hallelujah Junction Wildlife Area I:2

I. INTRODUCTION

This land management plan is designed to be a living document. It describes the dynamic ecological conditions and managerial goals of the Hallelujah Junction Wildlife Area. The plan uses an adaptive management approach and assumes that goals and tasks will continue to be updated and refined as more information is gathered and conditions change. It is written for a wide range of audiences that have varying levels of knowledge about ecosystems and adaptive management techniques as well as varying degrees of familiarity with the Wildlife Area itself.

Main entrance to the Hallelujah Junction Wildlife Area. October 2006, SEI.

About the California Department of Fish and Game

> The mission of the California Department of Fish and Game is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

The California Department of Fish and Game (CDFG) maintains native fish, wildlife, plant species and natural communities for their intrinsic and ecological value and their benefits to people. This includes habitat protection and maintenance in a sufficient amount and quality to ensure the survival of all species and natural communities. The department is also responsible for the diversified use of fish and wildlife including recreational, commercial, scientific and educational uses.

Purpose of CDFG Wildlife Areas. The CDFG currently manages more than 100 state wildlife areas. These areas are scattered throughout the state, most located in central and northern California. The state owns about two-thirds of the total acreage while the remainder is managed under agreements with other public agencies. The state acquires these wildlife areas to protect and enhance habitat for wildlife species, and to manage these lands for compatible, wildlife-related public uses. These lands provide habitat for a wide array of plant and animal species, including many listed as threatened or endangered.

Purpose of CDFG Land Management Plans. The CDFG develops management plans for all its lands. Its purpose in preparing a land management plan (LMP) is multifold:

- To guide management of habitats, species, and programs to achieve the department's mission to protect and enhance wildlife.
- To identify appropriate public uses of the property.
- To serve as a descriptive inventory of fish, wildlife and native plant habitats that occur on or use the property.
- To provide an overview of the property's operation and maintenance, and personnel requirements to implement management goals. It also serves as a budget planning aid for annual regional budget preparation.
- To provide a description of potential and actual environmental impacts and subsequent mitigation that may occur during management, and to provide environmental documentation to comply with state and federal statutes and regulations.

About the Hallelujah Junction Wildlife Area

The State of California purchased the Hallelujah Junction Wildlife Area (HJWA) in 1989 for the express purpose of protecting the winter range and migration corridors of the Loyalton-Truckee deer herd. The initial land purchase totaled 3,742 acres. Since that time, six additional expansions have brought the total to 13,394 acres. The original HJWA LMP (CDFG 1990) identified three primary management goals:

- To preserve critical deer winter range and migration corridors from development.
- To protect, restore, enhance and develop riparian and wetland habitats.
- To provide public use with an emphasis on interpretive and educational use.

Preparation of the HJWA Land Management Plan. The department prepared this update to the HJWA LMP with assistance from Sustain Environmental Inc. (SEI) and its affiliates, including the Geographic Information Center (GIC) at California State University, Chico, EcoSystems West Consulting, and Past Forward Inc. The department provided overall guidance to the planning process and was responsible for all decisions about the content of the plan. SEI, under contract to the department, provided technical and scientific expertise, and was responsible for most administrative aspects of the plan, including preparation of the initial draft.

Information to guide the plan's content came from three primary sources:

- Department policy and federal and state law.
- Consultation with area managers as part of an integrated planning program.
- Information collected about the occurrence of biological and cultural resources (including limited field surveys) and analysis of scientific literature to assess the efficacy of different management strategies.

Development of Management Goals. The staff and area managers from the CDFG's North Central Region were the primary sources of information on management issues at the HJWA. Management goals and objectives were crafted based on planning interviews with CDFG staff. These goals will continue to be refined by the Region's area land managers.

To assist with achieving consistency with the California Resources Agency and CDFG's partner agencies, state resource planning documents were also considered in the development of management goals. The CDFG is an integral part of the California Resources Agency, which oversees the management of the state's natural resources. It also partners with the California Wildlife Conservation Board, which directs public investments in wildlife conservation, and the California Fish and Game Commission, which provides rulemaking decisions. Key planning documents reviewed to assist in developing goals for this LMP include:

- California Wildlife Action Plan (CDFG 2007) http://www.dfg.ca.gov/wildlife/wap/report.html
- Resource Status Assessment and Trends Methodology (Hoenicke and Hoshovsky 2002) http://legacy.ca.gov/pub_docs/Natural_Resource_Health_and_Condition_Methodology_Report_FINAL.pdf
- Legal Mandates Related to the Conservation of Land and Natural Resources (Fulton et al. 2001) http://legacy.ca.gov/pub_docs/CCRISP_LegalMandates_V8.1.pdf
- North American Mule Deer Conservation Plan (Mule Deer Working Group 2004) http://www.dfg.ca.gov/wildlife/hunting/deer/docs/NAMuleDeerConsPlanFinal.pdf
- Coordinated Implementation Plan for Bird Conservation in California (IWJV 2005) http://www.iwjv.org/Images/CAPlan2005.pdf
- Draft Avian Conservation Plan for the Sierra Nevada Bioregion (Siegel and DeSante 1999) http://www.prbo.org/calpif/pdfs/sierra.v-1.pdf
- Riparian Bird Conservation Plan (Ballard et al. 2004) http://www.prbo.org/calpif/pdfs/riparian.v-2.pdf
- Sagebrush Bird Conservation Plan (Holmes et al. 2005) http://www.prbo.org/calpif/pdfs/sage.v-1.pdf

The HJWA LMP is based on adaptive management principles. As such, management goals focus first on establishing baseline conditions of biological diversity, habitat integrity and environmental health within the Wildlife Area. This information will help CDFG staff to determine how effective current management practices are in sustaining the HJWA, as well as assist in the development of meaningful indicators and performance measures for determining management success in the future.

In accordance with the California Environmental Quality Act (CEQA), an Initial Study (IS) was prepared to evaluate if LMP implementation would adversely impact the environment (Appendix G). A proposed Negative Declaration (ND) finding has been prepared because IS analysis concluded that this LMP, as proposed, would not have potentially significant adverse environmental impacts.

The HJWA LMP is programmatic in nature; thus, specific projects that may be developed consistent with the plan are not currently known. Full implementation of the LMP's goals and tasks is also contingent upon having adequate staff and operating budget. Any future projects will need to be evaluated in conjunction with the IS/ND to assess if additional project-specific CEQA analysis is necessary. CEQA Guidelines Sections 15162-15164 will be consulted to determine the extent of additional CEQA review required for future projects.

General Policy Guide. This update to the HJWA LMP is intended as a general policy guide to the management of the Wildlife Area. It does not specifically authorize or make a pre-commitment to any substantive physical changes to the Wildlife Area. With the exception of ongoing habitat restoration and enhancement, and operations and maintenance activities, any substantive physical changes that are not currently approved will require subsequent authorizations and approvals. Future projects may also require additional permits, consultations or approvals. Examples of such requirements include:

- *California State Lands Commission:* Consultation/permit for possible secondary impacts to surrounding lands underlying rivers and streams.
- *CDFG*: Internal consultation regarding California Endangered Species Act (CESA) compliance and streambed alteration agreements (CDFG Code §1602).
- *Regional Water Quality Board*: National Pollutant Discharge Elimination System construction stormwater permit (Notice of Intent to proceed under the statewide General Construction Permit); Clean Water Act (CWA) Section 401 clean water certification if CWA Section 404 permit is required or if isolated wetlands subject to the Porter-Cologne Act will be affected.
- *U.S. Army Corps of Engineers (USACE):* Section 404 CWA permit for discharge or fill of waters of the United States; Section 10 Rivers and Harbors Act permit for work in navigable waters of the United States.
- *U.S. Fish and Wildlife Service*: ESA consultation and take authorizations.

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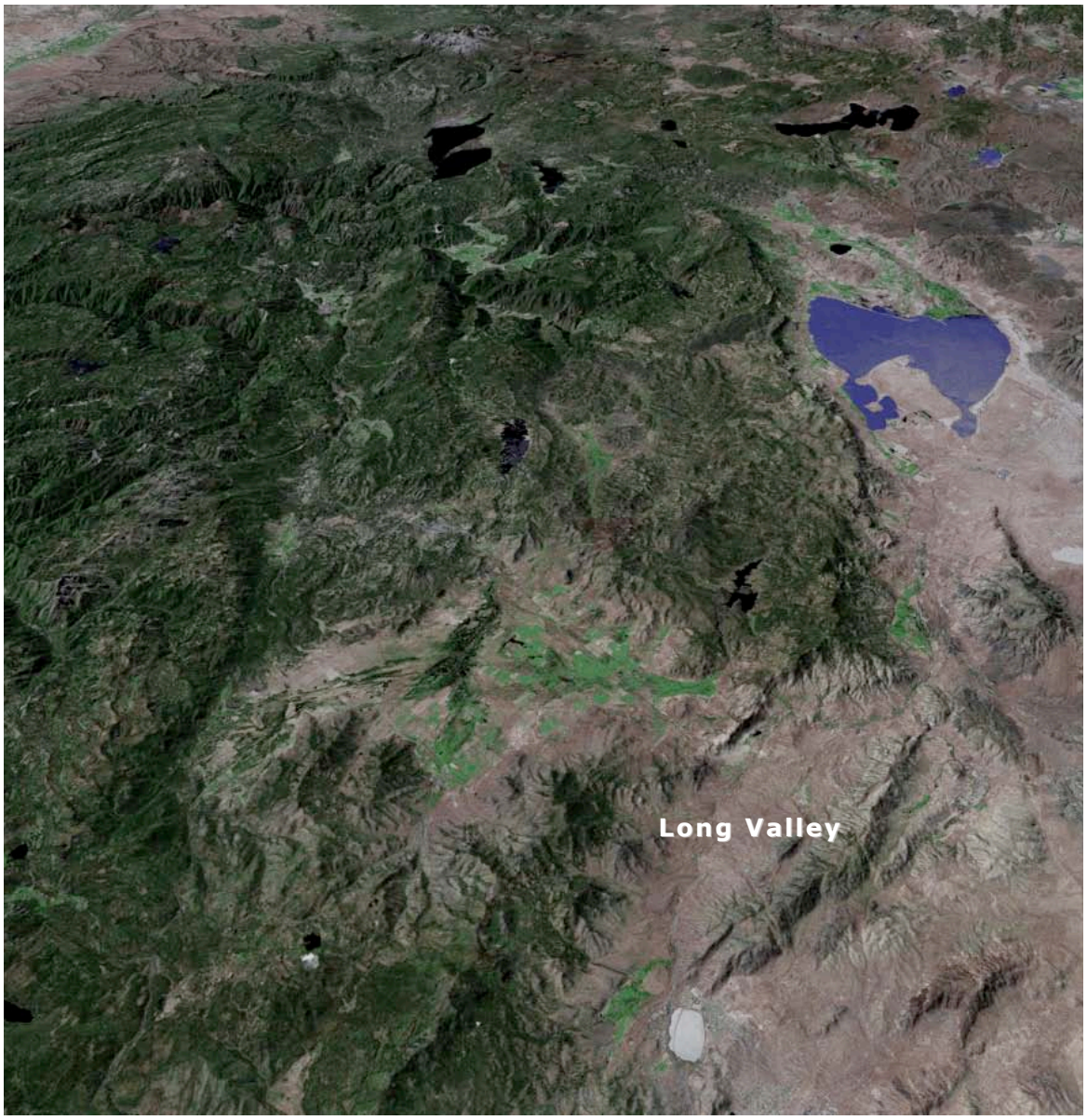
II. PROPERTY DESCRIPTION

This property description presents the ecological and historical parameters that affect the Hallelujah Junction Wildlife Area. Understanding these regional and site-specific conditions will help guide the California Department of Fish and Game in its efforts to adaptively manage the resources at this site.



Aerial panorama of the Long Valley Creek watershed.
Image courtesy of Dr. William A. Bowen, California Geographical Survey
http://geogdata.csun.edu

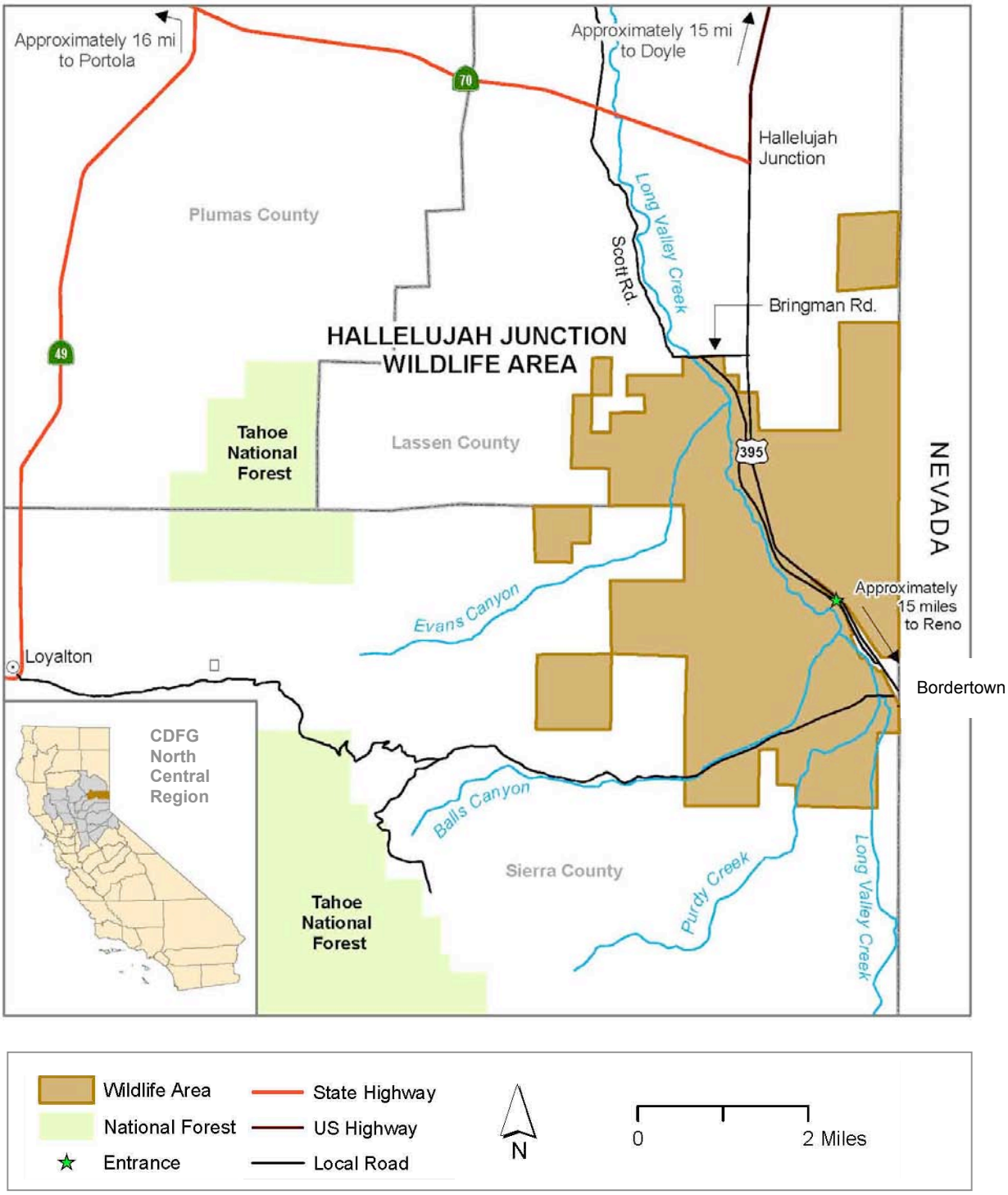
A. Geographic Setting

The 13,394-acre Hallelujah Junction Wildlife Area (HJWA) is located in Long Valley in the southern portion of the Modoc Plateau Bioregion in California at the western edge of the Basin and Range Geomorphic Province. Long Valley Creek, the southernmost tributary in the Honey Lake Watershed, bisects the Wildlife Area. The creek gathers water from the adjacent mountains and meanders north through the valley, ultimately discharging into the Honey Lake Basin. Approximately two thirds of the Wildlife Area lies to the west of Long Valley Creek and one third, mostly the foothills and slopes of the Petersen Mountains, lies to the east of the riparian corridor. Typical of eastern California Great Basin habitats, the HJWA provides a mosaic of sagebrush scrub (*Artemisia tridentada*), bitterbrush (*Purshia tridentata*), juniper woodlands (*Juniperus occidentalis and J. osteosperma*), wet meadows and wetland habitats.

The HJWA is in the northeastern portion of Sierra County and the southeastern corner of Lassen County. The Nevada border defines its eastern edge; Cold Springs, a rapidly growing suburb of Reno at Bordertown, is adjacent to its southeastern border. Just a few miles to the north is Hallelujah Junction, the interchange of U.S. Route 395 and State Route 70 that gives the Wildlife Area its name. U.S. 395 and the Union Pacific Railroad run through the middle of the Wildlife Area, parallel to Long Valley Creek, separating the eastern segment from the riparian corridor. Reno is 15 to 20 miles south on U.S. 395. (Figure II-a)

U.S. 395 bisects the Hallelujah Junction Wildlife Area. View looking south near interchange with State Route 70. February 2006, SEI.

Figure II-a. Regional Location, Hallelujah Junction Wildlife Area



Source: California Department of Fish and Game, North Central Region, May 2008, Patrick Tice (prepared by BDB for WB). Adapted by SEI.

B. Property Boundaries

The HJWA is located in Townships 21 and 22 North (T21N, T22N) and Ranges 17 and 18 East (R17E, R18E) on the Evans Canyon and Beckwourth Pass U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles in Lassen and Sierra counties, California. Initially acquired in 1989, and expanded in six subsequent acquisitions through 2005, the HJWA consists mainly of parcels that formerly made up the Evans Ranch and Green Gulch Ranch along with parcels acquired from the Bureau of Land Management (BLM) through a land exchange program. Table II-a summarizes the parcels and acquisition history. Legal descriptions of the parcels that make up the Wildlife Area are on file at CDFG's North Central Region headquarters and the HJWA office.

The Wildlife Area is approximately four miles wide and about six miles long. Figure II-b depicts the actual parcels and property boundaries that compose the HJWA, which is mostly contiguous with a disjunct parcel at the northeast corner and one on the west side south of Haskell Peak. The parcel map differs slightly from the HJWA boundary map supplied by CDFG. The CDFG boundary file currently depicts one parcel in the northeastern section of the Wildlife Area between 147-090-09 and 147-060-06 as part of the HJWA. The CDFG boundary file was used as the basis for figures provided throughout this LMP. Correcting the CDFG boundary file is a step-down activity (VB1).

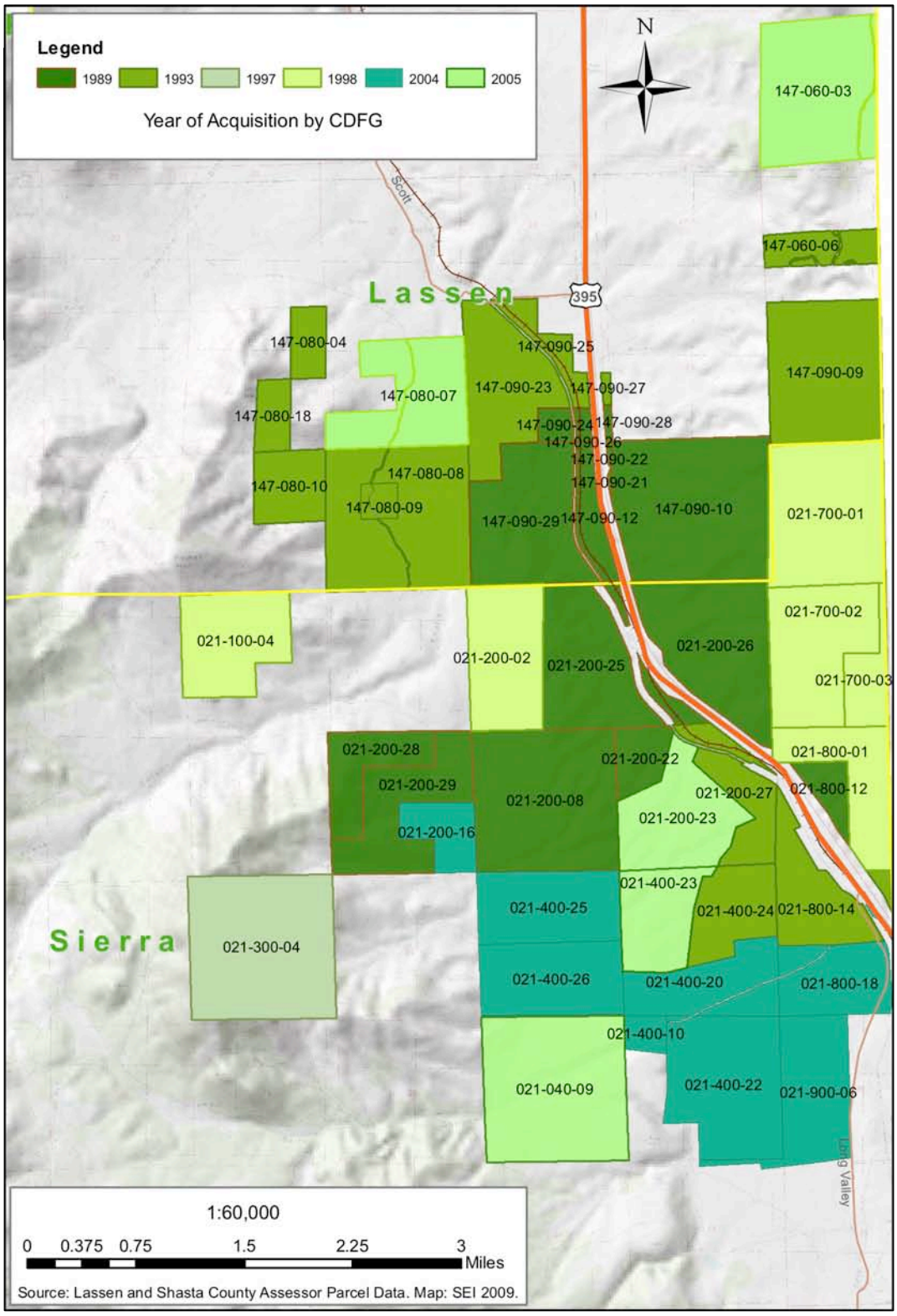
Table II-a. Acquisition History,[1] Hallelujah Junction Wildlife Area

Year	Prior Owner	Lassen County		Sierra County		Total Acres
		APN[2]	Acres	APN[2]	Acres	
1989	Evans Ranch, Inc (original purchase)	147-090-10	687	021-020-08	640	
		147-090-12	99	021-020-22	101	
		147-090-21	2	021-020-25	383	
		147-090-22	3	021-020-26	526	
		147-090-24	36	021-020-28	200	
		147-090-26	16	021-020-29	320	
		147-090-28	8	021-080-12	80	
		147-090-29	441			
		Lassen Subtotal	**1292**	**Sierra Subtotal**	**2250.00**	**3742**
1993	Evans Ranch, Inc	147-060-06	258	021-080-14[3]	263	
		147-080-04	77	021-040-24	198	
		147-080-08	591	021-020-27	188	
		147-080-10	38			
		147-080-18	159			
		147-090-09	77			
		147-090-23	499			
		147-090-25	359			
		147-090-27	8			
		Lassen Subtotal	**2153**	**Sierra Subtotal**	**649**	**2802**

Year	Prior Owner	Lassen County		Sierra County		Total Acres
		APN[2]	Acres	APN[2]	Acres	
1993	Ryan	147-080-09	38			
		Lassen Subtotal	38			38
1997	Richard Brown (seller)			021-030-04	640	
				Sierra Subtotal	640	640
1998	Nevada Bighorns Unlimited BLM Land Exchange			021-070-03	116	
				021-070-01	531	
				021-070-02	409	
				021-080-01	278	
				021-020-02	319	
				021-010-04	319	
				Sierra Subtotal	1972	1972
2004	Green Gulch Ranch			021-020-16	120	
				021-040-10	40	
				021-040-20	258	
				021-040-22	497	
				021-040-25	320	
				021-040-26	315	
				021-080-16	1	
				021-080-18	257	
				021-090-06	339	
				Sierra Subtotal	2147	2147
2005	Evans Ranch Associates	147-060-03	510	021-020-23	357	
		147-080-07	347	021-040-09	640	
				021-040-23	200	
		Lassen Subtotal	857	Sierra Subtotal	1197	2067.53
2008	TOTAL HJWA	Lassen	4,339	Sierra	9,055	13,395

[1] Parcel numbers and acreage verified by Lassen and Sierra County Assessor Parcel Data
[2] APN numbers reflect preferred CDFG format, which differs slightly from that used by Lassen and Sierra County Assessor Parcel Data
[3] Formerly Parcel 021-080-13
Source: CDFG

Figure II-b. Parcel Map and Property Boundaries, Lassen and Sierra Counties, Hallelujah Junction Wildlife Area



1. Adjacent Land Use

Federal lands largely border the HJWA, with BLM holdings on the east side, and the Tahoe National Forest to the west. The city of Santa Clara, California, owns two undeveloped neighboring sections (3 and 9) in Evans Canyon that, along with two privately held properties, account for the disjunct parcel on the south side of Haskell Peak. Private land use on the north side is primarily grazing lands. Ranches here consist of large cattle and hay operations with houses and multiple outbuildings. The Balls Canyon Ranch borders the Wildlife Area's southwest corner, and there have been discussions about the development of a resort on the property (J. Lidberg, CDFG Area Manager [ret.], personal communication).

Urban development has expanded along the U.S. 395 corridor from Reno and is encroaching on the HJWA from the southeast. Residential development at Cold Springs adjoins the southeast corner of the Wildlife Area east of the highway, and the commercial outpost of Bordertown shares a common boundary. Other development nearby includes industrial parks, homes on large lots, and ranch style homes with small acreages.

Properties making up the HJWA have been used historically for livestock grazing, most recently in conjunction with adjacent and nearby public land under an allotment plan administered by BLM. The portions of Lassen and Sierra counties in which the Wildlife Area is situated are designated open range; it is the responsibility of the landowner to fence livestock out rather than that of the livestock owner to fence the animals in (Andes 2000). The HJWA is largely fenced and access is restricted. Within the Wildlife Area, the riparian corridor along Balls Canyon Creek has been fenced to exclude livestock to protect habitat and prevent adverse impacts to water quality. Under crossings and deer-proof fencing with one-way gates (constructed during expansion of U.S. 395) facilitate deer migration and have reduced highway deer mortality (Kahre 1980). The primary access to HJWA is along the west side of U.S. 395 approximately 0.75 mile south of the Sierra County line sign on the highway (Lidberg, personal communication). Gates at property boundaries provide access between the main unit and isolated parcels.

2. Easements and Rights-of-Way

Easements and rights-of-way are legally recorded documents that run with the deed of the property, and are transferred with the property from owner to owner. Easements typically preserve the rights of an entity other than the landowner. Over the years, scores of easements have been granted or reserved by former owners of the parcels that make up the Hallelujah Junction Wildlife Area (Appendix A). Many of these are probably obsolete, while successors or heirs of the original grantees may hold other active easements.

Rights-of-way for railroads were recorded first, dating back to 1883, followed by utility easements in 1905, and highway easements in the 1920s. These easements facilitated much of the early transportation, power, and communication development in Long Valley. Since then, subsequent easements have been granted as those original systems were expanded or modified.

Other easements cover a variety of subjects ranging from drainage facilities to preserving the right of the people to fish. Former owners have reserved water rights on some parcels along with rights for water exploration and well development. Ingress-egress easements have been granted for grazing and a variety of other purposes. Mineral rights on HJWA parcels were patented as early as 1928 and

reserved as recently as 1989. Parcels acquired in the 1998 land exchange with BLM are subject to a covenant by Executive Order No. 11990 to maintain existing wetlands. Since establishment of the HJWA, one grantee has asserted an easement through Civil Code 813. The Walima Corporation claims an easement granted in 1982 for a road through T21N R17E, Sections 13, 14, 19, and 24, to the adjoining Balls Canyon Ranch. Some of these easements, if exercised, appear to have the potential to impact the Wildlife Area or its management. The proposed road to Balls Canyon Ranch and development associated with mineral exploration and recovery are examples.

View of Long Valley Creek, Western Pacific railroad and Pacific telephone lines bisecting HJWA. February 2006, SEI.

C. Geomorphology, Climate and Water

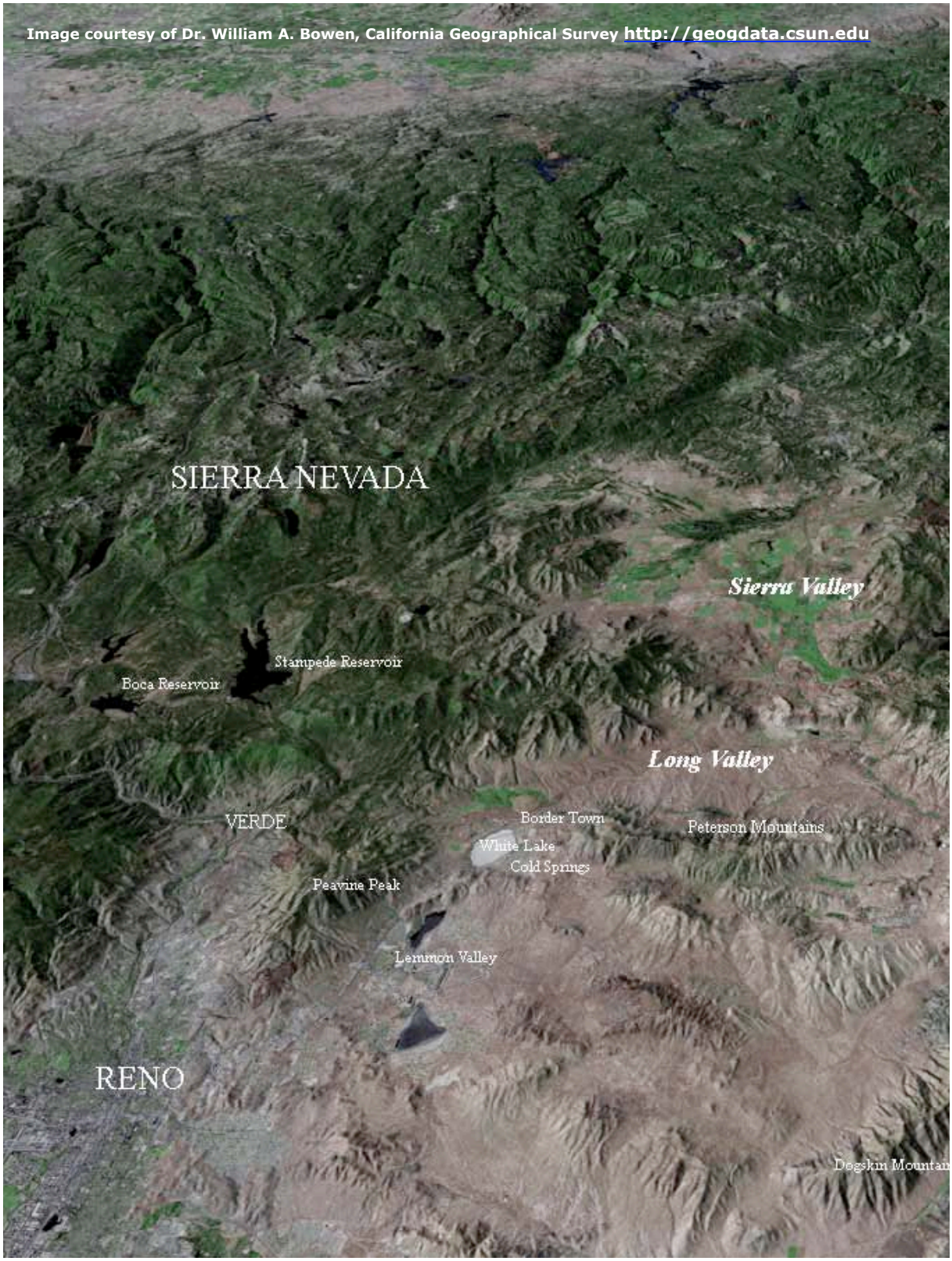
1. Geology and Soils

Long Valley, the geological home of the HJWA, is an elongated north-south trending basin located at the western edge of the Basin and Range Geomorphic Province, bounded by Peavine Peak to the south, the Diamond Mountains to the northwest, the Petersen Mountains to the east, and the Honey Lake Valley Basin to the north (Figure II-c). Elevations range from about 5000 feet on the valley floor to 6150 feet on the east side and 6900 feet on the slope of Haskell Peak on the west side (DWR 2004). The Diamond Mountains consist of Mesozoic granitic rocks. The Petersen Mountains consist mainly of Cretaceous to Jurassic granitic rocks with exposures of metavolcanic rocks near Cold Springs Valley. Two east-dipping normal faults are inferred to lie along the western and central parts of Long Valley. The two major faults include the Diamond Mountain Fault and a central unnamed fault that extends from Peavine Peak through Reno (Hallelujah) Junction. Long Valley is generally an asymmetric half-graben development. Valley sequences are tilted westward and sediments are deep (ibid.). The valley is bordered by Washoe County, Nevada, on the east.

South of S.R. 70, bedrock is shallow (150–300 feet in depth) between the Sierra Nevada and the central segment of the Long Valley fault. Pleistocene non-marine sedimentary rocks constitute valley fill in this region. These older valley fills underlie terraces along the west side of the valley. East of the central fault, the valley is underlain by a thick, west-dipping Pliocene non-marine sequence referred to as the Hallelujah Formation. This sequence thins to a few hundred feet near the community of Bordertown and forms a north-trending anticline between Cold Springs Valley and the southern-most part of Long Valley (ibid.).

Complex sedimentation patterns have formed Long Valley and the soils that underlie the HJWA. As shown in Figure II-d, most of the HJWA consists of terraces and dissected alluvial fans that reflect their sources on either side of the valley. Not surprisingly, there are strong differences in the soil types found east and west of U.S. 395. Table II-b lists soil types in the Wildlife Area and their proportional extent. Soil descriptions are from the Natural Resources Conservation Service (NRCS 2008).

Figure II-c. Panorama of Long Valley/Honey Lake Basin Watershed



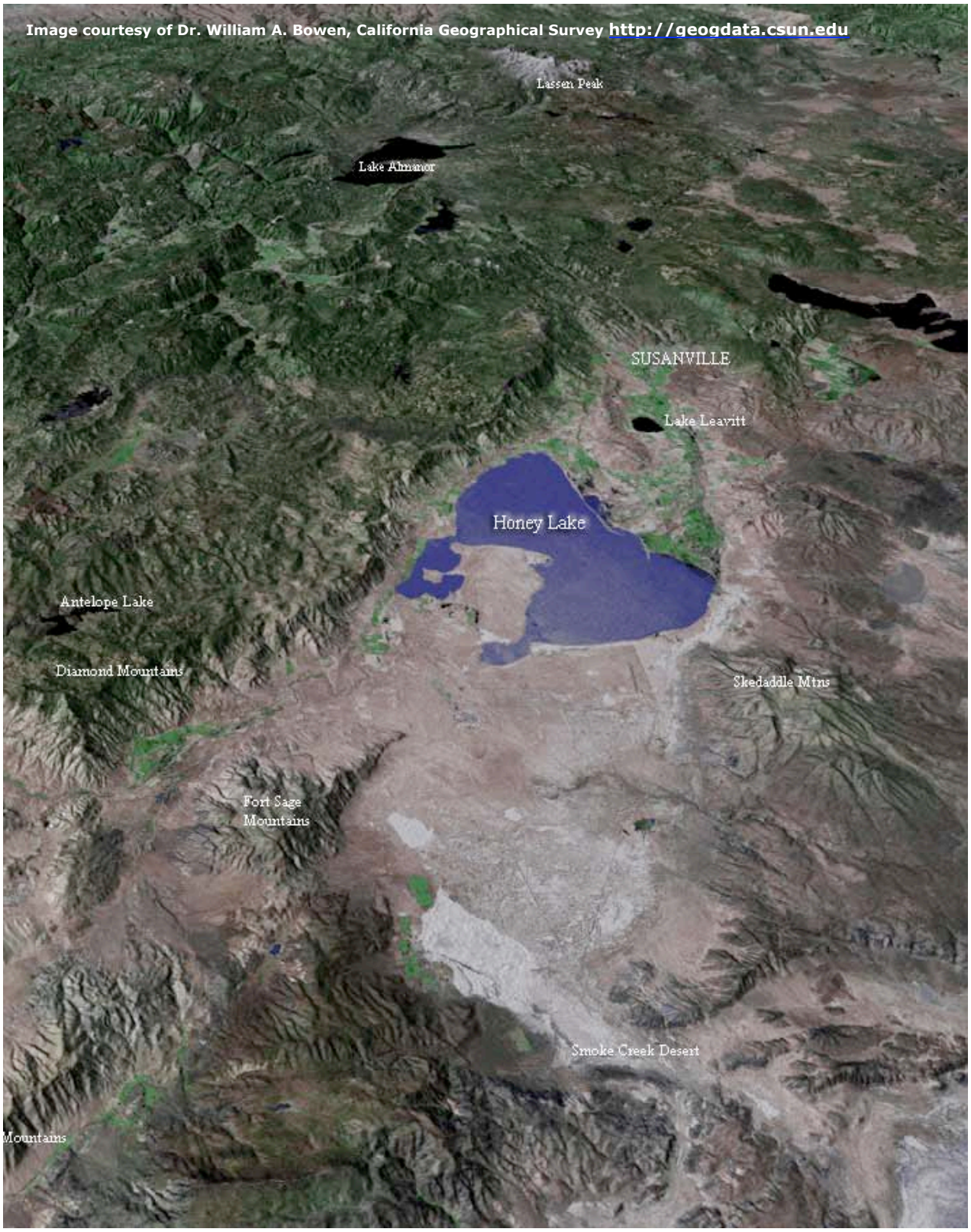
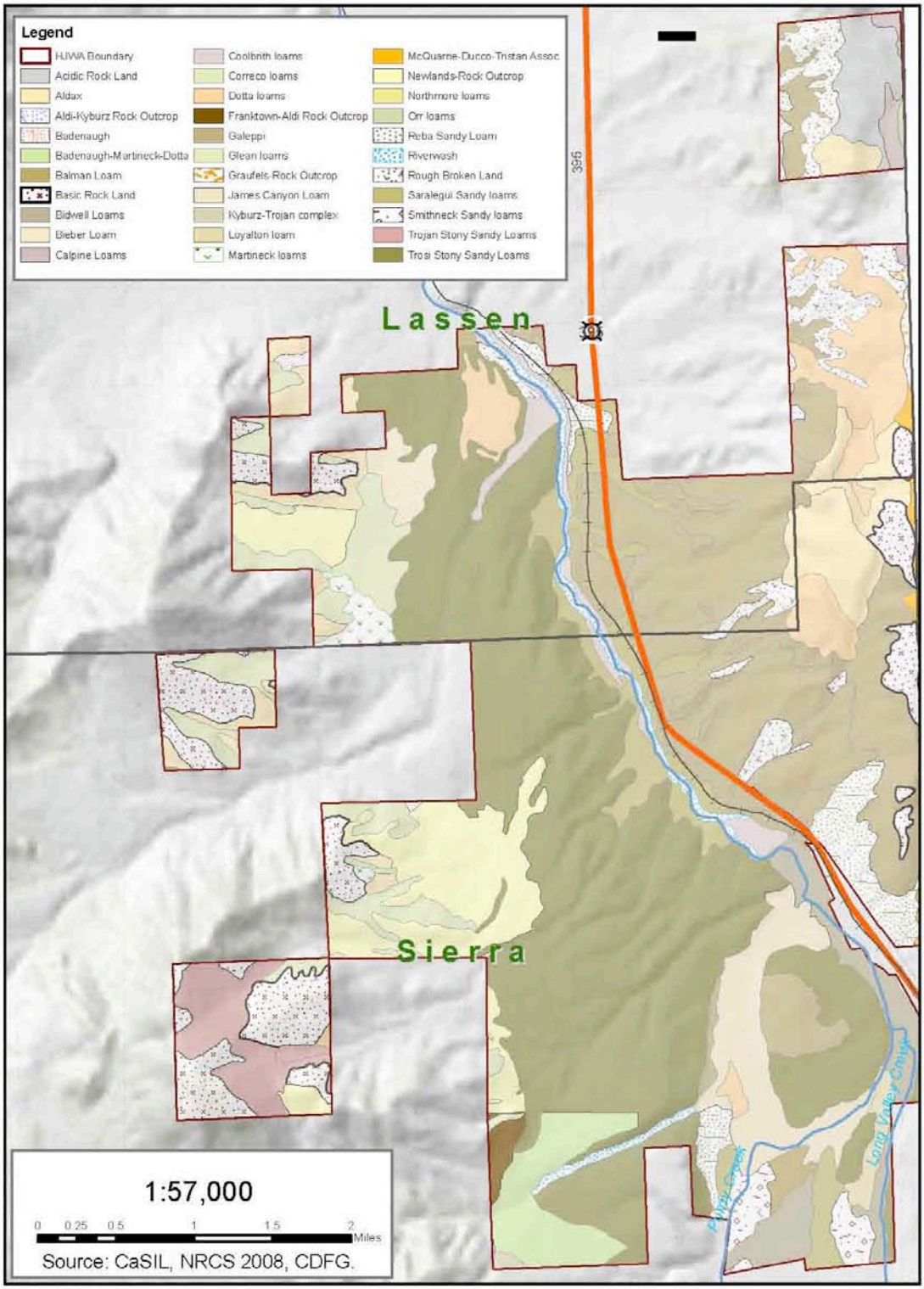


Image courtesy of Dr. William A. Bowen, California Geographical Survey http://geogdata.csun.edu
Lassen Peak
Lake Almanor
SUSANVILLE
Lake Leavitt
Honey Lake
Antelope Lake
Diamond Mountains
Skedaddle Mtns
Fort Sage
Mountains
Smoke Creek Desert
Mountains

Figure II-d. Distribution of Major Soil Types, Hallelujah Junction Wildlife Area



Map: SEI 2009

Table II-b. Soil Types by Proportional Extent, Hallelujah Junction Wildlife Area

Soil Type (most prevalent to least prevalent)	% Slope	% Acreage
Trosi Very Stony Sandy Loam	2 to 15	15.26
Galeppi Loamy Course Sand	5 to 30	12.09
Trosi-Saralegui Complex, Eroded	15 to 50	9.19
Newlands-Rock Outcrop Complex	2 to 30	5.94
Basic Rock Land	--	5.73
Trosi Extremely Stony Sandy Loam	2 to 15	4.80
Galeppi Cobbly Loamy Coarse Sand	5 to 30	4.25
Dotta Cobbly Sandy Loam	2 to 30	3.70
Saralegui Sandy Loam	2 to 15	3.30
James Canyon Silt Loam	0 to 2	3.23
Rough Broken Land	--	3.10
Glean Extremely Sandy Stony Loam	9 to 50	3.05
Aldax-Rock Outcrop Complex	15 to 75	2.65
Reba Sandy Loam	2 to 30	2.49
Badenaugh-Martineck-Dotta Association	2 to 30	2.24
Aldax-Millich Complex	5 to 30	1.98
Trojan Stony Sandy Loam	30 to 50	1.94
Bidwell Sandy Loam	0 to 2	1.90
Acidic Rock Land	--	1.33
Correco Very Cobbly Sandy Loam	2 to 30	1.21
Smithneck Sandy Loam	--	1.11
Riverwash	--	1.07
Coolbrith Silt Loam	2 to 5	0.93
Bidwell Loam	0 to 2	0.82
Bieber Gravelly Sandy Loam	0 to 5	0.75
Galeppi Loamy Course Sand	2 to 5	0.75
Ramelli Clay	--	0.72
McQuarrie-Ducco-Tristan Association	--	0.63
Martineck Very Stony Sandy Loam	2 to 30	0.59
Dotta Sandy Loams	2 to 9	0.58
Loyalton Fine Sandy Loam	--	0.49
Calpine Course Sandy Loam	5 to 9	0.40
Franktown-Aldi-Rock Outcrop Complex	30 to 50	0.35
Balman Loam	0 to 2	0.33
Coolbrith Silt Loam	0 to 2	0.30
Graufels-Rock Outcrop Complex	15 to 30	0.17
Trojan Stony Sandy Loams	2 to 30	0.13
Badenaugh Very Cobbly Sandy Loam	2 to 30	0.11
Kyburz-Trojan Complex	9 to 30	0.09
Balman Loam	2 to 5	0.06
Northmore Sandy Loam	4 to 8	0.06
Glean extremely Sandy Stony Loam	9 to 50	0.05
ORR Stony Sandy Loams	4 to 8	0.05
Trosi Very Stony Sandy Loams	2 to 15	0.05
Aldi-Kyburz-Rock Outcrop Complex	30 to 75	0.01
Bidwell Loam	--	0.00

Source: NRCS 2008

EAST SIDE SOILS

Galeppi soils on the east side of Long Valley Creek tend to be deep, well-drained sandy loams formed in alluvium derived from mixed igneous rocks. These soils have slow permeability with relatively high surface runoff, and are typically vegetated by big sagebrush scrub. Weathered ridges of Rough Broken Land punctuate the Galeppi fans. Aldax formations found on the foothill slopes above the Galeppi fans are shallow, well-drained soils formed in material weathered from andesite or basalt. They are characterized by moderately rapid permeability, and medium or rapid surface runoff. On the east side of the HJWA, Aldax soils roughly coincide with the distribution of the juniper woodland habitat type. Further up the slopes and along the weathered ridges of the Petersen Mountains occur rocky soil types that include Acidic Rock Land, Basic Rock Land, and Rough Broken Land. Here, soils are very shallow and rock covers most of the surface; outcrops and boulders are common, with sparse patches of annual and perennial grasses or sagebrush scrub. In the Petersen foothills in the northeast portion of the Wildlife Area is a Dotta terrace. Dotta formations are very deep, well-drained sandy loams formed in alluvium weathered from metamorphic and igneous rock sources. They tend to be of moderately slow permeability, and slow to rapid surface runoff. The terrace is vegetated by sagebrush scrub and scattered junipers. At the base of the hills in the southeast corner of HJWA is an alluvial fan of Reba sandy loam. Reba soils are well-drained, fine sandy clay loams underlain by silty clay. They exhibit slow permeability and slow to rapid runoff.

WEST SIDE SOILS

On the west side of Long Valley, Trosi loams form the terraces and alluvial fans. The Trosi series have light brown, platy, very stony loam A horizons, grading to very cobbly clay B2t horizons underlain by a hard pan. They occur on old terraces and have formed in gravelly, cobbly, and stony alluvium from mixed rock sources. They are characterized as well drained, having very slow permeability, and slow to rapid runoff. Three soils of the Trosi series cover nearly 30% of the HJWA surface (Table II-b) and are typically vegetated by low sagebrush scrub, and perennial grasses.

At the mouths of major drainages on this side of the valley are alluvial fans that reflect their upstream geologic sources. At the mouth of Balls Canyon, in the southern portion of the Wildlife Area, is a complex fan that includes Galeppi, Dotta, James Canyon, Coolbrith, and Bidwell formations. The James Canyon series are very deep, poorly drained soils that formed in alluvium from mixed rocks. They exhibit moderate permeability, low or medium surface runoff, and a seasonal high water table. James Canyon soils underlie much of the riparian scrub and meadow habitats on the Wildlife Area. Coolbrith silt loams have dark gray, medium and slightly acid, loam A horizons, dark brown, slightly acid, clay loam B2t horizons, and dark grayish brown mottled lower B horizons. Found in margins of basins, they formed in alluvium from mixed sources and are characterized as somewhat poorly drained, having moderately slow permeability, and slow or very slow runoff. This formation is at the western edge of the hay meadow.

The Bidwell sandy loam formation is found at the eastern margin of this complex close to the banks of Long Valley Creek. The Bidwell series consists of very deep well-drained soils on fan remnants and fan skirts. They formed in ashy alluvium from tuffaceous rocks. These soils are well drained, with moderately slow permeability, and slow to medium runoff.

Upstream in Balls Canyon, soils of the Badenaugh-Martineck-Dotta association underlie the sides of the canyon. Members of this series are deep soils on fan remnants and stream terraces that formed in

alluvium derived from mixed igneous rocks. They are well drained, with moderately slow permeability, and medium or high surface runoff.

At the mouth of Evans Canyon in the northern portion of HJWA is another alluvial fan complex with Coolbrith and Bidwell formations bounded by a Dotta terrace at the foot of Little Haskell Peak. Further upland, Bieber and Correco formations make up the alluvial fan and terraces at the foot of Haskell Peak and Little Haskell Peak. Bieber gravelly sandy loams are very shallow and shallow to the durapan; soils had formed in alluvium derived from volcanic rocks such as andesite, basalt, and tuff. They are well drained, with very slow permeability, and very high surface runoff. Correco soils are sandy and cobbly sandy loams that formed in alluvium from mixed sources. They are well drained, with slow permeability, and medium runoff. Martineck formations are found on the undulating slopes near the base of Haskell Peak. Soils in this series have an extremely stony sandy loam A1 horizon and an extremely stony, sandy clay B2t horizon underlain by a hard pan. They formed in cobbly and stony alluvium mostly derived from basic igneous rock sources. Low sagebrush scrub vegetates this part of the Wildlife Area.

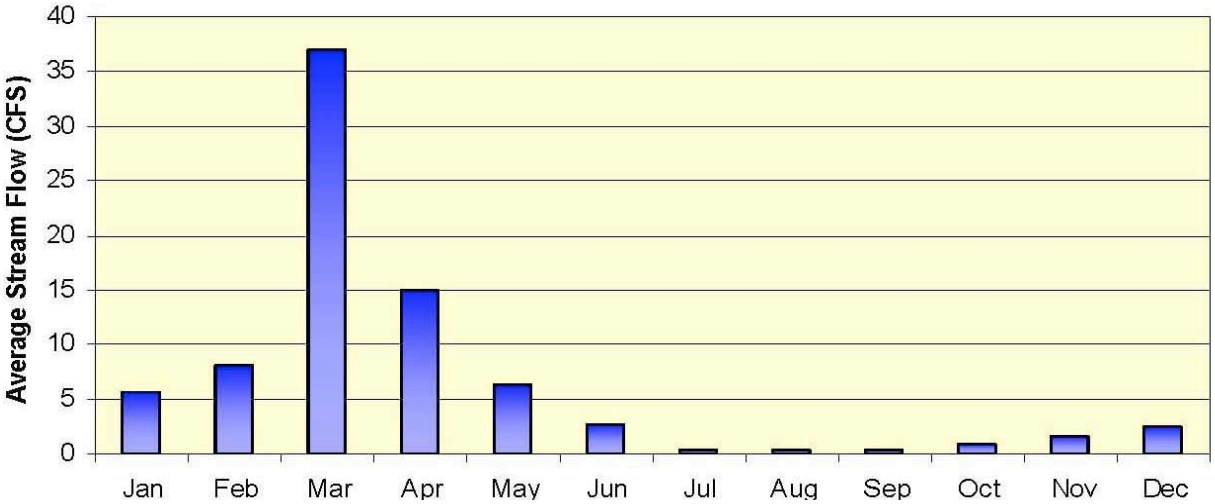
Higher on the western slopes are Aldax, Basic Rock land, Glean, and Newlands-Rock Outcrop formations. Glean soils are extremely stony sandy loams on slopes up to or exceeding 50%. They formed in gravelly, cobbly, and stony colluvium from mixed rocks including metamorphic rocks, basalt, and andesite. This series is well drained, has moderately rapid permeability, and medium to very rapid runoff. Soils of the Newlands-Rock complex are deep soils that formed in residuum and local colluvium from basic rock sources including andesite, basalt, and tuff. They are often found on slightly concave slopes and ridges, are well drained, have moderately slow permeability, and slow or medium runoff. In this portion of HJWA, these formations underlie sagebrush scrub and Jeffrey pine woodland.

On the valley floor, a Saralegui sandy loam formation occurs on both sides of Long Valley Creek and extends laterally into side drainages in the adjacent Galeppi and Trosi terraces. The Saralegui are deep soils that formed in moderately course-textured alluvium. They are well drained, have moderately rapid permeability, and medium runoff.

2. Hydrology

Long Valley Creek bisects the HJWA. The creek headwaters are located on Peavine Peak; the watershed drains north approximately 40 miles to terminate in the Honey Lake playa. The Wildlife Area itself is located in the Upper Long Valley section of the watershed, which extends from the headwaters to S.R. 70, and includes the perennial streams of Purdy Creek, Balls Canyon Creek and Evans Creek (WRD 1996). Along with these surface waters, there are at least three springs that support wet-meadow vegetation. Peak water flows occur in early spring (March-May), coinciding with the spring snowmelt in the Sierra. Flows on Long Valley Creek were measured for five years from 1989 to 1994. Average monthly flows were over 35 cubic feet per second (cfs) in March, and below 15 cfs the rest of the year (Brown and Caldwell 2007) (Figure II-e).

Figure II-e. Monthly Average Stream Flows, Long Valley Creek, USGS Gage 10354000, 1989–1994



Source: Adapted from Brown and Caldwell 2007

The Long Valley Groundwater Basin is hydrologically connected to the Honey Lake Groundwater Basin in the north and Cold Springs Valley in the south. The surface area of this basin is 73 sq. miles (DWR 2004). The USGS has reported that Cold Springs Valley receives an estimated 200 to 500 acre feet per year (af/y) as underflow from Long Valley (DWR 1989). A groundwater divide is present near Bordertown, Nevada. South of this divide, groundwater moves southeast into Cold Springs Valley. North of the divide, groundwater moves toward Long Valley Creek. Although the creek is a main source of recharge to the Honey Lake Groundwater Basin, shallow bedrock at the north end of Long Valley restricts groundwater movement (DWR 2004).

There are two water-bearing formations in Long Valley: Quaternary Sedimentary Deposits and the Tertiary Hallelujah Formation. The Quaternary sediments consist primarily of alluvium with limited areal extents and thickness. They provide some recharge to the older sedimentary and lake deposits but are not a significant source of groundwater for the basin. The Hallelujah Formation is the primary water-bearing formation in the valley. This formation ranges in thickness from 3,000 to 8,000 feet. The sediments are composed of fluviatile and lacustrine sedimentary debris derived locally from the granite and rhyolite tuff exposed in the valley. The lower part of the formation is marked by beds of sandy pebble and cobble conglomerate that supply most of the groundwater to wells at the southern end of the valley (Brown and Caldwell 2007).

The estimated groundwater storage for the Upper Long Valley, the portion of the basin south of S.R. 70, ranges between 180,000 and 300,000 acre feet (WRD 1989). In 1997, DWR estimated the groundwater extraction for agricultural and municipal/industrial uses at 74 and 28 acre feet, respectively. Deep percolation from agriculture applied water is estimated to be 140 acre feet (DWR 2004, WRD 1996).

3. Climate

With elevations ranging from 5000 feet on the floor of Long Valley to nearly 7000 feet in the mountains, the HJWA is subject to varying temperature regimes. The rain shadow effect caused by the Sierra Nevada results in greater precipitation on the western slopes of the Wildlife Area than occurs on the east side. The nearest available climate data are from the Reno Stead Airport about eight miles to the southeast on the other side of the Petersen Mountains (WRCC 2008). Conditions at Stead are probably comparable to those in Long Valley.

The annual growing season in the vicinity of the HJWA varies widely from 50 to 130 days. Average monthly temperatures range from a low of 31.9° F to a high of 71.7° F. July and August are the warmest months, with average maximum temperatures of 88.3° F and 87.0° F respectively, and each typically having 10 to 14 days on which the temperature exceeds 90° F. The highest temperature recorded at Stead since 1985 was 105° on July 11, 2002.Winter temperatures in the vicinity average 33.4°F with mean highs in the low to mid-40s and lows in the low 20s. Minimum temperatures typically dip below freezing every day from December through February and may do so in all months except July and August. However, the first fall freeze is typically in early October (probability > 60%) and the last spring freeze is typically in late May (probability < 30%). At higher elevations in the HJWA, freezing temperatures likely occur throughout the year. The lowest temperature recorded at Stead since 1985 was -22° F on December 22, 2004.

Since 1985, average annual precipitation in the vicinity of HJWA has been 11.31 inches, but has varied from just under 7 inches (1990) to nearly 24 inches (1996). Half of the annual precipitation occurs in the winter months, with February and December having the highest monthly averages. Rainfall during summer is mostly limited to thunderstorms that contribute only about 1% of the annual precipitation. On average, precipitation of greater than 0.01 inches is likely to occur on just three days from June through August. Precipitation during spring is more variable than that in the fall, and averages about 20% greater. Annual snowfall recorded at Stead since 1985 has averaged 14.3 inches, but was as much as 33.6 inches in 1996. January typically has the highest monthly snowfall, averaging 2.8 inches, but the highest monthly snowfall recorded was 29.5 inches in December of 1992. Observations suggest that snowfall is substantially greater at higher elevations of the HJWA on the west side of the valley. Snowmelt from those slopes and higher terrain beyond the HJWA boundaries results in stream flow through the Wildlife Area into midsummer.

Table II-c presents average monthly climatic data from Stead, Nevada, between 1985 and 2007. Additional climatic data, including an annual summary of weather data from 1985 to 2007, are provided in Appendix B.

Table II-c. Monthly Climate Summary, Stead, Nevada (5046' elevation), 1985-2007

AVERAGE MONTHLY	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL
Max. Temperature (F)	43.1	47.3	55.2	61.5	69.7	79.7	88.3	87.0	78.1	67.2	52.6	43.5	64.4
Mini. Temperature (F)	21.1	24.5	29.8	34.3	41.2	48.4	55.1	53.1	44.9	36.0	26.6	21.6	36.4
Total Precipitation (in.)	1.60	1.98	1.36	0.60	0.60	0.56	0.31	0.26	0.53	0.59	0.97	1.94	11.31
Total Snowfall (in.)	2.8	2.1	2.5	0.6	0.1	0.0	0.0	0.0	0.1	0.1	1.8	4.2	14.3
Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Source: Western Regional Climate Center 2008

4. Water Rights

The oversight responsibility for California's water is shared among several agencies. The California court system has jurisdiction over the use of percolating groundwater, riparian use of surface water and the appropriate use of surface water initiated prior to 1914. The State Water Resources Control Board (SWRCB) is responsible for water rights and water quality. It has jurisdiction to issue permits and licenses for water appropriation from surface and underground streams post-1914. The SWRCB also has authority to declare watercourses fully appropriated (available water rights are equalized with available water). The California Department of Water Resources (DWR) is responsible for planning the use of state water supplies and develops, in consultation with the California Water Commission, rules and regulations for that purpose (BLM 2001).

SURFACE WATER

River and other surface water may be diverted, stored and used only under a valid water right. California has two types of surface-water rights: riparian and appropriative. Riparian rights are incidental to ownership of riparian land (land adjacent to the waterway); they do not allow storage, the water must be used on the riparian land, and use does not require a permit. Riparian rights are "all share alike" or "correlative rights," meaning there is no priority of use against other riparian rights holders (during times of drought, all share the shortage). Riparian rights remain with the land when riparian lands are sold and are not lost through non-use (BLM 2001).

There are two types of appropriative rights: pre-1914, which must have been perfected by mid-1914 and must have been used essentially continuously since then; and post-1914 rights, which require a permit (or license based on a permit) granted by the SWRCB. Because appropriative rights are based on seniority (first in time, first in right), the SWRCB considers an application for a permit only if there is unappropriated water in the stream.

Long Valley Creek Stream System Adjudication. In 1976, after many years of litigation, Long Valley Creek water rights claimants successfully petitioned the SWRCB, and the appropriative rights of the Long Valley Creek Stream System were adjudicated in Decree 12999 (SWRCB 1976). Decree 12999 sets forth diversion rates on Long Valley Creek and its tributaries over the entire watershed extending from the upper watershed near Peavine Peak and Bald Mountain to the lower watershed near Honey Lake. Although diversion rates were set forth, the annual duty (the amount reasonably necessary for economical and beneficial use) in acre feet per year (af/y) or acre feet per acre (af/a) were not established or claimed (WRD 1992).

The Long Valley Creek Stream System adjudication is divided into three schedules:

- Schedule A addresses special class rights (the highest priority), usually limited to springs and seeps for domestic and stock uses.
- Schedule B involves tributary rights (such as Balls, Purdy and Evans creeks), which have either higher or correlative priority rights with Schedule C.
- Schedule C details water rights specific to Long Valley Creek itself.

Within schedules B and C, the diversions are further prioritized into levels 1-9, with level 1 having the highest priority and designated for either domestic/stock water or irrigation uses (SWRCB 1976). A level 1 water right has the highest priority so that, for example, if a right was ranked level 3, all of

the higher priority rights under levels 1 and 2 would have to be met before the third priority level was diverted. In the event that the water supply can meet only part of the entitlement of any specific priority level, the available water supply will be prorated in accordance with the allotments in that priority level (SWRCB 1976). A summary table of adjudicated water rights and associated priorities pertaining to the HJWA area under the Long Valley Creek decree is provided in Appendix C1.

HJWA Surface Water Rights. Based upon a preliminary review of the HJWA land acquisition history, various historical water reports (Mahannah 1991, 2002; WRD 1989, 1992, 1996), and the Long Valley Creek decree, it appears that the HJWA holds surface water rights (with varying priority levels) in schedules B and C:

Schedule B-1 East Branch and Unnamed Tributary
Schedule B-2 South Creek
Schedule B-3 Purdy Creek and Tributaries
Schedule B-4 Balls Creek and Tributaries
Schedule B-5 Occidental Unnamed Streams
Schedule B-6 Evans Canyon Creek
Schedule C Long Valley Creek

Available Water and Rights. In 1998, the SWRCB declared the Long Valley Creek Stream System fully appropriated annually from March 1 to September 30 (SWRCB 1998).

Water obtained by either riparian or appropriative rights must be put to reasonable beneficial use and not wasted (California Water Code, Section 100, 1200-1244). Riparian rights can be lost by severance or condemnation but not by non-use (forfeiture). Appropriative rights may be lost by severance, abandonment, forfeiture, prescription and adjudication (SWRCB 2003). Generally appropriative rights are subject to forfeiture if such rights are not used for a period of five consecutive years, although further research is required to determine if Decree 12999 protects Long Valley Stream System recipients from this rule of law. Riparian rights are generally given preference over appropriative rights; however, in a 1979 decision involving the Long Valley Stream System, the California Supreme Court ruled that unexercised riparian rights may lose priority in the adjudicative process and become subordinate to appropriative rights within the system (*In* Re Waters of the Long Valley Creek Steam System (25 Cal.3d 339, 599 P.2d 656 [1979]).

A query of the Electronic Water Rights Information Management System (eWRIMS) (SWRCB 2007) listed 13 points of diversion within the HJWA; water rights for all 13 diversion points had been cancelled (Appendix C2)

GROUNDWATER

In California, groundwater rights are either overlying or appropriative. Overlying groundwater rights are similar to riparian rights—incidental to landownership and correlative (all share alike). Groundwater appropriation is subordinate to overlying uses and also based on a first-in-time, first-in-right priority system. All groundwater rights are also subject to reasonable and beneficial use requirements and can be lost by severance, condemnation and prescription but not by forfeiture (non-use). Generally the state asserts no permitting authority over percolating groundwater (California Water Code, Section 1200-1). DWR's groundwater responsibilities extend to mapping groundwater basins, keeping well reports, assigning well numbers and investigating and collecting groundwater information. DWR is not responsible for protecting groundwater quality or regulating its use.

In 1980, California passed the Sierra Valley Groundwater Basin Act. This act authorized the formation of two groundwater districts, including the Long Valley Groundwater Management District (LVGMD). The LVGMD, which includes portions of Lassen and Sierra counties within the Long Valley Groundwater Basin, is one of 16 adjudicated groundwater basins in California (BLM 2001). The district was established after large wells were drilled near Border Town on the Nevada side of Long Valley, raising concerns that the basin would be overdrafted. The act gave the district the power to curtail or suspend pumping, and to ban exportation out of the basin in the event of overdrafting or water quality problems (Lassen County 1999). Lassen and Sierra counties entered into a joint powers agreement in June 1985 to address their commitment to managing the district. In 1989, the LVGMD enacted ordinance 89-01 to require a permit for groundwater exportation (Brown and Caldwell 2007; DWR 2003, 2004).

Based upon a review of the historical easements and consultant reports (Mahannah 1991, 2002; WRD 1996), there appear to be a number of groundwater wells and monitoring wells on the HJWA (Table II-d); however, they are not well-documented and their condition is unknown at this time.

Table II-d. Well Locations On or Near the Hallelujah Junction Wildlife Area

Well Name	Location (Township, Range, Quarter Section, Section)	Production Depth	Drilled Test Hole	Static Water Level	Production Capacity AF/Y*
Havanna 6”	T21N, R17E, SESW Sec 24	220		26.60	
Green Gulch TH	T21N, R17E, NWSE Sec 24		465	5.4	
TH 6, PW2	T21N, R17E, NWSE Sec 13	240	1100	22.35	200
TH7	T21N, R17E, SESE Sec 12		800	5.70	
TH5	T21N, R17E, NENE Sec 12		500	29.50	
E3 (PW4)	T21N, R17E, NENE Sec 12	710	770	72.90	1932
PW1	T21N, R17E, NWNE Sec 12	630	700	23.60	322
TH2	T21N, R17E, SWSE Sec 01		700	27.90	
E1 (PW3)	T21N, R17E, NWSE Sec 01	530	770	103.25	805
E4	T21N, R17E, NWSE Sec 01	205	205	96.60	
TH3	T22N, R17E, SWSW Sec 36		500	31	
TH4	T22N, R17E, SESE Sec 26		720	20.60	
CT North	T22N, R17E, NESE Sec 26	267		18	400
Evans #1	T21N, R17E, NENE Sec 10		500	37.10	80
TH9	T21N, R17E, SWSW Sec 11		198	166.50	
TH11	T21N, R17E, SENW Sec 01		270		
CT South	T21N, R17E, Sec 12	300			500

AF/Y: Acre-feet per year Source: WRD 1996, 2002

Queries of the eWRIMBS (SWRCB 2007) did not identify any recent activity to acquire water rights in the Long Valley Creek System; however, climate change effects, anticipated population growth, and existing memorandums outlining groundwater acquisition strategies for nearby urban centers indicate increasing pressures and demands on water resources in the area.

D. Cultural History

Compilation of the cultural resource history of the HJWA is based on an extensive literature review, a review of unpublished archaeological reports and records, database searches, and reconnaissance-level field surveys. Data sources included the BLM's General Land Office (GLO) Records (2006); California Historical Landmarks at the Office of Historic Preservation (1990); Northeast Information Center, CSU-Chico; the California Room, California State Library; and the Sacramento Archives and Museum Collection Center. Archaeologists conducted reconnaissance level surveys in May 2007. The results of the records search are housed at CDFG's HJWA office. This information contains detailed archaeological site information, which should be considered sensitive and confidential.

1. Land Use

PREHISTORIC

The following description of the Long Valley area's archaeological phases is derived largely from Elston (1986), in which he breaks down the western Great Basin into three regions: Central Subregion, Lahontan Basin, and the East Slope of the Sierra Nevada. Long Valley belongs to the East Slope region. Table II-e summarizes the archaeological phases discussed below.

The Paleoindian (11,000 - 8000 B.C.) era is the oldest period of human occupation in the Western Hemisphere. Large fluted Clovis and Folsom projectile points, mounted on hand-held spears, typify sites of this period. Subsistence during the Paleoindian era focused on megafauna and other large mammals. Other food resources included small mammals, birds, tubers, and easily harvested edible plants. The population was sparse and highly mobile. Sites are commonly found along Pleistocene lake shores, and range from single isolated artifacts to temporary hunting camps. No sites of this type have been found in the Long Valley area. These early sites appear to be largely limited to Central and Southern California Pleistocene Lakeshores.

The Prearchaic (8000 - 5000 B.C.) era appears to be an adaptation to the extinction of North America's megafauna at the close of the Pleistocene, and the warming and drying of the climate. Subsistence appears to still have largely been based on large game. Artifact assemblages from these sites often include large bifacial knives, stemmed and concave based points, crescents, scrapers, and large choppers. Many lithic tools from this period are heavily worn and reworked. Although rare, milling stones are occasionally found at such sites. Sites are typically found on gravel bars and other high ground along rivers and creeks feeding into marshes and shallow lakes. No sites of this type have been recorded in the Long Valley Area.

The Early Archaic (5000 - 2000 B.C.) era appears to be the earliest period of occupation for this part of the Great Basin. During this time, most of the marshes and lakes dried up. The presence of Pinto and Gypsum projectile points, used to tip atlatl darts, typify sites of this period. Big game hunting remained prevalent, although projectile points and other hunting implements became smaller and less specialized. The presence of mano and metate milling stones reflects an increased and intensive use of grass seeds. Caves and other rock shelters became more widely used for the storage of goods. Settlements were predominately near waterways in the lower elevations. A scarcity of sites indicates the population density was probably low. Residential structures are larger than those of later periods, possibly indicating the housing of extended families under one roof (ibid.).

The Middle Archaic (2000 B.C. - A.D. 500) was a period of cooling temperatures and more precipitation. More meadows, marshes, and lakes at lower elevations probably balanced less hospitable conditions at higher elevations. More extensive use of caves and rock-shelters for storage, combined with continued reoccupation of sites, indicate a more sedentary lifestyle and less mobility. Houses were 2-4 meters in diameter, with internal features. At the Hallelujah Junction and Bordertown sites, archaeological features include storage pits, rock-lined hearths, and burials. Preferred occupation sites were near waterways, in particular hot springs. Seed processing camps are found at the margins of meadows, adjacent to streams and creeks. Combined seed collecting and hunting camps are found at higher elevation meadows. Hunting camps are generally found on ridges and saddles overlooking streams and springs. Large game hunting focused on bighorn sheep and mule deer. In addition to the large game and grass seeds that made up the majority of the diet during the previous era, the remains of small mammals begin to appear in abundance at sites. Lithic technology focused on the production of large bifaces, which generated substantial waste, making sites more visible. Typical projectile points include Elko and Martis points, again used on atlatl darts. Trade increased with outside areas, specifically for obsidian and shell (Elston 1986).

Table II-e. Archaeological Phases of the Eastern Sierra Nevada/Western Great Basin

Age	Adaptive Strategy	Name	Characteristics
11,000–8000 B.C.	Paleoindian		Large fluted points, fine silicate flake stone tools, lack of milling stones
8000– 5000 B.C.	Prearchaic	Tahoe Reach	Large bifacial knives, stemmed and concave based points, crescents, scrapers, large choppers.
5000–2000 B.C.	Early Archaic	Spooner	Pinto points, manos and metates; residential camps with large structures near rivers, with hunting camps in upland scrub.
2000 B.C– A.D. 500	Middle Archaic	Martis	Elko and Martis points, manos and metates; residential camps near waterways, hunting and harvesting camps along creeks, springs, and ridges overlooking such.
A.D. 500–1850	Late Archaic	Late Kings Beach	Desert series points, mortars, hullers; smaller houses lacking internal features, relocation to riverine residential sites.
		Early Kings Beach	Rose Spring and Eastgate points, flake tools, emphasis on rabbit and other small game
A.D. 1850–present	Historic Period	Washoe	Gradual and selective adoption of Euro-American goods and lifestyle.

Source: Elston 1986

ETHNOGRAPHIC

At the time of contact with Euro-American people, Hokan-speaking Washoe were the primary human occupants of Long Valley. The Washoe were a culturally distinct group, not related to the other Great Basin groups (who were all Numic speakers), nor their California neighbors, the Maidu and Miwok.

Washoe woman. Edward S. Curtis Collection, 1926

The lifestyle of the Washoe blended the major aspects of both the California and Great Basin tribes. During the contact period in California, the subsistence economy was based on acorns and fish, while the Great Basin's Northern Paiute subsisted largely on pine nuts and the hunting of both small and large game. The Washoe were fortunate enough to have access to all of these food resource groups. One of the Great Basin's few oak groves was situated on the western end of Honey Lake Valley, providing the Washoe access to the highly valued black oak acorn. Pinyon pine nuts provided a food source rich in both fats and protein. Pine nuts were collected seasonally, and gatherers used long, hooked sticks to knock or pull the cones from the trees. In some cases, individual families "owned" particular trees or groves of trees. Grass seeds were extensively gathered, which, along with pine nuts, could be ground on large flat milling stones, commonly known by their Mexican name of *metates*. Other plant resources, including juniper berries, cattails, miners lettuce, and soap root, were also gathered when available.

The abundance of fish available to the Washoe was an unusual resource for most of the Great Basin cultural groups. The Washoe were fortunate to have several large bodies of water rich in fish resources. Lake Tahoe was at the heart of Washoe territory, and was full of trout, Tahoe suckers, and Lahontan Tui chub. Trout, Tahoe suckers, and mountain white fish were harvested from the Truckee and Walker Rivers. Forays were also made to the Pyramid and Walker Rivers for trout. In Long Valley Creek, major runs of Lahontan suckers were harvested during their spring migration run. Rabbits, quail, and other small game were harvested communally. Hunters would spread out into a line and drive the animals into long low nets. Deer, pronghorn and even mountain sheep were hunted in similar communal fashion. Extensive rock walls were constructed along natural migration routes to funnel animals into narrow canyons and then into large stone corrals, where the animals could be dispatched at will. Small rock blinds were constructed for hunters to hide behind and help drive the animals into the trap at the appropriate moment. The favored hunting weapon at the time of contact was the bow and arrow, tipped with a small stone point (D'Azevedo 1986).

Resources were only seasonally available, forcing the population to move frequently, following a cyclic pattern to harvest resources as they became available. Because of their nomadic lifestyle, their possessions were limited to what they could carry: clothing, knives, drills, scrapers, nets, weapons, etc. Heavier items such as milling stones were often left at frequently visited resource areas. Migration routes included stops not only at food sources, but stone quarries, utilitarian plant sources, and the like. Clothing was minimal, with rabbit skin blankets used only in the coldest weather (ibid.).

In the winter, the Washoe typically gathered together in larger multifamily villages of 10-15 units. Housing was more typical of California styles than Great Basin, with bark covered conical structures set up over a shallow house pit. The larger communal structures typical in California, often called dance houses, were absent (ibid.). In the spring, the families dispersed on their individual migration routes. Temporary summer camps were occupied near essential resources, usually near a source of water. Summer shelters were limited to simple brush windscreens.

Political organization was limited. At winter camps, a headman was elected, although his power and leadership were not great. The concept of a "chief" is one that appears to have been imposed by later white settlers. In their desire to simplify their dealings with the Washoe, the settlers sought out individuals who would speak for the various groups, assigning them the informal title of "captain." In 1859, Indian Agent Frederick Dodge described the Washoe as composed of three smaller bands led by Captain Jim, Pos-Souke, and Deer Dick. Captain Jim was the leader of a group centered near Genoa. Pos-Souke was the leader of a group in the Markleeville-Woodfords area, and Deer Dick led a group based at Honey Lake and Long Valley (D'Azevedo 1986).

Washoe territory was not precisely defined, and boundaries likely shifted over time. Peripheral areas were likely used by the Northern Paiute, Miwok, and Maidu. Through passage was also often allowed, as was the sharing of resources when plentiful.

HISTORIC

Trappers likely visited the area, although few documented their passage. James Beckwourth, an African-American mountain man, trapper, and explorer, had been looking for a better route for wagon trains to reach Marysville. He discovered what is now known as Beckwourth Pass in the spring of 1850, and immediately set about establishing a trail to Marysville. He worked on the trail in the summer and fall of 1850 and the spring of 1851. In the late summer of that year, he led the first wagon train of settlers along the trail into Marysville (James Pierson Beckwourth 2007). The Beckwourth Trail was used heavily until about 1855, when other more accessible routes came into use. The Beckwourth Trail left the California Trail from the Truckee River, about where Reno is now situated. The trail went north and west from there (roughly along the route now followed by U.S. 395), then turned west through the Beckwourth Pass. In Sierra Valley, west of the pass, Beckwourth established his War Horse Ranch and trading post. The trail then went north and west along Grizzly Creek. From there it went west to American Valley (now Quincy), turned southwest past Buck's Lake and Mountain House, and on to Bidwell's Bar at the confluence of the three forks of the Feather River. Bidwell's Bar now lies under Lake Oroville. The trail then proceeded southward to Marysville. The Beckwourth Trail did not follow the Feather River Canyon, which has far more rugged terrain. The Oroville-Quincy Highway follows the route of the Beckwourth Trail fairly closely (Plumas National Forest 2007). S.R. 70 now passes over Beckwourth Pass.

Trapper, explorer and mountain man James Beckwourth. Smithsonian.

After California became part of the United States, Long Valley initially became part of Butte and Yuba counties. Both were large counties with their governmental seats at their western ends. It soon became apparent that this arrangement would not work due to the long distances between the county seats and the far reaches of the counties. They were split and formed into the new Sierra and Lassen counties. Despite this history, the Long Valley area remained extremely remote, as it was isolated from the rest of the counties by the Sierra Nevada. The area was so remote that no mention is made of

the area or its settlers in the official county histories for Butte, Yuba, Lassen or Sierra counties (Thompson & West 1879, Farris & Smith 1882, Delay 1924).

Mining. Miners likely also visited the area early on. After the initial Gold Rush to California in 1849, many of California's mines were quickly depleted, and most of the productive mines were rapidly consolidating into the hands of a few wealthy individuals and corporations. Miners were soon scouring the other side of the Sierra Nevada Mountains in search of new riches. They ultimately discovered the rich gold and silver deposits of the Comstock Lode. Mining activity in the Long Valley area appears to have been fairly limited. One source notes mining activity prior to 1925 in the Diamond Mountains near Doyle, at Peavine Peak, and the Antelope Mine near "Purdy" (Myrick 1992). A review of the Evans Canyon 7.5' USGS Quad shows a number of prospects and shafts scattered around the perimeters of Haskell and Little Haskell Peaks. Because the map is 30 years old, it is impossible to tell whether this mining activity is historic in nature or not. Many would-be miners soon moved on to other endeavors, primarily supplying the miners with needed food and goods.

Farming/Ranching. In comparison with much of the surrounding arid environment, Long Valley provides a rich environment for farming and ranching as Long Valley Creek provided a year-round source of water. General Land Office plats show settlers as early as 1866.

A search of BLM's General Land Office records (2006) shows an extensive list of homesteaders in and around Long Valley (Table II-f). The earliest patents date to 1869 which, based on the Land Law of 1820, limited land acquisition to 80 acres at a price of $1.25 an acre. The Homestead Act of 1862 enabled anyone to enter a land patent and obtain a quarter section of land (160 acres). Once the applicant built a dwelling on the land, dug a well, plowed a minimum of 10 acres, fenced a portion of the land, and lived there for five years, the patent entry was completed, and the land was theirs. As an alternative to plowing 10 acres, the applicant could complete the patent entry by planting and successfully cultivating 10 acres of timber. As Congress had decided that the disposition of public land would not be used as a means to generate revenue for the federal government, the only costs borne by the applicant were those associated with establishing a homestead, plus a $14 patent filing fee (Sandoz 1963).

The lenient terms of the Homestead Act meant that the landless poor, such as recent immigrants and day laborers, could be elevated to the status of landowner. These terms, including the absence of any criteria for qualification, also meant that people who were not knowledgeable about farming practices could get 160 acres of land just as easily as someone who had extensive farming experience. This was often problematic with regard to the success of a homestead, especially when coupled with arid conditions. Despite these basic problems, from 1863 to 1900, more than 600,000 farmers received clear title under the act to U.S. lands totaling 80 million acres (Hibbard 1965). The Stock Raising Homestead Act of 1916 was the last federal program used in Long Valley for the transfer of federal land into private hands. This later land act sped up the transfer of federal land to private hands, allowing the acquisition of land deemed unfit for purposes other than stock grazing and the growing of forage (Earthworks 2007).

Table II-f. Patented Lands at Hallelujah Junction Wildlife Area

Name	Description	Date	Authority
T21N R17E			
Section 1			
Central Pacific Railroad Company	SW & S1/2NW & W1/2SE & SWNE & Lot 1 of NWNW & Lot 2 of NENW & Lot 3 of NWNE & Lot for of NENE & Lot 5 of SENE & Lot 6 of NESE & Lot 7 of SESE	February 26, 1875	1862 Grant
Section 2			
George C S Donohoe	E1/2SE & SENE & Lot 1	January 16, 1919	1862 Homestead Act
Mary A Evans	W1/2SE & SWNE & Lot 2	March 23, 1921	
Section 4			
Gotthard Diethelm	N1/2SE & SENE & Lot 1	March 7, 1924	1862 Homestead Act
Matilda E Evans	S1/2S1/2	November 21, 1902	1862 Homestead Act
Section 10			
Edith M Evans	S1/2SW & NESW & SWSE & SENW & S1/2NE & NENE	September 25, 1918	1862 Homestead Act
Edith M Evans	NWNE & N1/2NW & SWNW	February 24, 1928	1916 SRHA
Section 11			
Central Pacific Railroad Company	All	February 26, 1875	1862 Grant
Section 12			
David Evans	E1/2SW & NWNE & Lot 1	October 30, 1882	1862 Homestead
David Evans	SWNE & Lot 3 of NESE & Lot 4 of SESE	April 5, 1877	1820 Land Act
James L Evans	SWSE & Lot 4 of SESE	November 25, 1879	1820 Land Act
Section 13			
Central Pacific Railroad Company	W1/2 & W1/2E1/2 & Lot 1 of NENE & Lot 2 of SENE & Lot 3 of NESE & Lot 4 of SESE	February 26, 1875	1862 Railroad Grant
Section 14			
David Franklin Evans	N1/2	September 25, 1918	1862 Homestead Act
David Franklin Evans	S1/2	March 14, 1925	1916 SRHA
Section 16			
State of California	16	January 2, 1877	1853 California Enabling Act
Section 23			
Central Pacific Railroad Company	All	February 26, 1875	1862 Grant
Section 24			
Silas Edward Forman	NWNE	November 1, 1869	1820 Land Act
William E Lemmon	SENE & NESW	September 24, 1909	1820 Land Act
Elizabeth Jane Purdy & Sara Ann Purdy & Solomon Purdy	NWSE	March 23, 1892	1820 Land Act
Henry Hadden Purdy	NENW	November 1, 1869	1820 Land Act
Solomon Forman Purdy	SWSE & Lot 3 of NESE & Lot 4 of SESE	November 1, 1869	1820 Land Act
Solomon Purdy	SWNE & Lot 1 of NENE & Lot 2 of SENE	June 15, 1871	1820 Land Act
T21N R18E			
Section 7			
Mono Land and Livestock Co. & Beatrice Sario & Josephine Sario & Sario Livestock Co.	E1/2W1/2 & W1/2NE & Lot 1 of NWNW & Lot 2 of SWNW & Lot 3 of NWSW & Lot 4 of SWSW	February 25, 1949	1899 Land Exchange National Forest

Name	Description	Date	Authority
T21N R18E			
Section 18			
Joseph MC C Painter	Lot 3 of NWSW & Lot 4 of SWSW	August 5, 1872	1820 Land Act
Sophie Roberts	E1/2SW & SENW & Lot 2 of SWNW	September 9, 1909	1862 Homestead Act
Section 30			
Joseph Hall	SESW & Lot 3 of NWSW & Lot 4 of SWSW	August 5, 1872	1820 Land Act
T22N R17E			
Section 26			
Hiram Dean	S1/2SE & NESE	June 2, 1904	1862 Homestead Act
David Franklin Evans	SWNW	February 18, 1920	1820 Land Act
Edith M Evans	NWSW	April 12, 1928	1820 Land Act
Jonathan C Roberts	N12/NW & SWNE & SENW	December 10, 1881	1820 Land Act
Julius Roberts	S1/2SE & NESW & NWSE	April 1, 1899	1862 Homestead Act
John P Williams	SENE	March 1, 1940	1916 SRHA
Section 27			
Hiram A Dean	NENE	May 28, 1925	1862 Homestead Act
Edith M Evans	SENE & NESE	April 12, 1928	1820 Land Act
Donald B Munro	NWNE	February 11, 1920	1862 Homestead Act
Wilmer Fenton Pabst	SESE	March 15, 1928	1862 Homestead Act
Wilmer Fenton Pabst	S1/2SW &SENW & SWNE & W1/2SE	March 15, 1928	1916 SRHA
John P Williams	N1/2NW &SWNW & N1/2SW	March 1, 1940	1916 SRHA
Section 28			
Juanita Beisel & Juanita March	NW & W1/2NE & E1/2SW	November 24, 1928	1916 SRHA
Edith Evans	W1/2SE	June 11, 1952	1820 Land Act
Wilmer Fenton Pabst	E1/2NE	March 15, 1928	1916 SRHA
Angelo Trosie	Manzone Lode Claim	March 4, 1912	1866 Mineral Patent
Section 33			
Gotthard Diethelm	NE	March 7, 1924	1916 SRHA
Section 34			
Gotthard Diethelm	W1/2NW & SW & S1/2SE	March 7, 1924	1916 SRHA
Edith Evans	NENW & W1/2NE	February 17, 1954	
William Fenton Pabst	E1/2NE & NESE	March 15, 1928	1862 Homestead Act
Jonathan C. Roberts & Mary Heirs of Robinet	SENW	September 21, 1891	
Section 35			
Hiram Dean	NENE	June 2, 1904	1862 Homestead Act
Edith M Evans	NENE & N1/2NW	February 24, 1928	1916 SRHA
T22N R18E			
Section 30			
James B Talbott & William H Carr	SWNE	February 17, 1915	1862 Homestead Act
Edith Evans	E1/2SW & W1/2SE & Lot 3 of NESW & Lot 4 of SWSW & Lot 5 of SESE & Lot 6 of NESE	June 30, 1953	1934 Taylor Act

Source: BLM GLO Records 2006

Transportation/Railroad. In December 1880, construction began in Reno on the narrow gauge Nevada & Oregon Railroad, a railroad with a constantly changing business and construction plan. Construction had commenced for less than three miles when it came to a halt, due to lack of funding and direction. The railroad was reorganized in April 1881 as the Nevada-California-Oregon (N-C-O) Railway. By August, they had six miles of track laid with a locomotive and rolling stock that kept moving materials forward. By November, the railroad had reached David Evans' Ranch in Long Valley, where Evans had 30 acres of wheat under cultivation. At that point, the troubled railroad again ran out of money, laying off its work force. The Evans Ranch became the northern terminus of the railroad, and was known over the years as Oneida, Antelope, Evans, and possibly Purdy. The ranch has been recorded as an archaeological site.

It was not until October 1882 that regular service began between Oneida and Reno. From Oneida, passengers could take a stage to Susanville. Freight was flowing the other way with lumber from Brad & Schooling's Mill being shipped south to Reno. Service continued fairly regularly, but the company faced many financial difficulties, stemming back to the fraudulent activities of its founders. The railroad changed hands, and was reorganized several times. The line was extended incrementally: 1884 to Junction House; 1885 side-line to Mohawk; 1887-1889 to Amedee; 1899 to Termo; 1902 to Madeline; 1907 to Likely; 1908 to Alturas; and in 1912 to Lakeview. After 1910, the railroad saw continual losses. In 1925, the Southern Pacific (S.P.) made a reasonable offer to the owners of the N-C-O and a deal was quickly struck. The S.P. set about converting the railroad to standard gauge, instead of the antiquated narrow gauge. Thus, it was the end of the N-C-O (Myrick 1992).

2. Known Cultural Resources

Cultural resources at the HJWA can be grouped into several categories. Prevalent are prehistoric temporary-use sites, generally sparse lithic scatters. Also prevalent are prehistoric residential sites that include not only lithics, but also milling stones, hearths, faunal material, midden and burials. These sites are clustered along Long Valley Creek, which was known ethnographically to have been an important fishing ground. It was also noted ethnographically that Long Valley supported a sizable Washoe population well into the nineteenth century.

Historic sites can be grouped into three major categories: mining, farming/ranching, and transportation. Even prehistoric Long Valley was a major transportation corridor for native people, and the opening of Beckwourth Trail in 1850 put the area on the map for white settlers as well. Scott Road parallels the Beckwourth Trail running through the area, linking Virginia City and Honey Lake. Later, in 1882, came the N-C-O Railway. Finally, came State Highway 395 (originally State Highway 6, now U.S. 395), which also parallels much of Beckwourth Trail. Other than transportation, the primary use of the area was farming and ranching, as homesteads were established at least as early as the 1860s. These homesteads are scattered throughout Long Valley, and many of these remains are still visible, including standing structures, foundations, domestic refuse scatters, farm implements, fence lines, roads, and irrigation systems. These seem to be concentrated on the west side of U.S. 395. Mining sites are clustered on and around surrounding hillsides, in particular Haskell and Little Haskell peaks.

EXISTING SITE RECORDS

Large portions of the HJWA have been previously surveyed for cultural resources during the implementation of other unrelated projects. The most notable of these were the Alturas Intertie (Kautz and Hutchins 1995) and Evans Ranch Subdivision (Peak & Associates 1992) projects, which each covered several hundred acres of the Wildlife Area. A records search at the Northeast Information Center yielded 24 archaeological sites with prehistoric, prehistoric and historic, or historic components that have been documented within the Wildlife Area (Table II-g). Eight prehistoric isolates and four historic isolates have also been located and formally recorded. More detailed descriptions of the sites are housed at CDFG's HJWA office.

To provide a more rounded picture of site types and distribution, data concerning sites within a half mile of the HJWA were also obtained from the Northeast Information Center. Within a half mile of the Wildlife Area are 12 prehistoric and/or historical archaeological sites (Table II-h).

Table II-g. Known Archaeological Sites, Hallelujah Junction Wildlife Area

Site Numbers	Prehistoric components	Historic components
CA-LAS-370	Burial with basket, projectile points, mano, metates, scraper, and lithic rescattering	
CA-LAS-403H		Refuse deposit
CA-LAS-1840/H	Lithic scatter	Refuse deposit
CA-LAS-2220H		Scott Road (Virginia City to Honey Lake Road)
CA-SIE-79	Lithic scatter and milling stone fragments	
CA-SIE-80	Lithic scatter, projectile points, and mano	
CA-SIE-81	Projectile points, milling stone fragments, and lithic scatter	
CA-SIE-715	Lithic scatter and bifaces	
CA-SIE-716	Lithic scatter	
CA-SIE-717	Lithic scatter	
CA-SIE-718	Lithic scatter and biface	
CA-SIE-719H	Lithic scatter	Historic component
CA-SIE-720H		Refuse deposit
CA-SIE-721	Projectile points, lithic scatter, chopper, scrapers, and biface	
CA-SIE-805H	Lithic scatter and historic component	Tobacco tin
CA-SIE-806	Lithic scatter, projectile points, and biface	
CA-SIE-807	Lithic scatter	
CA-SIE-808H		Refuse deposit
CA-SIE-809H		Refuse deposit, depression with rock piles
CA-SIE-810H	Lithic scatter and historic components	Refuse deposit
CA-SIE-812H		Refuse deposit
CA-SIE-815H		Two earth-filled check dams
CA-SIE-972	Lithic scatter, projectile points, and metate	
CA-SIE-973H	Refuse deposit	

Source: Northeast Center of the California Historical Resources System

Table II-h. Archaeological Sites Within a Half Mile the Hallelujah Junction Wildlife Area

Site Number	Prehistoric Components	Historic Components
CA-LAS-371	Fire-cracked rock	
CA-LAS-374	Lithic scatter, fire-cracked rock, and grinding stones	
CA-LAS-551	Lithic scatter, projectile points, scraper, and manos	
CA-LAS-1572	Lithic scatter, projectile points, house pit, cores, faunal material, burned wood.	
CA-LAS-1573	Lithic scatter, bifaces, projectile points, burned wood, and faunal material	
CA-LAS-1574	Lithic scatter, manos, projectile points, faunal material, and burned wood	
CA-LAS-1575	Lithic scatter, projectile points, and cores	
CA-LAS-1847	Metate, mano, projectile points, bifaces, drill, lithic scatter, fire-cracked rock	Historic component
P-18-003380	Isolate biface	
CA-SIE-811H	Prehistoric component	Refuse deposit
CA-SIE-813H	Prehistoric component	Refuse deposit
CA-SIE-814H		Refuse deposit

Source: Northeast Center of the California Historical Resources System

NEW SITES NOTED

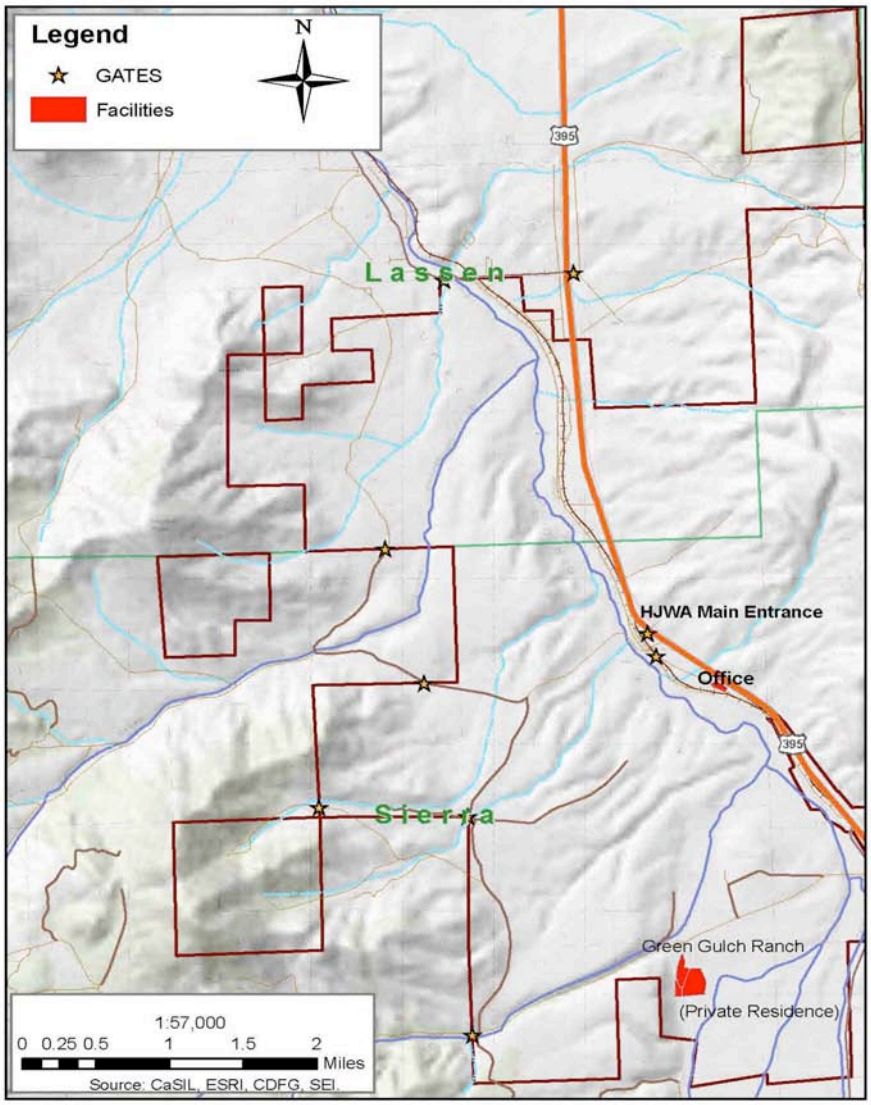
Eight new archaeological sites were noted during the May 2007 reconnaissance surveys (S. Baxter, Past Forward Inc., unpublished information). The following discussion provides details on these sites:

- SB-1 is a small refuse deposit of Aqua glass, sanitary cans, and white improved earthenware on the north side of a single-track dirt road.
- SB-2 is a complex series of dry-laid, native-stone foundations, a small concrete pump-house, a standing wood-framed cabin, a wood-framed chicken coop, and a dense refuse scatter of 1930s-1960s bottles, cans, and miscellaneous materials.
- SB-3 is a cabin set in an aspen grove. The structure actually lies just outside the HJWA boundary. It is noted here, as the location is a typical setting for a sheepherder's camp, and the house appears to be historic. There is a high likelihood that this site was historically occupied, and that portions of the site probably fall within the HJWA.
- SB-4 is an array of old farm implements including a hay rake and hay bailer.
- SB-5 is a mine that consists of a small gable-roofed shed or residential building, head-frame, ore bins, and an extensive collection of modern refuse including portions of automobiles and a fuel-bearing tractor-trailer. The shed and portions of the head-frame and ore bins are clad with T-1-11 siding, indicating the structures are probably not more than 40 years old.
- SB-6 is that portion of the old N-C-O Railway that runs through the HJWA. Portions of the railroad have been previously recorded (Kautz and Hutchins 1995), although the records search conducted by the Northeast Information Center did not provide a site record. This was likely an oversight, since the site, as recorded, runs for many miles from Reno to Alturas.

These six sites were not officially recorded during the course of this project; eventually these should be formally recorded using appropriate DPR 523 forms.

- SB-7 includes those portions of the Beckwourth Trail that cross through the Wildlife Area. The Northeast Information Center provided maps showing the route of the trail as it passes through the Wildlife Area, although it does not appear to have ever been formally recorded.
- SB-8 is U.S. 395. It may be considered a potential historic resource. The road was originally designated State Highway 6, and was one of the first designated highways in the state. In 1928, it was re-designated Highway 395. In its heyday, it ran from San Diego to the Canadian border (Baxter and Allen 2003). It is possible that this stretch of U.S. 395 has been recorded previously, although the Northeast Information Center provided no record; this should be verified.

3. Existing Structures



Map: SEI 2008

The HJWA has few buildings or other structures that are used for CDFG operations. An office building is located adjacent to the on-site manager's residence on Scott Road. Green Gulch Ranch has various barns, outbuildings and a residence, but maintenance of these facilities is the responsibility of the lessee. Other structures on the property may be considered historical resources and need further investigation.

III. HABITAT AND SPECIES DESCRIPTIONS

A. Flora III-2
B. Fauna III-13
C. Endangered, Threatened and Rare Species III-17
1. Special Status Plants III-17
2. Special Status Wildlife III-23

III. HABITAT AND SPECIES DESCRIPTIONS

The Hallelujah Junction Wildlife Area can be grouped into 14 basic plant community types consisting of at least 180 plant species, including 32 non-native or naturalized species. The Wildlife Area provides suitable habitat for at least 236 species of fish, amphibians, reptiles, birds, and mammals. To date, 4 rare plants and 11 special-status animal species have been documented on or near the site.

1. Flora

Vegetation Communities, Habitat Types and Plant Species

METHODOLOGY

Habitat and plant species descriptions are based upon reconnaissance-level field surveys and plant community mapping conducted during 2007 and 2008 as well as a review of published and unpublished reports concerning the Hallelujah Junction Wildlife Area (HJWA) and the surrounding area. The objectives of the surveys included:

- Compiling an inventory of vascular plant species growing without cultivation in the area
- Characterizing the habitat types (plant communities) occurring in the area
- Locating and mapping special-status plant species occurring in the area
- Identifying and mapping sensitive habitats within the area

Literature Review. A focused review of literature and species databases was conducted prior to field surveys. Sources reviewed included California Natural Diversity Data Base (CNDDB) occurrence records for the Evans Canyon and Beckwourth Pass U.S. Geological Survey (USGS) 7.5' quadrangles and the five surrounding quadrangles in California (CDFG 2008a); county and USGS quadrangle occurrence records in the California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California (Tibor 2001, CNPS 2008) for the same seven quadrangles; and regional floras (Munz and Keck 1973, Hickman 1993). A special-status plant survey conducted in 1992 of a small portion of the HJWA located within the 2007 Balls Canyon fire area was also reviewed (Witham 1992).

Field Survey and Plant Community Mapping. The initial botanical survey of HJWA was conducted on 29 July 2007 and was mostly confined to the riparian area along Long Valley Creek. The Balls Canyon fire, a result of a lighting storm on 11 July 2007, resulted in restricted access to most of the Wildlife Area. Additional botanical field surveys and plant community mapping were conducted between 14 and 20 May 2008 (areas burned in the 2007 Balls Canyon fire were mostly observed by vehicle while crossing through those areas). The timing of this survey was appropriate for identification of some but not all of the special-status plant species with potential to occur in the survey area.

The plant community mapping was based upon 1:12000 scale aerial photos of the wildlife area. The aerial images were taken in May 2007 (before the Balls Canyon fire), and georectified for field use. For the 2008 field season, the area of the stand-replacing Balls Canyon fire was excluded from the mapping effort (the fire boundary overlaid on aerial and ground-truthed). Botanists delineated most of the plant communities in the field, mapping the smallest recognizable area of each plant community directly onto the aerial photo. Ninety percent of the resulting polygons were ground-truthed. The plant community map was hand digitized from the marked-up aerials for the GIS database.

All vascular plant species encountered in identifiable condition were identified using keys and descriptions in Munz and Keck (1973) and Hickman (1993).[1] The generalized plant community

[1] Scientific nomenclature for plants in this LMP mostly follows Hickman (1993) and, for special-status species, Tibor (2001); and CNPS (2008). Common names follow Abrams (1923-1960); Hickman (1993); and the U.S. Department of Agriculture

classification schemes of Holland (1986), Sawyer and Keeler-Wolf (1995),[2] and CDFG (2003) were consulted in classifying the habitat types. The final classification and characterization of the habitat types were based on field observations.

Habitat types considered sensitive include those listed on the CNDDB working list of "high priority" habitats for inventory (i.e., those habitats that are rare or endangered within the borders of California) (Holland 1986, CDFG 2003). Sensitive habitats include riparian corridors, habitats for legally protected species, California Department of Fish and Game (CDFG) Species of Special Concern, areas of high biological diversity, areas providing important wildlife habitat, and unusual or regionally restricted habitat types.

FINDINGS

A total of 180 vascular plant taxa (species, subspecies and varieties) have been documented on the HJWA (Appendix D). Of these, 146 taxa are native and 32 are non-native. It is not known whether 2 taxa are native or non-native: common watercress (*Rorippa nasturtium-aquaticum*) and Kentucky bluegrass (*Poa pratensis*).

Overview of Plant Communities

Plant species on the HJWA can be grouped into 14 basic vegetation community types (Table III-a)[3]. Of these, nine can be considered late-successional native habitats of relatively wide distribution: *big sagebrush scrub*, *low sagebrush scrub*, *mountain mahogany scrub*, *juniper woodland*, *Jeffrey pine forest*, *Jeffrey pine woodland*, *riparian scrub*, *riparian forest/scrub*, and *meadow*. In contrast, the *spring* habitat type is a very localized native habitat. The *interior-rose golden-currant big-sagebrush scrub* is an unusual, localized habitat type dominated by native shrubs. *Recent burns* is an early-successional habitat type while another, *spineless-horsebrush/herbs*, appears to be an early-successional habitat type associated with relatively recent burns. The remaining habitat type, *developed*, is associated with human use and intensive, repeated disturbance.

Big sagebrush scrub, a highly variable habitat type, occupies the bulk of the Wildlife Area (Figure III-a). Low sagebrush scrub occurs only in the southern portion of the area, and mountain mahogany scrub, that may be widespread on mountain slopes in the general vicinity, is confined within the Wildlife Area to one area in the southwestern portion. Juniper woodland, Jeffrey pine forest, and Jeffrey pine woodland are habitats characterized by having a tree layer. Juniper woodland occurs only in the eastern portion of the area, east of U.S. 395, while Jeffrey pine forest and Jeffrey pine woodland are confined to the western portion of the area. Riparian scrub occupies narrow zones along drainages, especially those with perennial streams, while riparian forest/scrub is localized toward the southwestern end of the Wildlife Area along and near drainages. The meadow habitat type, also a highly variable habitat type, occupies large areas in the southeastern portion of the HJWA and less

(USDA) PLANTS database (2008), except for special-status species, which follow Tibor (2001) and CNPS (2008).

[2] Please cross reference with the 2009 2nd Edition when it becomes available.

[3] Bitterbrush stands at HJWA burned during the 2007 Balls Canyon Fire and therefore are not mapped or discussed as a distinct plant community. Restoration of this habitat type is a high priority to CDFG due to its value to wintering wildlife and is discussed with mountain mahogany scrub under Management Goals (IVB4).

extensive areas in the northwestern portion. Several burn areas mapped as recent burns occur in various portions of the Wildlife Area. The Balls Canyon fire area was not included in the above classification scheme as it will be an early successional stage habitat for the foreseeable future.

The spineless-horsebrush/herbs habitat type occurs only in the northwestern portion of the area, while the interior-rose golden-currant big-sagebrush scrub habitat type is restricted to one area in the extreme southeast. There are three mapped springs within the HJWA. The developed habitat type includes several small, developed areas in the southern portion of HJWA.

Table III-a. Crosswalk of Plant Community Types, Hallelujah Junction Wildlife Area

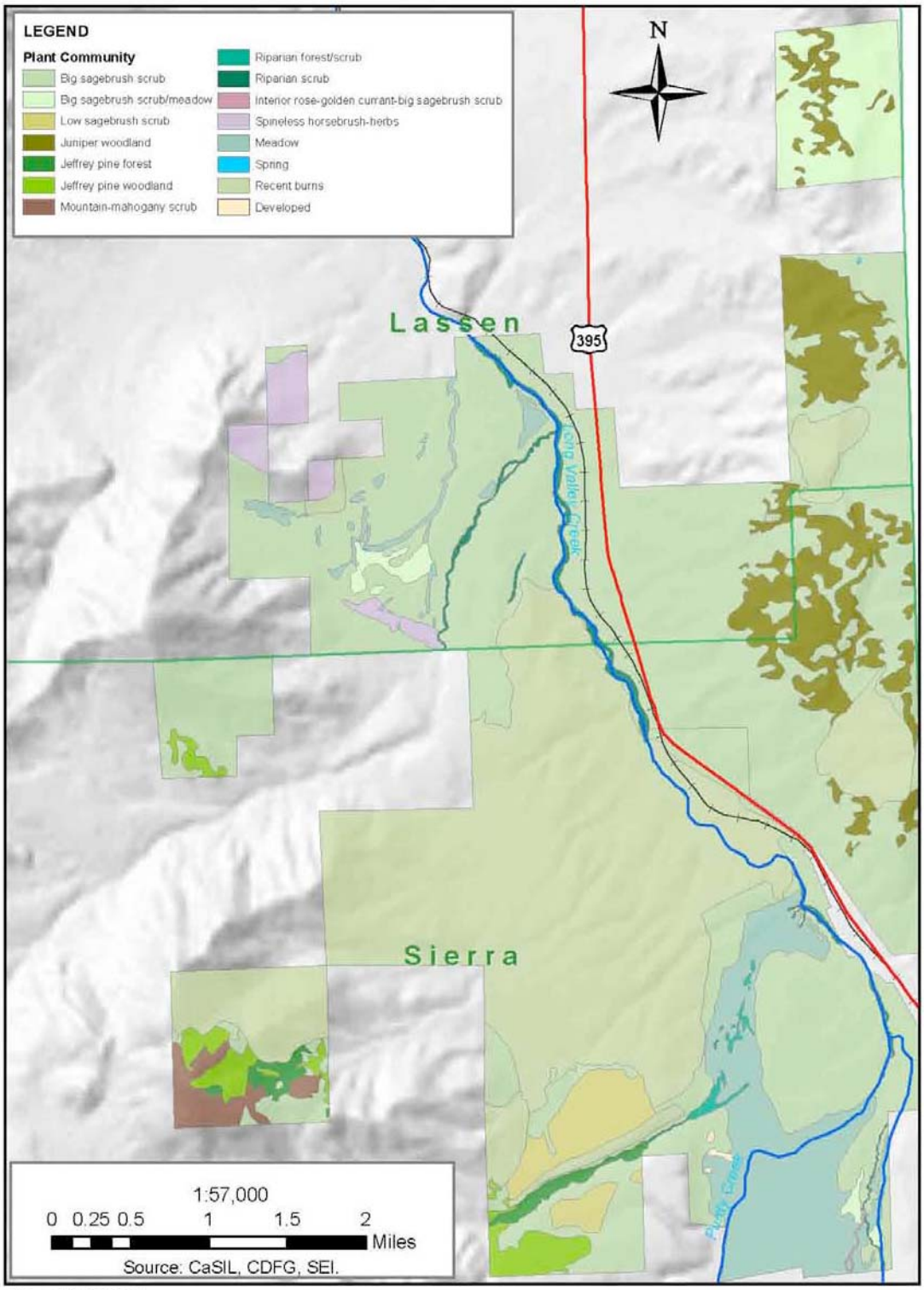
HJWA Plant Community Types	Total Acres	CDFG 2003, Holland Habitat Types [1]	Sawyer/Keeler-Wolfe Habitat Series [2]
Big sagebrush scrub	6598	Great Basin scrubs (35000) Great Basin mixed scrub (35100) Big sagebrush scrub (35210) Sagebrush steppe (35300)	Big sagebrush series
Low sagebrush scrub	263	Low sagebrush dwarf scrub (35.120.00)	Black sagebrush series Low sagebrush series
Mountain mahogany scrub[3]	125	Curlleaf mountain mahogany woodland and scrub (CDFG 2003) Broadleafed upland forest (81000)	Curlleaf mountain mahogany series
Interior-rose golden-currant big-sagebrush scrub	4	Great Basin mixed scrub (35100)	__
Spineless-horsebrush/herbs	175	__	__
Juniper woodland	861	Utah juniper woodland (CDFG 2003) Great Basin juniper woodland and scrub	Utah juniper series
Jeffrey pine forest	93	Jeffrey pine forest and woodland (CDFG 2003) Jeffrey pine forest (85100)	Jeffrey pine series
Jeffrey pine woodland	215	Jeffrey pine forest and woodland (CDFG 2003)	Jeffrey pine series
Riparian scrub	134	Low to high elevation riparian scrub (CDFG 2003) Pacific willow riparian forest (CDFG 2003) Montane riparian scrub (63500)	Montane wetland shrub habitat
Riparian forest/scrub	28	Montane black cottonwood riparian (61530), Modoc-Great Basin cottonwood-willow riparian forest (61610) Montane riparian scrub (63500) Modoc-Great Basin riparian scrub (63600)	Black cottonwood and mixed willow series
Meadow (dry to wet)	926	Montane meadow alliance (CDFG 2003) Great Basin Grassland (43000) Wet Montane Meadow (45110) Dry Montane meadow (45120)	Montane meadow habitat Nebraska sedge series
Spring	1	Meadows and seeps (CDFG 2003) Wet Montane Meadow (45110)	Montane meadow habitat Nebraska sedge series
Recent burns	3964	__	Cheatgrass series
Developed	7	__	__

[1] CDFG 2003, Holland 1986

[2] Sawyer and Keeler-Wolf 1995. Please cross reference with the 2009 2nd Edition when it becomes available.

[3] Bitterbrush stands within HJWA were burned during the 2007 Balls Canyon Fire and so were not mapped or identified as distinct plant communities.

Figure III-a. Plant Community Types, Hallelujah Junction Wildlife Area



Map: SEI 2008

Big sagebrush scrub. This habitat type corresponds to the big sagebrush series of Sawyer and Keeler-Wolf (1995) and correlates to the big sagebrush scrub alliance (CDFG 2003). This habitat type occupies the bulk of the HJWA. Other habitat types mostly occupy more limited areas within the matrix of big sagebrush scrub, and, particularly in the case of the tree-dominated habitat types (juniper woodland, Jeffrey pine forest, and Jeffrey pine woodland), are not always sharply distinct from big sagebrush scrub.

Big sagebrush scrub is defined broadly, and is exceedingly variable within the HJWA in physiognomy and species composition. Much of this variation is correlated with microenvironmental factors such as slope, aspect, moisture availability, and soil texture and composition. A number of subtypes could be recognized in the field but would require additional focused surveys to distinguish for mapping purposes.

The principal dominant shrub in this habitat type is big sagebrush (*Artemisia tridentata*, and may include ssp. *tridentata*, ssp. *vaseyana*, and ssp. *wyomingensis)*. Typically, while other shrub species are often present, they do not share dominance with big sagebrush. The most widespread associated shrub species (although absent from some areas) is bitterbrush or antelope bush (*Purshia tridentata*). Other associated shrubs, which are generally of localized occurrence, include green ephedra (*Ephedra viridis)*, yellow rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*), spineless horsebrush (*Tetradymia canescens*), desert peach (*Prunus andersonii*), and desert gooseberry (*Ribes velutinum*). Although big sagebrush is generally dominant in this habitat type, bitterbrush or other shrub species may co-dominate locally. Some of these areas could correspond to the Great Basin mixed scrub habitat of Holland (1986); however, no areas were large enough, or distinct enough in their aerial photo signatures, to be mapped separately.

There is considerable variation in both the stature and the leaf size of big sagebrush in the big sagebrush scrub habitat type. Many areas of big sagebrush scrub are dominated by one type of big sagebrush. However, throughout the study area there is complete intergradation between different forms of big sagebrush (see low sagebrush scrub habitat type); it is unclear how much of this variation involves distinct races of big sagebrush and how much is purely environmentally induced.

As would be expected for such a widespread habitat type, a large number of grass and herb species are associated with big sagebrush scrub. Widespread and characteristic grass and herb species include such native species as Stansbury's phlox (*Phlox stansburyi*), silvery lupine (*Lupinus argenteus* var. *heteranthus*), one-sided bluegrass (*Poa secunda* ssp. *secunda*), squirreltail grass (*Elymus elymoides* ssp. *elymoides*), Thurber's needlegrass (*Achnatherum thurberianum*), long-leaved hawksbeard (*Crepis acuminata*), western hawksbeard (*Crepis occidentalis*), Columbia ragwort (*Senecio integerrimus* var. *exaltatus*), woolly mule-ears (*Wyethia mollis*), milk-vetch (*Astragalus* spp., several species), hog fennel (*Lomatium* spp.), five-leaf clover (*Trifolium andersonii* ssp. *andersonii*, generally gently sloping areas), large-headed clover (*Trifolium macrocephalum*, generally gently sloping areas), low everlasting (*Antennaria dimorpha*, generally gently sloping areas), arrow-leaved balsam-root (*Balsamorhiza sagittata*, mostly on slopes), basin wild rye (*Leymus cinereus*, generally gently sloping areas), a violet, probably Great Basin violet (*Viola beckwithii*), and panicled zigadenus (*Zigadenus paniculatus*). The non-native species cheatgrass (*Bromus tectorum*) and red-stemmed filaree (*Erodium cicutarium*) are also widespread and often locally abundant in the big sagebrush scrub in the HJWA.

Low sagebrush scrub. Depending on the dominant species of sagebrush, this habitat type could correspond to the low sagebrush dwarf scrub alliance (low sagebrush series) or to the black sagebrush dwarf scrub alliance (black sagebrush series) of Sawyer and Keeler-Wolf (1995) and CDFG (2003). Within the HJWA, this habitat type is apparently confined to two sizeable areas in the southern portion of the Wildlife Area west of U.S. 395. Other areas referable to this habitat type may occur in the Wildlife Area, within areas mapped as big sagebrush scrub. Low sagebrush scrub occurs in nearly level upland areas with relatively shallow, often rocky or gravelly soil.

Although this habitat type is not sharply distinct in species composition from big sagebrush scrub, it is quite distinct in physiognomy, and the boundary between low sagebrush scrub and big sagebrush scrub (often coinciding with a slope break, with big sagebrush scrub occupying more sloping areas) is often relatively abrupt. Low sagebrush scrub is characterized by dominance of sagebrush that is low-growing (mostly ≤ 1 feet [3 dm] tall, sometimes up to 1.6 feet [5 dm] tall) and with small leaves (mostly < 0.6 inches [1.5 cm] long). The dominant sagebrush species could include a low-growing form of big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), low sagebrush (*Artemisia arbuscula*), or black sagebrush (*Artemisia nova*). (Positive identification of low-growing sagebrush species requires flower heads of these late summer to fall-flowering plants, which were not present during the survey). Throughout the study area, including areas of big sagebrush scrub, botanists observed apparent complete intergradation between tall and low-growing sagebrush, and between large-leaved and small-leaved sagebrush. Some upland areas with similar physiography to areas supporting low sagebrush scrub are occupied by scrub that, while relatively low, seems better treated as a phase of big sagebrush scrub, with more variation in shrub height and leaf size than in the areas mapped as low sagebrush scrub. Low sagebrush scrub is restricted to sagebrush scrub dominated almost entirely by low, small-leaved sagebrush.

Other shrub species are uncommon in the low sagebrush scrub of the study area. Bitterbrush is scattered in some areas, often toward the periphery of the low sagebrush scrub stands. Herb cover is generally moderately dense and diverse in species composition. Herb species that are especially associated with the low sagebrush scrub habitat type include Douglas' buckwheat (*Eriogonum douglasii* var. *douglasii*), cushion buckwheat (*Eriogonum ovalifolium* var. *ovalifolium*), alkali cusickiella (*Cusickiella douglasii*), California balsam-root (*Balsamorhiza macrolepis* var. *platylepis*), and scabland fleabane (*Erigeron bloomeri* var. *bloomeri*) (the latter two species occasionally occur in big sagebrush scrub). Other characteristic herbs in this habitat type include low everlasting, one-sided bluegrass, Stansbury's phlox, large-headed clover, and a violet, probably Great Basin violet.

Curlleaf mountain mahogany.
PRBO Conservation Science Shrubsteppe Monitoring Program

Mountain mahogany scrub. This habitat type corresponds to the curlleaf mountain mahogany series of Sawyer and Keeler-Wolf (1995) and to the curlleaf mountain mahogany woodland and scrub alliance of CDFG (2003). Specimens of the large shrub curlleaf mountain mahogany (*Cercocarpus ledifolius* var. *intercedens*) are widely scattered and infrequent in big sagebrush scrub, juniper woodland, and Jeffrey pine woodland throughout the HJWA. In one area of

the Wildlife Area, T21N R17E Sec. 16, the scrub habitat type is dominated by dense curlleaf mountain mahogany where it mostly occurs on ridgetops and steep upper slopes.

Interior-rose golden-currant big-sagebrush scrub. This habitat type designation is used only for an unusual scrub type occurring in a single area, near the southeast corner of the HJWA in T21N R18E Sec. 30. This area of scrub is long and narrow and generally follows a north-south drainage. Although it is dominated by native shrubs, this habitat type may have developed as a result of some past disturbance. The dominant shrubs are interior rose (*Rosa woodsii* var. *ultramontana*), golden currant (*Ribes aureum* var. *aureum*), and big sagebrush. Openings among the shrubs are vegetated with a variety of grass and herb species, including the native species silver wormwood (*Artemisia ludoviciana*) and the non-native species cheatgrass, white-top (*Cardaria pubescens*), broadleaved or perennial pepperweed (*Lepidium latifolium*), and common dandelion (*Taraxacum officinale*). Where the shrub cover becomes discontinuous, especially toward the south end of the mapped area, this habitat type intergrades with the adjacent meadow habitat.

Spineless-horsebrush/herbs. This is a distinctive, localized habitat type that is not adequately treated in generalized California vegetation classification schemes. This habitat type is mapped only in the northwestern portion of the HJWA. Some areas mapped as this habitat type have burned within the last decade or two, and it is possible that all areas of this habitat type are early successional areas following fire or other disturbance that removed the previous woody vegetation.

This habitat type is heterogeneous in species composition and physiognomy. It is generally characterized by scattered, small- to medium-sized shrubs at variable, low density, and a diverse assortment of native and non-native herbs and grasses. Shrubs are sometimes entirely absent from localized areas mapped with this habitat type. The most widespread shrub species in this habitat type is spineless horsebrush, although it is not universally present. Other characteristic shrubs include yellow rabbitbrush, Parry's rabbitbrush (*Chrysothamnus parryi*), and green ephedra. The thorny subshrub thorny skeleton plant (*Stephanomeria spinosa*) is scattered and occasionally locally abundant. Big sagebrush occurs sporadically, usually as small, young individuals. Bitterbrush occurs sporadically. Characteristic grass and herb species include squirreltail grass, Thurber's needlegrass, Stansbury's phlox, silvery lupine, woolly mule-ears, long-leaved hawksbeard, arrow-leaved balsam-root (especially on hill slopes), Columbia ragwort, woolly-pod milk-vetch (*Astragalus purshii* var. *tinctus*), and five-leaf clover. The non-native species cheatgrass and red-stemmed filaree are also abundant in this habitat type.

Juniper woodland. This habitat type corresponds to the Great Basin juniper woodland and scrub habitat type of Holland (1986), to the Utah juniper series of Sawyer and Keeler-Wolf (1995), and to the Utah juniper woodland of CDFG (2003). This habitat type occurs only in the portion of the HJWA located east of U.S. 395. It is best developed in the northeastern portion of the area, in T22N R18E, Sections 19, 30, and 31. Further south, except for localized areas, this habitat type becomes indistinct from big sagebrush scrub.

This habitat type is characterized by an arborescent layer consisting entirely of the small tree Utah juniper (*Juniperus osteosperma*). It is possible that western juniper (*Juniperus occidentalis* var. *occidentalis*) is intermixed in places; however, the only definite western juniper (with a prominent gland on each leaf) observed in the HJWA consisted of several scattered, heavily browsed (apparently by cattle) small trees in big sagebrush scrub in the northern portion of the area, west of U.S. 395. The density of juniper varies, but the trees are almost always well-spaced. To the south the trees are generally very widely spaced and the species composition of open areas between the junipers is similar to that of big sagebrush scrub. Big sagebrush is usually an abundant shrub associate in juniper woodland; other shrub associates include bitterbrush, green ephedra, yellow rabbitbrush, desert gooseberry, and gray ball sage (*Salvia dorrii* var. *dorrii*). Herb species composition and density vary from place to place; herb cover varies from sparse to moderately dense. Characteristic species include one-sided bluegrass, Stansbury's phlox, long-leaved hawksbeard, western hawksbeard, Thurber's needlegrass, thread-leaved locoweed (*Astragalus filipes*), shaggy milk-vetch (*Astragalus malacus*), arrow-leaved balsam-root, Columbia ragwort, Nevada lupine (*Lupinus nevadensis*, a special-status plant), and sickle-pod rock-cress (*Arabis sparsiflora* var. *sparsiflora*). The non-native species cheatgrass and red-stemmed filaree are also locally abundant in juniper woodland.

Jeffrey pine forest. This habitat type is recognized by Holland (1986), and corresponds to the Jeffrey pine series of Sawyer and Keeler-Wolf (1995) and the Jeffrey pine forest and woodland alliance of CDFG (2003). Although this habitat type is widespread in the eastern Sierra Nevada, it occurs only in limited areas in the western portion of the HJWA: bordering Balls Canyon Creek in T21N R17E Sec. 23, and in portions of T21N R17E Sec. 16. Much of the Jeffrey pine forest in Sec. 16 burned in the 2007 Balls Canyon fire, but some areas in this section were not burned.

This habitat type is characterized by dominance of Jeffrey pine (*Pinus jeffreyi*), which is generally the only tree species present. The tree canopy is relatively dense and closed or semi-closed in this habitat type, although openings do occur and the habitat type intergrades with the open-canopy Jeffrey pine woodland habitat type. Shrubs in the Jeffrey pine forest are most abundant in relatively open areas, and include big sagebrush, yellow rabbitbrush, and bitterbrush.

The herb layer is quite variable in both density and species composition, and is sometimes moderately dense. In the Jeffrey pine forest bordering Balls Canyon Creek, characteristic associated herb species include woolen-breeches (*Hydrophyllum capitatum* var. *alpinum*), Wheeler's bluegrass (*Poa wheeleri*), Columbia ragwort, Brown's pea (*Lathyrus brownii*), Nevada pea (*Lathyrus lanszwertii* var. *lanszwertii*), and short-beaked agoseris (*Agoseris glauca* var. *laciniata*). In one area of Jeffrey pine forest surveyed in T21N R17E Sec. 16, the understory had mostly burned in the Balls Canyon fire but the canopy was intact. The understory composition appeared similar, however, in bordering unburned areas. Characteristic herb species in this area include silvery lupine, woolly mule-ears, short-beaked agoseris, blue eyed Mary (*Collinsia parviflora*), low phacelia (*Phacelia humilis* var. *humilis*), long-leaved hawksbeard, western hawksbeard, one-sided bluegrass, Wheeler's bluegrass, and western peony (*Paeonia brownii*), along with the non-native species cheatgrass.

The streamside habitat within the Jeffrey pine forest along Balls Canyon Creek was not mapped as a distinct habitat. While having a Jeffrey pine overstory, this streamside supports occasional small stands of quaking aspen (*Populus tremuloides*) and widely scattered large shrubs characteristic of riparian scrub habitat (below) including Geyer willow (*Salix geyeriana*), arroyo willow (*Salix lasiolepis*), mountain alder (*Alnus incana* ssp. *tenuifolia*), and interior rose. Small floodplain terraces

adjacent to the stream channel and other moist areas near the creek support a distinctive assemblage of herbaceous species, many of them not in flower at the time of the survey, including Baltic rush (*Juncus balticus*), sedges (*Carex* spp.), clovers (*Trifolium* spp.), yarrow (*Achillea millefolium*), western buttercup (*Ranunculus occidentalis*), common horsetail (*Equisetum arvense*), hoary nettle (*Urtica dioic*a ssp. *holosericea*), and the non-native species common dandelion.

Jeffrey pine woodland. This habitat type is not specifically treated in generalized classification schemes, being intermediate between two major habitat types:Jeffrey pine forest and big sagebrush scrub. Within the HJWA, Jeffrey pine woodland occurs in a few areas in the southwestern portion. It is characterized by well-spaced Jeffrey pines that do not form a closed canopy. Most of the area occupied by this habitat is open, and has a shrub and herb composition similar to that of adjacent big sagebrush scrub. Shrub species such as big sagebrush, bitterbrush, and yellow rabbitbrush are abundant, along with herb species characteristic of big sagebrush scrub.

Riparian scrub. This habitat type does not entirely fit within generalized California vegetation classification schemes. It is best treated as a relatively low-elevation phase of the montane riparian scrub of Holland (1986). It roughly corresponds to the montane wetland shrub habitat (but not the series) of Sawyer and Keeler-Wolf (1995), which is also recognized by CDFG (2003). This habitat type occupies narrow zones, typically along the major drainages with permanent flowing streams. These include Long Valley Creek, Evans Canyon Creek, and Balls Canyon Creek.

Riparian scrub is dominated by large, sometimes sub-arborescent shrubs characteristic of sites where a permanent subsurface water supply is available. These include narrow-leaved willow (*Salix exigua*), Geyer willow, arroyo willow, Pacific willow (*Salix lucida* ssp. *lasiandra*), greenleaf willow (*Salix lucida* ssp. *caudata*), mountain alder, and interior rose. Shrub cover in this habitat type may be dense over sizable areas or sporadic and discontinuous. Jeffrey pines often occur as widely scattered, mostly small individuals. Along Balls Canyon Creek, there are occasional individuals of the large riparian tree black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) in the riparian scrub.

A variety of herbs, many of them characteristic of wet or seasonally wet places, occur in this habitat type, mostly in open microhabitats between the shrubs. Characteristic native herbs include Baltic rush, western buttercup, clustered field sedge (*Carex praegracilis*), silver wormwood, smooth scouring-rush (*Equisetum laevigatum*), common horsetail, and field mint (*Mentha arvensis*). Kentucky bluegrass (*Poa pratensis*), which may be native or non-native, is also widespread. The non-native species black medick (*Medicago lupulina*) is also abundant and widespread in this habitat type. Cheatgrass is occasionally abundant in localized areas.

Riparian forest/scrub. This habitat type within the HJWA has affinities to both the montane black cottonwood riparian forest and Modoc-Great Basin cottonwood-willow riparian forest habitat types of Holland (1986), to the black cottonwood and mixed willow series of Sawyer and Keeler-Wolf (1995), and to the black cottonwood riparian forests and woodlands, Pacific willow riparian forests, and mixed willow riparian forests and woodlands alliances of CDFG (2003), as well as to riparian scrub types. Within the HJWA, this habitat type designation applies to a few riparian areas near the southern end of the area that contain large trees of characteristic riparian species at high enough density to warrant recognition as a separate habitat type.

Extensive closed-canopy riparian forests do not occur in the HJWA. The riparian forest/scrub habitats in the area are characterized by small clumps of trees interspersed with riparian scrub. This habitat

type is intermediate between riparian forest and riparian scrub. In the southernmost stand (T21N R17E Sec. 24), the dominant trees are black cottonwood and tree-sized greenleaf willow. There are also a few Jeffrey pines toward the margins of the stand. Open areas between clumps of trees are mostly occupied by riparian scrub vegetation, with patches of riparian shrubs and small areas dominated by herbaceous species typical of riparian scrub. In other stands of riparian forest/scrub further north, the principal tree species is often tree-sized Pacific willow.

Meadow (dry to wet). This habitat type does not entirely fit within generalized California vegetation classification schemes. Wetter meadow areas have affinities to the montane meadow habitat type of Holland (1986), equivalent to the montane meadow alliance of CDFG (2003), and the montane meadow habitat (not recognized as a series) of Sawyer and Keeler-Wolf (1995). Localized meadow areas may refer to the Nebraska sedge alliance (series) or to the sedge alliance (series) of Sawyer and Keeler-Wolf (1995) and CDFG (2003). This habitat type is widespread in the HJWA, although it only occurs west of U.S. 395. Meadows are best developed in relatively low-lying areas with well-developed soils that are moist to wet, at least seasonally. Meadows also occur, however, in more upland areas, sometimes areas of moderate slope, where they are interspersed with, and often intergrade with, big sagebrush scrub. Sometimes meadow habitat is confined to a narrow zone bordering a drainage, as along an unnamed drainage near the north end of the Wildlife Area, in T22N R17E, Sections 27 and 34. Extensive meadow areas occur in the southeastern portion of the area, in the extensive lowlands along Balls Canyon Creek and tributary drainages, and along drainages tributary to Long Valley Creek. Smaller meadow areas occur in the northern portion of the survey area.

The meadow habitat type is heterogeneous in species composition. A more detailed habitat classification would recognize several meadow types, based largely on moisture availability. For the purposes of the management plan, all meadow types are grouped as a single meadow habitat type because meadow types with different moisture regimes and dominant species intergrade extensively and often occur in a mosaic that is difficult to map based on aerial photo signatures.

Meadow habitats are characterized by dominance of grasses and herbs, with few woody species. Drier meadow areas may be dominated by such native species as one-sided bluegrass, squirreltail grass, and five-leaf clover, and non-native species such as cheatgrass, red-stemmed filaree, and bulbous bluegrass (*Poa bulbosa*).

Moist or seasonally moist to wet meadow areas often support extensive patches of Baltic rush. Other species characteristic of moist to wet meadow areas include Kentucky bluegrass, clustered field sedge, western buttercup, California hesperochiron (*Hesperochiron californicus*), western blue flag (*Iris missouriensis*), straight-leaved rush (*Juncus orthophyllus*), Nebraska sedge (*Carex nebrascensis*, in wettest areas, where locally abundant), slender cinquefoil (*Potentilla gracilis* var. *fastigiata*), common camas (*Camassia quamash* ssp. *brevflora*), and the non-native species common dandelion. Locally the shrub species yellow rabbitbrush and rubber rabbitbrush (*Chrysothamnus nauseosus*) are invading meadow areas.

Several areas are mapped as big sagebrush scrub/meadow. In these areas, big sagebrush scrub and meadow habitats intergrade extensively, with areas of intermediate habitat.

Spring. Three springs are mapped on the Evans Canyon USGS quadrangle within the HJWA. Two of these are located in T22N R17E Sec. 34, in areas that are a mosaic of big sagebrush scrub and

meadow. The third is in T22N R18E Sec. 30. Both springs in Sec. 34, which are fenced to exclude cattle, support Nebraska sedge and a species of rush (*Juncus* sp.) that was not in flower at the time of the floristic survey. Another species of sedge also occurs around one spring, while common watercress is relatively abundant around the other. The spring in Sec. 30 supports a small stand of Geyer willow. Baltic rush is localized in patches around this spring, and common dandelion is relatively abundant around this spring.

Recent burns. This early successional habitat type includes the 4,400-acre area that was consumed by the 2007 Balls Canyon fire. Ground covers varied throughout the burn area with some Jeffrey pines still standing at higher elevations but no sagebrush habitat remaining on the valley floor. It also includes other, smaller burn areas that have occurred over the past decade in several portions of the Wildlife Area. It is likely that the Balls Canyon fire area vegetation will develop similarly over the next several years to that of these other recent burns.

Shrubs are sparse or nearly absent in these somewhat older burn areas, although occasional individual shrubs from the pre-fire vegetation have survived. Small, post-fire individuals of shrub species, including spineless horsebrush, yellow rabbitbrush, and sometimes big sagebrush and bitterbrush, are present at low density. The subshrub thorny skeleton plant is widespread and sometimes forms dense localized patches. Although bare ground is evident, a wide variety of herbaceous species grows here; many are native species, such as Stansbury's phlox, arrow-leaved balsam-root, one-sided bluegrass, squirreltail grass, western hawksbeard, silvery lupine, woolly mule-ears, five-leaf clover, scabland fleabane, and panicled Zigadenus. Non-native species, such as cheatgrass and red-stemmed filaree, are also abundant on these old burns.

Developed. Several developed areas that are part of an active ranching operation are located in the southern portion of the HJWA. These areas are occupied by buildings, other developed facilities (e.g., corrals), and landscaped or otherwise heavily altered areas.

B. Fauna

METHODOLOGY

Wildlife species descriptions are based on reviews of published and unpublished reports covering the HJWA as well as reconnaissance-level field surveys. The objectives for this work included:

- Compiling an inventory of common wildlife species found in the study area.
- Evaluating habitat quality for wildlife species.
- Developing a list of special-status wildlife species potentially occurring in the study area.
- Identifying and mapping sensitive wildlife habitats within the study area.

Literature Review. A review was conducted of published literature and unpublished materials (Internet research and CDFG internal documents) concerning the wildlife resources at the HJWA, including the results of previous wildlife surveys conducted in and near the HJWA (CDFG 2006, unpublished field data, on file at CDFG's HJWA office). Searches were conducted of CNDDB occurrence records for the Evans Canyon and Beckwourth Pass USGS 7.5' quadrangles and the five surrounding quadrangles within the state of California (CDFG 2008a), Threatened and Endangered Species Lists for the Evans Canyon and Beckwourth Pass USGS quadrangles (USFWS 2008d), and the California Wildlife Habitats Relationships System (CDFG 2006). Local and regional species experts were also consulted.

Field Surveys. To assess potential habitat for both common and special-status wildlife species, reconnaissance-level field surveys were conducted in 2006, 2007 and 2008 (Sustain Environmental, Inc, unpublished data). Reconnaissance surveys consisted of pedestrian transects to visually inspect the variety and quality of wildlife habitat as well as "windshield surveys" where access allowed. Biologists focused particular attention on areas that appeared to provide potentially suitable habitat for the special-status species likely to occur in the region (e.g., riparian areas, springs, sagebrush scrub, woodlands) and noted potential nesting sites, signs (tracks and scat), and/or animal presence. Biologists based the potential for special-status wildlife occurrence upon published literature, database searches, occurrence records from unpublished sources, and their professional experience and judgment. General habitat conditions and observations of all wildlife species encountered were noted.

FINDINGS

Based upon this preliminary assessment, the HJWA provides suitable habitat for 12 species of fish, 17 species of amphibians and reptiles, 141 species of birds, and 66 species of mammals (Appendix E). There are no data for invertebrate species occurrences. General information on wildlife species and habitats occurring within the HJWA are discussed by taxa below.

Invertebrates

Invertebrates are vital to energy and nutrient processing and cycling in ecosystems. All but primary producers are found at all trophic levels, and because of their abundance and diverse habitats, they play a major role in nutrient flow through ecosystems. They are important both as consumers (herbivores, detritivores, and predators) and as secondary producers (prey) (Niwa et al. 2001). No focused invertebrate surveys have been conducted, and there is much to be learned about the diversity of the aquatic and terrestrial invertebrates at this site.

Fishes

CDFG has conducted fishery surveys in the HJWA, especially along Balls Canyon Creek, Evans Creek and Long Valley Creek. These streams provide habitat for several species of native and non-native fish, including brown trout (*Salmo trutta*), speckled dace *(Rhinichthys osculus*) and lahotan redside *(Richarsonius egregius)* (Moyle 2002; CDFG 2006, unpublished field data, on file at CDFG's HJWA office).

Amphibians

Only a few species of amphibians are found in the Great Basin region of California (Stebbins 1985) and no focused amphibian surveys have been conducted at the HJWA. Bullfrogs (*Rana catesbeiana*), western toads (*Bufo boreaus*), and tree frogs (*Pseudacris regilla*) have been documented on site (CDFG 2006, unpublished field data, on file at CDFG's HJWA office). The only other amphibian species known to occur in this region of California is the Great Basin spadefoot toad (*Scaphiopus hammondi intermontanus)* (Stebbins 1985).

Reptiles

No focused inventory of reptiles has been completed for the HJWA. Based upon a review of ranges in California and western Nevada, and the types of habitats present at the Wildlife Area, common reptiles are likely to include western fence lizard (*Sceloporus occidentalis*), northern sagebrush lizard (*Sceloporus graciosus graciosus*), Sierra garter snake (*Thamnophis couchi*), and western rattlesnake (*Crotalus viridis*) (CalHerps 2006).

Birds

Many species of birds use the HJWA at some phase of their lifecycle due to its geographic location and the variety of habitats present. The following discussion addresses the major species guilds found or likely to occur at the Wildlife Area.

Water Birds

The wet meadow habitats and the narrow riparian corridor of Long Valley Creek are important resources to migratory waterfowl and wading birds. They provide roosting, foraging and potential nesting habitat for a number of water birds including several species of shorebirds, great blue heron (*Ardea herodias*), Canadian goose (*Branta canadensis*), and greater sandhill crane (*Grus canadensis tabida*).

Raptors

A wide variety of wintering and/or breeding raptors utilize the HJWA, including bald eagle *(Haliaeetus leucocephalus)*, golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), prairie falcon (*Falco mexicanus*), sharp-shinned hawk (*Accipiter striatus*), and northern harrier (*Circus cyaneus*). Several owl species may also be found on site, including barn owl (*Tyto alba*), short-eared owl (*Asio flammeus*), long-eared owl (*Asio otus*), great horned owl (*Bubo virginianus*), western screech owl (*Otus kennicottii*), flammulated owl (*Otus fammeolus*) and burrowing owl (*Athene cunicularia)*.

Terrestrial Birds

The primary upland game species at the HJWA are chukar (*Alectoris chukar*), mourning dove (*Zenaida macroura*), mountain quail (*Oreotyx pictus*) and California quail (*Callipepla californica*). Other resident, common, non-game bird species include common nighthawk (*Chordeiles minor*), Northern flicker (*Colaptes auratus*), loggerhead shrike (*Lanius ludovicianus*), Clark's nutcracker (*Nucifraga columbiana*), sage thrasher (*Oreoscoptes montanus*) and sage sparrow (*Amphispiza belli*).

Passerines

Neotropical migratory birds are those that breed in North America and winter in Central and South America. Representative species that breed and/or migrate through the Wildlife Area include western kingbird (*Tyrannus verticalis*), tree swallow (*Tachycineta bicolor*), barn swallow (*Hirundo rustica*), willow flycatcher (*Empidonax traillii*), and yellow warbler (*Dendroica petechia*).

Mammals

The HJWA provides habitat for a variety of mammals ranging from game species such as mule deer (*Odocoileus hemionus*) and pronghorn *(Antilocapra americana)*, to carnivores such as coyote (*Canis latrans*), American badger (*Taxidae taxus*), and long-tailed weasel (*Mustela frenata*), to a number of rodents including California ground squirrel (*Spermophilus beecheyi*), black-tailed jackrabbit (*Lepus*

californicus) and American beaver (*Castor canadensis*). Of all these species, the primary management concerns at HJWA revolve around providing winter range for the mule deer herd.

Mule Deer. In California, mule deer generally migrate out of high elevation areas in the fall to valleys and other low-elevation areas that receive less than 2 feet of snow, and then return to mountainous areas as snow melts in the spring (Wallmo 1981, Rogers 1999). The HJWA was acquired primarily to protect this important winter habitat and provide a protected migration corridor for the Loyalton-Truckee mule deer herd. Since the early 1970s, the population of the Loyalton-Truckee herd has been co-managed by the Nevada Department of Wildlife (NDOW) and the CDFG as an interstate herd that summers in California and migrates to winter ranges in Nevada (NDOW 2007).

Suitable habitat for mule deer includes a mosaic of vegetation including forest or meadow openings, dense woody thickets and brush, edge habitat, and riparian areas. A source of drinking water is especially important to mule deer (Zeiner et al. 1990b). Wintering deer use a patchy mosaic of dense cover (>3 feet tall) for shelter and browsing, interspersed with open foraging areas with grasses and forbs. Since winter is a period when mule deer are extremely dependent upon their fat reserves, they require shelter to minimize environmental stress. In spring, deer move up in elevation toward their summer ranges. All deer, and especially pregnant females, depend on abundant new herbaceous growth, particularly perennial grasses, to replenish tissue reserves while migrating. Cover is not as critical as during winter, but is still important for escaping predators.

In fall, deer return to their winter range. During this season, fawns are growing and deer need to store energy for the winter. Cover is important for escape from predators and for protection during the hunting season. Inadequate cover may cause deer to avoid otherwise desireable foraging areas. Patches of cover should be greater than 20 acres and open enough to allow easy movement.

Deer have more specific forage requirements than larger ruminants. Deer digestive tracts differ from cattle and elk in that they have a smaller rumen in relation to their body size and so they must be more selective in their feeding (Wallmo 1981). Instead of eating large quantities of low quality feed like grass, deer must select the most nutritious plants and plant parts (Mule Deer Working Group 2004). While a component of mule deer diet is forbs (broad-leafed herbaceous plants), during winter mule deer are primarily browsers with a diet comprised of leaves and twigs of woody shrubs (Wallmo 1981).

The primary limiting factor for deer at the HJWA is lack of quality forage, now exacerbated by the Balls Canyon fire. Regeneration of forage plants after severe fires can be slow.

C. Endangered, Threatened and Rare Species

Species that are legally protected or otherwise considered sensitive by federal, state or local resource conservation agencies and organizations are commonly referred to as special-status species. For the purposes of this plan, the designation of "special status" includes all of the following:

- Species listed as threatened or endangered under the federal Endangered Species Act (ESA) or California ESA
- Species of special concern as identified by the U.S. Fish and Wildlife Service (USFWS) or CDFG
- Species fully protected in California under the California Fish and Game Code
- Species identified as rare, threatened or endangered by the California Native Plant Society (CNPS)

1. Special Status Plants

Preliminary floristic studies conducted in support of this land management plan indicate that 19 special-status plant species have the potential to occur on or in the vicinity of the HJWA (Table III-b) (USFWS 2008a, b, c, CNPS 2008, CDFG 2008a, b). Of these, 8 species are designated as rare, threatened or endangered in California and elsewhere (CNPS List 1B) and 11 are designated as rare, threatened or endangered in California but common elsewhere (CNPS List 2). Plants on the CNPS List 1 or 2 are legally protected under the provisions of the California Environmental Quality Act (CEQA) and CEQA Guidelines.

Four special-status plants have been confirmed to be present on, or immediately adjacent to, the Wildlife Area: purple milk-vetch (*Astragalus agrestis*), Nevada daisy (*Erigeron nevadincola*), Webber's ivesia (*Ivesia webberi*), and golden violet (*Viola aurea*) (CDFG 2008a, Tibor 2001, CNPS 2008). Webber's ivesia is a CNPS List 1B species and a candidate for listing under the federal ESA. The other three documented species are on List 2. Table III-c summarizes CNDDB occurrence records for these four species. None of the four were observed during the 2007 or 2008 floristic surveys.

Table III-b. Legally Protected Plant Species with the Potential to Occur in the Vicinity of the Hallelujah Junction Wildlife Area, Lassen and Sierra Counties, California

California Native Plant Society (CNPS) Designations:

List 1B: Plants rare, threatened, or endangered in California and elsewhere
List 2: Plants rare, threatened, or endangered in California, but more common elsewhere

USFWS Designation: FC = Federal Candidate for listing under the Endangered Species Act

Common name Species name	STATUS	HABITAT	FLOWER PERIOD
Purple milk-vetch Astragalus agrestis	CNPS 2	Vernally moist places, Great Basin scrub, meadows and seeps.	April-July
Lemmon's milk-vetch Astragalus lemmonii	CNPS 1B	Great Basin scrub, meadows and seeps, marshes, lake shores.	May-August
Lens-pod milk-vetch Astragalus lentiformis	CNPS 1B	Sandy volcanic soil, Great Basin scrub, lower montane coniferous forest.	May-July
Pulsifer's milk-vetch Astragalus pulsiferae var. pulsiferae	CNPS 1B	Sandy or rocky, usually granitic soil, Great Basin scrub, lower montane coniferous forest, pinyon and juniper woodland.	May-August
Valley sedge Carex vallicola	CNPS 2	Moist places, Great Basin scrub, meadows and seeps.	July-August
Nevada daisy Erigeron nevadincola	CNPS 2	Rocky soil, Great Basin scrub, lower montane coniferous forest, pinyon and juniper woodland.	May-July
Ochre-flowered buckwheat Eriogonum ochrocephalum var. ochrocephalum	CNPS 2	Volcanic or clay soil, Great Basin scrub, pinyon and juniper woodland.	May -June
Alkali hymenoxys Hymenoxys lemmonii	CNPS 2	Subalkaline soil, Great Basin scrub, lower montane coniferous forest, meadows and seeps.	June-August
Sierra Valley ivesia Ivesia aperta var. aperta	CNPS 1B	Vernally moist places, usually volcanic soil, Great Basin scrub, lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland, vernal pools.	June-Sept
Dog Valley ivesia Ivesia aperta var. canina	CNPS 1B	Rocky volcanic soil, openings in lower montane coniferous forest, dry meadows.	June-August
Bailey's ivesia Ivesia baileyi var. baileyi	CNPS 2	Rocky volcanic soil, Great Basin scrub, lower montane coniferous forest.	May-August
Plumas ivesia Ivesia sericoleuca	CNPS 1B	Vernally moist places, usually volcanic soil, Great Basin scrub, lower montane coniferous forest, meadows and seeps, vernal pools.	May-Sept
Webber's ivesia Ivesia webberi	FC CNPS 1B	Sandy or gravelly soil, sometimes volcanic ash, Great Basin scrub, lower montane coniferous forest, pinyon and juniper woodland.	May-July
Sagebrush loeflingia Loeflingia squarrosa var. artemisiarum	CNPS 2	Sandy soil, desert dunes, Great Basin scrub, Sonoran desert scrub.	April-May
Suksdorf's broom-rape Orobanche ludoviciana var. arenosa	CNPS 2	Great Basin scrub.	June-Sep/Oct
Sticky pyrrocoma Pyrrocoma lucida	CNPS 1B	Alkaline clay soil, Great Basin scrub, lower montane coniferous forest, meadows and seeps.	July-October
Winged dock Rumex venosus	CNPS 2	Sandy soil, Great Basin scrub.	May-June
Green-flowered prince's plume Stanleya viridiflora	CNPS 2	White ash deposits, Great Basin scrub.	May-August
Golden violet Viola aurea	CNPS 2	Sandy soil, Great Basin scrub, pinyon and juniper woodland.	April-June

Table III-c. Locations of CNDDB Occurrence Records for CNPS List 1 and 2 Plant Species on, or Immediately Adjacent to, the Hallelujah Junction Wildlife Area

SPECIES	Record #	Township Range Section	Notes
Purple milk-vetch Astragalus agrestis	1	T21N R18E Sec. 30	Just outside Wildlife Area boundary
Nevada daisy Erigeron nevadincola	4	T22N R17E Secs. 25, 36	
	5	T21N R18E Sec. 6	
	6	T21N R17E Sec. 4	
	7	T21N R17E Sec. 2	Within Balls Canyon fire area
	8	T21N R18E Sec. 7	
	9	T21N R17E Sec. 4	
	10	T21N R18E Sec. 7	
	11	T21N R18E Sec. 18	
	12	T21N R17E Sec. 13	
	13	T21N R18E Sec. 30	Just outside Wildlife Area boundary
	28	T21N R17E Sec 1	
Webber's ivesia Ivesia webberi	8	T21N R17E Sec. 11	Within Balls Canyon fire area. Mapped location was searched May 2008, but species not observed
	10	T22N R17E Sec. 36	Just inside Wildlife Area boundary
Golden violet Viola aurea	6	T21N R17E Sec. 12	Along U.S. 395
	7	T21N R17E Sec. 1, T22N R17E Sec. 36	

Source: California Natural Diversity Database (CDFG 2008a)

DESCRIPTIONS OF SPECIAL STATUS PLANT SPECIES

Known to Occur

Purple milk-vetch *(Astragalus agrestis)*
Status: CNPS List 2

PHOTO: Mrs. W.D. Bransford

Purple milk-vetch is a low perennial herb in the large and taxonomically difficult genus *Astragalus* in the legume family (Fabaceae). It has pinnately compound leaves with 9-23 lanceolate to ovate leaflets. The pea-like flowers and the pods (fruits) occur in a dense head-like cluster; the flowers are pink-purple to white, and the pods are papery but not inflated. Identification of species of *Astragalus* is often difficult and requires mature pods, but the dense, head-like flower cluster of this species is somewhat distinctive.

In California, purple milk-vetch occurs only in Lassen and Sierra counties, except for one reported Mono County collection location. The occurrence near the HJWA is the only known Sierra County location. Outside the state, purple milk-vetch ranges to the

Rocky Mountain states and Yukon Territory. In California, it grows in seasonally moist soil in big sagebrush scrub and meadows.

The CNDDB reports one occurrence of purple milk-vetch in the vicinity of the study area, located along Long Valley Creek in T21S R18E Sec. 30. If mapped accurately, this location is just outside the Wildlife Area boundary. Habitat in this vicinity consists of narrow zones of meadow and riparian scrub habitat adjacent to the creek and associated drainages interspersed with big sagebrush scrub habitat. The CNDDB record indicates that the species occurs at this location with big sagebrush, yellow rabbitbrush, and interior rose, indicating a transitional area between big sagebrush scrub and riparian.

Nevada daisy *(Erigeron nevadincola)*
Status: CNPS List 2

PHOTO: Gary A. Monroe, USDA-NRCS

Nevada daisy is a low perennial herb in the sunflower family (Asteraceae), with pubescent stems and leaves. The typically erect stems are 6 inches (15 cm) tall, occasionally to 1 feet (30 cm) tall. The leaves are linear to narrowly oblanceolate. The numerous flower heads have all the phyllaries equal and have numerous conspicuous white ray flowers (usually tinged bluish or pinkish below) and a disk of yellow disk flowers. Technical characterizations are needed to distinguish this species from related species.

In California, Nevada daisy occurs only in Lassen, Sierra, Plumas and Placer counties, with only a few occurrences in the latter two counties. It also occurs in northern Nevada. It grows in rocky soil in Great Basin scrub, juniper and pinyon-juniper woodland, and lower montane coniferous forest.

Eleven populations of Nevada daisy are mapped by the CNDDB within or just outside the boundary of the Wildlife Area (Table III-c). These locations are widely distributed in the southern two-thirds of the area. The CNDDB records indicate that the species occurs in both big sagebrush scrub and juniper woodland in this area. A search of two of these locations, in T21N R18E Sec. 7 (CNDDB Occurrence No. 8) and in T21N R18E Sec. 30 (CNDDB Occurrence No. 13), did not uncover this species (Sustain Environmental, Inc, unpublished field data).

Webber's ivesia *(Ivesia webberi)*
Status: Federal Candidate for Listing, CNPS List 1B

PHOTO: © 2006 Dean Wm Taylor

Webber's ivesia is listed on CNPS List 1 (Tibor 2001, CNPS 2008). It is also a “candidate” species for federal listing (USFWS 2008c). In addition, it is listed as “threatened” in Nevada by the Nevada Native Plant Society (Nevada Natural Heritage Program 2008). It is a low perennial herb in the rose family (Rosaceae), growing from a rosette of basal leaves that are pinnately compound with 4-8 leaflets to a side; each leaflet is divided to the base into 5-12 linear to lanceolate lobes, giving the leaves a distinctive appearance.

The stems are up to 6 inches (15 cm) tall and have a pair of opposite leaves; this characteristic is unique in the genus *Ivesia*. Each stem terminates in a cluster of yellow flowers that is head-like in flower but open in fruit.

Webber's ivesia is known only in Lassen, Sierra and Plumas counties in California and in adjacent extreme western Nevada. It occurs in rocky (or sandy or gravelly), mainly volcanic soil in Great Basin scrub (primarily), lower montane coniferous forest, and juniper woodland.

The CNDDB mapped two populations of Webber's ivesia within the Wildlife Area. One of these localities (CNDDB Occurrence No. 8) was also reported and mapped by Witham (unpublished report, 1992). This location, in T21N R17E Sec. 11, is within the Balls Canyon fire area. The other mapped location within the Wildlife Area (CNDDB Occurrence No. 10) is located east of U.S. 395, just inside (south of) the Wildlife Area boundary, occurring in big sagebrush scrub.

Golden violet *(Viola aurea)*
Status: CNPS List 2

PHOTO:: Mrs. W.D. Bransford

Golden violet is a perennial from a woody taproot in the violet family (Violaceae). The leaves are both basal and cauline, long-petioled, oblong to nearly round, almost as wide as long, rounded and toothed to shallowly lobed at the apex, and are conspicuously canescent. The canescent leaves distinguish this species from the sometimes similar, widespread species mountain violet (*Viola purpurea*), which has pubescent, but not canescent, leaves. The flowers have the typical violet shape and are solitary on long pedicels from the leaf axils; the petals are yellow, with the lower three veined dark brown.

Golden violet occurs at widely scattered localities in California, in (from north to south) Lassen, Sierra, Mono, eastern Kern, San Bernardino, and San Diego counties. The two locations in the vicinity of the HJWA are the northernmost known localities in California. The species also occurs in western Nevada. It occurs in sandy soils in Great Basin scrub, pinyon and juniper woodland.

Two CNDDB occurrences are located in or near the study area, approximately a mile apart. One of these (CNDDB Occurrence No. 6), located in T21N R17E Sec. 12, is described as being along U.S. 395, with parts slightly outside the Wildlife Area boundary. The second occurrence (CNDDB Occurrence No. 7) is on both sides of the Lassen-Sierra county line, in T21N R17E Sec. 1 and T22N R17E Sec. 36. Both occurrences are in big sagebrush scrub.

OTHER PLANT SPECIES OF INTEREST

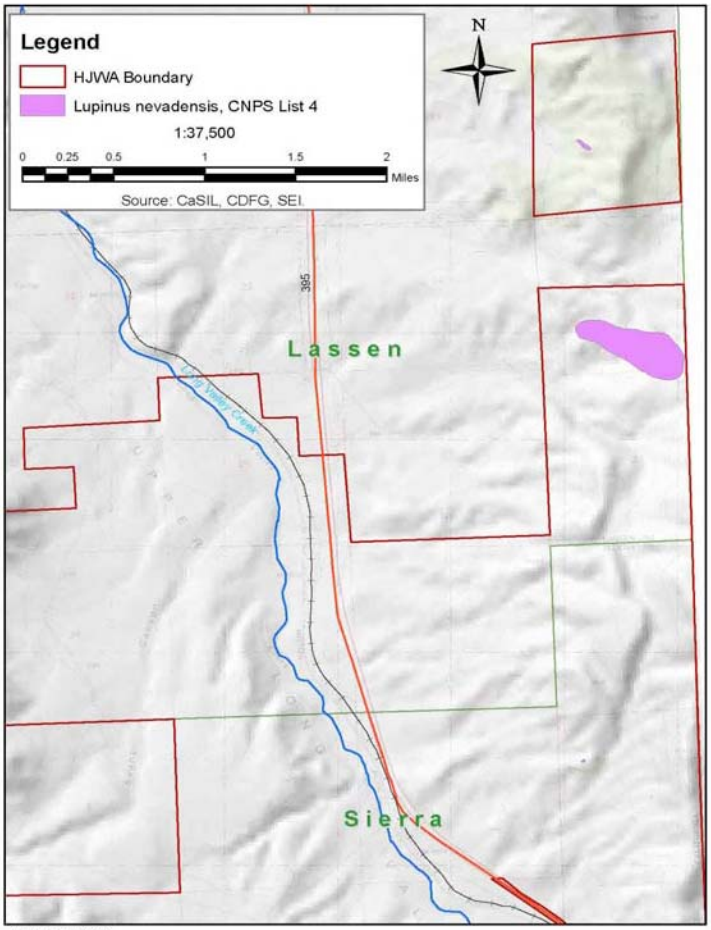
Nevada lupine *(Lupinus nevadensis)*
Status: CNPS List 4 (Limited Distribution – Watch List)

PHOTO: Gary A. Monroe, USDA-NRCS

Nevada lupine has no federal or state status, and does not fall under any specific regulatory authority. It is a perennial lupine in the legume family (Fabaceae). The leaves and stems are pubescent with conspicuous, relatively long, soft, spreading hairs, a characteristic that distinguishes it from many similar species, including silvery lupine, which is widespread in the Wildlife Area, including the areas where Nevada lupine occurs. The leaves are petioled and palmately compound, as is typical of lupines, with 6-10 oblanceolate leaflets. The inflorescence is a raceme of blue, pea-like flowers.

Nevada lupine occurs east of the Sierra-Cascade mountain axis from Lassen County to Inyo County in California. It also occurs in Nevada and Oregon. It occurs in Great Basin scrub, juniper and pinyon-juniper woodland.

Nevada lupine has been observed at three locations in the extreme eastern portion of the Wildlife Area. In T22N R18E SW and SE ¼ Sec. 30, Nevada lupine is widespread in both big sagebrush scrub and juniper woodland. At the other two locations, in T21N R18E NW ¼ Sec. 7 and T22N R18E SW ¼ Sec. 19, Nevada lupine appears to be more localized, in areas of juniper woodland habitat. It is likely that Nevada lupine is more widespread, at least in the eastern portion of the wildife area.



Map: SEI 2009

2. Special Status Wildlife

A review of the California Natural Diversity Database (CNNDB) and the USFWS online inventory of Threatened and Endangered Species by USGS quadrangles indicates that 32 special-status wildlife species have the potential to occur in the vicinity of the HJWA (CDFG 2008a, 2009; USFWS 2008d). California Bird Species of Concern (Shuford and Gardali 2008) and Birds of Conservation Concern 2008 (USFWS 2008e) were included in the review of potentially occurring special-status wildlife species. The resulting list includes 1 fish, 1 amphibian, 1 lizard, 19 bird species, and 10 mammals.

Table III-d summarizes information on the special-status wildlife species that have the potential to occur on or near the HJWA, including their regulatory status, habitat requirements, and likelihood of occurring within the Wildlife Area. Of the 32 species, 4 taxa (Lahontan cutthroat trout, Sierra Nevada yellow-legged frog, olive-sided flycatcher and Townsend's big-eared bat) are highly unlikely to occur based on local habitat conditions and are not discussed further in the text. The remaining 28 species include 11 taxa confirmed as occurring in the Wildlife Area as either resident or migrant species and 17 that will require focused surveys to determine their presence or absence. Species accounts for these special-status species follow below.

Table III-d. Special Status Wildlife Species with the Potential to Occur in the Vicinity of the Hallelujah Junction Wildlife Area

U.S. Fish and Wildlife Service (USFWS)
FE = Federal Endangered FT = Federal Threatened FD = Federal Delisted FC = Federal Candidate
CH = Critical Habitat Designation BCC = Birds of Conservation Concern

U.S. Forest Service (USFWS)
FSS = Forest Service Sensitive

U.S. Bureau of Land Management (BLM)
BLMS = BLM Sensitive

California Department of Fish and Game (CDFG)
SE = State Endangered ST = State Threatened SFP = State Fully Protected SSC = State Species of Concern WL=Watch List

Western Bat Working Group (WBWG)
WBWG High = High Priority WBWG Med = Medium Priority WBWG Low = Low Priority

Potential for Occurrence Evaluation Criteria:
Observed = Species documented in or immediately adjacent to the HJWA, and suitable habitat is available on or near HJWA
High = Species known to occur in the area and suitable habitat is present on or near the HJWA.
Moderate = HJWA is within the known range of this species and suitable habitat is present.
Low = HJWA does not provide suitable habitat and/or is outside of the known range and distribution.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
FISH					
Lahontan cutthroat trout *Oncorhynchus clarki henshawi*	FT			One of two species of native trout found east of the Sierra Nevada, associated with coldwater streams and lakes. Native populations are restricted to the Truckee, Walker and Carson river basins.	Low. There are antedotal reports of their historical occurrence in Balls Canyon Creek.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
AMPHIBIANS					
Sierra Nevada yellow-legged frog *Rana sierrae*	FC, FSS	SSC		Restricted to montane regions of California and adjacent Nevada. Historically found in lakes, ponds, marshes, meadows, and streams at 4500-12,000' elevation.	Low-None. No suitable breeding habitat in HJWA.
REPTILES					
Northern sagebrush lizard *Sceloporus graciosus graciosus*	BLMS			Found east of the Sierra Nevada in the Great Basin. Commonly found in sagebrush and other types of shrublands. Prefers open areas with scattered low bushes and lots of sun.	Observed.
BIRDS					
Greater sage-grouse *Centrocercus urophasianus* (nesting and leks)	FSS, BLMS	SSC		A sagebrush habitat obligate species. Lek sites tend to occur in less-vegetated areas with low sage, and nesting and wintering sites are located in areas dominated by various sagebrush species, especially big sagebrush.	Low. Nearest known lek sites (NV) are considered extirpated. There are suitable nesting and brood-rearing habitat nearby and on site.
Northern goshawk *Accipiter gentilis* (nesting)	FSS, BLMS	SSC		Prefers middle and higher elevations and mature, dense conifer forests.	Low. Marginal habitat existed along the western, higher elevation portion of the Wildlife Area. Most of this area burned in 2007.
Golden eagle *Aquila chrysaetos* (nesting and wintering)	BCC, BLMS	FP, WL		Habitat typically includes rolling foothills, mountain areas, sage-juniper flats, desert. Nests on cliffs of all heights and in large trees in open areas.	Observed.
Ferruginous hawk *Buteo regalis* (wintering)	BCC, BLMS	WL		Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats.	Moderate. Likely to occur as winter visitor.
Swainson's hawk *Buteo swainsoni*	BCC, FSS	ST		Nests in riparian woodlands and isolated trees; forages in grasslands, shrublands and agricultural fields.	Observed. Potential nesting habitat is available on the east side of U.S. 395.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
BIRDS					
Northern harrier *Circus cyaneus*		SSC		Nests and forages in open wetlands, including marshy meadows; wet, lightly grazed pastures; old fields; freshwater and brackish marshes; also dry uplands, including upland prairies, mesic grasslands, drained marshlands, croplands, cold desert shrub-steppe, and riparian woodland.	Observed. Suitable nesting and foraging habitat on site.
Bald eagle *Haliaeetus leucocephalus* (nesting and wintering)	FD, BCC	SE, FP		Winters throughout California near lakes, streams and rivers where prey is abundant. In California, most eagles nest in the mountainous regions of northeastern California near lakes and reservoirs.	Moderate. May be occasional winter visitor to area, but no suitable nesting habitat nearby.
Prairie falcon *Falco mexicanus* (nesting)	BCC	WL		Common to grasslands and shrub-steppe habitats. Requires rock outcrops or cliffs for nesting; also forages in agricultural fields.	Observed. Suitable foraging habitat on site, but no suitable nesting habitat.
American peregrine falcon *Falco peregrinus anatum*	FD, BCC, FSS	SE, FP		Found in a variety of habitats, most with cliffs for nesting and open areas for foraging. Preys mostly on birds, ranging in size from songbirds to small geese.	Low. May be occasional visitor to area. No suitable nesting habitat in the immediate vicinity.
Greater sandhill crane *Grus canadensis tabida*	FSS	ST, FP		Nests in wet meadows, marshlands and flooded fields of northeastern California and western Oregon. Forages in a variety of habitats.	Observed. CDFG reports cranes in the southern meadows of HJWA.
Short-eared owl *Asio flammeus* (nesting)		SSC		Nests and roosts on the ground in open meadows and grasslands.	High. Suitable habitat is present and within known range.
Long-eared owl *Asio otus* (nesting)		SSC		Prefers thickly wooded riparian areas for nesting and roosting with nearby open spaces for hunting.	High. Known to occur locally in isolated tree stands.
Burrowing owl *Athene cunicularia*	BCC, BLMS	SSC		Habitat consists of open, dry grassland and desert habitats; and in grass, forb and open shrub stages of juniper and ponderosa pine habitats. Uses rodent or other burrows for roosting and nesting cover.	Moderate. Very sparse distribution in the Great Basin, suitable habitat is present.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
BIRDS					
Olive-sided flycatcher *Contopus cooperi*	BCC	SSC		Summer resident and migrant from April-October. Nests in coniferous forests throughout California.	Low. No suitable nesting habitat. May occur as migrant.
Willow flycatcher *Empidonax traillii* (nesting)	FSS	SE		Prefers broad, open river valleys or large mountain meadows with lush growth of shrubby willows, wet meadow and montane riparian habitats at 2,000–8,000' elevation. Dense willow thickets are required for nesting and roosting.	Moderate. May occur as seasonal migrant. Marginal nesting habitat along Balls Canyon Creek and associated wetlands.
Loggerhead shrike *Lanius ludovicianus*	BCC	SSC		Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Observed. Suitable nesting and foraging habitat is present.
Bank swallow *Riparia riparia* (nesting)		ST		Nests in vertical banks and cliffs with fine textured or sandy soils near streams, rivers, lakes, and ocean. Forages primarily over water.	Observed. Suitable nesting and foraging habitat is present along Long Valley Creek. Nesting colony documented near northern end of Long Valley Creek.
California yellow warbler *Dendroica petechia brewsteri* (nesting)	BCC	SSC		Nests in riparian woodland and riparian scrub habitats. Forages in a variety of wooded and shrub habitats during migration.	High. Suitable nesting habitat is present in area.
Yellow-headed blackbird *Xanthocephalis xanthocephalis*		SSC		Summer resident in California. Closely associated with freshwater marshy areas with tall emergent vegetation.	Observed. CDFG has observed this species along Long Valley Creek.
MAMMALS					
Spotted bat *Euderma maculatum*	BLMS	SSC	High	Inhabits ponderosa pine regions in early summer, but descends to deserts at lower elevations in the fall. Roosts in rock crevices.	Moderate. Suitable habitat is present in area.
Townsend's big-eared bat *Corynorhinus townsendii*	FSS, BLMS	SSC	High	Prefers arid open areas near coniferous forests. Requires large protected caves and mines for roosting.	Low. No suitable roosting habitat in vicinity.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
MAMMALS					
Long-legged myotis *Myotis volans*			High	Lives primarily in coniferous forests near water sources. Roosts in trees, buildings or rock crevices. Hibernates in caves in winter.	Moderate. Suitable habitat is present in area.
Fringed myotis *Myotis thysanodes*	BLMS		High	Prefers woodlands or grasslands near water sources at mid-elevations. Roosts in caves, mines, or buildings.	Moderate. Suitable habitat is present in area.
Pallid bat *Antrozous pallidus*	FSS, BLMS	SSC	High	Typically associated with rocky outcrops with dry open areas but occasionally found in evergreen forests.	High. Suitable habitat is present in area.
Western white-tailed jackrabbit (=hare) *Lepus townsendii townsendii*		SSC		Preferred habitats are sagebrush, subalpine conifer, juniper, alpine dwarf-shrub and perennial grassland. Also uses low sagebrush, wet meadow and early successional stages of various conifer habitats.	Moderate. Suitable habitat is present.
Pygmy rabbit *Brachylagus idahoensis*	BLMS	SSC		Associated with dense sagebrush regions with deep soft soil for foraging, cover, and burrowing.	Low. Nearest documented location for this species is Honey Lake Valley.
Ringtail *Bassariscus astutus*		FP		Resides in hollow trees, logs, snags, and abandoned burrows in forested, shrubland, and rocky areas near a permanent water source.	Moderate. Suitable habitat is present along Balls Creek.
American badger *Taxidea taxus*		SSC		Preferred habitats are dry, open, treeless regions, prairies, parklands, and cold desert areas with friable soils.	Observed. Suitable habitat is present for burrows and small mammals for foraging.
Desert bighorn sheep *Ovis canadanesis nelsoni*	FSS, BLMS			Prefers open areas of low-growing vegetation for feeding, in close proximity to steep, rugged terrain for escape, lambing, and bedding, and an adequate source of water.	Observed. The high elevation slopes east of HWY 395 offer potential habitat for this species.

[1] Source: CDFG 2008a, 2009; CalHerps 2009, USFWS 2008d, USFWS 2008e.

NOTE: Taxonomic order, scientific names, and listing status designations are subject to change. Taxonomic order for bird species follows the AOU Checklist of North American Birds (1998 with supplements through 2008; for mammals, the Complete List of Amphibian, Reptile, Bird and Mammal Species in California (excluding subspecies) (CDFG 2008c). Please consult with CDFG and published literature for most up-to-date listing designations.

DESCRIPTIONS OF SPECIAL-STATUS WILDLIFE SPECIES*

Reptiles

Northern sagebrush lizard *(Sceloporus graciosus graciosus)*
Status: BLM Sensitive
Potential to Occur: Observed.

PHOTO: wormwould Creative Commons

In California, northern sagebrush lizards are found in the Great Basin desert regions east of the Sierra Nevada and in northeastern California (CalHerps 2009). They co-occur with the western fence lizard (*S. occidentalis*), but are usually found at higher elevations (up to 10,500 ft. elevation). As their name implies, Northern sagebrush lizards live in sagebrush and other shrublands, preferring open areas with scattered low bushes and basking sites. Sagebrush lizards become active in late spring, laying eggs in June or July. Hatchlings usually appear in August or September (St. John 2002).

Birds

Greater sage-grouse *(Centrocercus urophasianus)*
Status: Forest Service Sensitive, BLM Sensitive; California Species of Special Concern (nesting & leks)
Potential to Occur: Low. Historical occurrence records but presumed extirpated in area; suitable nesting and brood-rearing habitat exists

PHOTO: Gary Kramer, USFWS

Greater sage-grouse are year-long residents throughout most of the sagebrush-dominated portions of the Great Basin, Columbia Plateau, western Great Plains and Rocky Mountains in 11 western states, and Alberta and Saskatchewan in Canada (Schroeder et al. 2004). Their range in California includes portions of the Modoc Plateau and Great Basin in parts of Modoc, Lassen, Mono, and Inyo counties (Hall et al. 2008, Grinnell and Miller 1944). They formerly occupied portions of eastern Siskiyou, Shasta, Plumas, Sierra, and Alpine counties in California (Hall 1995). In northeastern California, greater sage-grouse are most abundant in eastern Lassen County, north of Honey Lake and east of Eagle Lake, and in the Surprise Valley in northeastern Modoc County. These areas contain approximately two-thirds of all of California's sage-grouse populations (Hall et al. 2008, Hall 1995).

* Four taxa that are highly unlikely to occur based on local habitat conditions (i.e., Lahontan cutthroat trout, Sierra Nevada yellow-legged frog, olive-sided flycatcher, and Townsend's big-eared bat) are not discussed further here.

One of the sagebrush obligate species, greater sage-grouse are dependent upon sagebrush habitats for food and cover throughout their life cycle. Sage-grouse males form leks (strutting grounds) opportunistically at sites within or adjacent to potential nesting habitat. Leks, or breeding display sites, typically occur in open areas surrounded by sagebrush where visibility among males is unobstructed by vegetation or topography (Connelly et al. 2000). Nesting sage-grouse usually select sites where the mean height of sagebrush ranges from 29 to 80 cm, and nests tend to be under the tallest sagebrush within a stand (ibid). Early brood-rearing areas are generally located in sagebrush habitats near the nest site, as the season progresses, sage-grouse move to more mesic sites, including meadows, riparian areas and croplands where there is both moisture and adequate insect prey for the juvenile birds (Hall et al. 2008). Although presumed extirpated in the area, an unconfirmed sighting was reported near Haskell Peak.

Northern goshawk *(Accipiter gentiles)*
Status: Forest Service Sensitive and BLM Sensitive; California Species of Special Concern (nesting)
Potential to Occur: Low. Marginal nesting habitat in higher western elevations prior to 2007 fire

PHOTO: Alan and Elaine Wilson, Free Cultural Work

Northern goshawks are the largest of North American accipiters and are found in middle- to high- elevation coniferous forests throughout the United States and Canada. In California, northern goshawks are considered uncommon to rare residents, and are distributed throughout the northern coast range, across the Cascades, the Modoc Plateau, Warner Mountains and south through the Sierra Nevada (Keane 2008, Small 1994). Goshawks prefer mature, dense tree stands with well-developed understory for nesting habitat; usually there is a water source within their nesting territory (Johnsgard 1990; Zeiner et al. 1990a). As with other accipiters, birds are their preferred prey, although they also feed on numerous species of small mammals, reptiles and even insects (Keane 2008, Johnsgard 1990).

Golden eagle *(Aquila chrysaetos)*
Status: Federal Bird of Conservation Concern, BLM Sensitive; California Fully Protected, Watch List
Potential to Occur: Observed

PHOTO: Immature Golden Eagle, USFWS

One of the largest raptors in North America, golden eagles are relatively common throughout the western United States where there is suitable foraging habitat and nest sites (Kochert et al. 2002). Their diet consists mostly of rabbits and rodents, but also includes other mammals, reptiles, birds, and some carrion (Zeiner et al. 1990a). Golden eagles nest most frequently on cliff ledges, but may build nests in trees large enough to support their weight. They often maintain alternative nest sites and reuse old nests for generations (ibid.).

Ferruginous hawk *(Buteo regalis)*
Status: Federal Bird of Conservation Concern, BLM Sensitive; California Watch List
Potential to Occur: Moderate. Likely winter visitor

PHOTO: Courtesy © 2008 Ron Wolf

Primarily a winter visitor to California, ferruginous hawks are found in arid to semi-arid regions, shrub steppe, grasslands, and agricultural areas in southwestern Canada, the western United States and northern Mexico (Johnsgard 1990). They are one of the largest hawks: adults are about 2 feet long with a wingspan of 4 1/2 feet. The adults have three color phases, the most common of which is the "light" phase, characterized by reddish brown above and white below with red-brown legs. When flying overhead the legs of the "light" phase form a characteristic "V" contrasting with the white belly area. Generally, ferruginous hawks are not known to nest in California, but one confirmed nest site was documented southwest of Termo, in Lassen County (approximately 100 miles north of HJWA) during the early 1990s (P. Bloom, Western Foundation of Vertebrate Zoology, personal communication). Ferruginous hawks build large stick nests in isolated trees or isolated clumps of trees in exposed locations, but they will nest on the ground in treeless areas.

Swainson's hawk *(Buteo swainsonii)*
Status: Federal Bird of Conservation Concern, BLM Sensitive; California Threatened
Potential to Occur: Observed. Potential nesting habitat east of U.S. 395

PHOTO: Pharaoh Hound, Creative Commons

Swainson's hawks breed in the western United States and Canada and winter in South America as far south as Argentina. California has two distinct Swainson's hawk breeding areas: the Central Valley and the Great Basin (including portions of Shasta, Siskiyou, Modoc and Lassen Counties) (Woodbridge 1998). Swainson's hawks are adapted to open habitats with sparse tree cover, and have become increasingly dependent on agriculture as native plant communities are converted to agricultural lands. In the Great Basin region of California, Swainson's hawks often nest in small junipers adjacent to or in close proximity to natural meadows or agricultural fields (R. Cull, unpublished data). The California vole (*Microtus californicus*) and Belding's ground squirrel (*Spermophilis beldingi*) are dietary staples; however, a variety of other small mammals, birds, reptiles and insects are also consumed (Woodbridge 1998).

Northern harrier *(Circus cyanus)*
Status: California Species of Special Concern
Potential to Occur: Observed

PHOTO: Alan and Elaine Wilson, Free Cultural Work

Northern harriers nest and forage in a variety of open habitats including marshes, grasslands, low shrublands, and agricultural fields. Harriers are ground nesters and prey on a variety of small animals, particularly rabbits, mice, voles and small birds (Johnsgard 1990).

Bald eagle *(Haliaeetus leucocephalus)*
Status: Federal Delisted, Bird of Conservation Concern; California Endangered, Fully Protected (wintering and nesting)
Potential to Occur: Moderate. May be occasional visitor, but no suitable nesting habitat nearby

PHOTO: Alan and Elaine Wilson, Free Cultural Work

Bald eagles winter throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands (ibid.). The breeding range of bald eagles is primarily in mountainous habitats near reservoirs, lakes, and rivers in the northern portion of the state (Small 1994). Fish constitute most of the bald eagle's diet, but wintering birds frequent wetland habitats in search of dead and dying waterfowl and other water birds (Buehler 2000).

Bald eagle nesting territories are associated primarily with young or mature forests of ponderosa and mixed conifer types with varying canopy closure, but can be found in all forest types from blue oak savanna to lodgepole pine types (Buehler 2000, Verner and Boss 1980). Bald eagles usually nest in overstory ponderosa or sugar pine with foliage shading the nests, within 0.5 mile of a large body of water, and with low human disturbance (Verner and Boss 1980). Total canopy closure in stands that support bald eagle nests is usually less than 40% (ibid.).

Prairie falcon *(Falco mexicanus)*
Status: Federal Bird of Conservation Concern; California Watch List
Potential to Occur: Observed. No suitable nesting habitat on site

PHOTO: Doug Backlund, Public Domain

Prairie falcons are found throughout the arid West, usually associated with shrub-steppe and grassland habitats (Steenhof 1998). Prairie falcons usually nest on sheltered cliff ledges or rock outcrops overlooking large open areas, although they sometimes use old raven nests (Zeiner et al. 1990a). Prairie falcons prey on medium-sized mammals and birds and range widely while foraging, searching large areas for prey. Prairie falcons are regularly observed foraging at the HJWA.

American peregrine falcon *(Falco peregrinus anatum)*
Status: Federal Delisted; California Endangered, Fully Protected
Potential to Occur: Low. May be occasional visitor, but no suitable nesting habitat nearby

PHOTO: Doug Backlund, Public Domain

Historically, the American peregrine falcon was found throughout the Sierra Nevada and most of California (Grinnell and Miller 1944). Now, it is uncommon as a breeding resident and uncommon as a migrant (Zeiner et al. 1990a). The American peregrine falcon nests on vertical cliffs with large potholes or ledges that are inaccessible to land predators. Because this species preys primarily on birds, nest sites are usually located near areas that support large avian populations, such as coastal areas or wetlands. Peregrine falcons may travel long distances from their nesting grounds to foraging habitats (Grinnell and Miller 1944, Zeiner et al. 1990a). Breeding activity begins as early as March and ends in August (Zeiner et al. 1990a).

Greater sandhill crane *(Grus canadensis tabida)*
Status: Forest Service Sensitive; California Threatened, Fully Protected
Potential to Occur: Observed. Reported in southern meadows and pastures of HJWA

PHOTO: © Rebecca Cull

The greater sandhill crane is one of six subspecies of sandhill cranes found in North America (Littlefield 1989). There are five recognized populations of greater sandhill cranes. The Central Valley population winters in California's Central Valley, and nests in northeastern California, eastern Oregon, portions of Nevada and Washington, and British Columbia. They congregate in large flocks at night roosts and disperse during the day to forage in grasslands and emergent wetlands, as well as moist croplands with rice or corn stubble. Greater sandhill cranes have been observed in the south-central meadows and pastures of HJWA but are not known to nest in the area (J. Dawson, CDFG, personal communication).

Short-eared owl *(Asio flammeus)*
Status: California Species of Special Concern
Potential to Occur: High. Suitable nesting habitat present

PHOTO: Courtesy © 2007 Ron Wolf

The short-eared owl nests and roosts (unless snow prevents this) on the ground. Its preferred habitats include open prairies, coastal grasslands, tundra, marshes, bogs, savanna, and dunes. Short-eared owls are uncommon breeders in the Klamath Basin, Modoc Plateau and Great Basin regions of northern California (Roberson 2008, Small 1994). Its daytime counterpart is the Northern harrier, and like the harrier, it can be seen flying low in its open habitat. The short-eared owl has a distinctively moth-like flight (Johnsgard 1990).

Long-eared owl *(Asio otus)*
Status: California Species of Special Concern (nesting)
Potential to Occur: High. Known to occur locally in isolated tree stands at HJWA

PHOTO: Courtesy © 2007 Ron Wolf

Long-eared owls inhabit open woodlands, forest edges, riparian strips along rivers, hedgerows, juniper thickets, woodlots, and wooded ravines and gullies. Breeding habitat includes thickly wooded areas for nesting and roosting with nearby open spaces for hunting. Long-eared owls nest almost exclusively in old stick nests of crows, magpies, ravens, hawks, or herons. Less often, they nest in rock crevices, tree cavities, or on open ground. Nests are usually located in wooded sites, often screened by shrubbery, vines, or branches and are commonly 5 to 10 meters (16 to 33 feet) above ground. Long-eared owls are considered uncommon local residents in northeastern California (Hunting 2008, Small 1994).

Burrowing owl *(Athene cunicularia)*
Status: Federal Bird of Conservation Concern, BLM Sensitive; California Species of Special Concern
Potential to Occur: Moderate. Suitable nesting habitat present

PHOTO: Alan and Elaine Wilson, Free Cultural Work

The burrowing owl is a year-long resident of open, dry grassland and desert habitats. They are also found as residents in grass, forb and open shrub stages of pinyon-juniper, and ponderosa pine habitats. This small owl is found the length of the state of California in appropriate habitats and has been found as high as 5,300 feet in Lassen County (Gervais et al. 2008, Grinnell and Miller 1944). Burrowing owls require burrows for nesting and roosting, and relatively short vegetation or sparse shrubs. Although they may dig their own burrows in soft soils, burrowing owls usually nest in old burrows of a ground squirrel, badger or other small mammals (Gervais et al. 2008).

Willow flycatcher *(Empidonax traillii)*
Status: Forest Service Sensitive; California Endangered (nesting)
Potential to Occur: Moderate. May occur as seasonal migrant, marginal nesting habitat available

PHOTO: © Steve Zack

Willow flycatchers historically nested throughout California, preferring riparian deciduous shrubs, particularly willow thickets (Grinnell and Miller 1944). Currently, three subspecies of the willow flycatcher breed in California. Each has been listed as state Endangered and USFS Region 5 Sensitive in California. Willow flycatchers are known to nest in the northeastern California and in montane riparian habitats in the Cascade-Sierra Range (Sedgwick 2000).

Loggerhead shrike *(Lanius ludovicianus)*
Status: Federal Bird of Conservation Concern; California Species of Special Concern
Potential to Occur: Observed

PHOTO: David Menke, USFWS

The loggerhead shrike is the only one of the world's 30 species of true shrikes that occurs exclusively in North America. Like other shrikes, it inhabits ecotones, grasslands, and other open habitats and feeds on a variety of invertebrate and vertebrate prey. Compared to most birds, its head is large in proportion to its body size—hence the name Loggerhead, which also means blockhead (Yosef 1996). The loggerhead shrike is known for its habit of impaling prey on thorns or barbed wire (a common nickname is "butcher bird"). Similar in coloration to mockingbirds, loggerhead

shrikes have a large head with a distinctive black mask and hooked beak. Males and females are similar in size. Loggerhead shrikes appear to be increasing in northeastern California, especially the Honey Lake Valley, but are uncommon elsewhere in the Great Basin region of California (Humple 2008).

Bank swallow *(Riparia riparia)*
Status: California Threatened (nesting)
Potential to Occur: Observed. Known to occur north of HJWA, suitable habitat along Long Valley Creek

PHOTO: © Scott Elowitz

The bank swallow is the smallest North American swallow, with a body length of about 4.75 inches. Bank swallows are distinguished from other swallows by their distinct brown breast band contrasting with white underparts. The upper parts are brown. The species nests in colonies and creates nests by burrowing into vertical banks consisting of fine-texture soils. Bank swallows breed in California from April to August and spend the winter months in South America. Currently, bank swallows are locally common only in restricted portions of California where sandy, vertical bluffs or riverbanks are available for the birds to dig their burrows and nest in colonies. Most of California's remaining populations nest along the upper Sacramento River where it still meanders in a somewhat natural manner; however, bank swallow nesting sites have been documented along the northern portion of Long Valley Creek and other isolated sites in northeastern California. It is estimated that the range of bank swallows in California has been reduced by 50% since 1900 (CDFG 2000).

California yellow warbler *(Dendroica petechia brewsteri)*
Status: Federal Bird of Conservation Concern; California Species of Special Concern (nesting)
Potential to Occur: High. Suitable nesting habitat present

PHOTO: Courtesy © 2007 Ron Wolf

Yellow warblers are neotropical migrants that breed in North America and winter from Mexico to northern South America (Heath 2008). Yellow warblers nest in a variety of shrubs associated with wetland habitats (Lowther et al. 1999). Dense growth may be preferred in order to reduce nest predation and brood parasitism. The males are sometimes polygamous. The female builds a neat, compact cup nest in an upright twig fork 2 to 12 feet up, sometimes up to 40 or even 60 feet. The cup is made of wool, plant down, dry weed stem fibers, and fine grass stems, and then lined with plant fibers, cotton, plant down, and sometimes feathers. Incubation of the 3 to 6 (usually 4 or 5) whitish spotted eggs lasts 11 days. Both parents tend the nestlings until fledging occurs at 9 to 12 days (ibid.).

Yellow-headed blackbird *(Xanthocephalus xanthocephalus)*
Status: California Species of Special Concern
Potential to Occur: Observed. Individuals observed along Long Valley Creek

PHOTO: Courtesy © 2009 Ron Wolf

Primarily wintering in northern and western Mexico, yellow-headed blackbirds occur in California as seasonal migrants and summer residents (Jaramillo 2008). Depending upon the location, their breeding season extends from mid-April to late July. Yellow headed blackbirds have a patchy distribution in California, but are locally numerous in northeastern California, occuring from the Klammath Basin to Sierra County and south along the east side of the Sierra to Owens Valley. This colonial species breeds almost exclusively in marshes with tall emergent vegetation such as tules (*Scirpus* spp.) or cattails (*Typha* spp.), where there is relatively deep water (ibid.); however, they have been documented nesting in low vegetation such as spikerush (*Eleocharis*) in Sierra Valley. Because of their need to build their nests over deeper water, yellow-headed blackbird breeding sites are often at the edges of large ponds, lakes and reservoirs (ibid.).

Mammals

Spotted bat *(Euderma maculatum)*
Status: BLM Sensitive; California Species of Special Concern; Western Bat Working Group High Priority
Potential to Occur: Moderate. Suitable habitat present nearby

PHOTO: © Merlin D. Tuttle, Bat Conservational International

Spotted bats are rare, year-round residents in California and Nevada. They are found in a wide variety of habitats, from low desert to high elevation coniferous forest, but are primarily associated with cliff-roosting habitat (Brown and Pierson 1996). Spotted bats emerge late in the evening and feed almost entirely on moths. This species appears to be relatively solitary, but sometimes hibernates in small clusters.

Long-legged myotis *(Myotis volans)*
Status: Western Bat Working Group High Priority
Potential to Occur: Moderate. Suitable habitat present nearby

PHOTO: © Merlin D. Tuttle, Bat Conservational International

The long-legged myotis is one of western America's most widely distributed bat species. It is found from the Tongas National Forest in Alaska, south through the western United States into the Baja peninsula, and along the Sierra Madre Occidental in Mexico. Long-legged myotis are especially dependent on wooded habitats from pinyon-juniper to coniferous forests, usually at elevations of 4,000 to 9,000 feet. Radio-tracking studies have identified maternity roosts beneath bark and in other cavities. These typically are located in openings or along forest edges where they receive a large amount of daily sun. Though maternity colonies are most often formed in tree cavities or under loose bark, they also are found in rock crevices, cliffs and buildings. Long-legged myotis forage over ponds, streams, water tanks, and in forest clearings, often on moths. Few winter records exist in the West (Bat Conservation International 2008).

Fringed myotis *(Myotis thysanodes)*
Status: BLM Sensitive; Western Bat Working Group High Priority
Potential to Occur: Moderate. Suitable habitat present nearby

PHOTO: © Merlin D. Tuttle, Bat Conservational International

Fringed myotis are found throughout much of California, and from southern to central Nevada. They frequent a variety of habitats from low desert scrub to high elevation coniferous forest (Brown and Pierson 1996). Known to be a cave-roosting species, this bat also uses rock crevasses, mines, trees, and buildings for day and night roosts. In northern California, both male and female fringed bats use tree snags exclusively for day roosts (Keinath 2004). These bats are fairly tolerant of cold and hibernation occurs from October to March. Short migratory movements to hibernating sites may occur. Mating occurs in the fall and large maternity colonies of up to 200 individuals form from late April to September. One young is born from May to July, mostly in late June, and lactating females can be found through August (ibid.).

Pallid bat *(Antrozous pallidus)*
Status: Forest Service Sensitive, BLM Sensitive; California Species of Special Concern; Western Bat Working Group High Priority
Potential to Occur: High. Suitable habitat present on site

PHOTO: © Merlin D. Tuttle, Bat Conservation International

Pallid bats occur throughout California, except in the high Sierra Nevada, from Shasta to Kern counties, and in the northwestern corner of the state from Del Norte and western Siskiyou counties (Hall 1981, Zeiner et al. 1990b). These bats inhabit a variety of habitats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed coniferous forests. They are common in grasslands and desert regions in the southwestern United States and most abundant in the Sonoran life zones; they are less abundant in evergreen and mixed forests than in vegetation assemblages characteristic of lower elevations (Hermanson and O'Shea 1983). Pallid bats reside yearly in the majority of their range and they have been collected at sites up to 8,000 feet in elevation. Pallid bats may roost in a variety of places including tree cavities, rock crevices and human-made structures (Brown and Pierson 1996).

Western white-tailed jackrabbit *(Lepus townsendii townsendii)*
Status: California Species of Special Concern
Potential to Occur: Moderate. Suitable habitat present and within range

PHOTO: Vic Hall, USFWS

The range of white-tailed hares in California is restricted to the east side of the Sierra Nevada and Cascade ranges from Tulare County north to the Oregon border. Usually solitary and nocturnal, it is the largest of California's hares and the second largest in the Western Hemisphere. In winter, it is sometimes mistaken for a snowshoe hare because in the colder parts of its range, individuals turn completely white (Zeiner et al. 1990b).

Pygmy rabbit *(Brachylagus idahoensis)*
Status: BLM Sensitive; California Species of Special Concern
Potential to Occur: Low. Suitable habitat present but limited range

PHOTO: Aaron Ambos, Nevada Natural Heritage Program

Pygmy rabbits have a limited geographic range that includes northeastern California, eastern Oregon, southwestern Washington, southern Idaho, and portions of Nevada (Hall 1946, Hall 1981). They are the smallest rabbit species in North America: reported mean weights for adults range from 398 to 462 g (0.88-1.02 lb) (Washington Department of Fish and Wildlife 1995). Considered sagebrush obligates, pygmy rabbits are found in areas where big sagebrush grows in very dense stands (Ulmschneider et al. 2004). Unlike other species of rabbits native to North America, this species usually digs its own burrows (Flinders 1999). Burrow systems usually consist of two to seven openings, with the main entrance concealed at the base of a sagebrush plant (Ulmschneider et al. 2004). Pygmy rabbits have been documented in the Honey Lake basin (R. Cull, unpublished field data) but to date, no surveys have been conducted in Long Valley.

Ringtail *(Bassariscus astustus)*
Status: California Fully Protected
Potential to Occur: Moderate. Suitable habitat present along Balls Creek

PHOTO © melissa jane. All rights reserved

The ringtail range extends as far north as southwest Oregon, throughout California except the agricultural portion of the Central Valley, east to Colorado, and south into Central America (Jameson and Peeters 2004). They are found in a variety of habitats including dense riparian growth, montane evergreen forests, oak woodlands, pinyon juniper, chaparral, and deserts (Kaufmann 1982). Their territory is usually no farther than one-half mile away from a permanent water source; they find reproductive and resting cover in hollow trees, logs, snags, rocks, and abandoned burrows. Nocturnal and secretive, ringtails feed on a variety of small mammals, lizards, invertebrates, and birds (Zeiner et al. 1990b).

American badger *(Taxidea taxus)*
Status: California Species of Special Concern
Potential to Occur: Observed. Reported on site

PHOTO: © Martin J. Gilroy, SEI

American badgers are generally associated with dry, open, treeless regions, prairies, parklands, and cold desert areas (Zeiner et al. 1990b). They range throughout the western United States, north into the western provinces of Canada, and east to Ohio, Michigan, and Ontario, Canada (Long 1972). Badgers are carnivores that feed on ground squirrels (*Spermophilus* ssp.), cottontail rabbits (*Sylvilagus* spp.), jackrabbits (*Lepus* spp.), small rodents (*Peromyscus, Microtus, Mus, Reithrodontomys, Dipodomys*), pocket gophers (*Thomomys* spp.), snakes, birds, and insects (Errington 1937, Messick and Hornocker 1981). Badgers are fossorial animals (burrowing), badgers typically capture prey by digging them out of their burrows. They may also scavenge prey killed by other predators or prey on species that co-use their dens, such as cottontail rabbits (Snead and Hendrickson 1942). Adult badgers are primarily nocturnal (Lindzey 1982, Sargeant and Warner 1972), but juveniles are active during the day, especially during dispersal in June-August (Messick and Hornocker 1981).

Desert bighorn sheep *(Ovis canadensis nelsoni)*
Status: Forest Service Sensitive, BLM Sensitive
Potential to Occur: Observed. Nearest known populations are in Nevada.

PHOTO: Andrea Barna, Creative Commons

The desert bighorn are one of three subspecies of bighorn sheep found in California. The desert bighorn ranges through the dry, desertmountains of eastern California, much of Nevada, northwestern Arizona, and southern Utah. Bighorn sheep are gregarious, sometimes forming herds of over 100 individuals, but small groups of 8-10 are more common. Mature males usually stay apart from females and young for most of the year in separate bachelor herds. They migrate seasonally, using larger upland areas in the summer and concentrating in sheltered valleys during the winter (De Lisle 2006).

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IV. MANAGEMENT GOALS

Management goals for the Hallelujah Junction Wildlife Area are based on the California Fish and Game Code and policies of the California Fish and Game Commission. The California Fish and Game Commission has policy directives designed to protect and preserve native non-listed species diversity, halt any significant species decline, assist with the recovery of at-risk native species, and support compatible public use.

In general, goals and tasks are structured to promote best management practices and, where appropriate, are coordinated with larger regional planning goals. Full implementation of Hallelujah Junction Wildlife Area goals and tasks is contingent upon having adequate staff and operating budget.

A. Definitions of Terms Used in This Plan

The land management plan for the Hallelujah Junction Wildlife Area has been developed in accordance with the California Department of Fish and Game's Guide and Annotated Outline for Writing Land Management Plans (CDFG 2007). This CDFG guide organizes management information and guidelines into elements, goals and tasks, establishing a hierarchy of management actions that together express the policy direction for wildlife areas.

1. Elements

- **Element:** An element is any biological unit, biological monitoring and adaptive management strategy, public use activity, facility maintenance program, cultural resource activity, or administrative effort for which management goals have been prepared and presented within this land management plan (LMP).
- **Biological Element**: Biological elements refer to the habitat types (including their associated plant communities, wildlife and ecological processes) for which specific management goals have been developed.
- **Biological Monitoring Element:** Biological monitoring elements refer to adaptive management strategies for continually improving the diversity, habitat integrity and environmental health of the biological elements identified in this LMP.
- **Public Use Element:** Public use elements include public access information and education, hunting, wildlife and nature observation, and scientific research that are appropriate to and compatible with the purposes for which the wildlife area was established and land acquired.
- **Facility Maintenance Element:** The facility maintenance element refers to the conservation and maintenance operations that support and protect the multitude of resources and beneficial uses of the wildlife area.
- **Cultural Resource Element:** The cultural resource element refers to the protection of significant historical and archaeological resources that may be present and that may yield information important to the prehistory or history of the wildlife area.
- **Administration Element**: The administrative element refers to ongoing recordkeeping and resource coordination activities that are needed to support the other management elements in this LMP.

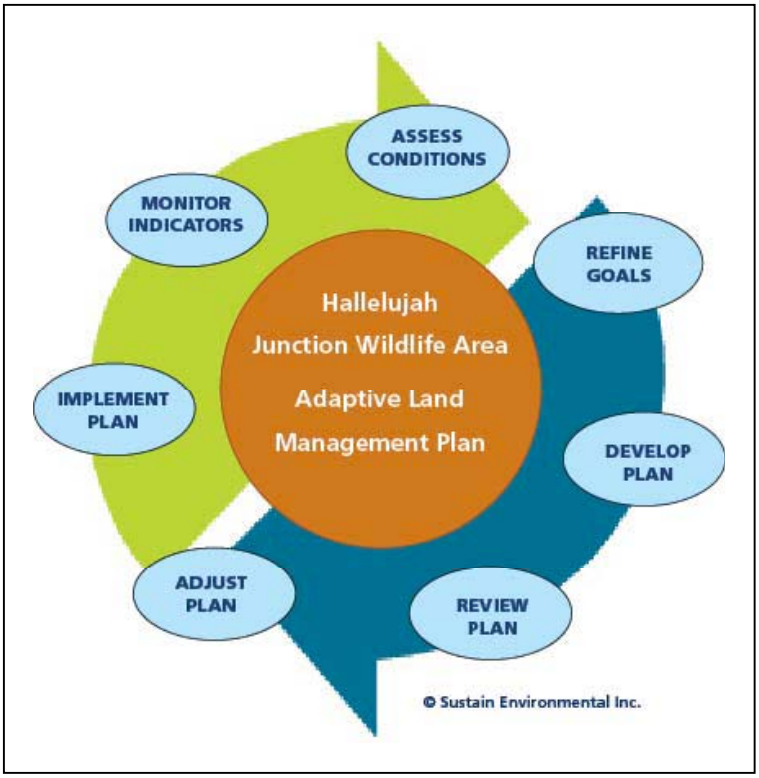
2. Goals and Objectives

- **Biological Goal:** A biological goal is a statement describing management and intended long-term results for a biological element.
- **Biological Monitoring Goal:** A biological monitoring goal is a statement describing adaptive management and intended implementation results for a phase of a biological monitoring element.

- **Public Use Goal:** A public use goal is a statement describing the type and level of public use that is compatible with the biological element goals specified in this LMP.
- **Facility Maintenance Goal:** A facility maintenance goal is a statement describing the type and level of grounds and facility maintenance that is needed to attain the goals for the biological and public use elements specified in this LMP.
- **Cultural Resource Goal:** A cultural resource goal is a statement describing the management and intended results for the cultural resources element.
- **Administration Goal:** An administration goal is a statement describing the type and level of recordkeeping and management coordination activities that is needed to achieve the goals specified in this Hallelujah Junction Wildlife Area (HJWA) land management plan.

3. Tasks and Adaptive Management Strategies

- **Tasks:** Tasks are the individual projects or work elements that implement the goals and objectives specified in this LMP. They should be used to develop both immediate and long-term operation and maintenance schedules and budgets for the HJWA. Generally, tasks are listed in the order required to achieve the goal or objective.
- **Adaptive Management Strategies:** Adaptive management is a dynamic strategy in which management efforts are monitored regularly to assess their status and effectiveness. Adaptive management begins with collecting baseline data and testing long-term strategies for monitoring and evaluating changes to the baseline. Information and knowledge gained in this process are used to update management goals and tasks. The goal of adaptive management is continual improvement and long-term sustainability. An adaptive management approach has been applied to all elements within this LMP.



B. Biological Elements

The overall biological management goal for the California Department of Fish and Game wildlife areas is to optimize ecological and habitat productivity for all species in balance with the needs of the public. To accomplish this, CDFG strives to protect and maintain the physical processes that contribute to the ecological productivity of this area with an emphasis on habitat management programs.

HABITAT FOCUS

The biological elements of this land management plan focus on the dominant plant communities found at the Hallelujah Junction Wildlife Area. The 14 plant community types identified in Chapter IIIA are grouped here into 7 biological elements that share common management strategies (Table IV-a). Management of the Loyalton-Truckee deer herd is identified as a separate biological element since protection of its winter foraging range is the primary purpose of the HJWA acquisition.

Table IV-a. Crosswalk of Biological Elements and Plant Communities at the Hallelujah Junction Wildlife Area

Biological Element	HJWA Plant Communities
Loyalton-Truckee Deer Herd Element	All
Sagebrush Scrub Habitat Element	Big sagebrush scrub Low sagebrush scrub Interior-rose golden-currant big-sagebrush scrub
Juniper Woodland Habitat Element	Juniper woodland Isolated western junipers
Bitterbrush[1] and Mountain Mahogany Scrub Habitat Element	Bitterbrush scrub Mountain mahogany scrub
Jeffery Pine Habitat Element	Jeffery pine forest Jeffery pine woodland
Riparian/Spring Habitat Element	Riparian scrub Riparian forest/scrub Isolated spring habitats
Meadow Habitat Element	Dry to wet meadow (some intergrade with sagebrush scrub)
Recent Burns/Early Successional Habitat Element	Recent burns Early successional stages of previous burns (including spineless-horsebrush/herbs)

[1] Bitterbrush stands occurred historically on site but were burned during the 2007 fire; they are included as a biological management element to address restoration goals.

Each biological element is further broken down into goals and tasks that focus on improving the three major aspects of functionally dynamic ecosystems:

- *Biological Diversity.* These goals and tasks aim at improving the composition of species within the habitat type, including rarity, abundance, richness, and connectivity.
- *Habitat Integrity.* These goals and tasks aim at improving the structural diversity and environmental relationships within the habitat type, including maintenance and restoration of conditions that support biological diversity.
- *Environmental Health.* These goals and tasks aim at improving environmental conditions of the habitat, including the water, air and soil quality.

The biological goals and tasks address conditions both within the HJWA and within the larger ecological landscape. Many tasks are necessarily broad due to the lack of baseline data. Tasks related to surveys, mapping, monitoring and regional coordination are discussed with more specificity in Biological Monitoring (IVC). Specific tasks related to controlling invasive non-native species are described in the HJWA Weed Management Plan (Appendix F). A discussion of the environmental impacts and mitigation associated with the proposed management goals and activities as outlined in this document is provided in the California Environmental Quality Act (CEQA) Checklist (Appendix G).

SPECIAL STATUS SPECIES

Management goals for special-status species are addressed within each habitat type, reflecting the focus of the California Department of Fish and Game on strengthening ecosystem integrity to promote species diversity. Protecting habitat for special-status species is given first priority in recognition of the landscape-level needs of rare and endemic species. These goals are based on the stated purpose of the land's acquisition by the California Wildlife Conservation Board (WCB), the California Fish and Game Code, and the policies of the California Fish and Game Commission. Internal CDFG coordination will occur for species under the California Endangered Species Act before any HJWA activities are undertaken that may potentially impact threatened or endangered species or habitat. Consultation with U.S. Fish and Wildlife Service (USFWS) will also occur as required when there is a nexus through federal permitting or funding requirements.

1. Loyalton-Truckee Mule Deer Element

Pregnant mule deer. © 2006 Mike Dunn

It is the policy of the Fish and Game Commission to:

> *Conserve, restore, maintain and utilize California's wild deer populations.*

The numbers and distribution of mule deer have been in decline throughout the West since the mid 1970s (Nevada Department of Wildlife [NDOW] 2007, Mule Deer Working Group 2003). Management of mule deer is complex and dynamic. Mule deer herds range across a variety of boundaries (e.g., private, state and federal lands), and utilize a variety of plant communities. They require a mosaic of habitats that provide cover, food and water (Wallmo 1981). The HJWA provides both critical winter range and a migration corridor for a portion of the Loyalton-Truckee deer herd. This herd migrates eastward in the fall from Sierra and Nevada counties, crosses U.S. 395, and winters in the vicinity of Petersen Mountain and the Sand Hills in Nevada (NDOW 2007). The herd uses the HJWA heavily in the spring when they are seeking early green feed on their way to fawning grounds at higher elevations.

GOAL 1.1: Protect, restore and enhance habitat, and regulate hunting to support an optimal size of the Loyalton-Truckee mule deer herd.

TASK 1.1.1: Follow management recommendations provided in the Loyalton-Truckee Deer Herd Management Plan that apply to the HJWA.

TASK 1.1.2: Monitor seasonal deer abundance, habitat use, and migration routes to inform deer herd management decisions (IVC, Phases 1-3).

TASK 1.1.3: Protect and enhance mountain mahogany and bitterbrush habitat (IVB, 4) to maintain and improve deer foraging habitat.

TASK 1.1.4: Protect, enhance, and restore riparian habitat (IVB, 6) to maintain and improve deer fawning habitat.

TASK 1.1.5: Implement a grazing monitoring plan for the HJWA with special emphasis on assessing grazing effects on mule deer habitat (Appendix H).

TASK 1.1.6: Manage invasive plant species such as cheatgrass (IVB, 8), to maintain and improve deer foraging and cover habitat.

TASK 1.1.7: Manage fuel loads to reduce potential for catastrophic fire events (IVE, 2) to maintain and improve all deer habitats, and to prevent deer mortality caused by fire.

TASK 1.1.8: Periodically evaluate the hunting program and regulations and recommend changes as warranted to maintain an optimal deer herd size (IVD, 2).

TASK 1.1.9: Implement design features, standard management requirements, and best management practices (BMP) described in the HJWA LMP to manage potential grazing impacts to special-status species, mule deer, riparian and wetland vegetation types, aquatic ecosystems, and to mountain mahogany, bitterbrush, and other upland vegetation types.

2. Sagebrush Scrub Habitat Element

Big sagebrush scrub on the east side of the Hallelujah Junction Wildlife Area, looking west to Sierra.
February 2006, SEI.

Sagebrush scrub is the dominant habitat type at the HJWA. Sagebrush ecosystems are diverse habitats found throughout western North America and support a variety of flora and fauna. Species that require sagebrush for some part of their life cycle are “sagebrush obligates.” California is home to at least eight species of wildlife considered sagebrush obligates, including western sage-grouse, sage thrashers, Brewer's sparrows, and sage sparrows (McAdoo et al. 2003). Sagebrush ecosystems have undergone intense changes during the past few hundred years and are considered the most endangered ecosystem in the United States (Chambers et al. 2008). Intense agricultural practices, increased fire frequency, overgrazing, and climate change have resulted in the loss of over half of the sagebrush ecosystems of the Great Basin (Baker 2006).

GOAL 2.1: Maintain, enhance and restore habitat for special-status species that occur in sagebrush habitats within or adjacent to the Wildlife Area.

TASK 2.1.1: Conduct, support or encourage surveys for special-status species that have the potential to occur in sagebrush habitats within and adjacent to the Wildlife Area.

TASK 2.1.2: Periodically monitor populations of special-status species to assess overall habitat integrity, to detect changes in species distribution and abundance, and to detect adverse effects of human use, erosion or non-native species.

TASK 2.1 3: Conduct management activities and manage public uses, especially grazing and hunting activities, to minimize effects on areas known to be occupied by special-status species (e.g., western sage-grouse, burrowing owl).

TASK 2.1.4: Ensure that all actions undertaken in the wildlife areas comply with the federal Endangered Species Act (ESA); California Endangered Species Act (CESA), including any applicable Habitat Conservation Plans (HCP) or Natural Community Conservation Plans (NCCP); Sections 401 and 404 of the Clean Water Act (CWA); Section 1602 of Fish and Game Code; and other applicable plans or regulations aimed at the protection of special-status species or their habitats.

GOAL 2.2: Prevent further loss of biological integrity within sagebrush scrub habitats in the Wildlife Area.

TASK 2.2.1: Manage invasive plant species such as cheatgrass (IVB, 1 and 8) to maintain and improve wildlife foraging and cover habitat (Appendix F).

TASK 2.2.2: Prepare and implement a fire management plan (IVE) that includes weed management, livestock grazing, and restoration planning in collaboration with University of Nevada, Reno (UNR), U.S. Forest Service (USFS), California Department of Forestry and Fire Protection (CAL FIRE) and the Nevada Department of Wildlife (NDOW).

3. Juniper Woodland Habitat Element

Lone juniper in Long Valley (foreground) with scattered juniper on eastern slopes of Peterson Mountains (background). October 2006, SEI.

Juniper woodlands are part of the mosaic of habitats found throughout the Great Basin. The female cones (frequently called berries) of western juniper are an important food crop for many mammals and birds, especially during the winter. More than 100 wildlife species use open juniper woodlands for thermal and hiding cover, nesting, and food during some stage of their life cycle (Miller 2001). Wildlife diversity in juniper communities is strongly related to the diversity and abundance of understory plant species (ibid.). The more diverse the understory, the greater the biodiversity. The converse is also true. Juniper can form dense closed-canopy forests with little understory and low biodiversity.

While junipers are an important component of the Great Basin ecosystem, the extent of juniper expansion in the Great Basin has caused concern among wildlife and range experts. The expansion of juniper woodlands during the past 130 years has resulted in increased soil erosion, diminished wildlife habitat, reduced forage production, and reduced biodiversity within Great Basin plant communities (Miller et al. 2005). At the HJWA, there are a few scattered junipers west of U.S. 395, but most are east of the highway on the west-facing slopes of Petersen Mountain. Swainson's hawks are known to nest in juniper trees, especially near agricultural fields or pastures.

GOAL 3.1: Maintain, enhance and restore habitat for special-status species that occur in juniper habitats within or adjacent to the Wildlife Area.

TASK 3.1.1: Conduct, support or encourage surveys for special-status species that have the potential to occur in juniper woodland habitats within and adjacent to the Wildlife Area (IVC, Phase 1).

TASK 3.1.2: Map and protect Swainson's hawk nest trees from disturbance during the nesting season (April–August).

TASK 3.1.3: Conduct baseline wildlife species surveys in juniper woodland habitat.

TASK 3.1.4 Periodically monitor understory plant diversity in the juniper woodland and take management actions as appropriate to maintain the greatest diversity. As stated previously, juniper encroachment can be detrimental to wildlife if left unmanaged. Juniper woodlands exceeding current conditions may be removed if needed to prevent deer habitat loss.

TASK 3.1.5: Monitor the extent and distribution of juniper woodland habitat on the Wildlife Area. Take actions as needed to optimize habitat for the Loyalton-Truckee deer herd and other wildlife species, including juniper removal.

4. Bitterbrush[1] and Mountain Mahogany Scrub Habitat Element

Historic bitterbrush stand, interspersed in big sage, west side of the Hallelujah Junction Wildlife Area, looking east toward Petersen Mountains (background). Area burned in the 2007 Balls Canyon Fire. October 2006, SEI

Providing high protein forage and protection from the elements, bitterbrush and mountain mahogany are important plants for wintering big game (Wallmo 1981). They provide high quality, important spring and winter browse for antelope and deer. Bitterbrush seed is an important source of food for small animals and the plant provides cover for small animals and birds (Dyer et al. 2008). The 2007 Balls Canyon fire severely impacted the extent of these plant communities at the Wildlife Area. Restoration of these plant communities is a priority for wildlife area managers (J. Lidberg, CDFG [ret.], personal communication) (IVB, 8).

[1] Bitterbrush stands within HJWA were burned during the 2007 Balls Canyon Fire and so were not mapped or identified as distinct plant communities. Some areas dominated by mountain mahogany survived the fire and so were mapped as distinct plant communities (IIIA, Figure III-a).

GOAL 4.1: Maintain, enhance and restore habitat for special-status species that occur in bitterbrush and mountain mahogany habitats within or adjacent to the Wildlife Area.

TASK 4.1.1: Conduct surveys for special-status species that have the potential to occur in bitterbrush and mountain mahogany habitats within and adjacent to the Wildlife Area (IVC, Phase 1).

GOAL 4.2: Protect and enhance bitterbrush and mountain mahogany habitat.

TASK 4.2.1: Research existing literature addressing bitterbrush and mountain mahogany regeneration in order to understand and manage for the current lack of regeneration.

TASK 4.2.2: Identify management practices that may enhance bitterbrush and mountain mahogany vegetation types in areas where they already exist.

TASK 4.2.3: Conduct and support studies of bitterbrush and mountain mahogany regeneration and potential restoration or enhancement methods (IVC, Phases 1-3)).

TASK 4.2.4: Identify opportunities for restoration or enhancement in areas that previously supported bitterbrush and mountain mahogany vegetation types but were modified due to fires or other disturbance; and assess physical, biological, and economic opportunities and constraints. Record all locations of these vegetation types in the CDFG GIS database.

TASK 4.2.5: Develop plans and pursue funding for identified bitterbrush and mountain mahogany restoration or enhancement projects; include goals, techniques, costs, monitoring, an adaptive management process, and a schedule; and include the help of volunteers whenever practical.

TASK 4.2.6: Implement restoration and enhancement projects (e.g., seeding, planting, soil amendments, and watershed restoration) for the bitterbrush vegetation type and for the mountain mahogany vegetation type if effective restoration or enhancement methods are developed.

TASK 4.2.7: Use local resources for seed collection and restoration. Establish an annual program to collect bitterbrush seed for deer habitat enhancement.

5. Jeffery Pine Habitat Element

Stand of Jeffery pine on the west side of the Hallelujah Junction Wildlife Area. September 2008, SEI.

Located in the upper elevations along the west side of the HJWA, Jeffery pine woodland and forests provide habitat and important food sources for a variety of wildlife species including Clark's nutcracker, northern goshawk, brown creeper, squirrels, bats and mule deer. The Jeffery pine forest provides an important habitat linkage and migration corridor for the Loyalton-Truckee deer herd as they move from their summer range in the upper Sierra Nevada to their winter ranges (Rogers 1999).

GOAL 5.1: Maintain, enhance and restore habitat for special-status species that occur in Jeffery pine habitats within or adjacent to the Wildlife Area.

TASK 5.1.1: Conduct surveys for special-status species that have the potential to occur in Jeffery pine habitats within and adjacent to the Wildlife Area (IVC, Phase 1).

TASK 5.1.2: Monitor regeneration of upland forest that was burned in the Balls Canyon fire (IVC, Phase 1). Enhance this forest with additional seeding or planting as needed.

TASK 5.1.3: Prepare an approved timber harvest plan before any timber harvest.

TASK 5.1.4: Ensure that all actions undertaken in the Wildlife Area comply with regulations and guidelines protecting unique or sensitive communities.

6. Riparian/Spring Habitat Element

Balls Canyon Creek, Hallelujah Junction Wildlife Area. October 2007, SEI. © C. Remy

In the arid climate of the Great Basin region, riparian and aquatic resources are generally small and isolated from one another (Sada 2008). Streams such as Long Valley Creek, Balls Canyon Creek and Evans Creek obtain most of their surface water from Sierra snow melt and springs. Permanent and intermittent streams, seeps and springs provide important resources for wildlife, especially greater sage-grouse, mule deer and pronghorn (Dealy et al. 1981).

GOAL 6.1: Maintain, enhance and restore habitat for special-status species that occur in riparian habitats within or adjacent to the Wildlife Area.

TASK 6.1.1: Conduct surveys for special-status species that have the potential to occur in riparian habitats within and adjacent to the Wildlife Area (IVC, Phase 1).

TASK 6.1.2: Identify and protect essential habitat for the following special-status species known, or are highly likely, to occur in riparian/spring habitats within and adjacent to the Wildlife Area (IVC, Phase 1):

- Bank swallow
- Willow flycatcher
- Yellow warbler
- Pallid bat

TASK 6.1.3: Periodically monitor populations of special-status species to assess overall habitat integrity, detect changes in distribution and abundance, and detect positive and adverse effects of management activities, human use, and/or non-native species (IVC, Phase 2).

TASK 6.1.4: Reassess and adapt management practices as needed to protect essential habitat for special-status species (IVC, Phase 3).

GOAL 6.2: Protect, enhance, and restore riparian and wetland vegetation types.

TASK 6.2.1: Review historic information on natural processes and conditions within the Long Valley and Balls Creek watershed and identify areas where natural functions have been lost or impaired.

TASK 6.2.2: Restore, protect, and enhance the hydrologic stability, floodplain functions, and ecological functions of Long Valley Creek and Balls Canyon Creek to enhance riparian habitat for special-status species dependent on these habitats (e.g. willow flycatcher, yellow warbler, bat species).

TASK 6.2.3: Inventory and map all springs on property. Incorporate data into GIS database for HJWA.

TASK 6.2.4: Monitor existing fencing that excludes cattle from riparian areas. Maintain or add fencing as needed to protect important riparian areas from overgrazing, and to protect important ecosystems from cattle disturbance or pollution.

TASK 6.2.5: Ensure that all projects proposed within the watersheds of HJWA provide protection measures for water quality (particularly erosion and sedimentation control measures), water quantity, stream buffers, and aquatic species.

TASK 6.2.6: Before implementing any construction projects including soil disturbance greater than 1 acre (or less, depending on current State Water Resources Control Board (SWRCB) regulations), prepare a Storm Water Prevention Pollution Plan (SWPPP) that identifies BMPs that will be used to eliminate or minimize the potential for construction-related pollution to enter stream flows directly, or through stormwater runoff.

TASK 6.2.7: Ensure that all actions undertaken in the wildlife areas comply with the ESA and CESA; Section 401 and 404 of the CWA; Section 1602 of Fish and Game Code; and other applicable regulations aimed at the protection of aquatic ecosystems.

TASK 6.2.8: Establish cooperative agreements with neighbors, local and regional conservation groups, and resource agencies to enhance riparian and wetland habitats (IVC, Phase 3).

TASK 6.2.9: Evaluate opportunities, constraints, and potential restoration benefits to identify feasible watershed restoration projects that would support the goals of this LMP, including a review of existing documents and/or conducting additional assessments.

GOAL 6.3: Protect and manage riparian habitat for species abundance and richness.

TASK 6.3.1: Complete a wildlife species inventory.

TASK 6.3.2: Conduct a breeding bird survey of riparian habitats to establish a baseline for species diversity (IVC, Phase 1).

TASK 6.3.3: Monitor the distribution and relative abundance of breeding riparian birds on an annual basis, as an indicator of diversity within riparian habitats on and adjacent to the Wildlife Area (IVC, Phase 2).

TASK 6.3.4: Reassess and adapt management practices as needed to improve species richness and abundance (IVC, Phase 3).

GOAL 6.4: Maintain and improve connectivity in riparian habitats.

TASK 6.4.1: Assess connectivity within and between riparian habitats on, adjacent to and near the Wildlife Area.

TASK 6.4.2: Coordinate with regional planning efforts to improve connectivity for diverse species at a larger landscape level (Adaptive Management Element, Riparian Habitat, Regional Planning).

7. Meadow Habitat Element

Meadow habitat, southern portion of the Hallelujah Junction Wildlife Area. June 2008, SEI.

Meadows comprise only a small portion of the region's total land area (926 acres), but they provide critical wildlife habitat for many species. As with riparian habitat, meadows support high species diversity of both plants and animals. Numerous species use these areas for short periods during migration or during dry periods when lush vegetation and water are not available in other habitats. Other wildlife species depend on meadows year-round. Meadows also produce high populations of prey species important to a variety of bird and mammal predators.

GOAL 7.1: Identify and protect essential habitat for special-status species that occur in meadows within or adjacent to the Wildlife Area.

TASK 7.1.1: Conduct surveys for special-status species that have the potential to occur in meadow habitats within and adjacent to the Wildlife Area (IVC, Phase 1).

TASK 7.1.2: Map and protect habitat for special-status species that occur in meadow habitats.

GOAL 7.2: Restore and enhance meadow habitats that have been modified by fire or other disturbance.

TASK 7.2.1: Identify opportunities for restoration or enhancement in areas that previously supported grassland/meadow vegetation but were modified due to fires or other disturbance; and assess physical, biological, and economic opportunities and constraints. Record all locations of these vegetation types in the CDFG GIS database.

TASK 7.2.2: Implement a grazing management plan for the HJWA with special emphasis on assessing grazing effects on meadows and mule deer habitat (Appendix H).

TASK 7.2.3: Manage invasive plant species such as cheatgrass and pepperweed (IVB, 1 and 8), to maintain and improve deer foraging and cover habitat.

TASK 7.2.4: Consult with USFWS and CDFG species experts before undertaking any management actions that could potentially affect special-status species or their habitats.

8. Recent Burns/Early Successional Habitat Element

Area burned in 2006, Hallelujah Junction Wildlife Area. September 2008, SEI.

Fires in the sagebrush landscape are usually "stand-replacing," requiring 3 to 10 decades to return the landscape to pre-fire conditions (Baker 2006). Stand-replacing fires burn extremely hot, destroying all vegetation above ground, damage topsoil, change the hydrophilic properties of soil, and contribute to erosion. During the recovery period, open ground is vulnerable to colonization by non-native invasive plants such as cheatgrass, yellow star thistle and purple knapweed. These non-natives displace native plant communities, create monocultures, diminish wildlife habitat, and promote more frequent fire events (Appendix F). Throughout the West, invasion by cheatgrass has led to a grass-fire cycle, where increasing cheatgrass populations promote larger fires that allow it to spread further (Baker 2006). The HJWA has experienced several periodic fire events and restoration, and management of these areas is a management priority.

GOAL 8.1: Control and minimize the spread of non-native invasive plants.

TASK 8.1.1: Inventory and map distributions of invasive non-native plant populations and integrate data into the GIS database (IVC, Phase 1).

TASK 8.1.2: Implement the HJWA Weed Management Plan (Appendix F).

TASK 8.1.3: Develop and implement enhancement strategies that use natural processes to improve habitat for special-status species.

TASK 8.1.4: Manage livestock during appropriate seasons and at an appropriate intensity to use grazing as a management tool for invasive plant species management (Appendices F and H).

GOAL 8.2: Promote restoration of fire-damaged wildlife habitat at the HJWA.

TASK 8.2.1: Develop and implement a habitat restoration plan to provide wildlife cover and forage (IVE, 3).

TASK 8.2.2: Establish cooperative agreements with local and regional conservation groups, universities, and resource agencies to enhance wildlife habitat.

TASK 8.2.3: Identify and map active headcuts and erosion-prone areas and install erosion-control measures before the rainy season. Use only certified, weed-free straw for erosion control.

TASK 8.2.4: Conduct stormwater checks on erosion-control measures before and after rain events to monitor effectiveness.

TASK 8.2.5: Pursue funding and develop plans for already identified restoration projects that include goals, techniques, costs, monitoring, an adaptive management process, and a schedule.

TASK 8.2.6: Support and encourage the monitoring of baseline and post-restoration ecological conditions.

TASK 8.2.7: Cooperate with the development and implementation of local and regional restoration plans from other agencies/programs that are consistent with the goals of this LMP.

CONSTRAINTS ON BIOLOGICAL ELEMENTS

The goals of the biological elements are constrained by a range of natural and human-induced factors. Effective management of the Wildlife Area requires that these factors be identified and considered. This plan recognizes that the Wildlife Area exists within the context of conflicting values and needs that are important to neighbors and users of the Hallelujah Junction Wildlife Area as well as the people of California in general. Factors that affect the ability of the CDFG to attain the biological element goals are presented below.

Environmental factors

Large-scale events such as catastrophic flooding, climate change or wild fires are beyond the control of CDFG. Changes to local zoning ordinances could increase public use pressure upon the HJWA.

Legal, political, or social factors

Watershed-scale management will be constrained by the willingness or ability of other public land managers and private landowners to cooperate. Private land owners may place values on their land that conflict with the goal of a healthy, functional ecosystem. Other public land management agencies have missions and goals that differ from CDFG (for example, the mission of the USFS is “to achieve quality land management under the sustainable multiple-use management concept in order to meet the diverse needs of people” and BLM lands are managed under multiple-use, sustained yield concepts).

Financial factors

Limited funding for staffing and operations is the greatest existing management constraint for the Wildlife Area. This land management plan proposes management actions that will require an increase in funding and/or creative partnerships with local conservation groups and educational institutions.

C. Biological Monitoring Elements

Monitoring changes in environmental conditions is a critical component of the California Department of Fish and Game's mission "to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend." To date, however, very little baseline data have been collected on conditions at the Hallelujah Junction Wildlife Area. The adaptive management approach presented here will enable land managers to begin collecting data, assessing the environmental health of the Wildlife Area, and coordinating management practices with regional habitat conservation planning efforts. It will also add to the body of knowledge about species, habitats, and natural communities as well as provide feedback about the success of management practices in achieving biological goals.

ESTABLISHING AN ADAPTIVE MANAGEMENT APPROACH

Land managers are frequently confronted with the quandary of how to manage resources with limited funding and partial information. One approach to this challenge is to simply begin, then adapt practices as knowledge increases. This approach starts by basing the management plan on the broadest ecological level (habitat), then working toward a comprehensive ecological inventory of the site, integrating data as it becomes available, measuring data against indicators of success, and modifying management strategies as new information is learned. This is the crux of a comprehensive and adaptive land management plan.

Measuring ecosystem conditions, and responses of the ecosystem to both intentional management actions and natural changes, are critical pieces of the adaptive management feedback loop. Over time, monitoring produces information on trends in species and habitats that can be associated with specific conservation and management activities (Oakley et al. 2003).

While some management practices have well-known applications and outcomes, such as fencing and trash removal, many management activities must be undertaken with much less certainty. The development of a biological monitoring and implementation program typically proceeds in phases to minimize unintended consequences that can the result at the local or landscape level when managing complex and interrelated ecological systems (Atkinson et al. 2004).

CDFG RESOURCE ASSESSMENT PROGRAM

The CDFG's Species and Natural Communities Monitoring and Assessment Program, also known as the Resource Assessment Program (RAP), is working to develop and implement a long-term and strategic program to inventory, monitor, and assess the distribution and abundance of priority species, habitats, and natural communities in California. This strategic program is bringing many of the varied data collection, compilation, and dissemination efforts under the "umbrella" of a systematic and more comprehensive effort. The intent of the program is to more effectively address resource assessment priorities and refocus existing efforts in the collection, analysis, and use of data on native fish, wildlife, plants, and communities. CDFG assessment tools and resources can be accessed online at its Resource Assessment Program Network (RAPnet). A list of data, mapping and assessment resources appears in Appendix I.

PHASE 1: Baseline Data Collection Element

Phase 1 of adaptive management planning is to determine the baseline condition of the system as a prelude to a long-term monitoring program design. This generally involves an inventory of what species, habitats, and other resources are present, their locations, and general conditions (Atkinson et al. 2004).

Data management begins with proper collection and recordkeeping in the field. Inventories and sampling protocols must be established so that different people can gather comparable datasets over time. Protocols should not be overly reliant on technology that is likely to change or become obsolete so that datasets are no longer replicable. Data must also be reported consistently to serve an adaptive management purpose.

GOAL 1.1: Inventory resources within each habitat element and identify relationships between biological elements.

Some baseline information has already been collected for the HJWA, including annual monitoring of the winter deer herd, gross-level plant community mapping, and development of a preliminary plant species list. Establishing the baseline conditions for each of the biological elements is the critical first step in implementing an adaptive management plan for the HJWA.

The following tasks apply to *each* of the habitat elements. Element specific tasks are detailed separately.

TASK 1.1.1: *Set up permanent plots and conduct annual vegetation monitoring using CDFG accepted protocols.* Permanent vegetation monitoring plots should be established in each of the habitat types at the HJWA. Permanent vegetation monitoring plots provide consistent reference points from which to measure and monitor changes in species distribution, plant density, and canopy cover within a given habitat (Elzinga et al. 2001). These data are especially valuable when undertaking habitat restoration.

TASK 1.1.2: *Set up permanent photo monitoring stations for annual documentation of habitat conditions*. Photographs are by far the easiest monitoring tool available to a manager. They are an inexpensive visual record of the site over time, and can portray landscape changes to audiences of varying backgrounds. Photo monitoring can support a baseline conditions assessment, document abnormal events, detect and document change, and document the effectiveness of management practices over time (McDougald et al. 2003). Establishing permanent photo points in each of the habitats at the HJWA will provide another method of documenting existing conditions, changes, and compliment other monitoring programs.

TASK 1.1.3: *Conduct focused surveys for special-status species (flora and fauna) using accepted federal and state protocols, and submit occurrence data to the CNDDB.* Several special-status species have the potential to occur at the HJWA (IIIC) but there have been no focused surveys to document their presence.

TASK 1.1.4: *Conduct bat surveys (using Anabat software or similar tool) to determine species utilization of the HJWA.* The particular combination of habitats at the HJWA (sagebrush scrub, juniper woodland, Jeffery pine, riparian, and meadow) is likely to support a number of special-status bat species.

TASK 1.1.5: *Conduct breeding bird surveys.* Use either area searches or point counts to determine species composition and presence/absence of special-status species in each of the representative habitats throughout the HJWA (Ralph et al. 1995, Ralph et al. 1993). Birds are sensitive indicators of environmental conditions because of their high metabolic rate, their relatively high position in the food chain, and their distribution across a wide variety of habitats (RHJV 2004). By managing for a diversity of birds species, CDFG will also protect many other elements of biodiversity and the natural processes that are integral to the overall maintenance of the HJWA.

TASK 1.1.6: *Inventory and map distributions of invasive non-native plant populations and integrate data into the GIS database for HJWA.* Mapping invasive plant populations is the first step in prioritizing management activities directed toward controlling their spread (Appendix F).

GOAL 1.2: Collect additional baseline data related to the health and status of the Loyalton-Truckee mule deer herd.

As a species that requires large amounts of land and a variety of habitats to support its population, mule deer often are used as an "umbrella" or flagship species for monitoring ecological conditions on a landscape level (CDFG et al. 1998). Because of their importance as a principal game species, there is a wealth of data concerning long-term deer abundance, habitat requirements, and seasonal ranges (ibid.). Multi-agency collaboration and support already exists to protect critical habitat areas, and maintain and improve population numbers (NDOW 2006).

TASK 1.2.1: Continue to collaborate with USFS, BLM and NDOW for monitoring mule deer habitat and annual surveys.

TASK 1.2.2: Conduct deer composition counts in spring and fall. Use monitoring data to set and adjust harvest rates, timing, duration of hunts, and bag limits to achieve population objectives.

TASK 1.2.3: Monitor winter survival of fawns to maintain an index of recruitment into the population.

TASK 1.2.4: Monitor livestock grazing to minimize or eliminate detrimental impacts to mule deer habitats.

GOAL 1.3: Collect baseline data specific to the extent of the bitterbrush and mountain mahogany habitat.

TASK 1.3.1: Conduct focused surveys for bitterbrush and map using GPS. Incorporate data into GIS database as separate layer for restoration planning.

TASK 1.3.2: Conduct focused surveys of mountain mahogany to confirm and correct aerial mapping of habitat extent, using GPS. Incorporate data into GIS database as a separate layer for restoration planning.

GOAL 1.4: Collect baseline data specific to the integrity of Jeffery pine habitats.

TASK 1.4.1: Survey and map unique habitat features such as downed wood, snags and rock outcrops. Incorporate these landscape features into the GIS database.

GOAL 1.5: Collect baseline data specific to the environmental health of wetland habitats.

TASK 1.5.1: Using GPS, map the locations of all springs and seeps at the HJWA and enter data into GIS database.

TASK 1.5.2: Inventory aquatic species, including fish and amphibians, to establish a baseline for species diversity monitoring. Conduct appropriately timed focused surveys in early spring and summer to document chorusing frogs, egg-masses, tadpoles, and juveniles. Document and map occurrences of special-status species and submit data to the CNDDB.

TASK 1.5.3: Conduct baseline benthic macro invertebrate (BMI) sampling along creeks. Use CDFG's protocol for BMI surveys in low gradient streams (CDFG 2003). Wetland invertebrates occur in the entire spectrum of available aquatic wetland habitats and conditions. They occur in the sediment, in the water column, on and amongst the submerged and emergent vegetation. They are found in abundance in large and small, permanent and seasonal, wetlands. Wetland macro invertebrates have a greater tolerance of low dissolved oxygen concentrations than stream macro invertebrates, but they are still sensitive to a variety of physical and chemical factors (Barbour et al. 1999). Some BMI monitoring programs have been developed throughout the United States and California using citizen volunteers and students (US EPA 2001). Invertebrate community data and Index of Biological Integrity (IBIs) can be used for various wetland management needs and decisions, including:

- Condition monitoring (status and trends)
- Problem investigation monitoring
- Wetland mitigation effectiveness monitoring
- Total maximum daily load (TMDL) investigations, including listing, delisting, and effectiveness of implementation.

TASK 1.5.4: Conduct monthly surveys of wetland dependent birds for at least one full year to establish baseline for species diversity.

PHASE 2: Long-Term Monitoring Element

Phase 2 of adaptive management planning is characterized by testing long-term monitoring protocols and sampling models to select cost-effective designs with sufficient statistical power to detect biologically relevant and management-relevant changes. The pilot phase often progresses through an iterative process, including revisions to protocols and comparisons of multiple methods. In addition, the pilot phase is an opportunity to conduct targeted studies to resolve critical management uncertainties and refine conceptual models based on emerging information (Atkinson et al. 2004).

GOAL 2.1 Establish long-term monitoring protocols for each biological element and resolve critical management uncertainties.

The long-term tasks outlined below apply to all the biological management elements.

TASK 2.1.1: *Establish cooperative agreements with local and regional conservation groups and resource agencies to enhance special-status species habitats and monitor regional special-status species populations.* Monitoring populations of special-status species should be conducted periodically to assess overall habitat integrity, detect changes in distribution and abundance, and detect positive and adverse effects of management activities, human use, and/or non-native species.

TASK 2.1.2: *Monitor the distribution and relative abundance of breeding birds on an annual basis, using either area searches or point counts.* Since birds occupy a wide variety of ecological niches and are relatively easy to monitor in comparison to other taxa, they are often used as focal species for monitoring. Focal species are those whose habitat requirements define the different spatial attributes, habitat characteristics, and management regimes indicative of healthy ecosystems. Many of the focal bird species identified in the Sagebrush Bird Conservation Plan (CalPIF 2005) and Riparian Bird Conservation Plan (RHJV 2004) have been observed at the HJWA (Figure IV-a, Figure IV-b).

http://www.prbo.org/cms/

TASK 2.1.3: *Implement an annual monitoring and reporting program for other focal species, including mule deer, reptiles and amphibians, mammals and aquatic invertebrates.*

TASK 2.1.4: *Implement a grazing management and monitoring plan for the HJWA.* Work with grazing lessees to implement the grazing management and monitoring plan for the HJWA (IVE and Appendix H), with special emphasis on assessing grazing effects on meadow, sagebrush, riparian habitats, and water quality. The Sierra Valley Resource Conservation District or UC Cooperative Extension Services may be available to help oversee this task.

Figure IV-a. Sagebrush Bird Focal Species
Identified in the Sagebrush Bird Conservation Plan (CalPIF 2005) and potentially occurring within the Hallelujh Junction Wildlife Area

Western sage-grouse
National Park Service

Gray flycatcher
Larry Barnes, PRBO Conservation Science Shrubsteppe Monitoring Program

Loggerhead shrike
David Menke, USFWS

Juniper titmouse
Tony Randal, Creative Commmons

Sage thrasher
Larry Barnes, PRBO Conservation Science Shrubsteppe Monitoring Program

Green-tailed towhee
jerryoldenettel Creative Commons

Brewer's sparrow
Creative Commons

Vesper sparrow
Larry Barnes, PRBO Conservation Science Shrubsteppe Monitoring Program

Lark sparrow
Len Blumin, Creative Commons

Sage sparrow
Larry Barnes, PRBO Conservation Science Shrubsteppe Monitoring Program

Western meadowlark
Larry Barnes, PRBO Conservation Science Shrubsteppe Monitoring Program

Figure IV-b. Riparian Bird Focal Species
Identified in the Riparian Bird Conservation Plan (RHJV 2004) and potentially occurring within the Hallelujah Junction Wildlife Area

Swainson's hawk
Pharaoh Hound, Creative Commons

Willow flycatcher
© Steve Zack

Yellow warbler
© 2007 Ron Wolf

PHASE 3: Regional Habitat Conservation Planning Element

Phase 3 of adaptive management planning focuses on implementing long-term monitoring protocols that have been tested in Phase 2, and includes periodic evaluation and refinement of the monitoring program. The program continues to address uncertainties, principally by evaluating responses to management and extreme events. Emerging uncertainties are also addressed and prioritized, such as a new invasive species or pollution source. Due to the general lack of baseline data on the HJWA, this document is unable to address Phase 3 since it will depend largely on the findings of Phases 1 and 2.

An important aspect of long-term monitoring is effectively coordinating with regional conservation planning efforts that address habitat issues from a larger landscape perspective. Early coordination efforts can speed species recovery by improving habitat connectivity and facilitate land management and restoration activities through information and resource sharing. An annotated list of regional habitat conservation planning resources appears in Appendix J.

GOAL 3.1: Develop working relationships with regional associations with expertise in wildlife and native plants to assist with species counts and biological monitoring.

The local chapter of the Audubon Society (Lahontan Audubon) is active in the region, participating in the annual Breeding Bird Survey, and managing and conducting the annual Christmas Bird Counts. They regularly offer birding trips for both novice and experienced birders to nearby Sierra Valley and have indicated a desire to assist CDFG with breeding bird surveys and point counts at the HJWA (A. Gubanich, vice president, Lahontan Audubon Society, personal communication). Additional support for the biological monitoring element may come from Point Reyes Bird Observatory (PRBO) Conservation Science and the Intermountain West Joint Venture.

Other groups that may be able to help with habitat monitoring and weed management are the Nevada Native Plant Society in Reno, the Plumas-Sierra Weed management group and the Lassen Special Weed Action Team (SWAT). SWAT's mission is to coordinate an integrated pest management partnership between public and private land managers and citizens for the control of noxious weeds in Lassen County.

GOAL 3.2: Recruit researchers and educators at regional institutions to assist with the design and testing of long-term monitoring protocols, especially in the areas of fire restoration, grazing as a vegetation management tool, and climate change.

Several local educational institutions, including the Desert Research Institute, Truckee Meadows Community College, University of Nevada, Reno (UNR), and California State University at Chico (CSU, Chico) and San Francisco (CSU, San Francisco), have expressed interest in utilizing the Wildlife Area as an extended outdoor classroom. Several UNR graduate students have used or currently use the Wildlife Area for field research, resulting in a variety of peer-reviewed publications (Appendix K). The San Francisco State University, Sierra Nevada Field Station, located in nearby Sierra Valley, provides a convenient base camp for extended field studies. Student monitoring, surveys and research can provide a valuable and inexpensive option for collecting resource data.

GOAL 3.3: Coordinate with regional conservation planning efforts for assistance with framing data collection and monitoring parameters from a larger landscape perspective.

The need for monitoring at multiple levels is emphasized in the concluding paragraph to the Sagebrush Bird Conservation Plan (CalPIF 2005):

> High priority monitoring action for a particular region is likely to include a mix of approaches, from development of new targeted surveys that address research questions simultaneously with species status assessment, to improvement of regional or continental multi-species surveys in which data are collected by volunteers. Both approaches are important for guiding local management efforts. Broad-scale results highlight regionally-important species and habitats that require research and management at the local scale. Effects of management in a local area can only be interpreted in the context of regional population change, which often is known only from broader surveys. And finally, only broad-scale population monitoring can tell us whether the sum of local management efforts is benefiting the target species as a whole. Of course, many factors other than management actions affect species populations. Thus, broad-scale monitoring data is not the only information required for evaluation of success toward meeting objectives. At the same time, research-oriented monitoring is crucially needed to determine causes of important population change and to test effects of specific management actions. Monitoring therefore is needed at a variety of geographic scales, using a wide range of approaches. The challenge for monitoring personnel is to communicate and cooperate so that scarce resources can be allocated most effectively and data gathered at all scales can be integrated for the maximum benefit of bird conservation.

The North American Mule Deer Conservation Plan (Mule Deer Working Group 2004) is working to develop an eco-regional approach to mule deer management, noting the following problem with continued focus on localized habitats and practices:

> Traditionally each state and province has collected management information independent from other, sometimes similar, states or provinces. This resulted in a wide variety of methodologies and approaches used by states and provinces for mule deer management. Inconsistencies in data collection, timing, and varying methods make it difficult to compare or combine data at an ecoregional basis. Lack of adequate funds and personnel shortages may be responsible for some of these differences, but lack of open communication was a major contributing factor. Further, federal agencies responsible for managing mule deer habitat are sometimes not in direct contact with the state or provincial wildlife management agency. Efforts to secure timely data to summarize population sizes and status among the various western states and provinces have been very difficult. More standardized approaches to mule deer data gathering are needed to help alleviate this problem.

TASK 3.3.1: Keep current on key habitat and species conservation planning efforts that address the biological management goals set forth in this LMP.

CONSTRAINTS ON BIOLOGICAL MONITORING ELEMENTS

Internal Constraints

As with other elements, limited funding for staff and operations is a major constraint on the biological monitoring element. Full realization of the monitoring goals and tasks will require an increase in funding for the Wildlife Area.

External Constraints

Environmental conditions at the Hallelujah Junction Wildlife Area vary year to year and season to season and may influence management's ability to implement aspects of this monitoring plan. A key aspect of an adaptive management plan is the ability to address changing issues and conditions.

D. Public Use Elements

The primary purpose of the Hallelujah Junction Wildlife Area is to preserve critical winter range and migration corridors for the Loyalton-Truckee deer herd. Public use of the area is restricted during much of the year to protect the viability of the herd and prevent further degradation of habitat. Compatible public uses include hunting, wildlife observation, and scientific research.

Hallelujah Junction Wildlife Area was acquired to protect the winter range of the Loyalton-Truckee deer herd. It is closed from February 1 to June 30 to protect gestating does. Anonymous photo

The 13,394 acres that make up the Hallelujah Junction Wildlife Area (HJWA) have been purchased by the State of California to protect one of the most important deer herds in California and Nevada, the Loyalton-Truckee deer herd. This herd has experienced population decline to 40% of its historical level due to habitat loss (B. Curtis, Wildlife Conservation Board meeting transcript, November 18, 2003). The HJWA provides winter range and preserves important migratory corridors for the deer. Preserving quality winter habitat is a critical aspect of deer reproductive success (Braun 2005, Rogers 1999).

Although the HJWA provides a sense of solitude, urban growth pressures continue to mount. Reno, a swelling population center in the fastest growing state in the nation, sits 15 miles to the south. Paralleling this urban encroachment are the growth of tiny, remote outposts like Hallelujah Junction (four miles to the north at the crossroads of U.S. 395 and State Highway 70) and Bordertown, located just two miles south of the main gate along U.S. 395. The residential communities of Cold Springs and White Lake now abut the southern border of the Wildlife Area. These seemingly out-of-the-way places are becoming the future sites of million-dollar residences that are rapidly transforming the landscape of many Great Basin areas (Mitchell 2000). As the urban-wildland interface intensifies, managing visitor capacity and communicating with the public will become a critical element of wildlife area management.

Urban development pressure from Reno has extended up Long Valley, displacing deer from traditional migratory corridors and increasing human disturbance to animals while they are in their winter range. In recent years, trespassing snowmobilers have harassed pregnant deer, prompting the closure of the Wildlife Area to all public access from February 1 to June 30 (J. Lidberg, CDFG [ret.], personal communication).

During summer months, the Wildlife Area is vulnerable to wildfires, sparked both by lightning strikes and by cars passing through the HJWA on U.S. 395. A major fire in July 2007 destroyed

approximately 4,400 acres of wildlife habitat, including prime stands of bitterbrush, an important winter forage plant for deer. Unauthorized off-road vehicles, including motorcycles and all-terrain vehicles, have further damaged wildlife habitat, resulting in CDFG's 2007 prohibition of all off-road vehicles, even on developed roads. While public access is restricted to one entry point off U.S. 395 on the southwest portion of the Wildlife Area, the area of the Wildlife Area east of U.S. 395, portions of which abut unrestricted BLM land in Nevada, remains largely unfenced and unmarked.

COMPATIBLE PUBLIC USES

It is the policy of the Fish and Game Commission that:

> Lands under the administration of the Department be made available to the public for fishing, hunting or other forms of compatible wildlife dependent recreational use, and for scientific studies whenever such use or uses will not unduly interfere with the primary purpose for which such lands were acquired (California Fish and Game Commission 2002).

In keeping with this policy, the overall public use goal for the HJWA is to protect biological resources while providing opportunities for recreational activities and scientific studies that do not have significant adverse impacts. Compatible activities are those that are either wildlife-dependent or related, and that have low to moderate potential to negatively impact wildlife and other uses of the Wildlife Area (Table IV-b).

Table IV-b. Compatible Wildlife-Related Activities at Hallelujah Junction Wildlife Area

ON-SITE ACTIVITY	RELATION TO WILDLIFE			Potential impact on habitat or wildlife	Potential conflict with other uses	Required level of management
	Dependent	Related	Unrelated			
Research and Education		x		Low	Low	Low
Wildlife and Nature Observation	x			Low	Low	Low
Hunting	x			Moderate	High	Moderate

Source: SEI 2008

REGULATION OF WILDLIFE AREAS

The CDFG regulates public use of all wildlife areas under California Code of Regulations (CCR) Title 14 (Natural Resources), Division 1, Sections 550 and 551. Division 1 contains regulations that have been formally adopted by the California Fish and Game Commission, reviewed and approved by the Office of Administrative Law, and filed with the Secretary of State. Section 550 regulates general public use while section 551 regulates activities related to hunting, permitting requirements and site-specific restrictions.

California Wildlife Conservation Policy

The general wildlife conservation policy of public lands regulated under the California Fish and Game Code (§1801) is to encourage the conservation and maintenance of wildlife resources. The policy includes the following objectives:

- To provide for the beneficial use and enjoyment of wildlife by the public.
- To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to people.
- To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species.
- To maintain diversified recreational uses of wildlife, including hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with public safety, and a quality outdoor experience.
- To provide for economic contributions in recognition that wildlife is a renewable resource of the land by which economic return can accrue to the public through regulated management and maintenance of healthy and thriving wildlife resources.
- To alleviate economic losses or public health and safety problems caused by wildlife.
- To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the objectives above.

HJWA SITE-SPECIFIC REGULATIONS

All wildlife areas are classified as Type A, B, or C [§550]. Type A and B areas require specific permits or season passes whereas Type C areas usually do not. However, a Type C area may have site-specific regulations that restrict public use activities that are incompatible with the purpose for which the wildlife area was acquired.

The HJWA is designated as a Type C area. Although it has no required permits or passes and no specified daily hunter capacity, the following site-specific regulations are in place to protect the viability of the Loyalton-Truckee deer herd:

- The Wildlife Area is closed to public entry from February 1 through June 30. The winter closure period was extended by two months in 2007 (previous regulations closed the area from February 1 to April 30). The Fish and Game Commission deemed these amendments necessary "to prevent disturbance to the wintering Loyalton-Truckee deer herd, particularly gestating females which are in sub-optimal condition during this time of year due to poor winter nutrition. The herd remains on the area into late May or early June before migrating to its summer ranges."
- Access to the Wildlife Area is permitted only at the designated entry point, which is the double gate on the west side of U.S. 395, two miles north of the California-Nevada state line on Scott Road.
- Horses, bicycles and camping are prohibited.
- Dogs are allowed for hunting only.

In 2007, the Fish and Game Commission also amended general public use regulations to prohibit the use of off-road motorized vehicles in all wildlife areas unless specified otherwise. This amendment was adopted to protect species and habitats from damage and disturbance, and for the protection of public safety [550(b)(6)(A)].

Regulations can be expected to change over time, so current regulations should be consulted for any determination about lawful use of a wildlife area (California Fish and Game Commission 2008). These regulations are published annually and are available at the CDFG Web site: http://www.fgc.ca.gov/regulations/current/regs.asp

1. Public Access Information and Education Element

Hallelujah Junction Wildlife Area is closed to the public from February 1 to June 30 to protect gestating does. View of main entrance off U.S. 395. February 2006, SEI.

It is the policy of the Fish and Game Commission that:

> I. The Department shall disseminate to the maximum extent feasible information to the public through the news media, books, pamphlets, motion pictures and other appropriate means regarding all matters dealing with the conservation, protection, management and administration of the state's fish and wildlife resources. It shall also inform the public about the authority and activities of the Commission and the Wildlife Conservation Board.
>
> II. The Department shall develop education programs in conjunction with the Department of Education directed toward the state's youth, which emphasize the importance of the preservation, enhancement and proper management of California's fish, wildlife and habitat resources and which recognize the role and value of hunting and fishing as resource management tools. Young people will be encouraged to participate in conservation, hunting and fishing programs based on a sound renewable natural resource ethic.
>
> III. The Department shall encourage education programs that increase the public's respect and concern for wild animals; and their knowledge of the interrelationships between wild animals, their environment, and their human neighbors (California Fish and Game Commission 1995).

Informing and educating the public about the Wildlife Area and its authorized and compatible uses, including the fragile nature of its ecological systems, is key to the successful management of public access and use.

GOAL 1.1: Facilitate safe and authorized access to the Wildlife Area.

TASK 1.1.1: Post information at the entrance to the Wildlife Area about boundaries, access, use designations and restrictions, potential risks, and emergency contacts.

TASK 1.1.2: Work with local, regional and state agencies to integrate the HJWA into emergency communications and response plans.

TASK 1.1.3: Identify and clearly mark the boundaries of the Wildlife Area for the public through maps, property boundary signs, and signs locating the entry point.

TASK 1.1.4: Consider developing trail routes in areas where public use is high or where needed to avoid sensitive areas.

TASK 1.1.5: Continue to update information on the CDFG's HJWA Web page (http://dfg.ca.gov/lands/wa/region2/halljunction.html) and other published materials on the HJWA.

TASK 1.1.6: Monitor the magnitude and type of illegal public use, such as off-road vehicle use or out of season hunting. Increase CDFG presence in wildlife areas, and increase the frequency of the assignment of penalties. As necessary, request assistance from the county sheriff to enforce laws.

GOAL 1.2: Educate the public about compatible uses of the Wildlife Area.

TASK 1.2.1: Add information to signage about the purposes of the Wildlife Area--protection of the long-term viability of the Loyalton-Truckee deer herd and compatible public uses--at unauthorized access points as well as at the entrance to the Wildlife Area.

TASK 1.2.2: Add information to CDFG's HJWA Web page and to other published materials on the HJWA about the primary purpose of the Wildlife Area and compatible public uses.

TASK 1.2.3: Provide an interpretive information bulletin board or kiosk at the entrance point to the HJWA where visitors can observe and learn about the natural history, cultural history, and restoration of compromised habitats.

TASK 1.2.4: Hold periodic public information meetings to increase the awareness of visitors and potential visitors to the Great Basin region about HJWA, existing public use opportunities, regulations, and any particular management issues requiring focused attention.

GOAL 1.3: Enlist the support of user groups to assist as stewards of the area's resources.

TASK 1.3.1: Enlist the support of user groups in conducting annual inspections for signs of human disturbance, hosting "clean up days," and assisting with installing barriers to discourage access to closed zones and sensitive habitats.

TASK 1.3.2: Enlist the support of user groups in restoring and monitoring ecosystems damaged by unauthorized uses, fires, flooding, and other conditions.

TASK 1.3.3: Consider developing a docent program that draws on the expertise of user groups to educate the public about the ecology and natural history of the area, including the importance of the area to the Loyalton-Truckee deer herd.

GOAL 1.4: Work with adjacent landowners and holders of easements to develop strategies for reducing unauthorized access.

TASK 1.4.1: Assess where the Wildlife Area is experiencing the heaviest unauthorized access and illegal resource degradation.

TASK 1.4.2: Coordinate with adjacent landowners to develop procedures for responding to unauthorized use and trespass. Work toward mutually agreeable strategies for reducing unauthorized access and resource degradation.

GOAL 1.5: Support use of the HJWA by Native Americans for cultural purposes and traditional activities such as gathering native plant materials.

TASK 1.5.1: Review access requests by Native Americans to the Wildlife Area by evaluating the purpose and need for access or collections according to applicable laws and treaties related to tribal use of state properties.

TASK 1.5.2: Develop access plans and issue permits for Native Americans for cultural purposes and activities that are compatible with the HJWA goals. Permits should identify specific species, limitations, locations and seasons, and include standard liability clauses.

GOAL 1.6: Assess effectiveness of management practices in improving public understanding of the purposes of HJWA and decreasing illegal use.

TASK 1.6.1: Add to signage the name, phone number, email, and Web site address of a person the public may contact regarding questions, comments and suggestions about compatible uses at the HJWA, and develop a procedure for tracking and following up on these contacts.

TASK 1.6.2: Develop pertinent recreation indicators for the HJWA and use them to evaluate and report use levels and to conduct visitor interest and satisfaction surveys periodically (Watson et al. 2000).

TASK 1.6.3: Identify a regional resource for assisting area managers in establishing rapid assessments tools and procedures for gauging public use.

TASK 1.6.4: Periodically review actual public use of the Wildlife Area and evaluate rules, regulations, guidelines and materials to ensure compatibility of public uses and consistency with HJWA goals.

2. Hunting Element

It is the policy of the Fish and Game Commission that:

> The Department shall emphasize programs that ensure and enhance hunting and fishing opportunities. These activities shall be integrated into all Department programs.
>
> In its review of federal, state and local plans, special plans and proposed projects to determine consistency with Commission policy and the goals and objectives of the Department's management plans and programs, and in meeting its responsibilities as trustee for the State's fish and wildlife resources, the Department shall establish the goal of preventing loss of hunting and sport fishing opportunities (California Fish and Game Commission 1994).

Hunting is allowed at the HJWA between July 1 and January 31 during open seasons for all legal species. Game species include dove (northern zone), quail (zone Q1), rabbit and deer (zone X6b to the east of the highway and zone X7a to the west). Motorized vehicles and horses are not permitted. Dogs are allowed for hunting only. Camping and trailers are not allowed. Public entry is permitted from one hour before sunrise to one hour after sunset through the double-gated entry off U.S. 395 at Scott Road (2 miles north of Bordertown at the California-Nevada state line). There are no resources for fishing.

California hunting regulations booklets, updated and published annually, provide detailed information on state hunting laws as well as regulations specific to each hunt zone.

GOAL 2.1: Provide a quality wildlife-dependent recreational experience using a renewable natural resource.

TASK 2.1.1: Inform the public of hunting times, locations and any special restrictions at the entrance to the Wildlife Area, on signage at strategic access points, at the department's North Central Region (NCR) headquarters, and the CDFG Web site.

TASK 2.1.2: Develop area maps identifying open and closed hunt areas.

TASK 2.1.3: Coordinate and conduct a volunteer "clean-up day" in late summer to ready the Wildlife Area for the upcoming hunting season.

TASK 2.1.4: Continue to maintain and develop relationships among CDFG staff, hunters and volunteer organizations to provide quality hunting experiences and to assist in maintaining the long-term viability of the herd.

GOAL 2.2: Promote hunter education and ethics through information and enforcement of hunting regulations and compliance with compatibility determinations.

TASK 2.2.1: Work with local hunting organizations to incorporate information about the HJWA into hunter safety courses and provide links to online information.

TASK 2.2.2: Post information at the entry gate to the Wildlife Area on proper handling of deer and elk to prevent the spread of chronic wasting disease (CDFG 2005).

TASK 2.2.3: Post information on regional family events where adults participate together with children and youth in hunting experiences.

TASK 2.2.4: Post information on available special hunts in the area for youth, women and people with disabilities.

3. Wildlife Viewing and Nature Observation Element

It is the mission of the Department of Fish and Game to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

The HJWA provides opportunities for a variety of nature and wildlife observation activities on a walk-in basis, except during the winter closure period. These include hiking, bird watching, big game observation, nature study, and photography. State recreation trends show that hiking, “family outings” and nature study (including bird and wildlife watching) are some of the fastest growing outdoor recreation activities (California State Parks 2005).

Several aspects of the HJWA support nature study activities. The HJWA is home to 180 plant species, including 146 native plants, and provides suitable habitat for at least 236 species of fish, amphibians, reptiles, birds, and mammals. Nature groups are drawn to the area to see spring wildflowers, winter raptors, dragonflies, fall color, and panoramic landscapes. The HJWA also has the potential to provide structured educational and land-based learning opportunities for youth.

The public may be discouraged from using the Wildlife Area to hike and view nature due to the lack of marked and regularly maintained trails, limited access points, and recent fires.

GOAL 3.1: Improve safety and opportunities for wildlife viewing and nature observation at the HJWA.

TASK 3.1.1: Assess methods for improving low-impact access, such as the development of trails that avoid sensitive areas and installation of observation blinds at key points.

TASK 3.1.2: Post interpretive information about the importance of the Truckee-Loyalton deer herd, its seasonal migrations and habitat needs, its use of the Wildlife Area as a winter range, and its status as a focal species indicating the environmental health of the area.

TASK 3.1.3: Post information educating non-hunters about appropriate behavior and safety practices during hunting season.

TASK 3.1.4: Post information at the entrance to the Wildlife Area and on the CDFG Web site about permit opportunities for organized group access.

GOAL 3.2: Establish a means of capturing and sharing observations made by visitors.

TASK 3.2.1: Maintain a current species list for the HJWA and provide this information to the public at Fish and Game offices.

TASK 3.2.2: Explore options for integrating visitor observations (including photographs) into baseline data collection efforts, monitoring and research.

GOAL 3.3: Support the use of HJWA for developing environmental literacy.

TASK 3.3.1: Provide staff assistance, interpretive materials, and permits for environmental education activities.

TASK 3.3.2: Encourage all environmental education and natural resource interpretation (informal education) users to incorporate state guidelines for natural resource education in their field activities, curricula, and interpretive programs, both on- and off-site. For example, incorporate Global Learning and Observations to Benefit the Environment (GLOBE) program standards for the scientifically valid atmospheric, hydrologic soils, and land cover/phenology measurements into public research and education standards.

4. Scientific Research Element

It is the policy of the Fish and Game Commission that:

I. Research, including the investigation of disease, shall be performed to provide scientific and management data necessary to promote the protection, propagation, conservation, management or administration of fish and wildlife resources of this state when such data is not available by other means.

II. Whenever possible and advantageous, the services of the University of California or other academic or research institutions, or federal, state or local agencies shall be used.

III. The Department shall review the following information, which must be clearly stated in any proposed research programs: (a) goals and objectives of proposed research, including benefits to be derived from such research; (b) pertinent background information, including a literature review which supports this research; (c) experimental design, including methods of data collection and analysis; (d) estimated cost of program; (e) its estimated duration; and (f) how results will be presented to the Department. The provisions of this paragraph shall not extend to emergency investigations of disease.

IV. The Department shall report regularly to the Commission on the status of major research programs in progress (California Fish and Game Commission 1994).

Containing seven primary habitat types, the HJWA is part of the distinctive Great Basin ecosystem that faces serious environmental challenges. These ecosystems are in peril due in part to increased human activity, global climatic change, spread of invasive exotic plants, decline in sagebrush/perennial grass and riparian habitats, accelerated soil erosion, water supply changes, and altered fire regimes (Nevada Agricultural Experiment Station 2008). To address these challenges on the HJWA, it will be particularly important for CDFG's North Central Region to assist HJWA land managers in data sharing and developing partnerships with research institutions in the Great Basin region.

The University of Nevada, Reno (UNR) has undertaken numerous scientific studies in the area. These studies, and others that might assist in management activities at the HJWA, often are not distributed to HJWA land managers. Some research activities and longitudinal studies have been conducted in the Wildlife Area without prior consultation or coordination with CDFG staff. CDFG regional managers encourage permitted public use of the Wildlife Area for scientific study as well as the coordination and sharing of research information and databases.

While these studies may result in valuable information, land managers have a responsibility to assess their value within the context of the Wildlife Area's overall goals and conditions. In considering the compatibility of proposed research projects, the following criteria may be helpful:

- Research is designed to improve management of the HJWA.
- Research has minimal or no potential conflicts with biological goals stated in this LMP.
- Research has minimal or no potential conflicts with other compatible public uses at the HJWA.
- Research has minimal or no potential to interfere with or preclude certain types of future research at the HJWA.
- Research uses scientifically valid and CDFG-approved research and monitoring protocol and mapping.

GOAL 4.1: Develop a process for coordinating, capturing and sharing research related to the HJWA.

TASK 4.1.1: Post notices regarding procedures and contact information for obtaining research permits on the HJWA.

TASK 4.1.2: Establish protocol guidelines for use by researchers and field technicians, including integration of research into CDFG-preferred databases.

TASK 4.1.3: Identify and participate in regional advisory groups related to Great Basin ecosystems.

GOAL 4.2: Provide opportunities for scientific research that will support adaptive management of the HJWA and provide useful biological information to land managers.

TASK 4.2.1: Establish working relationships with UNR, CSU SF Sierra Nevada Field Station, and other regional research institutions for engaging in on-site data collection, information sharing and longitudinal studies.

TASK 4.2.2: Support the use of HJWA for research efforts related to protecting and enhancing riparian corridors and bitterbrush stands, and restoring areas impacted by wildfires and previous land management practices.

TASK 4.2.3: Identify and assess experimental design opportunities (including remote sensing and telemetry) that could be incorporated into habitat and species management, restoration, and/or reintroduction projects at the HJWA.

TASK 4.2.4: Explore options for integrating the observations of organized groups into baseline data collection efforts, monitoring and research.

TASK 4.2.5: Consider developing or participating in a tiered research and career development program involving universities, community colleges and public school programs.

CONSTRAINTS ON PUBLIC USE ELEMENT

The goals of the public use elements are constrained by a range of natural and human factors. Effective management of the Wildlife Area requires that these factors be identified and considered.

Environmental factors

Compatibility of public uses with biological goals depends on the intensity of use and the number of users. Uses that have negligible impacts on biological goals at current levels may have negative impacts at higher levels. Uses that are currently considered compatible may have to be curtailed in the future if they cause degradation of vegetation, erosion, or declines in populations of sensitive species.

While public access is an important component in the CDFG's mission, protection of habitat and wildlife is the priority. Public use of the area must be balanced with habitat and wildlife protection.

Legal, political, or social factors

Different public uses have the potential to conflict with one another, especially if overall use of the Hallelujah Junction Wildlife Area increases in the future. If conflicts develop, uses may need to be limited to specific areas or times of the year, or otherwise restricted.

Financial factors

Limited funding for staff and operations is a major constraint when managing public use. Public use goals and tasks were formulated under the assumption that the CDFG has or will obtain the funding to undertake these tasks.

E. Facility Maintenance Elements

Facilities management is a critical component of the Hallelujah Junction Wildlife Area. The Wildlife Area will require active management to maintain and restore the structure and species associated with each of the habitat elements, especially in response to the 2007 Balls Canyon Fire. This section details the components of facilities management necessary to achieve implementation of the land management plan.

The effective management of the Hallelujah Junction Wildlife Area will require establishing a regular facility maintenance program to meet the goals of biological elements and public use. Existing facilities at the HJWA that require regular maintenance include access roads, fencing, gates, and several buildings and structures. Routine maintenance will also be required on water control structures for irrigation purposes. Without adequate maintenance, public and employee safety may be jeopardized and wildlife habitat may decline in value and quantity.

CLIMATE CHANGE RESOURCES

Areas managers will need to draw on outside resources to help address the impact of climate change on fire, vegetation and water management in the Wildlife Area.

Great Basin Ecology Laboratory. The Nevada Forestry Sciences Laboratory is part of the U.S. Forest Service, Rocky Mountain Research Station, located on the University of Nevada, Reno (UNR) campus. It houses the Ecology, Paleoecology and Restoration of Great Basin Watersheds Research Work Unit, and the Great Basin Ecosystem Management Project. The research conducted at the laboratory uses a collaborative, interdisciplinary approach to increase understanding of Great Basin ecosystems and to develop approaches for maintaining and restoring their integrity. Areas of emphasis include the following:

- Effects of climate and anthropogenic disturbance on riparian ecosystems and the implications for their management and restoration.
- Expansion of pinyon-juniper woodlands and the consequences for fire regimes and fire management.
- Susceptibility of sagebrush ecosystems to exotic plant invasions, and management options for control of plant invasions.
- Effects of ongoing climate change on Great Basin ecosystems.

Great Basin Institute. The Great Basin Institute is an interdisciplinary field studies organization that promotes environmental research, education, and conservation throughout the West. The institute advances ecological literacy and habitat restoration through educational outreach and direct service programs.

Desert Research Institute. The Desert Research Institute (DRI) is a stand-alone institution within the Nevada System of Higher Education. It supports nearly 500 researchers, staff and students working on more than 300 projects per year. The DRI houses the Center for Arid Lands Environmental Management, a research division focusing on the effects of climate change, urbanization and desertification around the world.

Involving Citizen Volunteers

The department's Volunteer Coordination Handbook (CDFG 2003), available at the North Central Region office, provides guidance for enlisting and working with citizen volunteers. A volunteer program may include biological monitoring, trail maintenance, weeding, exotic plant removal, and restoration,. Successful implementation of such a program must be carefully balanced with the biological goals and monitoring elements and may require a volunteer coordinator. Using volunteers has been effective for the National Park Service (NPS Volunteers in Parks Program), the USFWS (USFWS volunteers), and California State Parks (State Volunteers in Parks), as well as Fish and Game departments in other states.

Volunteers assisting with bitterbrush restoration efforts in Idaho and Nevada.

1. Health and Safety Element

GOAL 1.1: Provide a safe environment for wildlife and for public use.

TASK 1.1.1: Establish an annual monitoring and reporting program of Wildlife Area facilities (e.g., condition of signs, structures, fences).

TASK 1.1.2: Fix or replace facilities as needed, and adapt facility management approach based on the results of the annual monitoring program.

TASK 1.1.3: Ensure that facilities maintenance actions comply with the ESA, CESA and other regulations aimed at the protection of special-status species and/or sensitive habitats.

TASK 1.1.4: Document facility needs in the CDFG's maintenance and capital outlay database.

GOAL 1.2: Discourage destructive and illegal public use of wildlife areas through enforcement of regulations.

TASK 1.2.1: Monitor the magnitude and type of illegal public use, such as off-road vehicle use or out of season hunting. Encourage increased CDFG warden presence in wildlife areas, as well as increasing the frequency of the assignment of penalties. Request assistance from the county sheriff as necessary to enforce laws.

2. Fire Management Element

Previous burn stopped at access road in the HJWA. October 2006, SEI

Weather, topography and vegetation have combined to establish fire as a natural and consistent force across the Great Basin landscape. The moisture-laden Pacific air masses are lifted by the Sierra Nevada ranges, resulting in west-slope precipitation and drier air spilling eastward across the region. These dry air masses contain the electrical charge necessary to generate high-intensity lightning storms. When this occurs during the hot, dry summer months, the result can be hundreds of fires across thousands of acres of rangeland (Nevada Agricultural Experiment Station 2008).

Fire History. Existing fire history for the west side of the Wildlife Area (USFS, unpublished data) is summarized in Table IV-b. These fires occurred on or adjacent to the HJWA and burned at least a portion of the Wildlife Area (Figure IV-c). During the 19 years of CDFG ownership, at least five lightning-strike fires have burned within the Wildlife Area, ranging from a small fire in 1990 to the Balls Canyon Fire in 2007, which burned 4,368 acres mostly within HJWA (Figure IV-d).

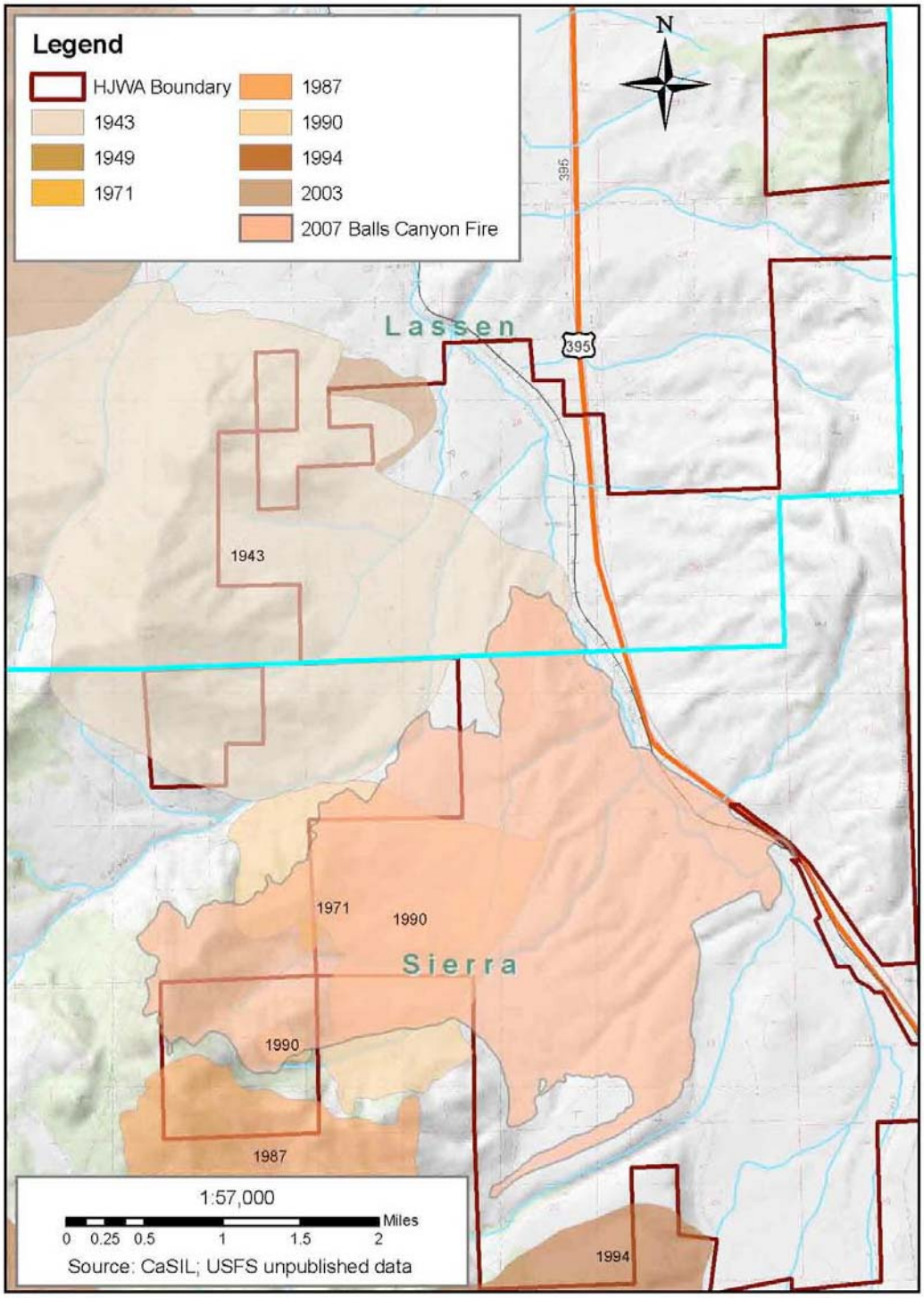
Table IV-b. Regional Fire History, Hallelujah Junction Wildlife Area (West of U.S. 395)[1]

Year	Month	Name of Fire	HJWA Sections Affected	Total Acres[2]
1943	unk	unknown	T21N, R 17E Sec. 4	5,328
1949	Aug	unknown	T21N, R 17E Secs. 26, 27	3,545
1971	Aug	unknown	T21N, R 17E Sec. 10	71
1987	June	unknown	T21N, R 17E Sec. 16	1,000
1990	Aug	unknown	T21N, R 17E Sec. 10	1,562
1990	Aug	unknown	T21N, R 17E Sec. 16	36
1994	Aug	Cottonwood	T21N, R 17E Secs. 23, 24	48,000
2003	July	Chilcoot	T22N, R 17E Sec. 28	5,639
2007	July	Balls Canyon	T21N, R 17E Secs. 16, 14, 13, 11, 12, 10, 2	4,368

[1] Comparable data is not available for the east side of the HJWA.

[2] Total acreage of fire, (including areas outside HJWA) per USFS, unpublished GIS data.

Figure IV-c. 2007 Balls Canyon Fire Burn Area and Previous Burn Areas In and Near the Hallelujah Junction Wildlife Area



Map: SEI 2008

Figure IV-d. Devastation from 2007 Balls Canyon Fire, Hallelujah Junction Wildlife Area

Stand-replacing fires, like the 2007 Balls Canyon fire that obliterated this mature sagebrush habitat, can take 35-100 years to regenerate.

Last sage standing near Long Valley Creek

Surviving bitterbrush.

Surviving Jeffery pines. SEI

SEI photos, July 2007

Fire Response. California Department of Forestry and Fire Protection (CAL FIRE) is the primary responder for fire protection within “state responsibility areas” (including wildlife areas) (CAL FIRE 2008). Under the terms of the 2002 California Cooperative Fire Agreement on Wildland Fire Suppression, the various state and federal fire agencies agreed to adopt a "closest forces concept" for fire response, based upon the philosophy that the closest available appropriate resources should be initially used in combating wildland fires (USFS 2002). The Sierra Front Interagency Dispatch Center (SFIDC) in Minden, Nevada, coordinates fire response for several of the nearby federal land management agencies, including the BLM Carson City District and the Humboldt-Toiyabe National

Forest (SFIDC 2003). Along with Tahoe National Forest (TNF), these agencies are among the closest first responders to the HJWA. Fire response agreements also exist with the Sierraville Ranger District of the TNF.

Fire Planning and Management. CAL FIRE coordinates with local wildfire planning entities including the Sierra County Fire Protection District, Sierra Fire Safe and Watershed Council, the Lassen County Fire Safe Council, the Lassen County Community Wildfire Protection Plan, and the Hallelujah Junction Fire Protection District. The Cold Springs Valley Volunteer Fire Department is located just south of the Wildlife Area on U.S. 395.

There is currently no fire management plan for the HJWA. Fuels and fire management are very important priorities at the HJWA. Physical conditions within and surrounding the Wildlife Area make it highly susceptible to wildfires, and catastrophic wildfires cause serious economic and ecological impacts on the Wildlife Area, the CDFG, and the surrounding communities. Fire management activities at the HJWA may include creation of firebreaks to provide effective containment, and the use of livestock grazing to help control cheatgrass on newly burned sites (IVE3 and Appendix H). Management coordination with local first responders is imperative.

GOAL 2.1: Manage the Wildlife Area to optimize wildlife habitat conditions while protecting people and property.

TASK 2.1.1: Develop and implement a Wildfire Management Plan for the HJWA. The management plan should coordinate with local and regional fire management agencies and implement the policies outlined in the "Interim Joint Policy on Pre, During and Post Fire Activities and Wildlife Habitat" (California Fish and Game Commission and California State Board of Forestry 1994). The wildfire management plan will include the following:

- Contact information for CDFG's agency representative will be provided to the Reno Emergency Command Center, local fire authorities, and the Tahoe and Toiyabe National Forest management offices, as well as the BLM Carson City District. Obtain comparable contact information from these agencies. This information should be updated annually, preferably in early spring, before fire season.
- Maps that indicate boundaries, access points, and water sources to local fire authorities. These maps should be distributed to the fire management officer at the Carson Ranger District and the fire chief at the Truckee CAL FIRE station.
- Maps of sensitive resources that require careful consideration during a fire incident. This information should be shared with the local and regional fire responders. Ensure that details of confidential information are appropriately circulated.
- Coordination with the battalion chief of the TNF Carson Ranger District to obtain and review copies of local incident command procedures and agreements applicable to fire suppression at the HJWA. Determine how the department could aid appropriate fire suppression responses (e.g., installing locator signs within the Wildlife Area for fire-fighting personnel.)

TASK 2.1.2: Train the Wildlife Area Manager to serve the role of Resource Specialist or Agency Representative through the Incident Command System (ICS). As part of the ICS, make a department

representative available (the Wildlife Area Manager or another local plant, wildlife, and fisheries specialist) to provide advice during fires that threaten habitat at HJWA.

TASK 2.1.3: Coordinate and meet annually with local fire agencies to develop and update wildfire response procedures including vegetation management, recent fire events, and contact information.

TASK 2.1.4: Identify water sources that could be used strictly for emergency purposes that would save lives and property. Install an auxiliary water tank and pump if necessary.

TASK 2.1.5: Install fire extinguishers and smoke alarms in all structures at the HJWA and train staff on proper use of extinguishers.

TASK 2.1.6: Design and implement vegetation management strategies, including:

- Establishing firebreaks along existing roads, parking lots, and existing structures.
- Using livestock grazing as appropriate to manage fuel load.
- Maintaining at least 100 feet of defensible space between structures and flammable vegetation.
- Storing woodpiles and other flammable materials away from structures.

TASK 2.1.7: Identify and implement project-specific BMPs to minimize fire hazards during any management activities that require the use of mechanical equipment.

GOAL 2.2: Coordinate with other resource agencies to promote healthy ecosystems at HJWA and vicinity.

TASK 2.2.1: Review existing TNF and BLM fire suppression procedures to identify fire suppression tactics that could have long-term effects on ecosystems. Recommend avoidance or modification of those tactics whenever feasible in order to avoid or minimize long-term effects on the ecosystems of the HJWA.

TASK 2.2.2: Review and comment on any proposed fuel or fire management projects for the HJWA or the surrounding TNF or BLM lands to ensure consistency with CDFG goals, such as protection of natural resources.

3. Vegetation Management and Grazing Element

Vegetation management activities at HJWA may include herbicide use, livestock grazing, prescriptive burning, and restoration of burned areas. As described earlier in Biological Elements (IVB), sagebrush habitats are among the most endangered ecosystems in the United States (Knick et al. 2003). The grazing practices of the late 1800s removed most of the perennial grasses, allowing native shrubs to expand, and allowing cheatgrass and other exotics to move in (BLM 1999). Sagebrush, mountain mahogany, bitterbrush, and other shrubs of the Great Basin burn extremely hot, and are generally killed by fire. Natural reestablishment of these plant communities is a long-term process, requiring 35 to120 years (ibid.).

Habitat Restoration. Habitat restoration and the control of cheatgrass and other non-native invasive plants is a primary concern to HJWA managers, especially since the 2007 Balls Canyon fire destroyed so much of the Wildlife Area. The historical fire rotation (the period of time required to

burn once through a given area) in sagebrush habitats is estimated to be once every three to four hundred years (Baker 2006) but the invasion of cheatgrass has changed that cycle to once every 10-15 years. Restoration of fire-damaged ecosystems is a long-term commitment that includes soil rehabilitation and stabilization, replanting of native species, weed control, and monitoring. (Figure IV-e)

Cheatgrass creates a grass-fire cycle where increasing cheatgrass promotes large fires that allow the cheatgrass to expand further, eroding and fragmenting sagebrush habitats, and preventing reestablishment of shrub habitats (Baker 2006). Huge amounts of research dollars and effort have been directed toward finding the means to control cheatgrass in the Great Basin. The most commonly applied methods are mechanical removal, tilling, late fall and early spring livestock grazing, late spring prescribed fire, and herbicide use (Bossard et al. 2000).

Figure IV-e. Fire and vegetation management issues, Hallelujah Junction Wildlife Area

Ash and topsoil storm after 2007 Balls Canyon

Invasive non-native cheatgrass infests previous burn.

More diverse revegetation following a less intense fire.

Source: SEI photos.

Grazing Management. Livestock grazing is a traditional activity at the HJWA and continues to this time. Livestock grazing is permitted to the extent that it is compatible with the wildlife management focus of the department (CDFG, Green Gulch Ranch Best Management Practices, on file at the

HJWA office). With proper management, livestock can be used to control non-native plants, assist with habitat restoration efforts, and control fuel loads to minimize fire danger.

The current lessee for HJWA uses the former Green Gulch Ranch (approximately 2,100 acres), primarily located in the southern portion of the Wildlife Area. The terms of the lease include maintenance and repair of the residence, barns and out buildings, fences, cattle guards, gates, rights to harvest the hay meadow, and other improvements upon the leased lands. The current lease expires in April 2009, but the lessee can exercise a five-year renewal period (Department Lease Agreement, HJ-2004-01-R2). The Sierra Valley Resource Conservation District (SVRCD) manages the grazing lease on behalf of CDFG for HJWA and the other nearby wildlife areas (Antelope Valley, Smithneck Creek, Chilcoot, and Crocker Meadows).

GOAL 3.1: Restore, to the greatest extent possible, fire-damaged habitats.

TASK 3.1.1: Develop a Habitat Restoration and Monitoring Plan for the Balls Canyon Fire area in consultation with experts from UNR.

TASK 3.1.2: Establish cooperative agreements with SVRCD, UNR, USFS, BLM, and other agencies to assist with securing funding, implementing, and monitoring for the Balls Canyon Fire Restoration Plan.

TASK 3.1.3: Develop maps identifying critical areas where emergency revegetation or mechanical or structural measures may be necessary to prevent excessive erosion or flooding post-fire. Implement such measures as appropriate, following fire or fire suppression.

TASK 3.1.4: Develop maps identifying areas of sensitive resources that may require specific management actions for appropriate prescribed burning activities (e.g., season-specific burning of invasive plant species).

TASK 3.1.5: Implement tasks described in Section IVB and the weed management plan (Appendix F) to manage the introduction and spread of invasive plant species that may increase fire hazards (e.g., cheatgrass, perennial pepperweed).

GOAL 3.2: Control invasive plants, and promote native plant restoration and healthy ecological functions.

TASK 3.2.1: Implement and monitor the effectiveness of the HJWA Weed Management Plan (Appendix F).

TASK 3.2.2: Implement and monitor the grazing management plan for HJWA (Appendix H).

GOAL 3.3: Provide opportunities for range management research and education.

TASK 3.3.1: Work with grazing lessee to design and implement a grazing management and monitoring plan that meets CDFG habitat management goals, and considers the economic goals of the cattle operator (Appendix H).

TASK 3.3.2: Continue to work with SVRCD for oversight of the grazing lease.

TASK 3.3.3: Consider a memorandum of understanding (MOU) with UC Cooperative Extension for use of facilities for student agricultural research projects.

Hay meadow harvested under grazing lease, Hallelujah Junction Wildlife Area. October 2006, SEI

4. Vector Control Element

Insects or other arthropods that transmit diseases or discomfort to humans, their pets, livestock and wildlife are called vectors. Mosquitoes are the most important vectors of human disease worldwide, responsible for about 1.5 million deaths per year from mosquito-borne malaria alone (Center for Disease Control 2007). Other important diseases that are transmitted by mosquitoes to humans include West Nile virus, dengue hemorrhagic fever, yellow fever, and a number of types of encephalitis. Recent attention has been focused on controlling the spread of West Nile virus, which has killed over 300 species of birds and also infects horses throughout the United States (ibid.).

Other important disease vectors include fleas (which can transmit diseases such as sylvatic plague) and ticks (which can transmit Lyme disease, human granulocytic ehrlichiosis (HGE) and babesiosis). The most well known of these tick-borne diseases, Lyme disease, is caused by the spirochete bacterium *Borrelia burgdorferi*. In the western United States, the Borrelia bacterium is carried by the Western blacklegged tick (*Ixodes pacificus)*. This species of tick is found throughout most of California (California Department of Health Services 2008).

Hantavirus is a rare but serious illness found throughout the arid western United States. It is primarily transmitted to humans by deer mice, although other rodent species can be infected. A person can be infected by inhaling airborne particles of urine, droppings, or saliva from infected rodents. Individuals can also be exposed by touching their nose, mouth, or eyes after handling infected rodents, nests, or droppings (California Department of Health Services 2005). The risk of contracting the virus is extremely low (less than 50 cases in California within the past ten years), but it is a potentially deadly disease and warrants cautionary measures, especially in areas where wild mice are prevalent (ibid.).

Other vector-borne illnesses may affect livestock and wild ungulates, such as Epizootic bovine abortion (EBA) or "foothill abortion" disease. EBA was originally recognized as an abortion disease of cattle that occurred after summer grazing in the foothill regions of coastal and central California. EBA is also a phenomenon of summer grazing in the Sierra Nevada Mountains and the Great Basin regions of California, and has been diagnosed in southern Oregon and western Nevada. EBA is transmitted by the bite of soft-bodied ticks called pajahuello (*Ornithodoros coriaceus*) (Oliver and Norman 1994). This species of tick is present at the HJWA and has been the subject of a number of UNR research projects (M. Teglas, UNR, personal communication).

GOAL 4.1: Maintain or enhance habitat values for waterfowl and other wildlife while protecting humans, domestic animals and wildlife from vector-borne diseases such as West Nile virus, and EBA; and minimize financial costs to CDFG.

TASK 4.1.1: As needed, implement a mosquito control plan that applies the BMPs identified in the "Technical Guide to Best Management Practices for Mosquito Control in Managed Wetlands" (Kwasny et al. 2004).

TASK 4.1.2: Post tick identification and Lyme disease prevention signs at public access points to the Wildlife Area.

TASK 4.1.3: Support academic research efforts to identify and control EBA and other diseases that could affect wild ungulates and livestock.

5. Water Management Element

Few water management activities occur at the HJWA. Water is diverted from Balls Canyon Creek to provide water for livestock on the Green Gulch Ranch, and Purdy Creek provides overland flow through the southern meadows on its way to Long Valley Creek. There are at least three springs/seeps on the HJWA that could be developed for both livestock and wildlife use.

On the east side of U.S. 395, there are three wildlife water guzzlers that collect rainwater and snow melt, channel it into tanks, and then distribute the water to troughs (Figure IV-f). This simple system provides great benefits to wildlife, especially wintering and migrating deer.

There is a number of ground water monitoring wells on the property but the status and exact locations need to be determined. One well provides water to the office building and on-site residence. Additional water sources need to be categorized and mapped (V, Step Down Actions).

GOAL 5.1: Maintain and enhance the variety and diversity of riparian and wet meadow habitats at the HJWA for optimal wildlife habitat.

TASK 5.1.1: Coordinate with neighbors to develop water for wildlife (guzzlers and troughs) outside the riparian corridors.

TASK 5.1.2: Install water guzzlers for enhancement of wildlife habitat, making sure some water is available at ground level for smaller species. Ensure that each water source has protective measures in place to prevent the accidental drowning of small wildlife.

TASK 5.1.3: Use GPS to map the location and types of all wells and other water sources and include the data in the GIS database (V, Step Down Actions).

TASK 5.1.4: Research and obtain additional water rights for riparian habitat restoration efforts (V, Step Down Actions).

Figure IV-f. Rainwater collection system serves as a wildlife water guzzler on the east side of the Hallelujah Junction Wildlife Area.

SEI photos.

6. Access Roads, Parking and Trails Element

The only public access to the HJWA is from the west side of U.S. 395. A paved entrance road leads through a deer-proof fence and the main gate. Just inside the gate is an unmarked graveled area that is intended for public parking.

The paved entrance road joins the unpaved Scott Road, which roughly parallels Long Valley Creek north and south through the Wildlife Area. South along Scott Road is the HJWA headquarters and on-site manager's residence. Access to and through the Wildlife Area is served by a sparse network of unpaved dirt roads and locked gates. There are no established trails and no other parking facilities. The primary road through the western section of the Wildlife Area fords Long Valley Creek, which is impassable during high flows.

One of the primary issues facing area management is controlling unauthorized public access to the Wildlife Area. During the winter, snowmobiles have used the railroad right of way to gain access to the closed Wildlife Area and have been observed harassing wintering deer (J. Lidberg, CDFG [ret.], personal communication). Recent changes in regulations have since banned off-road motorized vehicles on most CDFG wildlife areas, including HJWA (CDFG 2007).

GOAL 6.1: Maintain safe roads for department and public use, and emergency access.

TASK 6.1.1: Inventory existing roads to evaluate whether they provide sufficient access for management needs; identify erosion and sedimentation problems, and road hazards.

TASK 6.1.2: Evaluate alternative road crossings for Long Valley Creek to minimize erosion and sedimentation.

TASK 6.1.3: Ensure that planned measures to improve access across creeks and streams are properly permitted.

TASK 6.1.4: Stabilize the Long Valley Creek crossing using accepted BMPs.

TASK 6.1.5: Where feasible, install physical barriers (e.g., boulders) at points frequently used to illegally access or traverse department property. Select barriers that are consistent with the rural character of the region and the aesthetics of the natural environment in the Wildlife Area.

GOAL 6.2: Provide manageable public parking areas and prevent unauthorized use.

TASK 6.2.1: Clearly identify the public parking facility, inside the access gate.

7. Signage, Fencing and Gates Element

Fencing, gates and signs are used to denote HJWA boundaries, to restrict public access, and to contain management activities such as livestock grazing. While signage can be an effective tool in promoting public stewardship (IVD), it can be difficult and expensive to maintain and may attract unwanted public use of the Wildlife Area.

When U.S. 395 became a four-lane freeway in the mid-1970s, three bridges were built at known deer crossing routes to decrease the incidents of highway deer mortality. The bridges and their associated under crossings provided safe passage for cattle, deer and construction equipment movement under

the highway. Four miles of deer-proof fencing and associated wing fences force the deer to use the under crossings. One-way gates were installed to provide an exit for those deer that may get on the highway from the ends of the project or through gaps caused by vehicular accidents or other causes (Kahre 1980).

Maintenance of the deer fence and under crossings is critical to minimize highway deer mortality. There are a number of places where coyotes and rabbits have dug holes under the fence line that are large enough for deer to crawl under and access the highway (J. Dawson, CDFG, personal communication). In other areas, erosion features such as headcuts and gullies have formed under the fence line and in the underpasses that permit deer passage. Occasional vandalism and accidents have occurred in which locks and latches were broken off the drive and walk gates. During periods of high wind, tumbleweeds pile up and block the gates preventing wildlife access. The tines on some of the one-way gates have bent and now allow passage in both directions. Area managers have expressed concern that the main gate could be inadvertently left open and allow deer access to U.S. 395 (ibid.).

GOAL 7.1: Add, improve, and maintain existing structures and signs for resource protection, education, safety, and appropriate public use of the wildlife areas.

TASK 7.1.1: Inform users of the location and boundaries of HJWA by providing locator signs and property boundary signs at major access points.

TASK 7.1.2: Inform users regarding compatible public uses of HJWA by providing bulletin boards at the formal entrance to the Wildlife Area (IVD).

TASK 7.1.3: Select signage locations and styles that are consistent with the rural character of the region and the aesthetics of the natural environment in the Wildlife Area.

TASK 7.1.4: Annually survey existing fencing and gates and repair where necessary.

TASK 7.1.5: Identify and remove obsolete internal fencing materials.

TASK 7.1.6: Annually inventory existing boundary signage, and install new signs where necessary.

TASK 7.1.7: Install a kiosk or bulletin board with wildlife area maps and Title 14 regulations, safety information, and interpretive material at appropriate public access points (IVD).

TASK 7.1.8: Implement a grazing management plan that includes pasture rotation and exclusionary fencing to protect riparian and wetland resources (Appendix H).

TASK 7.1.9: Regularly inspect deer fencing and work with Caltrans to make repairs as needed.

TASK 7.1.10: Repair headcuts and gullies that provide passage for deer under the deer-proof fence. Incorporate passageways for smaller animals that are not large enough for deer.

TASK 7.1.11: Work with neighbors to maintain fencing to prevent livestock from trespassing onto the Wildlife Area.

TASK 7.1.12: Investigate the need for a double-wide cattle guard at the main entrance gate to preclude deer accessing the highway when the gate is left open or damaged.

8. Structures Element

There are few buildings or other structures at the HJWA. The department's primary responsibilities are to maintain the office building and adjacent on-site manager's residence. Green Gulch Ranch has various barns, outbuildings and a residence, but maintenance of these facilities is the responsibility of the lessee. Other structures on the property are considered historical resources and should be evaluated by a qualified archaeologist to determine appropriate action (IVF).

GOAL 8.1: Optimize the use of the existing structures at the HJWA.

TASK 8.1.1: Regularly inspect and maintain the residences, office, storage buildings, sheds, and related structures in optimum working condition to maximize the efficient use of the operating budget, and to ensure the health, safety, and reasonable accommodation of department staff and others using the site.

TASK 8.1.2: Identify and prioritize specific facility needs to carry out research, monitoring and education goals for the HJWA.

TASK 8.1.3: Review historical structures on property (IVF).

9. Equipment Element

The CDFG currently owns, operates and maintains the following equipment for use at the HJWA: two 4-wheel drive trucks, two ATVs with trailers, and one large trailer for two ATVs, along with fencing tools and electric hand tools (T. Weist, CDFG, personal communication). Area managers (ibid.) have identified the following equipment needs in order to facilitate full implementation of this land management plan:

- Snowmobile for winter maintenance
- Tractor/back hoe for road repair and erosion control

Full details are discussed in the Operations and Maintenance Summary (V).

GOAL 9.1: Maintain all equipment, vehicles, and facilities in optimum working condition to maximize the efficient use of the Wildlife Area's operating budget.

TASK 9.1.1: Regularly inspect and service all heavy equipment and vehicles.

TASK 9.1.2: Regularly inspect and maintain fuel tanks to comply with state and federal laws.

TASK 9.1.3: Establish and maintain cooperative agreements with Caltrans, SVRCD, USFS and BLM to provide and operate equipment needed to maintain grounds and facilities at HJWA.

GOAL 9.2: Monitor weather conditions that may effect management of the Wildlife Area.

TASK 9.2.1: Assess the feasibility of installing a weather station at the HJWA office and coordinate data sharing with the National Weather Service forecast office in Reno and UNR.

CONSTRAINTS ON FACILITY MAINTENANCE ELEMENTS

The goals of the facilities maintenance elements are constrained by a range of natural and human induced factors. Effective management of the Wildlife Area requires that these factors be identified and considered.

Environmental factors

Maintenance requirements will depend largely on the severity of winter weather conditions. In years of wildfire, exceptional rainfall, flooding or erosion may damage roads, fences, and signage. The degree of damage will dictate maintenance priorities.

Legal, political, or social factors

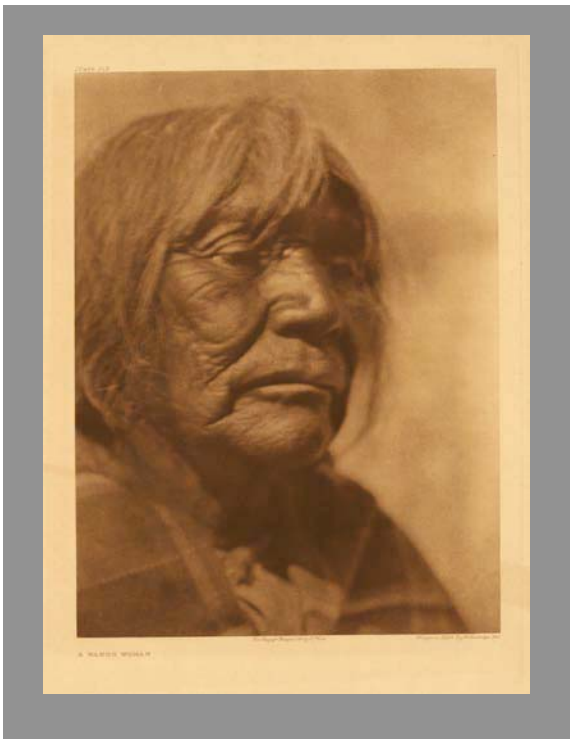
The addition of signing, access improvements, and portable sanitation units will result in public expectation for the maintenance of these improvements. Some of the improvements may attract vandalism. The frequency and severity of vandalism may impact the department's ability to maintain the improvements or to continue to provide them over the long term.

Financial factors

As with other elements, limited funding for staff and operations is a major constraint on facilities maintenance. Full realization of the facilities maintenance goals will require an increase in funding for the Hallelujah Junction Wildlife Area.

F. Cultural Resource Elements

Human activity at the Hallelujah Junction Wildlife area has been continuous since prehistoric occupation. Significant historical or archaeological resources are present and could potentially be affected by public uses or management actions, particularly ground-disturbing activities in areas not yet surveyed. Some remnants of human activity may need to be removed or disturbed because of safety hazards, aesthetic impacts, or conflicts with other management goals.



Washo woman, 1926. Edward S. Curtis Collection

James Beckwourth. Smithsonian

1. Cultural Resource Protection Element

Archaeological and historical resources on the Hallelujah Junction Wildlife Area, as they are elsewhere, are protected under California Public Resource Code Section 21083.2 and California Code of Regulations, Title 14, Chapter 3, Section 15064.5. Whenever an action with potential impacts on cultural resources is contemplated, California Department of Fish and Game staff must follow a standard procedure to evaluate the significance of the resource and to determine whether the potential impact requires mitigation. California Register of Historic Resources (CRHR) serves as a guide to cultural resources when there is a discretionary action subject to the California Environmental Quality Act (CEQA); it also serves as a guide for management of the HJWA. The CRHR lists criteria for evaluating the significance of cultural resources and their eligibility for listing in the California Register. Adverse effects to cultural resources eligible for listing must be avoided or the effects mitigated.

GOAL 1.1: To the extent feasible, preserve and catalog all cultural resources that have yielded or have the potential to yield information important to the prehistory or history of the HJWA, and the region that otherwise would meet significance criteria according to the California Register of Historical Resources.

TASK 1.1.1: Complete and submit existing site records for the newly identified archaeological sites to the State Historic Preservation Officer to establish eligibility, and submit any culturally significant resources that may be eligible for inclusion in the National Register of Historic Places (NRHP) or the CRHR.

TASK 1.1.2: Complete a comprehensive cultural resources survey of the property. Approximately 20% of the Hallelujah Junction Wildlife Area has been surveyed to date. Identify areas that have not yet been surveyed for cultural resources. In general, cultural surveys that are more than five years old should be re-conducted. In part, this is to monitor the condition of known archaeological resources, as well to identify any previously unrecognized sites.

TASK 1.1.3: Create a detailed, comprehensive map of known archaeological resources for management purposes. Mapping sites can assist management decisions, and help to predict locations of additional cultural resources in areas that have not yet been surveyed. Note that archaeological site location is considered sensitive information, and shall be kept confidential.

TASK 1.1.4: Treat all sites, until further evaluation occurs, as potentially important. Public use areas should avoid important archaeological sites.

TASK 1.1.5: Make determinations of eligibility (formal resource evaluation), using criteria set forth by the CRHR or the NRHP, of all identified cultural resources. If federal monies are involved with any project, it is necessary to evaluate cultural resources using criteria set forth by the NRHP. Those properties determined to be significant using National Register criteria are automatically also eligible for the California Register (although not always vice versa). By determining if a resource is eligible or not, constraints on future projects may be eliminated; that is, if a resource is not eligible, it does not need protection. Conversely, identifying and making determinations of eligibility can focus planning for future projects, and capitalize on resource spending.

TASK 1.1.6: Conduct cultural resource surveys before ground-disturbing activities (e.g., any new construction, road grading, or extensive ecological restoration). If necessary, conduct pre-construction archaeological testing and data recovery if resources are discovered. Prepare an “inadvertent discovery plan” to be utilized during implementation of any project involving ground disturbance. The inadvertent discovery plan shall refer to and outline state law regarding the discovery of human remains, and include a requirement to consult with a qualified archaeologist in the case of a discovery of cultural resources or human remains during ground-disturbing activities.

TASK 1.1.7: When facility improvements or restoration efforts are proposed that may affect significant cultural resources, consult the CEQA guidelines and/or Section 106 of the National Historic Preservation Act (if there is federal involvement) for guidance on compliance with regulations.

TASK 1.1.8: Support research efforts to document the history of human activities at the HJWA.

TASK 1.1.9: As funding allows, prepare a Cultural Resources Treatment Plan that can be used to predict where buried properties are likely concentrated, and provide a uniform approach to

archaeological monitoring, test excavation, and data recovery, as well as providing an overarching management guideline

TASK 1.1.10: Develop an interpretive plan for the area. The Hallelujah Junction Wildlife Area is an area rich in cultural and archaeological resources. Prehistoric occupation of the area, survival of Native American traditions and sites into the historic period, and historic land uses, are all rich canvases upon which to build possible interpretive plans. Pamphlets, articles, outdoor panels, Web sites, and video histories are all potential interpretive outlets.

2. Native American Access Element

GOAL 2.1: Support use of the HJWA by Native Americans for traditional activities, such as gathering native plant materials for cultural purposes.

Gathering of limited quantities of native plant materials can be compatible with the goals of the Wildlife Area. The tasks listed below are intended to ensure that such uses are authorized only when compatible, and when they take place in a manner that minimizes conflicts with other uses.

TASK 2.1.1: Contact appropriate local Native American representatives to determine if there are any traditional cultural properties located within the Hallelujah Junction Wildlife area. Traditional cultural properties are those sites that may reflect the beliefs, customs, and practices of living Native communities. Often, knowledge of the locations of these sites has been passed down through the generations, either orally or through practice.

TASK 2.1.2: Work with native peoples who request access for traditional activities to determine the purpose of and need for access and/or collections within the HJWA.

TASK 2.1.3: Develop access plans, including standard liability clauses, for issuing permits to Native peoples whose activities are compatible with the goals of this plan.

TASK 2.1.4: Allow limited gathering of materials for ceremonial, educational and craft purposes by native people.

CONSTRAINTS ON CULTURAL RESOURCE PROTECTION

Effective management of the Wildlife Area requires that potential constraints to implementation of the cultural resource element be identified and considered.

Environmental factors

While cultural resource protection is an important component in the department's mission, protection of habitat and wildlife is the priority.

Financial factors

Limited funding for staff and operations could be a major constraint for the implementation of the Cultural Resource Element of the land management plan. Ground-disturbing activities will require additional cultural resource surveys to ensure protection of sensitive artifacts and resources. This work will require the services of a qualified archaeologist. The cultural resource goals and tasks were formulated under the assumption that the CDFG has or will obtain the funding to undertake these tasks.

G. Administration Elements

Administration of the Hallelujah Junction Wildlife Area includes maintaining and providing records of management actions and expenditures in support of the Wildlife Area. Record keeping is a critical element when planning and allocating staff time, identifying funding needs for acquisition and management of new parcels, and maintaining public accountability. Managing data, information and agreements concerning the Wildlife Area is a critical function in attaining the management goals for all other elements.

1. Record-Keeping Element

Administrative records for the Hallelujah Junction Wildlife Area are housed at the department's North Central Region (NCR) headquarters with copies maintained at the HJWA office. The administrative library includes title and easement reports, legal descriptions of the properties, lease agreements, and research permits and reports. The NCR headquarters also stores confidential cultural resource reports, database searches, and maps concerning the Wildlife Area to guide management actions.

The CDFG has an agreement with the Sierra Valley Resource Conservation District (SVRCD) for management of the grazing leases on all its properties in Sierra County. This agreement allows funds generated by the leases to be reinvested in the management of the area. HJWA vehicles and office space are shared with the Antelope Valley/Smithneck Creek Wildlife Area, the Chilcoot Wildlife Area, and the Crocker Meadows Wildlife Area.

GOAL 1.1: Maintain existing data and agreements concerning the management and resources of the Wildlife Area.

TASK 1.1.1: Maintain accurate financial records regarding expenditures, staff, maintenance, funding, and other administrative duties. Provide training as needed to implement this task.

TASK 1.1.2: Administer the renewal, modification, and termination of grazing allotments and timber sales, as necessary.

TASK 1.1.3: Maintain cooperative agreement with SVRCD for oversight of grazing leases.

TASK 1.1.4: Store cultural resource data in a secure area and restrict public access.

TASK 1.1.5: Regularly update geographic information system (GIS) data sources as information becomes available.

TASK 1.1.6: Document facility needs in a CDFG maintenance and capital outlay database.

TASK 1.1.7: Prepare annual monitoring and periodic status reports as defined in the land management plan (V).

TASK 1.1.8: Actively pursue funding to help facilitate implementation of the LMP.

2. Resource Coordination Element

GOAL 2.1: Establish and maintain positive relationships with neighbors, lessees and user groups to address wildlife area management issues.

TASK 2.1.1: Meet or correspond with local landowners and user groups as needed to maintain communication about the management activities at HJWA.

TASK 2.1.2: Promote educational opportunities, recruit volunteers and foster a sense of stewardship regarding the area.

GOAL 2.2: Develop regular communication procedures with federal, state and local agencies regarding plans and projects that may affect habitats at HJWA.

It is the policy of the California Fish and Game Commission that CDFG review and comment on proposed projects affecting important range and habitat values, and to recommend and seek the adoption of proposals necessary or appropriate for the protection of fish and wildlife and their habitats. Coordination with local government and planning agencies is an important component of this policy. Entities that have management activities and interests related to the Wildlife Area include, *but are not limited to*, the following:

Federal and State Agencies

California Department of Forestry and Fire Protection (CAL FIRE)
California Department of Transportation (Caltrans)
California Department of Water Resources (DWR)
California State Water Resources Control Board (SWRCB)
California Highway Patrol (CHP)
Nevada Department of Wildlife (NDOW)
University of Nevada, Reno (UNR)
U.S. Department of Agriculture
    Natural Resources Conservation Service (NRCS)
U.S. Department of the Interior
    Bureau of Land Management (BLM)
U.S. Forest Service
    Humboldt-Toiyabe National Forest
    Rocky Mountain Research Station (RMRS)
    Tahoe National Forest

Local Governments and Municipalities

Lassen County
Lassen County Sheriff's Department
Sierra County
Sierra County Fire Safe and Watershed Council (SCSWC)
Sierra County Sheriff's Department
Sierra Valley Resource Conservation District (SVRCD)

Utilities

Sierra Pacific Power Company (easement)

Private Landowners
Neighboring landowners
Union Pacific Railroad

Tribal Groups
Washoe tribe

CONSTRAINTS ON ADMINISTRATION ELEMENTS

Internal Constraints

As with other elements, limited funding for staff and operations is a major constraint on the administrative element. Due to funding constraints, staff training opportunities may be limited.

External Constraints

Environmental conditions at the Hallelujah Junction Wildlife Area vary from year to year and season to season and may influence management's ability to implement aspects of this monitoring plan. A key aspect of an adaptive management plan is the ability to proactively address changing issues and conditions.

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V. OPERATIONS AND MAINTENANCE SUMMARY

The Hallelujah Junction Wildlife Area Land Management Plan recommends proactive ecosystem management at a level that is more intensive than in the past. Partnerships with local educational institutions, conservation agencies and community groups can help the California Department of Fish and Game meet the biological goals in this plan, provided the department commits additional budgetary resources of its own as a capacity building measure. The advancement of scientific knowledge regarding invasive species control and restoration of native vegetation will likely result in new techniques and opportunities for more effective wildlife management, and will further the understanding of issues specific to the site and region. To respond to changing conditions and increasing knowledge, this plan will need to be reviewed and revised periodically.

Inspecting previous burn before spring growth. SEI

A. Staffing and Equipment

1. Personnel Needs

At the time the Hallelujah Junction Wildlife Area land management plan (HJWA LMP) was prepared, management oversight and maintenance activities were conducted by an Associate Wildlife Biologist (AWB) and a Fish and Wildlife Technician (FWT). The AWB is based in Graeagle, California, and has additional management responsibilities at the Antelope Valley/Smithneck Creek Wildlife Areas, Crocker Meadow Wildlife Area, and Chilcoot Wildlife Area in Sierra and Plumas counties.

Currently, the staffing is allocated as follows:

Program Management	*Area Manager/AWB*	*0.25PY*
Maintenance	*Fish and Wildlife Technician*	*0.75PY*

To adequately support the HJWA and to perform the tasks identified in this LMP, a combination of additional program management, site management, and maintenance will be required. The staffing program proposed below incorporates permanent staffing supplemented by seasonal labor. The current and estimated new annual labor costs for the HJWA are presented in Table V-a on the following page.

Program Management

Area Manager, AWB position, 0.20 PY

The direction of the HJWA will continue to be supervised by the AWB. This person will have the principal responsibility for implementing this LMP. Based upon discussions with CDFG staff, this position will decrease to 0.20 PY. The AWB will serve as the area manager of the HJWA, perform technical tasks, and give direction to staff. The AWB serves as CDFG's principal representative at meetings and coordinates with other agencies and interests.

Site Management

Wildlife Habitat Supervisor II, 0.5 PY

Increased day-to-day field operations will require a new Wildlife Habitat Supervisor II position. This individual will act as the field manager for the HJWA by performing basic communications, monitoring, and support functions. The individual will also assist and direct regular CDFG staff members, seasonal labor and volunteers performing biological monitoring and maintenance tasks as directed by this LMP.

Wildlife Biologist, Range A/B, 0.5 PY

This person will conduct most biological surveys and monitoring efforts on the HJWA under the general direction of the AWB.

Wildlife Habitat Assistant (WHA), 0.75 PY

This person is responsible for the day-to-day maintenance of the area.

Fish and Wildlife Scientific/Seasonal Aide, 0.75 PY

This position is responsible for the less technical tasks, including assisting with maintenance and operation of the area, and assisting with some aspects of the biological monitoring that may be necessary.

Table V-a. Estimated Annual Labor Cost, Hallelujah Junction Wildlife Area

Title	Annual Salary[1]	Current PY	Current Cost	New PY[2]	New Cost	Net Increase/ Decrease
Associate Wildlife Biologist	67,008	0.25	16,752	0.20	13,400	-3,352
Wildlife Biologist, A/B	50,196	-	-	0.50	25,100	25,100
Wildlife Habitat Supervisor II	62,868	-	-	0.50	31,450	31,450
Wildlife Habitat Assistant	45,696	-	-	0.75	34,272	34,272
Fish and Wildlife Technician	42,072	0.75	31,544	-	-	-31,544
Seasonal/Scientific Aide	20,000	-	-	0.75	15,000	15,000
Estimated Annual Labor Cost	**-**	**-**	**54,312**	**-**	**119,222**	**70,926**

[1] Average salary based on 2007 rates. Accessed on: California State Personnel Board Web site
[2] PY = Personnel Years (1.0 PY = 2080 hours)

2. Capital Equipment Needs

Additional equipment that will be needed to fulfill the goals and objectives of the HJWA LMP are summarized in Table V-b. Not all of these items will be immediately necessary, and equipment purchases can be prioritized and phased in as funding allows.

Table V-b. Additional Equipment Needs , Hallelujah Junction Wildlife Area

Description	Estimated Cost (New)
Backhoe/Tractor	$80,000.00
Snowmobile	$8,000.00
Estimated Total Equipment Cost	**$88,000.00**

In addition to the specific equipment listed above, CDFG has identified a need for a new residence for on-site staff. This would be a modular home to replace or augment the existing residence. The estimated cost to permit and build the structure is $250,000 (Jim Lidberg, CDFG [ret.], personal communication).

B. "Step Down" Activities

This LMP describes several activities that will require a substantial investment of time and budget in order to fully address them. While these activities are important to the overall management of HJWA, they are not deemed critical to preparation of the LMP. These activities have been identified as step-down actions for CDFG.

1. Easement Research and Parcel Map Follow-Up

There are scores of easements recorded on the various parcels that comprise the HJWA (Appendix A). Many of these are probably obsolete, but some have the potential to affect management of the Wildlife Area including road easements, well easements and mineral rights. Chain-of-title research and the potential consolidation, abandonment and or removal of these claims will require the attention of CDFG's Lands Program. In addition, CDFG boundary files (used as the basis for maps throughout this LMP) should be corrected to correspond to Sierra and Lassen County parcel and ownership maps, as depicted in Figure II-b.

2. Water Rights Research and Follow-Up

As stated elsewhere in this LMP (II), water right issues in the Upper Long Valley are complicated. Additional research will be required to determine exactly what rights were retained by CDFG (Appendix C1 and C2) and how HJWA water supply may be at risk due to climate change, regional population growth and potential water supply acquisition strategies for nearby urban centers. Several steps have been identified as part of this research:

- Contact the State Water Resources Control Board (SWRCB) to order copies of the decree maps and examine the currently filed statements of diversion and use, as well as new applications, extensions, petitions for changes and transfers. It may also be beneficial to file change of ownership and/or Statements of Diversion and Use with the SWRCB's Division of Water Rights.
- Research and compare additional existing hydrological reports done for the area (David Keith Todd Consulting Engineers, Inc. 1989; Water Research and Development, Inc. 1989).
- Determine what water rights were acquired, retained or severed in the 1989 and 1993 HJWA land acquisitions from the former Evans Ranch Inc. landowners. Follow up with the Evans Ranch Estate regarding a request to transfer existing water rights to CDFG. (The Evans Ranch water rights were originally scheduled to be transferred to Sierra County but had not occurred as of March 2009 [Thomas Archer, attorney at law, personal communication]).
- Conduct a hydrological assessment of the Wildlife Area. Document current and future stream flow needs in Long Valley Creek and its major tributaries, as well as assess the groundwater supply, quality and recharge capacity. The hydrological assessment should include GPS mapping of the ground water production and test wells and the active and historical surface water diversion points in and adjacent to the Wildlife Area. The hydrological assessment can be used to clearly define CDFG's water needs, quantity and timing as well as declare its intended use (i.e., restoration, fisheries enhancement, wildlife habitat enhancement, and livestock) and to declare minimum in-stream flow requirements.

- Prepare a drought contingency plan for management of the Wildlife Area. Evaluate how current and planned management activities may need to be adjusted and or adapted to contend with ecological conditions that result from climate change.
- Climate change effects and regional population growth suggest it would be prudent for HJWA managers to take all necessary steps to permanently secure and document present and future water supplies for the area. Such measures may need to extend beyond declaring minimum in-stream flows to exploring potential conservation easements or forbearance agreements with upstream water rights holders.

3. Cultural Resource Treatment Plan

HJWA is located in an area rich in historical and pre-historical resources. A comprehensive survey of the Wildlife Area is recommended to document resources. A "Cultural Resource Treatment Plan" should be prepared by a qualified archaeologist familiar with the resources and issues of this region of California. Such a plan will assist managers and staff in determining appropriate actions and mitigation for cultural resources on site as well as appropriate management activities. Part of the plan should include mapping known resources as part of the GIS system for the Wildlife Area.

4. Fire Management Plan

As described elsewhere in this LMP (IVE, 2), the HJWA is located in a region rated as moderate to high fire risk (CAL FIRE 2008), and has already been profoundly affected by fire. A Fire Management Plan should be prepared to ensure appropriate coordination with the local and regional fire management agencies, and to implement the polices outlined in the "Interim Joint Policy on Pre, During, and Post Fire Activities and Wildlife Habitat" (California State Board of Forestry and the California Fish and Game Commission 1994).

5. Fire Restoration and Monitoring Plan

The Balls Canyon Fire eliminated thousands of acres of sagebrush and bitterbrush habitat in the HJWA. Given the topography, climate regime and plant communities of HJWA, restoration of these habitats will require the long-term commitment of staff time and financial resources. Weed management and follow-up monitoring will be a critical component of the Restoration Plan. Implementation will likely require cooperative agreements with several other agencies and institution.

6. Range Management Plan

Preparation of a full-range management plan for the HJWA will require the services of a California-licensed Certified Rangeland Manager (CRM) per CCR Title 14 §1651 (Huff 2008). The baseline ecological data collected to prepare the LMP provides the critical background information for informing planning decisions regarding livestock management at the Wildlife Area. Next steps include integrating this volume of bio-geographical information with the preliminary range assessments done in 2007, and collecting and mapping additional information regarding water sources, pasture fencing and infrastructure. Many of the biological monitoring strategies described in Section 4 are applicable to range monitoring and may be integrated into the range management plan. A stand-alone range management plan will be an important resource for area managers and should be annually revised and updated according to management needs and monitoring data (Appendix H).

C. Funding Sources

1. Operations and Maintenance Budget

Current funding sources for the operation and maintenance of the HJWA are through CDFG's operating budget for the North Central Region. The annual grazing lease provides a minor budget augmentation that supports maintenance and habitat restoration activities. Sierra County recently contributed funds to assist with the Balls Canyon Fire Restoration effort. Implementation of the LMP will require additional funding and support.

2. Restoration, Enhancement and Capital Improvement Resources

Funding sources for habitat restoration, enhancement and capital improvements include, but are not limited to:

- California Endangered Species Tax Check-Off Fund
- CDFG Minor/Major Capital Outlay proposals
- Ducks Unlimited, Wetland Restoration Program
- Grant programs administered by the National Fish and Wildlife Foundation
- Grant programs administered by the U.S. Environmental Protection Agency
- Grant programs administered by the U.S. National Oceanic and Atmospheric Administration
- Grant programs administered by the Wildlife Conservation Board
- Neotropical Migratory Bird Conservation Act Grants Program
- North American Wetlands Conservation Act (NAWCA) funding
- Other programs authorized under future bond acts
- State Duck Stamp Program
- U. S. Department of the Interior's Healthy Lands Initiative
- U.S. Fish and Wildlife Service, Endangered Species Act, Section 6 provisions for cooperation with the states
- U.S. Fish and Wildlife Service, State Wildlife Grant Program, Federal Aid in Wildlife Restoration Program
- Upland Game Stamp Program

D. Operations and Maintenance Tasks

Operations and maintenance tasks are described earlier under the goals for each management element (IV) and summarized in Table V-c, below. Tasks are presented according to topical progressions and should not be construed as a prioritized list. Tasks associated with biological goals are largely restated and incorporated under biological monitoring tasks (IVC) and facility maintenance tasks (IVE). CDFG will prioritize implementation of the tasks based upon staffing availability, outside resources and financial constraints.

Table V-c. Summary of Staffing Required to Implement HJWA LMP

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
IVB: BIOLOGICAL ELEMENTS								
1. Loyalton-Truckee Mule Deer Element								
GOAL 1.1: Protect, restore and enhance habitat, and regulate hunting to support an optimal size of the Loyalton-Truckee mule deer herd.	TASK 1.1.1: Follow management recommendations provided in the Loyalton-Truckee Deer Herd Management Plan that apply to the HJWA.	I	I	I	-	-	-	P
	TASK 1.1.2: Monitor seasonal deer abundance, habitat use, and migration routes to inform deer herd management decisions (IVC, 1.2).	-	60	20	30	-	-	A
	TASK 1.1.3: Protect and enhance bitterbrush and mountain mahogany habitat, to maintain and improve deer foraging habitat.	-	I	I	-	-	40	A
	TASK 1.1.4: Protect, enhance, and restore riparian habitat to maintain and improve deer fawning habitat.	-	40	-	20	-	10	A
	TASK 1.1.5: Implement a grazing monitoring plan for the HJWA with special emphasis on assessing grazing effects on mule deer habitat (App. H).	-	24		40			A
	TASK 1.1.6: Manage invasive plant species such as cheatgrass (App. F) to maintain and improve deer foraging and cover habitat.	-	-	I	40	-	20	A
	TASK 1.1.7: Manage fuel loads to reduce potential for catastrophic fire events (IVE, 2), maintain and improve all deer habitats, and to prevent deer mortality caused by fire.	I	I	I	I	I	I	A
	TASK 1.1.8: Periodically evaluate the hunting program and regulations and recommend changes as warranted to maintain an optimal deer herd size (IVD, 2).	-	24	-	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK 1.1.9: Implement design features, standard management requirements, and best management practices (BMP) described in the HJWA LMP to manage potential grazing impacts to special-status species, mule deer, riparian and wetland vegetation types, aquatic ecosystems, and to mountain mahogany, bitterbrush, and other upland vegetation types.	-	I	I	-	-	-	P
2. Sagebrush Scrub Habitat Element								
GOAL 2.1: Maintain, enhance and restore habitat for special-status species that occur in sagebrush habitats within or adjacent to the Wildlife Area.	TASK 2.1.1: Conduct, support or encourage surveys for special-status species that have the potential to occur in sagebrush habitats within and adjacent to the Wildlife Area.	-	I	20	40	-	40	A
	TASK 2.1.2: Periodically monitor populations of special-status species to assess overall habitat integrity, to detect changes in species distribution and abundance, and to detect adverse effects of human use, erosion or non-native species.	-	I	20	40	-	-	P
	TASK 2.1 3: Conduct management activities and manage public uses, especially grazing and hunting activities, to minimize effects on areas known to be occupied by special-status species (e.g., western sage-grouse, burrowing owl, etc.).	-	10	I	-	20	-	P
	TASK 2.1.4: Ensure that all actions undertaken in the wildlife areas comply with the federal Endangered Species Act (ESA); California Endangered Species Act (CESA) including any applicable Habitat Conservation Plans (HCP) or Natural Community Conservation Plans (NCCP); Sections 401 and 404 of the Clean Water Act (CWA); Section 1602 of Fish and Game Code; and other applicable plans or regulations aimed at the protection of special-status species or their habitats.	I	20	20	-	-	-	P
GOAL 2.2: Prevent further loss of biological integrity within sagebrush scrub habitats in the Wildlife Area.	TASK 2.2.1: Manage invasive plant species such as cheatgrass to maintain and improve wildlife foraging and cover habitat (App. F).	-	10	10	-	-	-	P
	TASK 2.2.2: Prepare and implement a fire management plan that includes weed management, livestock grazing, and restoration planning in collaboration with University of Nevada, Reno (UNR), U.S. Forest Service (USFS), California Department of Forestry (CDF) and the Nevada Department of Wildlife (NDOW) (IVE, Appendices E and G).	16	-	40	-	-	-	A

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
3. Juniper Woodland Habitat Element								
GOAL 3.1: Maintain, enhance and restore habitat for special-status species that occur in juniper habitats within or adjacent to the Wildlife Area.	TASK 3.1.1: Conduct, support or encourage surveys for special-status species that have the potential to occur in juniper woodland habitats within and adjacent to the Wildlife Area (IVC).	-	40	-	-	-	-	P
	TASK 3.1.2: Map and protect Swainson's hawk nest trees from disturbance during the nesting season (April-August).	8	24	-	-	-	-	P
	TASK 3.1.3: Conduct baseline wildlife species surveys in juniper woodland habitat (IVC, 1).	-	24	-	-	-	-	P
	TASK 3.1.4: Periodically monitor understory plant diversity in the juniper woodland and take management actions as appropriate to maintain the greatest diversity.	-	16	-	-	-	-	P
	TASK 3.1.5: Monitor the extent and distribution of juniper woodland habitat on the Wildlife Area. Take actions as needed to optimize habitat for the Loyalton-Truckee deer herd and other wildlife species, including juniper removal.	-	8	-	-	-	-	P
4. Bitterbrush and Mountain Mahogany Scrub Habitat Element								
GOAL 4.1: Maintain, enhance and restore habitat for special-status species that occur in mountain mahogany habitats within or adjacent to the Wildlife Area.	TASK 4.1.1: Conduct surveys for special-status species that have the potential to occur in mountain mahogany habitats within and adjacent to the Wildlife Area (IVC, 1).	-	16	-	-	-	-	P
GOAL 4.2: Protect and enhance bitterbrush and mountain mahogany habitat.	TASK 4.2.1: Research existing literature addressing bitterbrush and mountain mahogany regeneration in order to understand and manage for the current lack of regeneration.	-	10	10	-	-	-	P
	TASK 4.2.2: Identify management practices that may enhance bitterbrush and mountain mahogany vegetation types in areas where they already exist.	-	I	I	-	-	-	P
	TASK 4.2.3: Conduct and support studies of bitterbrush and mountain mahogany regeneration and potential restoration or enhancement methods (IVC, 3).	-	I	I	-	-	-	P
	TASK 4.2.4: Identify opportunities for restoration or enhancement in areas that previously supported bitterbrush and mountain mahogany vegetation types but were modified due to fires or other disturbance; and assess physical, biological, and economic opportunities and constraints. Record all locations of these vegetation types in the CDFG GIS database.	-	40	I	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK 4.2.5: Develop plans and pursue funding for identified bitterbrush and mountain mahogany restoration or enhancement projects; include goals, techniques, costs, monitoring, an adaptive management process, and a schedule; and include the help of volunteers whenever practical.	-	10	10	-	-	-	P
	TASK 4.2.6: Implement restoration and enhancement projects (e.g., seeding, planting, soil amendments, watershed restoration) for the bitterbrush vegetation type and for the mountain mahogany vegetation type if effective restoration or enhancement methods are developed.	-	-	-	10	-	40	P
	TASK 4.2.7: Use local resources for seed collection and restoration. Establish an annual program to collect bitterbrush seed for deer habitat enhancement.	-	-	-	40	-	-	A
5. Jeffery Pine Habitat Element								
GOAL 5.1: Maintain, enhance and restore habitat for special-status species that occur in Jeffery pine habitats within or adjacent to the Wildlife Area	TASK 5.1.1: Conduct surveys for special-status species that have the potential to occur in Jeffery pine habitats within and adjacent to the Wildlife Area (IVC, 1).	-	8	-	-	-	-	P
	TASK 5.1.2: Monitor regeneration of upland forest that was burned in the Balls Canyon fire (IVE, 3). Enhance this forest with additional seeding or planting as needed.	-	-	I	10	-	-	P
	TASK 5.1.3: Prepare an approved timber harvest plan before any timber harvest.	-	I	I	I	-	-	P
	TASK 5.1.4: Ensure that all actions undertaken in the Wildlife Area comply with regulations and guidelines protecting unique or sensitive communities.	-	I	I	-	-	-	P
6. Riparian/Spring Habitat Element								
GOAL 6.1: Maintain, enhance and restore habitat for special-status species that occur in riparian habitats within or adjacent to the Wildlife Area.	TASK 6.1.1: Conduct surveys for special-status species that have the potential to occur in riparian habitats within and adjacent to the Wildlife Area (IVC, 1).	-	16	-	-	-	-	P
	TASK 6.1.2: Identify and protect essential habitat for the following special-status species known, or are highly likely, to occur in riparian/spring habitats within and adjacent to the Wildlife Area (IVC, 1):Bank swallow, willow flycatcher, yellow warbler, and pallid bat	8	I	-	-	-	-	P
	TASK 6.1.3: Periodically monitor populations of special-status species to assess overall habitat integrity, detect changes in distribution and abundance, and detect positive and adverse effects of management activities, human use, and/or non-native species (IVC, 1).	-	16	-	-	-	-	P
	TASK 6.1.4: Reassess and adapt management practices as needed to protect essential habitat	8	I	8	16	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	for special-status species.							
GOAL 6.2: Protect, enhance, and restore riparian and wetland vegetation types.	TASK 6.2.1: Review historic information on natural processes and conditions within the Long Valley and Balls Creek watershed and identify areas where natural functions have been lost or impaired (V, 3).	I	I	I	I	-	I	P
	TASK 6.2.2: Restore, protect, and enhance the hydrologic stability, floodplain functions, and ecological functions of Long Valley Creek and Balls Canyon Creek to enhance riparian habitat for special-status species dependent on these habitats (e.g. willow flycatcher, yellow warbler, and bat species).	I	I	I	I	-	I	P
	TASK 6.2.3: Inventory and map all springs on property. Incorporate data into GIS database for HJWA.	-	-	-	16	-	40	A
	TASK 6.2.4: Monitor existing fencing that excludes cattle from riparian areas. Maintain or add fencing as needed to protect important riparian areas from overgrazing, and to protect important ecosystems from cattle disturbance or pollution (App. H).	-	-	-	40	-	80	A
	TASK 6.2.5: Ensure that all projects proposed within the watersheds of HJWA provide protection measures for water quality (particularly erosion and sedimentation control measures), water quantity, stream buffers, and aquatic species.	-	I	I	-	-	-	P
	TASK 6.2.6: Before implementing any construction projects including soil disturbance greater than 1 acre (or less, depending on current State Water Resources Control Board (SWRCB) regulations), prepare a Storm Water Prevention Pollution Plan (SWPPP) that identifies BMPs that will be used to eliminate or minimize the potential for construction-related pollution to enter stream flows directly, or through stormwater runoff.	-	-	I	I	-	-	P
	TASK 6.2.7: Ensure that all actions undertaken in the wildlife areas comply with the ESA and CESA; Section 401 and 404 of the CWA; Section 1602 of Fish and Game Code; and other applicable regulations aimed at the protection of aquatic ecosystems.	-	I	20	I	-	-	P
	TASK 6.2.8: Establish cooperative agreements with neighbors, local and regional conservation groups, and resource agencies to enhance riparian and wetland habitats (IVC, 2).	16	-	-	-	-	-	P
	TASK 6.2.9: Evaluate opportunities, constraints, and potential restoration benefits to identify feasible watershed restoration projects that would support the goals of this LMP, including a review of existing documents and/or conducting additional assessments.	-	I	I	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
GOAL 6.3: Protect and manage riparian habitat for species abundance and richness.	TASK 6.3.1: Complete a wildlife species inventory.	8	80	-	-	-	40	P
	TASK 6.3.2: Conduct a breeding bird survey of riparian habitats to establish a baseline for species diversity (IVC, 1).	-	80	-	-	-	40	A
	TASK 6.3.3: Monitor the distribution and relative abundance of breeding riparian birds on an annual basis, as an indicator of diversity within riparian habitats on and adjacent to the Wildlife Area (IVC, 2).	-	I	-	-	-	80	A
7. Meadow Habitat Element								
GOAL 7.1: Identify and protect essential habitat for special-status species that occur in meadows within or adjacent to the Wildlife Area.	TASK 7.1.1: Conduct surveys for special-status species that have the potential to occur in meadow habitats within and adjacent to the Wildlife Area (IVC, 1).	8	I	-	-	-	40	P
	TASK 7.1.2: Map and protect habitat for special-status species that occur in meadow habitats.	-	8	-	-	-	-	P
GOAL 7.2: Restore and enhance meadow habitats that have been modified by fire or other disturbance.	TASK 7.2.1: Identify opportunities for restoration or enhancement in areas that previously supported grassland/meadow vegetation but were modified due to fires or other disturbance; and assess physical, biological, and economic opportunities and constraints. Record all locations of these vegetation types in the CDFG GIS database.	16	40	-	-	8	-	P
	TASK 7.2.2: Implement a grazing management plan for the HJWA with special emphasis on assessing grazing effects on meadows and mule deer habitat (App. H).	8	-	40	40	-	-	A
	TASK 7.2.3: Manage invasive plant species such as cheatgrass and pepperweed (see App. F), to maintain and improve deer foraging and cover habitat.	-	16	40	40	-	-	P
	TASK 7.2.4: Consult with USFWS and CDFG species experts before undertaking any management actions that could potentially affect special-status species or their habitats.	8	8	-	-	-	-	P
8. Recent Burns/Early Successional Habitats Element								
GOAL 8.1: Control and minimize the spread of non-native invasive plants.	TASK 8.1.1: Inventory and map distributions of invasive non-native plant populations and integrate data into the GIS database (IVC, 1).	-	8	-	80	-	40	A
	TASK 8.1.2: Implement the HJWA Weed Management Plan (App. F).	-	-	24	80	-	80	A
	TASK 8.1.3: Develop and implement enhancement strategies that use natural processes to improve habitat for special-status species.	-	I	I	40	-	100	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK **8.1.4:** Manage livestock during appropriate seasons and at an appropriate intensity to use grazing as a management tool for invasive plant species management (Appendices E and G).	-	I	I	-	-	-	P
GOAL 8.2: Promote restoration of fire-damaged wildlife habitat at the HJWA.	TASK 8.2.1: Develop and implement a habitat restoration plan to provide wildlife cover and forage (IVE, 2).	-	I	40	-	-	-	P
	TASK 8.2.2: Establish cooperative agreements with local and regional conservation groups, universities, and resource agencies to enhance wildlife habitat (IVG, 2).	16	-	-	-	-	-	P
	TASK 8.2.3: Identify and map active headcuts and erosion-prone areas and install erosion-control measures before the rainy season. Use only certified weed-free straw for erosion control.	-	-	24	-	-	40	P
	TASK 8.2.4: Conduct stormwater checks on erosion-control measures before and after rain events to monitor effectiveness.	-	-	-	24	-	-	P
	TASK 8.2.5: Pursue funding and develop plans for already identified restoration projects that include goals, techniques, costs, monitoring, an adaptive management process, and a schedule.	I	I	I	-	-	-	P
	TASK 8.2.6: Support and encourage the monitoring of baseline and post-restoration ecological conditions.	-	I	I	20	-	-	P
	TASK 8.2.7: Cooperate with the development and implementation of local and regional restoration plans from other agencies/programs that are consistent with the goals of this LMP (IVG, 2).	-	I	I	-	-	-	P
IVC: BIOLOGICAL MONITORING ELEMENTS								
1. Baseline Data Collection Element								
GOAL 1.1: Inventory resources within each habitat element and identify relationships between biological elements.	TASK 1.1.1: Set up permanent plots and conduct annual vegetation monitoring using CDFG accepted protocols.	-	40	-	-	-	40	A
	TASK 1.1.2: Set up permanent photo monitoring stations for annual documentation of habitat conditions.	-	I	-	-	-	-	A
	TASK 1.1.3: Conduct focused surveys for special-status species (flora and fauna) using accepted federal and states protocols, and submit occurrence data to the CNDDB.	-	40	-	-	-	-	P
	TASK 1.1.4: Conduct bat surveys (using Anabat software or similar tool) to determine species utilization of the HJWA.	-	24	-	-	-	-	P
	TASK 1.1.5: Conduct breeding bird surveys.	-	80	-	-	-	-	A

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK 1.1.6: Inventory and map distributions of invasive non-native plant populations and integrate data into the GIS database for HJWA.	-	40	-	40	-	-	P
GOAL 1.2: Collect additional baseline data related to the health and status of the Loyalton-Truckee mule deer herd.	TASK 1.2.1: Continue to collaborate with USFS, BLM and NDOW for monitoring mule deer habitat and annual surveys.	24	24	-	-	-	-	A
	TASK 1.2.2: Conduct deer composition counts in spring and fall. Use monitoring data to set and adjust harvest rates, timing, duration of hunts, and bag limits to achieve population objectives.	-	I	-	-	-	24	A
	TASK 1.2.3: Monitor winter survival of fawns to maintain an index of recruitment into the population.	-	I	-	-	-	-	A
	TASK 1.2.4: Monitor livestock grazing to minimize or eliminate detrimental impacts to mule deer habitats (App. H).	-	24	-	40	-	-	A
GOAL 1.3: Collect baseline data specific to the extent of the bitterbrush and mountain mahogany habitat.	TASK 1.3.1: Conduct focused surveys of bitterbrush to confirm and correct aerial mapping of habitat extent, using GPS. Incorporate data into GIS database as a separate layer for restoration planning.	-	16	-	-	-	-	P
	TASK 1.3.2: Conduct focused surveys for mountain mahogany and map using GPS. Incorporate data into GIS database as separate layer for restoration planning.	-	24	-	-	-	-	P
GOAL 1.4: Collect baseline data specific to the integrity of Jeffery pine habitats.	TASK 1.4.1: Survey and map unique habitat features such as downed wood, snags and rock outcrops. Incorporate these landscape features into the GIS database.	-	16	-	-	-	-	P
GOAL 1.5: Collect baseline data specific to the environmental health of wet habitats.	TASK 1.5.1: Using GPS map the locations of all springs and seeps at the HJWA and enter data into GIS database (see also IVB, Task 6.2.3).	-	-	-	-	-	40	P
	TASK 1.5.2: Inventory aquatic species, including fish and amphibians, to establish a baseline for species diversity monitoring. Conduct appropriately timed focused surveys in early spring and summer to document chorusing frogs, egg-masses, tadpoles, and juveniles. Document and map occurrences of special-status species and submit data to the CNDDB.	-	I	-	-	-	-	P
	TASK 1.5.3: Conduct baseline benthic macro invertebrate (BMI) sampling along creeks. Use CDFG's protocol for BMI surveys in low gradient streams (CDFG 2003).	-	16	-	-	-	-	A
	TASK 1.5.4: Conduct monthly surveys of wetland dependent birds for at least one full year to establish baseline for species diversity.	-	24	-	-	-	-	A

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
2. Long-term Monitoring Element								
GOAL 2.1: Establish long-term monitoring protocols for each biological element and resolve critical management uncertainties.	TASK 2.1.1: Establish cooperative agreements with local and regional conservation groups and resource agencies to enhance special-status species habitats and monitor regional special-status species populations.	16	-	-	-	-	-	A
	TASK 2.1.2: Monitor the distribution and relative abundance of breeding birds on an annual basis, using either area searches or point counts.	-	I	-	-	-	-	A
	TASK 2.1.3: Implement an annual monitoring and reporting program for other focal species, including mule deer, reptiles and amphibians, mammals and aquatic invertebrates (V, 6).	-	I	-	-	-	-	A
	TASK 2.1.4: Implement a grazing management and monitoring plan for the HJWA (App. H).	-	-	24	80	-	-	A
3. Regional Habitat Conservation Planning Element								
GOAL 3.1: Develop working relationships with regional associations with expertise in wildlife and native plants to assist with species counts and biological monitoring.								P
GOAL 3.2: Recruit researchers and educators at regional institutions to assist with the design and testing of long-term monitoring protocols, especially in the areas of fire restoration, grazing as a vegetation management tool, and climate change.								P
GOAL 3.3: Coordinate with regional conservation planning efforts for assistance with framing data collection and monitoring parameters from a larger landscape perspective.	TASK 3.3.1: Keep current on key habitat and species conservation planning efforts that address the biological management goals set forth in this LMP.	8	8	-	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
IVD: PUBLIC USE ELEMENTS								
1. Public Access Information and Education Element								
GOAL 1.1: Facilitate safe and authorized access to the Wildlife Area.	TASK 1.1.1: Post information at the entrance to the Wildlife Area about boundaries, access, use designations and restrictions, potential risks, and emergency contacts.	-	-	-	8	-	-	P
	TASK 1.1.2: Work with local, regional and state agencies to integrate the HJWA into emergency communications and response plans.	-	8	-	-	-	-	A
	TASK 1.1.3**:** Identify and clearly mark the boundaries of the Wildlife Area for the public through maps, property boundary signs, and signs locating the entry point.	-	-	-	8	-	40	P
	TASK 1.1.4: Consider developing trail routes in areas where public use is high or where needed to avoid sensitive areas.	8	-	8	-	-	-	P
	TASK 1.1.5: Continue to update information on CDFG's HJWA Web page and other published materials on the HJWA.	-	8	-	-	-	-	A
	TASK 1.1.6: Monitor the magnitude and type of illegal public use, such as off-road vehicle use or out of season hunting. Increase CDFG presence in wildlife areas, and increase the frequency of the assignment of penalties. Request assistance from the county sheriff as necessary to enforce laws.	-	-	-	-	100	-	A
GOAL 1.2: Educate the public about compatible uses of the Wildlife Area.	TASK 1.2.1: Add information to signage about the purposes of the Wildlife Area --protection of the long-term viability of the Loyalton-Truckee deer herd and compatible public uses--at unauthorized access points as well as at the entrance to the Wildlife Area.	-	-	I	-	-	-	P
	TASK 1.2.2: Add information to the HJWA Web page and to other published materials on the HJWA about the primary purpose of the Wildlife Area and compatible public uses.	-	I	I	-	-	-	P
	TASK 1.2.3: Provide an interpretive information bulletin board or kiosk at the entrance point to the HJWA where visitors can observe and learn about the natural history, cultural history, and restoration of compromised habitats.	-	I	I	I	-	-	P
	TASK 1.2.4: Hold periodic public information meetings to increase the awareness of visitors and potential visitors to the Great Basin region about HJWA, existing public use opportunities, regulations, and any particular management issues requiring focused attention.	I	I	I	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
GOAL 1.3: Enlist the support of user groups to assist as stewards of the area's resources.	TASK 1.3.1: Enlist the support of user groups in conducting annual inspections for signs of human disturbance, hosting "clean up days," and assisting with installing barriers to discourage access to closed zones and sensitive habitats.	-	I	I	-	-	-	P
	TASK 1.3.2: Enlist the support of user groups in restoring and monitoring ecosystems damaged by unauthorized uses, fires, flooding, and other conditions.	I	I	I	-	-	-	P
	TASK 1.3.3**:** Consider developing a docent program that draws on the expertise of user groups to educate the public about the ecology and natural history of the area, including the importance of the area to the Loyalton-Truckee deer herd.	-	8	-	-	-	-	P
GOAL 1.4: Work with adjacent landowners and holders of easements to develop strategies for reducing unauthorized access.	TASK 1.4.1: Assess where the Wildlife Area is experiencing the heaviest unauthorized access and illegal resource degradation.	-	-	I	40	-	-	P
	TASK 1.4.2: Coordinate with adjacent landowners to develop procedures for responding to unauthorized use and trespass. Work toward mutually agreeable strategies for reducing unauthorized access and resource degradation.	-	-	-	16	-	-	P
GOAL 1.5: Support use of the HJWA by Native Americans for cultural purposes and traditional activities such as gathering native plant materials.	TASK 1.5.1: Review access requests by Native Americans to the Wildlife Area by evaluating the purpose and need for access or collections according to applicable laws and treaties related to tribal use of state properties.	-	I	I	-	-	-	P
	TASK 1.5.2: Develop access plans and issue permits for Native Americans for cultural purposes and activities that are compatible with the HJWA goals. Permits should identify specific species, limitations, locations and seasons, and include standard liability clauses.	-	I	I	-	-	-	P
GOAL 1.6: Assess effectiveness of management practices in improving public understanding of the purposes of HJWA and decreasing illegal use.	TASK 1.6.1: Add to signage the name, phone number, email, and Web site address of a person the public may contact regarding questions, comments and suggestions about compatible uses at the HJWA, and develop a procedure for tracking and following up on these contacts.	-	8	-	-	-	-	P
	TASK 1.6.2: Develop pertinent recreation indicators for the HJWA and use them to evaluate and report use levels and to conduct periodic visitor interest and satisfaction surveys.	8	8	8	8	-	-	P
	TASK 1.6.3: Identify a regional resource for assisting area managers in establishing rapid assessments tools and procedures for gauging public use.	I	-	-	-	-	-	A

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK 1.6.4: Periodically review actual public use of the Wildlife Area and evaluate rules, regulations, guidelines and materials to ensure compatibility of public uses and consistency with HJWA goals.	-	I	I	-	-	-	P
2. Hunting Element								
GOAL 2.1: Provide a quality wildlife-dependent recreational experience using a renewable natural resource.	TASK 2.1.1: Inform the public of hunting times, locations and any special restrictions at the entrance to the Wildlife Area, on signage at strategic access points, and the CDFG Web site.	-	-	I	-	-	-	A
	TASK 2.1.2: Develop area maps identifying open and closed hunt areas.	-	-	-	16	-	-	A
	TASK 2.1.3: Coordinate and conduct a volunteer "clean-up day" in late summer to ready the Wildlife Area for the upcoming hunting season.	-	-	-	16	-	-	A
	TASK 2.1.4: Continue to maintain and develop relationships among CDFG staff, hunters and volunteer organizations to provide quality hunting experiences and to assist in maintaining the long-term viability of the herd.	-	I	-	-	-	-	P
GOAL 2.2: Promote hunter education and ethics through information and enforcement of hunting regulations and compliance with compatibility determinations.	TASK 2.2.1: Work with local hunting organizations to incorporate information about the HJWA into hunter safety courses and provide links to online information.	-	4	-	-	-	-	A
	TASK 2.2.2: Post information at the entry gate to the Wildlife Area on proper handling of deer and elk to prevent the spread of Chronic Wasting Disease.							A
	TASK 2.2.3: Post information on regional family events where adults participate together with children and youth in hunting experiences.							P
	TASK 2.2.4: Post information on available special hunts in the area for youth, women and people with disabilities.							P
3. Wildlife Viewing and Nature Observation Element								
GOAL 3.1: Improve safety and opportunities for wildlife viewing and nature observation at the HJWA.	TASK 3.1.1: Assess methods for improving low-impact access, such as the development of trails that avoid sensitive areas and installation of observation blinds at key points.	-	8	-	-	-	16	A
	TASK 3.1.2: Post interpretive information about the importance of the Loyalton-Truckee deer herd, its seasonal migrations and habitat needs, its use of the Wildlife Area as a winter range, and its status as a focal species indicating the environmental health of the area.	-	4	-	-	-	-	P
	TASK 3.1.3: Post information educating non-hunters about appropriate behavior and safety practices during hunting season.	-	-	-	-	-	2	P
	TASK 3.1.4: Post information at the entrance to	-	4	-	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	the Wildlife Area and on the CDFG Web site about permit opportunities for organized group access.							
GOAL 3.2: Establish a means of capturing and sharing observations made by visitors.	TASK 3.2.1: Maintain a current species list for the HJWA and provide this information to the public at Fish and Game offices.	-	8	-	-	-	-	P
	TASK 3.2.2: Explore options for integrating visitor observations (including photographs) into baseline data collection efforts, monitoring and research.	-	4	-	-	-	-	P
GOAL 3.3: Support the use of HJWA for developing environmental literacy.	TASK 3.3.1: Provide staff assistance, interpretive materials, and permits for environmental education activities.	-	I	10	20	-	-	P
	TASK 3.3.2: Encourage all environmental education and natural resource interpretation (informal education) users to incorporate state guidelines for natural resource education in their field activities, curricula, and interpretive programs, both on- and off-site. For example, incorporate GLOBE program standards for the scientifically valid atmospheric, hydrologic soils, and land cover/phenology measurements into public research and education standards.	-	I	I	-	-	-	P
4. Scientific Research Element								
GOAL 4.1: Develop a process for coordinating, capturing and sharing research related to the HJWA.	TASK 4.1.1: Post notices regarding procedures and contact information for obtaining research permits on the HJWA on the CDFG Web site.	-	I	-	-	-	-	p
	TASK 4.1.2: Establish protocol guidelines for use by researchers and field technicians, including integration of research into CDFG-preferred databases.	I	I	-	-	-	-	P
	TASK 4.1.3: Identify and participate in regional advisory groups related to Great Basin ecosystems.	8	8	-	-	-	-	P
GOAL 4.2: Provide opportunities for scientific research that will support adaptive management of the HJWA and provide useful biological information to land managers.	TASK 4.2.1: Establish working relationships with UNR, Eagle Lake Field Station, and other regional research institutions for engaging in on-site data collection, information sharing and longitudinal studies.	-	I	-	-	-	-	P
	TASK 4.2.2: Support the use of HJWA for research efforts related to protecting and enhancing riparian corridors and bitterbrush stands, and restoring areas impacted by wildfires and previous land management practices.	-	I	-	-	-	-	P
	TASK 4.2.3: Identify and assess experimental design opportunities (including remote sensing and telemetry) that could be incorporated into habitat and species management, restoration, and/or reintroduction projects at the HJWA.	-	8	-	-	-	-	P
	TASK 4.2.4: Explore options for integrating the observations of organized groups into baseline data collection efforts, monitoring and research.	-	I	-	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK 4.2.5: Consider developing or participating in a tiered research and career development program involving universities, community colleges and public school programs.							P
IVE: FACILITY MAINTENANCE ELEMENTS								
1. Health and Safety Element								
GOAL 1.1: Provide a safe environment for wildlife and for public use.	TASK 1.1.1: Establish an annual monitoring and reporting program of wildlife area facilities (e.g., condition of signs, structures, etc.).	-	-	I	I	-	-	A
	TASK 1.1.2: Fix or replace facilities as needed, and adapt facility management approach, based on the results of the annual monitoring program.	-	-	20	20	-	100	A
	TASK 1.1.3: Ensure that facilities maintenance actions comply with the ESA, CESA and other regulations aimed at the protection of special-status species and/or sensitive habitats.	-	I	-	-	-	-	P
	TASK 1.1.4: Document facility needs in CDFG's maintenance and capital outlay database (IVG).	I	-	20	-	-	-	A
GOAL 1.2: Discourage destructive and illegal public use of wildlife areas through enforcement of regulations.	TASK 1.2.1: Monitor the magnitude and type of illegal public use (e.g., off-road vehicle use, out of season hunting). Increase CDFG presence in wildlife areas, and increase frequency of assign-ment of penalties. Request assistance from the county sheriff as necessary to enforce laws (IVD).	-	I	-	-	-	-	P
2. Fire Management Element								
GOAL 2.1: Manage the Wildlife Area to optimize wildlife habitat conditions while protecting people and property.	TASK 2.1.1: Develop and implement a Wildfire Management Plan for the HJWA. The management plan should coordinate with local and regional fire management agencies and implement the policies outlined in the "Interim Joint Policy on Pre, During and Post Fire Activities and Wildlife Habitat" (California State Board of Forestry and California Fish and Game Commission 1994). Coordinate with battalion chief of TNF Carson Ranger District to obtain and review copies of local incident command procedures and agreements applicable to fire suppression at the HJWA. Determine how CDFG could aid appropriate fire suppression responses (e.g., installing locator signs within the wildlife areas for fire-fighting personnel).	-	-	I	I	-	-	A
	TASK 2.1.2: Train the Wildlife Area Manager to serve the role of Resource Specialist or Agency Representative through the Incident Command System (ICS). As part of the ICS, make a department representative available (Wildlife Area Manager or another local plant, wildlife, and fisheries specialist) to provide advice during fires that threaten habitat at HJWA.	16	16	-	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK 2.1.3: Coordinate and meet annually with local fire agencies to develop and update wildfire response procedures including vegetation management, recent fire events, and contact information.	8	-	8	-	-	-	A
	TASK 2.1.4: Identify water sources that could be used strictly for emergency purposes that would save lives and property. Install an auxiliary water tank and pump if necessary.	-	-	-	16	-	-	P
	TASK 2.1.5: Install fire extinguishers and smoke alarms in all structures at the HJWA and train staff on proper use of extinguishers.	-	-	I	I	-	-	A
	TASK 2.1.6: Design and implement vegetation management strategies, including: Establishing firebreaks along existing roads, parking lots, and existing structures. Using livestock grazing as appropriate to manage fuel load. Maintaining at least 100 feet of defensible space between structures and flammable vegetation. Storing woodpiles and other flammable materials away from structures.	-	-	I	I	-	I	A
	TASK 2.1.7: Identify and implement project-specific BMPs to minimize fire hazards during any management activities that require the use of mechanical equipment.	-	-	I	-	-	-	P
GOAL 2.2: Coordinate with other resource agencies to promote healthy ecosystems at HJWA and vicinity.	TASK 2.2.1: Review existing TNF and BLM fire suppression procedures to identify fire suppression tactics that could have long-term effects on ecosystems. Recommend avoidance or modification of those tactics whenever feasible in order to avoid or minimize long-term effects on the ecosystems of the HJWA.	-	I	-	-	-	-	P
	TASK 2.2.2: Review and comment on any proposed fuels or fire management projects for the HJWA or the surrounding TNF or BLM lands to ensure consistency with CDFG goals, such as protection of natural resources.	I	I	10	-	-	-	P
3. Vegetation Management and Grazing Element								
GOAL 3.1: Restore, to the greatest extent possible, fire-damaged habitats.	TASK 3.1.1: Develop a Habitat Restoration and Monitoring Plan for the Balls Canyon Fire area in consultation with experts from UNR.	8	24	24	-	-	-	P
	TASK 3.1.2: Establish cooperative agreements with SVRCD, UNR, USFS, BLM and other agencies to assist with securing funding, implementing, and monitoring for the Balls Canyon Fire Restoration Plan.	I	I	-	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK 3.1.3: Develop maps identifying critical areas where emergency revegetation or mechanical or structural measures may be necessary to prevent excessive erosion or flooding post-fire. Implement such measures as appropriate, following fire or fire suppression.	-	-	10	-	-	-	P
	TASK 3.1.4: Develop maps identifying areas of sensitive resources that may require specific management actions for appropriate prescribed burning activities (e.g., season-specific burning of invasive plant species).	-	-	I	-	-	-	P
	TASK 3.1.5: Implement tasks described in the Biological Elements and weed management plan (App. F) to manage the introduction and spread of invasive plant species that may increase fire hazards (e.g., cheatgrass, perennial pepperweed).	-	-	I	60	-	60	P
GOAL 3.2: Control invasive plants, and promote native plant restoration and healthy ecological functions.	TASK 3.2.1: Implement and monitor the effectiveness of the HJWA Weed Management Plan (App. F)	-	I	I	I	-	-	A
	TASK 3.2.2: Implement and monitor the grazing management plan for HJWA (App. H)	-	I	I	I	-	-	A
GOAL 3.3: Provide opportunities for range management research and education.	TASK 3.3.1: Work with grazing lessee to design and implement a grazing management and monitoring plan that meets CDFG habitat management goals, and considers the economic goals of the cattle operator (App. H).	I	I	I	I	-	-	A
	TASK 3.3.2: Continue to work with SVRCD for oversight of the grazing lease.	I	I	I	I	-	-	A
	TASK 3.3.3: Consider an MOU with UC Cooperative Extension for use of facilities for student agricultural research projects.							
4. Vector Control Element								
GOAL 4.1: Maintain or enhance habitat values for waterfowl and other wildlife while protecting humans, domestic animals and wildlife from vector-borne diseases such as West Nile virus, and EBA; and minimize financial costs to CDFG.	TASK 4.1.1: As needed, implement a mosquito control plan that applies the BMPs identified in CDFG's "Technical Guide to Best Management Practices for Mosquito Control in Managed Wetlands".							P
	TASK 4.1.2: Post tick identification and Lyme disease prevention signs at public access points to the Wildlife Area.							A
	TASK 4.1.3: Support academic research efforts to identify and control EBA and other diseases that could affect wild ungulates and livestock.							P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
5. Water Management Element								
GOAL 5.1: Maintain and enhance the variety and diversity of riparian and wet meadow habitats at the HJWA for optimal wildlife habitat.	TASK 5.1.1: Coordinate with neighbors to develop water for wildlife (guzzlers and troughs) outside the riparian corridors.	-	-	I	I	-	-	P
	TASK 5.1.2: Install water guzzlers for enhancement of wildlife habitat, making sure some water is available at ground level for smaller species. Ensure that each water source has protective measures in place to prevent the accidental drowning of small wildlife.	-	-	I	I	-	I	P
	TASK 5.1.3: Use GPS to map the location and types of all wells and other water sources and include the data in the GIS database.	-	-	-	I	-	I	A
	TASK 5.1.4: Research and obtain additional water rights for riparian habitat restoration efforts (V3).	I	-	-	-	-	-	P
6. Access Roads, Parking and Trails Element								
GOAL 6.1: Maintain safe roads for department and public use, and emergency access.	TASK 6.1.1: Inventory existing roads to evaluate whether they provide sufficient access for management needs; identify erosion and sedimentation problems, and road hazards.	-	-	I	I	-	-	P
	TASK 6.1.2: Evaluate alternative road crossings for Long Valley Creek to minimize erosion and sedimentation.	-	-	I	I	-	-	P
	TASK 6.1.3: Ensure that planned measures to improve access across creeks and streams are properly permitted.	-	-	I	-	-	-	P
	TASK 6.1.4: Stabilize the Long Valley Creek crossing using accepted BMPs.	-	-	24	40	-	40	P
	TASK 6.1.5: Where feasible, install physical barriers (e.g., boulders) at points frequently used to illegally access or traverse department property. Select barriers that are consistent with the rural character of the region and the aesthetics of the natural environment in the Wildlife Area.	-	-	-	20	-	20	P
GOAL 6.2: Provide manageable public parking areas and prevent unauthorized use.	TASK 6.2.1: Clearly identify the public parking facility, inside the main access gate.	-	-	I	I	-	-	A
7. Signage, Fencing and Gates Element								
GOAL 7.1: Add, improve, and maintain existing structures and signs for resource protection, education, safety,	TASK 7.1.1: Inform users of the location and boundaries of HJWA by providing locator signs and property boundary signs at major access points.	-	-	I	20	-	-	P
	TASK 7.1.2: Inform users regarding compatible public uses of HJWA by providing bulletin boards at the formal entrance to the Wildlife Area (IVD).	-	-	I	I	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
and appropriate public use of the wildlife areas.	TASK 7.1.3: Select signage locations and styles that are consistent with the rural character of the region and the aesthetics of the natural environment in the Wildlife Area.	-	-	I	I	-	-	P
	TASK 7.1.4: Annually survey existing fencing and gates and repair where necessary.	-	-	-	I	-	I	A
	TASK 7.1.5: Identify and remove obsolete internal fencing materials.	-	-	-	I	-	I	P
	TASK 7.1.6: Annually inventory existing boundary signage, and install new signs where necessary.	-	-	-	I	-	I	A
	TASK 7.1.7: Install a kiosk or bulletin board with wildlife area maps and Title 14 regulations, safety information, and interpretive material at appropriate public access points (IVD).	-	-	16	I	-	I	P
	TASK 7.1.8: Implement a grazing management plan that includes pasture rotation and exclusionary fencing to protect riparian and wetland resources (App. H).							A
	TASK 7.1.9: Regularly inspect deer fencing and work with CalTrans to make repairs as needed.	-	-	-	I	-	I	P
	TASK 7.1.10: Repair headcuts and gullies that provide passage for deer under the deer-proof fence. Incorporate passageways for smaller animals that are not large enough for deer.	-	-	-	I	-	I	P
	TASK 7.1.11: Work with neighbors to maintain fencing to prevent livestock from trespassing onto the Wildlife Area.	-	-	I	I	-	I	P
	TASK 7.1.12: Investigate the need for a double-width cattle guard at the main entrance gate to preclude deer accessing the highway when the gate is left open or damaged.	I	I	I	I	-	-	P
8. Structures Element								
GOAL 8.1: Optimize the use of the existing structures at the HJWA.	TASK 8.1.1: Regularly inspect and maintain the residences, office, storage buildings, sheds, and related structures in optimum working condition to optimize the efficient use of the operating budget, and to ensure the health, safety, and reasonable accommodation of department staff and others using the site.	I	I	I	I	-	I	A
	TASK 8.1.2: Identify and prioritize specific facility needs to carry out research, monitoring and education goals for the HJWA.	I	I	I	I	-	I	P
	TASK 8.1.3: Review historical structures on property as discussed in the Cultural Resource Element (IVF).	-	-	I	I	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
9. Equipment Element								
GOAL 9.1: Maintain all equipment, vehicles, and facilities in optimum working condition to maximize the efficient use of the wildlife area's operating budget.	TASK 9.1.1: Regularly inspect and service all heavy equipment and vehicles.	-	-	-	I	-	-	P
	TASK 9.1.2: Regularly inspect and maintain fuel tanks to comply with state and federal laws.	-	-	-	I	-	-	P
	TASK 9.1.3: Establish and maintain cooperative agreements with CalTrans, SVRCD, USFS and BLM to provide and operate equipment needed to maintain grounds and facilities at HJWA.	I	I	I	I	-	-	A
GOAL 9.2: Monitor weather conditions that may affect management of the Wildlife Area.	TASK 9.2.1: Assess the feasibility of installing a weather station at the HJWA office and coordinate data sharing with the National Weather Service Forecast Office in Reno and UNR.	-	-	4	-	-	-	P
IVF: CULTURAL RESOURCE ELEMENTS								
1. Cultural Resource Protection Element								
GOAL 1.1: To the extent feasible, preserve and catalog all cultural resources that have yielded or have the potential to yield information important to the prehistory or history of the HJWA, and the region that otherwise would meet significance criteria according to the California Register of Historical Resources.	TASK 1.1.1: Complete and submit existing site records for the newly identified archaeological sites to the State Historic Preservation Officer to establish eligibility, and submit any culturally significant resources that may be eligible for inclusion in the National Register of Historic Places (NRHP) or the CRHR.	-	-	16	-	-	-	P
	TASK 1.1.2: Complete a comprehensive cultural resources survey of the property. Approximately 20% of the Hallelujah Junction Wildlife Area has been surveyed to date. Identify areas that have not yet been surveyed for cultural resources. In general, cultural surveys that are more than five years old should be re-conducted. In part, this is to monitor the condition of known archaeological resources, as well to identify any previously unrecognized sites.	-	I	I	-	-	-	P
	TASK 1.1.3: Create a detailed, comprehensive map of known archaeological resources for management purposes.	-	-	I	-	-	-	P
	TASK 1.1.4: Treat all sites, until further evaluation occurs, as potentially important. Public use areas should avoid important archaeological sites.	-	I	I	-	-	-	P
	TASK 1.1.5: Make determinations of eligibility (formal resource evaluation), using criteria set forth by the CRHR or the NRHP, of all identified cultural resources.	-	I	-	-	-	-	P

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
	TASK 1.1.6: Conduct cultural resource surveys before ground-disturbing activities (e.g., any new construction, road grading, or extensive ecological restoration). If necessary, conduct pre-construction archaeological testing and data recovery if resources are discovered. Prepare an "inadvertent discovery plan" to be utilized during implementation of any project involving ground disturbance.	-	I	-	-	-	-	P
	TASK 1.1.7: When facility improvements or restoration efforts are proposed that may affect significant cultural resources, consult the CEQA guidelines and/or Section 106 of the National Historic Preservation Act (if there is federal involvement) for guidance on compliance with regulations.	-	I	-	-	-	-	P
	TASK 1.1.8: Support research efforts to document the history of human activities at HJWA	-	-	I	-	-	-	P
	TASK 1.1.9: As funding allows, prepare a Cultural Resources Treatment Plan that can be used to predict where buried properties are likely concentrated, and provide a uniform approach to archaeological monitoring, test excavation, and data recovery, as well as providing an overarching management guideline.	-	I	-	-	-	-	P
	TASK 1.1.10: Develop an interpretive plan for the area.	-	24	-	-	-	-	P
2. Native American Access Element								
GOAL 2.1: Support use of the HJWA by Native Americans for traditional activities, such as gathering native plant materials for cultural purposes.	TASK 2.1.1: Contact appropriate local Native American representatives to determine if there are any traditional cultural properties located within the Hallelujah Junction Wildlife area.	I	-	-	-	-	-	P
	TASK 2.1.2: Work with native peoples who request access for traditional activities to determine the purpose of and need for access and/or collections within the HJWA.	I	-	-	-	-	-	P
	TASK 2.1.3: Develop access plans, including standard liability clauses, for issuing permits to Native peoples whose activities are compatible with the goals of this plan	I	-	-	-	-	-	P
	TASK 2.1.4: Allow limited gathering of materials for ceremonial, educational and craft purposes by native people.	I	-	-	-	-	-	P
IVG: ADMINISTRATION ELEMENTS								
1. Record-Keeping Element								
GOAL 1.1: Maintain existing data and agreements	TASK 1.1.1: Maintain accurate financial records regarding expenditures, staff, maintenance, funding, and other administrative duties. Provide training as needed to implement this task.	-	20	40	-	-	-	A

GOALS	TASKS	ANNUAL STAFF HOURS						FREQ
		AWB	BIO	WHS	WHA	FGW	SA	
concerning the management and resources of the Wildlife Area.	TASK 1.1.2: Administer the renewal, modification, and termination of grazing allotments and timber sales, as necessary.	-	I	I	-	-	-	P
	TASK 1.1.3: Maintain cooperative agreement with SVRCD for oversight of grazing leases.	I	I	I	-	-	-	A
	TASK 1.1.4: Store cultural resource data in a secured area and restrict public access.	I	-	I	-	-	-	A
	TASK 1.1.5: Regularly update GIS data sources as information becomes available.	-	30	I	20	-	-	A
	TASK 1.1.6: Document facilities need in a CDFG maintenance and capital outlay database.	-	-	I	-	-	-	A
	TASK 1.1.7: Prepare annual monitoring and periodic status reports as defined in V.	-	I	I	-	-	-	A
	TASK 1.1.8. Actively pursue funding to help facilitate implementation of the LMP.	I	I	I	-	-	-	P
2. Resource Coordination Element								
GOAL 2.1: Establish and maintain positive relationships with neighbors, lessees and user groups to address wildlife area management issues.	TASK 2.1.1: Meet or correspond with local landowners and user groups as needed to maintain communication about the management activities at HJWA.	I	I	I	-	-	-	P
	TASK 2.1.2: Promote educational opportunities, recruit volunteers and foster a sense of stewardship regarding the area.	-	I	-	-	-	-	P
GOAL 2.2: Develop regular communication procedures with federal, state and local agencies regarding plans and projects that may affect habitats at HJWA.		I	-	-	-	-	-	P
TOTALS*		**224**	**1300**	**550**	**1000**	**200**	**1200**	

* Total hours shown for the tasks do not match totals at bottom because some tasks are duplicated or included with others.

KEY TO TABLE V-c

I = Included in hours for another closely related task A = Annually P = Periodically

AWB = Associate Wildlife Biologist — responsible for overall site management, administration, and coordination with other agencies and groups

BIO = Biologist — responsible for planning and directing wildlife species monitoring activities, habitat management, and management coordination

WHS = Wildlife Habitat Supervisor — implementation of wildlife habitat management activities, development of survey methods, and ability to identify plants and wildlife in the field

WHA = Wildlife Habitat Assistant — responsible for tasks such as operation and maintenance of equipment, weed control, facilities maintenance, monitoring and maintenance

FGW = Fish And Game Warden — responsible for law enforcement

SA = Seasonal Aides/Scientific Aides — responsible for executing routine operations and maintenance tasks under supervision of permanent personnel

E. Future Revisions to This Plan

The HJWA Land Management Plan reflects the best information available at this time; however, the information within will eventually become outdated and new information and ecological management techniques will be available and standardized. New information may include:

- Documented threats to biotic communities, habitats or wildlife species.
- Feedback generated by monitoring management activities (adaptive management).
- Scientific research that directs improved management techniques.
- New legislative or policy direction.

Implementation of a successful adaptive management plan requires a periodic reassessment of identified tasks and goals (to ensure that the overall goals are being met) and an integration of new techniques and scientific information. Unfortunately, this aspect of adaptive management is often neglected because it seems too involved, too cumbersome or too expensive. To address this problem, this section presents a hierarchy of revision procedures based upon the magnitude of the change: minor or major.

If the appropriate procedure for a proposed revision is not apparent, the regional manager (in consultation with CDFG's Lands Program) will determine which to use. Both minor and major revisions to the LMP will require appropriate consultation within the North Central Region and the Lands Program, coordination and consultation with other agencies, and an appropriate level of public outreach.

Minor Revisions

Minor LMP revisions may include the addition of new property to the Wildlife Area, the adoption of limited changes to the goals and tasks as a result of adaptive management, new scientific information or minor policy or legislative changes. The following revisions qualify as minor:

- The revision(s) does not affect the overall purposes of the LMP.
- The revision(s) does not physically alter the environment beyond what has already been evaluated in the current LMP; therefore, it does not require additional CEQA analysis.

Minor revisions to the LMP may be prepared by wildlife area staff or by using other CDFG departmental resources. The regional manager must approve these revisions.

Major Revisions or New Comprehensive Management Plan

New policy directions or management plans will require procedures comparable to the initial LMP planning process, and proportionate to the level of policy change that is proposed. The following revisions are categorized as major:

- Revision(s) that could substantially change the LMP.
- Revisions that propose a completely new LMP.
- Revisions that physically alter the environment of the Wildlife Area beyond what was analyzed in the current LMP.
- Management actions that require additional CEQA documentation or environmental permits and approvals.

A major revision or a new plan requires the recommendation of the regional manager, and may be prepared using available departmental resources. The director of the department must approve major revisions.

Recommended Five-Year Review

As part of the adaptive management planning cycle, a complete review of the achievements of the goals of the LMP should be prepared every five years following the date of adoption of the LMP or subsequent revisions. A status report documenting this review should, at minimum, include:

- Evaluation of the achievement of the purposes and goals of this LMP.
- Evaluation of the completion or annual completion, as appropriate, of each task contained in this LMP and those that may be added between each review period.
- Fiscal evaluation of the program.
- Evaluation of the effectiveness of CDFG's coordination efforts with local governments, and other property management and regulatory agencies involved in the HJWA.
- Development of important new scientific information that has bearing on the management of the Wildlife Area.
- Recommendations for revisions to incorporate new information into the LMP and improve its effectiveness.

The status report should be prepared or coordinated by the area manager. It should be submitted to North Central Region for review and comment, approved by the regional manager, and submitted to the director of the California Department of Fish and Game. This report should serve as a basis for appropriate adjustments to ongoing management practices and for revisions of the Hallelujah Junction Wildlife Area land management plan.

VII. DOCUMENT PREPARATION

VII. DOCUMENT PREPARATION

Preparation of an adaptive management plan such as this LMP is an exercise in collaboration and teamwork and would not have been possible without the contributions of the following people and organizations.

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VI. REFERENCES

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By Chapters

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APPENDIX A

Easements

Hallelujah Junction Wildlife Area

APPENDIX A
Easements | Hallelujah Junction Wildlife Area

Number	Acquisition	Grantee	Category	Easement	Date Recorded	Recorded	County	Township	Range	Section (s)	Portion	Source Document	Comments
13	Original Acquisition	State of California	Fishing	Right of the people to fish	2/2/50	Book 58; Page 127	Lassen	22N	17E	36	All	Schedule B	Per CA Constitution Sect. 25 Article I
59	Expansion 3	State of California	Fishing	Right of the people to fish	10/26/62	Book 33; Page 203	Sierra	21N	17E	16	All	Schedule B	Per CA Constitution Sect. 25 Article I; Executed to Tahoe Timber Company
78	Expansion 5	State of California	Ingress-Egress	Moving livestock across and beneath freeway at cattle pass structure and bridge	12/5/73	Book 59; Page 600	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4
77	Expansion 5	State of California	Ingress-Egress	Relinquishment of abutter's rights to adjoining highway	12/5/73	Book 59; Page 600	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4
82	Expansion 5	Edmond T. Allen III	Ingress-Egress	Access, grazing rights, miscellaneous purposes	10/25/82	Book 98; Page 151	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Affects Parcel No. 4; Refer to instrument for particulars
52	Expansion 1	Evans Ranch Associates	Ingress-Egress	50 ft access and appurtenances	12/12/82	Book 411; Page 346	Lassen	22N	17E	26	NW1/4	Schedule B	Evans Ranch, Inc.
14	Original Acquisition	Evans Ranch Associates	Ingress-Egress	50 ft strip of land for access	12/13/82	Book 411; Page 346	Lassen	22N	17E	26	Portion	Schedule B	
53	Expansion 1	Northern Nevada Land Co.; J. Mathewson and J. Claser	Ingress-Egress	Ingress-eggress and appurtenances	12/6/85	Book 452; Page 20	Lassen	22N	17E	26	Portion	Schedule B	Evans Ranch, Inc.
54	Expansion 1	Northern Nevada Land Co.; J. Mathewson and J. Claser	Ingress-Egress	Ingress-eggress and appurtenances	12/6/85	Book 452; Page 20	Lassen	22N	18E	31	Portion	Schedule B	Evans Ranch, Inc.
15	Original Acquisition	Northern Nevada Land Co.; J. Mathewson and J. Claser	Ingress-Egress	50 ft strip of land for ingress and egress	12/8/85	Book 452; Page 20							
24	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	200 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 504	Lassen	22N	17E	26, 35, 36	S1/2 of SE1/4 of 26; E1/2 of NE1/4 of 35; W1/2 of 36	Exhibit "A"	Parcel 1 associated with water export project
38	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	100 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 521	Sierra	21N	17E	1	SW1/4	Exhibit "A"	Parcel 12 associated with water export project
25	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	200 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 505	Sierra	21N	17E	1,12	S1/2 of SE1/4 of 26; E1/2 of NE1/4 of 35; W1/2 of 36	Exhibit "A"	Parcel 2 associated with water export project
28	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	60 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 508	Lassen	22N	17E	26,35	Portions	Exhibit "A"	Parcel 2 associated with water export project
29	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	100 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 510	Sierra	21N	17E	1,2,12	Portions	Exhibit "A"	Parcel 3 associated with water export project
30	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	100 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 511	Sierra	21N	17E	1,2,10,11	Portions	Exhibit "A"	Parcel 4 associated with water export project
31	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	60 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 514	Sierra	21N	17E	10,11	Portions	Exhibit "A"	Parcel 5 associated with water export project
32	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	60 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 515	Sierra	21N	17E	1	Portions	Exhibit "A"	Parcel 6 associated with water export project
33	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	60 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 516	Sierra	21N	17E	12	NE1/4	Exhibit "A"	Parcel 7 associated with water export project
26	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	60 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 506	Sierra	21N	17E	1,2,12	Portions	Exhibit "A"	Parcel A associated with water export project
27	Original Acquisition	Evans Ranch, Inc.	Ingress-Egress	60 ft strip of land for service road and utility lines	5/31/89	Book 505; Page 507	Sierra	21N	17E	1,2,12	Portions	Exhibit "A"	Parcel B associated with water export project
55	Expansion 1	State of California	Ingress-Egress	Ingress-eggress and appurtenances	5/31/89	Book 505; Page 499	Lassen	22N	17E	26	Portion	Schedule B	Evans Ranch, Inc.
56	Expansion 1	Alexander E. Jackowiak and Geraldine Viehover	Ingress-Egress	25 ft strip for ingress-egress	1/28/93	Book 568; Page 789	Lassen	22N	17E	30	Portion	Schedule B	Evans Ranch, Inc.

APPENDIX A
Easements | Hallelujah Junction Wildlife Area

Number	Acquisition	Grantee	Category	Easement	Date Recorded	Recorded	County	Township	Range	Section (s)	Portion	Source Document	Comments
88	Expansion 5	Sierra Pacific Power Company	Ingress-Egress	Access and appurtenances	2/18/99	Book 132; Page 496	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 2
44	Expansion 1	Edith M. Evans	Minerals	All coal and other minerals; prospect	7/13/28	Book L of Patents; Page 335	Lassen	22N	17E	35	NW1/4 of NW1/4	Exhibit "A"	Evans Ranch, Inc.
17	Original Acquisition	Edith M. Evans	Minerals	All coal and other minerals; prospect	7/13/28	Book L of Patents; Page 335	Lassen	22N	17E	35	NE1/4 of NE1/4; N1/2 of NW1/4	Schedule C	
103	Expansion 6	Wilmer Fenton Pabst	Minerals	All Coal and other minerals; prospect	11/10/28	Book L; Page 377	Lassen	22N	17E	27	SE1/4 of NW /4; SW1/4 OF NE1/4;W1/2 OF SE1/4; S1/2 OF SW1/4	Schedule B	Evans Ranch Associates
40	Expansion 1	Wilmer Fenton Pabst	Minerals	All Coal and other minerals; prospect	11/10/38	Book L of Patants; Page 377	Lassen	22N	17E	28	E1/2 of NE 1/4	Exhibit "A"	Evans Ranch, Inc.; Evidence suggests was recorded in 1928
18	Original Acquisition	Edith M. Evans	Minerals	All coal and other minerals; prospect	2/2/50	Book 58; Page 127	Lassen	22N	17E	36	All	Schedule C	
58	Expansion 3	State of California	Minerals	Oil, gas, other minerals; prospect	10/26/62	Book 33; Page 203	Sierra	21N	17E	16	All	Grant Deed; Schedule C	Executed to Tahoe Timber Company
41	Expansion 1	Gotthard Diethelm	Minerals	All Coal and other minerals; prospect	1/7/77	Book 311; Page 246	Lassen	22N	17E	33	NE1/4	Exhibit "A"	Evans Ranch, Inc.
43	Expansion 1	Gotthard Diethelm	Minerals	All Coal and other minerals; prospect	1/7/77	Book 311; Page 246	Lassen	22N	17E	34	W1/2 of NW1/4; SW1/4; S1/2 of SE1/4	Exhibit "A"	Evans Ranch, Inc.
42	Expansion 1	Gotthard Diethelm	Minerals	1/16 of all coal, oil, gas, other minerals	1/7/77	Book 311; Page 248	Lassen	22N	17E	34	NW1/4 of SE1/4	Exhibit "A"	Evans Ranch, Inc.
19	Original Acquisition	Evans Ranch, Inc.	Minerals	All coal and other minerals; prospect	1/19/89	Book 505; Page 503	Sierra	21N	17E	1	All		
60	Expansion 4	Sario Livestock Company	Minerals	50% of mineral rights; ingress, egress	5/30/89	Book 122; Page 1630	Sierra	21N	18E	7	W1/2 of SE1/4	Exhibit "A"	
75	Expansion 5	Not specified	Not specified	Not specified; References notes and recitals on survey map	8/17/62	Survey Map filed; Book 2; Page 8	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 2; Refer to map for particulars
96	Expansion 6	Not specified	Not specified	Matters as contained or referred to in an instrument	1/21/72	Book 54; Page 362	Sierra	21N	17E			Schedule B	Judgement Third Appellate District filed July 21, 1971, 3 Civil 12300; Refer to document for particulars
97	Expansion 6	Not specified	Not specified	Not specified; references notes and recitals on parcel map	4/20/81	Book 6; Page 75	Sierra	21N	17E			Schedule B	Evans Ranch Associates; Refer to map for particulars
80	Expansion 5	Not specified	Not specified	Not specified; references notes and recitals on parcel map	4/20/81	Parcel Map filed; Book 6; Page 75	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4; Refer to map for particulars
99	Expansion 6	Not specified	Not specified	Matters as contained or referred to in an instrument	12/15/82	Book 99; Page 28	Sierra	21N	17E			Schedule B	Evans Ranch Associates; Refer to instrument for particulars; Executed by P. Joan Vierra et al
83	Expansion 5	Not specified	Not specified	Not specified; references notes and recitals on parcel map	12/15/82	Parcel Map filed; Book 6; Pages	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Affects Parcel No. 4; Refer to map for particulars
85	Expansion 5	Not specified	Not specified	Not specified	12/15/82	Book 99; Page 28	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4; Refer to instrument for particulars; Executed by P. Joan Vierra et al
87	Expansion 5	Not specified	Not specified	Not specified; references notes and recitals on survey map	4/27/93	Survey Map filed; Book 9; Page 82A	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4; Refer to map for particulars
90	Expansion 5	Not specified	Not specified	Not specified	2/18/99	Book 132; Page 496	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 2; Refer to instrument for particulars
91	Expansion 5	Not specified	Not specified	Matters as contained or referred to in an instrument	12/29/00	Instrument No. 200013172	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4; Refer to instrument for particulars
2	Original Acquisition	Stockton Beckworth Pass Railway	Railroad	200 ft strip for railroad purposes	5/3/06		Lassen	22N	17E	35		Schedule B	Approved under Act of March 3, 1875; Federal Land Office Records

APPENDIX A
Easements | Hallelujah Junction Wildlife Area

Number	Acquisition	Grantee	Category	Easement	Date Recorded	Recorded	County	Township	Range	Section (s)	Portion	Source Document	Comments
4	Original Acquisition	Central Pacific Railway Company	Railroad	Railroad ROW	3/13/30	Book 26; Page 458	Lassen	22N	17E	35	S1/2 of N1/2; S1/2	Schedule B	
48	Expansion 1	NV-CA-OR Railway Company	Railroad	Railroad ROW; 100 ft wide	12/5/30	Book 26; Page 458	Lassen	22N	17E	26	Portion	Schedule B	Evans Ranch, Inc.; Disclosed in deed from Central Pacific Railway to D.F. and E.M. Evans
1	Original Acquisition	NV-CA-OR Railway Company	Railroad	200 ft strip for railroad purposes	12/5/1883		Lassen	22N	17E	26, 35		Schedule B	Approved under Act of March 3, 1875; Federal Land Office Records
93	Expansion 6	Nevada and California Railroad Company	Railroad	60 ft wide strip of land for railroad	8/31/1885	Book Z; Page 22	Sierra	21N	17E	12	Portions	Schedule B	Evans Ranch Associates; Exact location not disclosed of record
63	Expansion 4	State of California	Road	ROW for Federal Aid Highway	11/9/21	Serial No. CAS 069790	Sierra	21N	18E	18	SW1/4 of SE1/4	Patent	Sect 17 of Act of Nov 9, 1921 (42 Stat. 216)
3	Original Acquisition	State of California	Road	Highway purposes	12/30/26	Book 18; Page 419	Lassen	22N	17E	35	NE1/4 of NE1/4	Schedule B	
71	Expansion 5	State of California	Road	State highway and incidental purposes	5/5/27	Book 30; Page 362	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4
72	Expansion 5	State of California	Road	Public highway, road and incidental purposes	5/28/28	Book 31; Page 12	Sierra	21N	18E	19	Portions	Schedule B	Green Gulch Ranch; Portions of Parcel Nos. 2 and 4
6	Original Acquisition	State of California	Road	Highway purposes	2/6/33	Book 29; Page 442	Lassen	22N	17E	36	W1/2 of SW1/4	Schedule B	
7	Original Acquisition	State of California	Road	Highway purposes	11/15/34	Book 31; Page 357	Lassen	22N	17E	26, 35	SE1/4 of 26; E1/2 of 35	Schedule B	
73	Expansion 5	State of California	Road	State highway and incidental purposes	1/2/35	Book 34; Page 127	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4
8	Original Acquisition	State of California	Road	Highway purposes	2/2/50	Book 58; Page 127	Lassen	22N	17E	36	W1/2 of SW1/4	Schedule B	
64	Expansion 4	State of California	Road	ROW for Federal Aid Highway	8/28/58	Serial No. CACA 656	Sierra	21N	18E	18	SW1/4 of SE1/4	Patent	Sect 17 of Act of Aug 27, 1958 (23 U.S.C. 317)
39	Expansion 1	State of California	Road	Road purposes	12/26/73	Book 273; Page 607	Lassen	22N	17E	26	NE1/4 of SE1/4	Exhibit "A"	Evans Ranch, Inc.
16	Original Acquisition	State of California	Road	Ingress-egress for 2 lane road	12/26/73	Book 273; Page 607	Lassen	22N	17E	26	W1/2; N1/2 of SE1/4; SW1/4 of NE1/4	Schedule C	
11	Original Acquisition	Western Pacific Railroad Company	Road	Road purposes	12/26/73	Book 273; Page 615	Lassen	22N	17E	26	N1/2 of NW1/4	Schedule B	
51	Expansion 1	Western Pacific Railroad Company and Pacific Telephone and Telegraph	Road	Road and appurtenances	12/26/73	Book 273; Page 615	Lassen	22N	17E	26	N1/2 of NW1/4	Schedule B	Evans Ranch, Inc.
106		Walima Holdings Corp. (Balls Ranch)	Road	Road or highway	6/23/82	Book 98; Page 151	Sierra	21N	17E	13,14,19,24	Portions	Exhibit "A"	Easement granted June 23 1982; Notice to CDFG per Civil Code 813 January 19 2007
94	Expansion 6	Sunset Telephone and Telegraph Company	Utility	Utilities and incidental purposes	9/11/05	Book 19; Page 328	Sierra	21N	17E	12	Portions	Schedule B	Evans Ranch Associates; Exact location not disclosed of record
70	Expansion 5	Sunset Telephone and Telegraph Company	Utility	Utilities and incidental purposes	9/11/05	Book 19; Page 328	Sierra	21N	18E	19	Portions	Schedule B	Green Gulch Ranch; Portion of Parcel Nos. 2 and 4; Exact location not disclosed of record
66	Expansion 4	Pacific Telephone and Telegraph Company	Utility	Buried communications cable	3/4/11	ROW No. CACA 251	Sierra	21N	18E	18	SW1/4of NE 1/4	Patent	Act of March 4, 1911 43 U.S.C. 961
65	Expansion 4	Pacific Telephone and Telegraph Company	Utility	Telephone and telegraph	3/4/11	ROW No. CAS 035335	Sierra	21N	18E	18	SW1/4of NE 1/4	Patent	Act of March 4, 1911 43 U.S.C. 961
49	Expansion 1	Pacific Telephone and Telegraph company	Utility	Public utility and appurtenances; ingress, eggress; tree trimming	3/9/43	Book 28; Page 319	Lassen	22N	17E	26	Portion	Schedule B	Evans Ranch, Inc.

APPENDIX A
Easements | Hallelujah Junction Wildlife Area

Number	Acquisition	Grantee	Category	Easement	Date Recorded	Recorded	County	Township	Range	Section (s)	Portion	Source Document	Comments
5	Original Acquisition	Pacific Telephone and Telegraph Company	Utility	Telephone poles, wires, etc.	3/9/43	Book 28; Page 319	Lassen	22N	17E	26, 35	E1/2 of SE1/4 of 26; E1/2 of E1/2 of 35	Schedule B	
95	Expansion 6	Pacific Telephone and Telegraph Company	Utility	Utilities and incidental purposes	5/1/43	Book 40; Page 312	Sierra	21N	17E	12	Portions	Schedule B	Evans Ranch Associates; Exact location not disclosed of record
74	Expansion 5	Pacific Telephone and Telegraph Company	Utility	Utilities and incidental purposes	5/1/43	Book 40; Page 312	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4; Exact location not disclosed of record
9	Original Acquisition	Pacific Telephone and Telegraph Company	Utility	Ingress-egress, communication facilities	12/18/73	Book 273; Page 407	Lassen	22N	17E	26, 35, 36	W1/2 of W1/2 of 36; E1/2 of E1/2 of 35; SE1/4 of 26	Schedule B	
79	Expansion 5	Pacific Telephone and Telegraph company	Utility	15 ft strip of land for utilities and incidental purposes	1/8/74	Book 60; Page 136	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4
12	Original Acquisition	Pacific Telephone and Telegraph Company	Utility	Ingress-egress, Public utilities	10/20/76	Book 307; Page 518	Lassen	22N	17E	35	NE1/4 of NE1/4	Schedule B	
67	Expansion 4	Evans Ranch, Inc.	Utility	Powerline, buried water pipeline, and road	10/21/76	ROW No. CACA 19666	Sierra	21N	18E	18	SW1/4of NE 1/4	Patent	Act of Oct 21, 1976 (43 U.S.C. 1761)
81	Expansion 5	Pacific Telephone and Telegraph company	Utility	Utilities and incidental Purposes	5/25/82	Book 96; Page 196	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 2; Exact location not disclosed of record
98	Expansion 6	Not specified	Utility	Ingress-eggress, roadway, and utilities	9/10/82	Book 97; Page 260	Sierra	21N	17E			Schedule B	Evans Ranch Associates; Exact location not disclosed of record
84	Expansion 5	Not specified	Utility	Perpetual, non-exclusive easements for ingress, egress, roadway, utility, incidental purposes	12/15/82	Book 99; Page 28	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4; Exact location not disclosed of record
100	Expansion 6	Not specified	Utility	Access, service road, and utility lines	5/31/89	Book 122; Page 1685	Sierra	21N	17E			Schedule B	Evans Ranch Associates; Exact location not known
86	Expansion 5	State of California	Utility	Road and utilities	5/31/89	Book 122; Page 1685	Sierra	21N	17E	10	SE1/4	Schedule B	Green Gulch Ranch; Portions of Parcel No. 6
101	Expansion 6	Sierra Pacific Power Company	Utility	Utilities and incidental purposes	4/10/96	Book 129; Page 1367	Sierra	21N	17E			Schedule B	Evans Ranch Associates; Refer to instrument for particulars
108		Sierra Pacific Power Company	Utility	Utility facilities and appurtenances	12/11/98	Vol. 132; Page 0145	Sierra	21N	17E	1,12,13	Portions	Exhibit "A"	160 ft wide utility ROW; 30 ft wide access road ROW; Refer to document for particulars
109		Sierra Pacific Power Company	Utility	Utility facilities and appurtenances	12/11/98	Vol. 132; Page 0145	Sierra	21N	18E	19	Portions	Exhibit "A"	160 ft wide utility ROW; 30 ft wide access road ROW; Refer to document for particulars
107		Sierra Pacific Power Company	Utility	Utility facilities and appurtenances	12/11/98	Vol. 707; Page 111	Lassen	22N	17E	36	Portions	Exhibit "A"	160 ft wide utility ROW; 30 ft wide access road ROW; Refer to document for particulars
89	Expansion 5	Sierra Pacific Power Company	Utility	Utilities and incidental Purposes	2/18/99	Book 132; Page 501	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 2
102	Expansion 6	Sierra Pacific Power Company	Utility	Utilities and incidental purposes	6/19/99	Book 132; Page 0145	Sierra	21N	17E	23		Schedule B	Evans Ranch Associates; Refer to instrument for particulars
92	Expansion 5	Not specified	Utility	Public utility easement; delineated on map	12/29/00	Map recorded; Book 11	Sierra	21N	18E	19	NE1/4	Schedule B	Green Gulch Ranch; Portion of Parcel No. 4; Refer to map for particulars
45	Expansion 1	Not specified	Utility	Non-exclusive for ingress, egress; utility; undefined route	Not Specified		Lassen	22N	17E	27	SE1/4 of NW1/4; S1/2 of NE1/4 of SE1/4; S1/2 of SW1/4	Exhibit "A"	Evans Ranch, Inc.
47	Expansion 1	Not specified	Utility	Perpetual; 60 ft strip of land for utility lines and access road	Not Specified		Lassen	22N	17E	26, and 35	Portion	Exhibit "A"	Evans Ranch, Inc.; Centerline of 60 ft strip is described in detail
46	Expansion 1	Not specified	Utility	Perpetual; 200 ft strip of land for utility lines and access road	Not Specified		Lassen	22N	17E	26, 35, and 36	Portion	Exhibit "A"	Evans Ranch, Inc.; Westerly line of 200 ft strip is described in detail
104	Expansion 6	United States	Water	ROW for ditches or canals constructed by U.S.	7/13/28	Book L; Page 334	Lassen	22N	17E	27	Portions	Schedule B	Evans Ranch Associates; Act of August 30, 1890 43 U.S.C. 945

APPENDIX A
Easements | Hallelujah Junction Wildlife Area

Number	Acquisition	Grantee	Category	Easement	Date Recorded	Recorded	County	Township	Range	Section (s)	Portion	Source Document	Comments
105	Expansion 6	United States	Water	ROW for ditches or canals constructed by U.S.	11/10/28	Book L; Pages 376 and 377	Lassen	22N	17E	27	Portions	Schedule B	Evans Ranch Associates; Act of August 30, 1890 43 U.S.C. 945
110	Expansion 6	United States	Water	ROW for ditches or canals constructed by U.S.	11/10/28	Book L; Pages 376 and 377	Lassen	22N	18E	19	Portions	Schedule B	Evans Ranch Associates; Act of August 30, 1890 43 U.S.C. 945
76	Expansion 5	Parties	Water	Correlative rights to waters of Balls Creek	1/21/72	Book 54; Page 362	Sierra	21N	18E	19	NE1/4	Schedule B	Superior Court Case No. 2809; Edith M. Evans vs. Morgan Flagg et al
50	Expansion 1	State of California	Water	Drainage facilities and appurtenances	12/26/73	Book 273; Page 607	Lassen	22N	17E	26	Portion	Schedule B	Evans Ranch, Inc.
10	Original Acquisition	State of California	Water	Drainage facilities	12/26/73	Book 273; Page 607	Lassen	22N	17E	26, 35, 36	E1/2 of SE1/4 of 26; E1/2 of E1/2 of 35; W1/2 of W1/2 of 36	Schedule B	
21	Original Acquisition	Evans Ranch, Inc.	Water	All water rights, surface or groundwater	1/19/89	Book 505; Page 503	Sierra	21N	17E	1,2,10,11,12	Portions		Grantee may use natural stream flow in Long Valley Creek; see document for particulars
20	Original Acquisition	Evans Ranch, Inc.	Water	All water rights, surface or groundwater	1/19/89	Book 505; Page 503	Lassen	22N	17E	26, 35, 36	Portions		Grantee may use natural stream flow in Long Valley Creek; see document for particulars
23	Original Acquisition	Evans Ranch, Inc.	Water	Drilling tests, water wells, utility lines	1/19/89	Book 505; Page 503	Sierra	21N	17E	1,2,10,11,12	Portions		Upon construction of wells, grantor entitled to easement for operation and access
22	Original Acquisition	Evans Ranch, Inc.	Water	Drilling tests, water wells, utility lines	1/19/89	Book 505; Page 503	Lassen	22N	17E	26, 35, 36	Portions		Upon construction of wells, grantor entitled to easement for operation and access
36	Original Acquisition	Evans Ranch, Inc.	Water	One acre parcel for PW-3 well	5/31/89	Book 505; Page 519	Sierra	21N	17E	10	E1/2	Exhibit "A"	Parcel 10 associated with water export project
37	Original Acquisition	Evans Ranch, Inc.	Water	one acre parcel for PW-4 well	5/31/89	Book 505; Page 520	Sierra	21N	17E	12	NE1/4	Exhibit "A"	Parcel 11 associated with water export project
34	Original Acquisition	Evans Ranch, Inc.	Water	one acre parcel for development of spring	5/31/89	Book 505; Page 517	Sierra	21N	17E	10	SW1/4	Exhibit "A"	Parcel 8 associated with water export project
35	Original Acquisition	Evans Ranch, Inc.	Water	One acre parcel for Evans #1 well	5/31/89	Book 505; Page 519	Sierra	21N	17E	10	NE1/4	Exhibit "A"	Parcel 9 associated with water export project
61	Expansion 4	United States	Water	ROW for ditches or canals constructed by U.S.	11/30/1890	43 U.S.C. 945	Sierra	21N	17E	2, 4	Portions	Patent	Act of August 30, 1890 43 U.S.C. 945
62	Expansion 4	United States	Water	ROW for ditches or canals constructed by U.S.	11/30/1890	43 U.S.C. 945	Sierra	21N	18E	6, 18	Portions	Patent	Act of August 30, 1890 43 U.S.C. 945
68	Expansion 4	Patentee	Wetlands	Maintain existing wetlands	5/24/77	Executive Order 11990	Sierra	21N	17E	2, 4	Portions	Patent	90 Stat. 2756, 43 U.S.C. 1716
69	Expansion 4	Patentee	Wetlands	Maintain existing wetlands	5/24/77	Executive Order 11990	Sierra	21N	18E	6, 18	Portions	Patent	90 Stat. 2756, 43 U.S.C. 1716
57	Expansion 2	No easements											No easements listed in acquisition documents

APPENDIX B

Climate Data
Stead, Nevada
(267820)

Climate Data from Stead, Nevada (267820)

Period of Record Monthly Climate Summary

Period of Record: 3/9/1985 To 12/31/2007

AVERAGE MONTHLY	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL
Max. Temperature (F)	43.1	47.3	55.2	61.5	69.7	79.7	88.3	87.0	78.1	67.2	52.6	43.5	64.4
Min. Temperature (F)	21.1	24.5	29.8	34.3	41.2	48.4	55.1	53.1	44.9	36.0	26.6	21.6	36.4
Total Precipitation (in.)	1.60	1.98	1.36	0.60	0.60	0.56	0.31	0.26	0.53	0.59	0.97	1.94	11.31
Total Snowfall (in.)	2.8	2.1	2.5	0.6	0.1	0.0	0.0	0.0	0.1	0.1	1.8	4.2	14.3
Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.

Max. Temp.: 96.1% Min. Temp.: 95.3% Precipitation: 95.7% Snowfall: 93.1% Snow Depth: 85%

Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, *wrcc@dri.edu*

Period of Record General Climate Summary - Growing Degree Days

Station:(267820) STEAD

From Year=1985 To Year=2008

Growing Degree Days[1] for Selected Base Temperature (F)													
Base[2]	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
40 M	15	39	139	255	480	722	982	931	645	371	95	21	4695
40 S	15	54	193	448	928	1650	2632	3563	4208	4579	4673	4695	4695
45 M	2	8	59	145	335	573	827	776	497	234	35	6	3497
45 S	2	11	70	214	550	1122	1949	2725	3222	3456	3491	3497	3497
50 M	0	1	16	65	210	428	672	621	354	122	9	1	2500
50 S	0	1	17	82	292	720	1392	2013	2367	2490	2499	2500	2500
55 M	0	0	3	20	112	290	518	466	224	50	1	0	1684
55 S	0	0	3	23	135	425	943	1409	1634	1683	1684	1684	1684
60 M	0	0	0	3	47	169	366	314	114	15	0	0	1027
60 S	0	0	0	3	50	219	585	898	1013	1027	1027	1027	1027
Corn Growing Degree Days[3]													
50 M	15	37	112	182	310	457	620	591	426	274	86	17	3127
50 S	15	52	164	345	655	1113	1733	2324	2750	3024	3110	3127	3127

[1] Growing Degree Day units are computed as the difference between the daily average temperature and the base temperature (Daily Ave. Temp. - Base Temp.) One unit is accumulated for each degree Fahrenheit; the average temperature is above the base temperature. Negative numbers are discarded. Example: If the day's high temperature was 95 and the low temperature was 51, the base 60 heating degree day units is ((95 + 51) / 2) - 60 = 13. This is done for each day of the month and summed.

[2] M = Monthly data. S = Running sum of monthly data.

[3] Corn Growing Degree Day units have the limitations that the maximum daily temperatures greater than 86 F are set to 86 F and minimums less than 50 F are set to 50 F.

Table updated on July 14, 2008
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered

Western Regional Climate Center, wrcc@dri.edu

Period of Record General Climate Summary - Temperature

Station:(267820) STEAD

From Year=1985 To Year=2008

Period	Average			Daily Extreme				Monthly Extreme				Max Temp		Min Temp	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	43.1	21.1	31.9	69	31/2003	-10	03/1993	39.2	1986	23.6	1993	0.0	3.5	28.0	0.6
February	47.3	24.5	35.9	69	28/1986	-19	06/1989	42.8	1995	27.0	1990	0.0	1.4	23.1	0.4
March	55.2	29.8	42.5	78	20/2004	7	07/1998	47.5	2004	35.7	2006	0.0	0.2	20.1	0.0
April	61.5	34.3	47.9	83	29/2007	15	04/1999	52.6	1992	42.7	1999	0.0	0.0	11.9	0.0
May	69.7	41.2	55.4	94	28/2003	22	11/2000	62.5	2001	48.3	1998	0.5	0.0	3.8	0.0
June	79.7	48.4	64.1	99	24/2006	30	05/1988	68.5	2006	59.4	1993	3.3	0.0	0.3	0.0
July	88.3	55.1	71.7	105	11/2002	34	18/1987	76.1	2007	64.9	1987	14.9	0.0	0.0	0.0
August	87.0	53.1	70.0	99	12/2004	36	31/1999	73.3	2001	65.1	1989	11.5	0.0	0.0	0.0
September	78.1	44.9	61.5	94	03/2007	26	27/1986	65.0	2001	53.7	1986	1.6	0.0	1.0	0.0
October	67.2	36.0	51.6	88	10/1996	14	09/1985	57.8	2003	47.0	1998	0.0	0.0	8.5	0.0
November	52.6	26.6	39.8	73	01/1999	0	12/1985	47.1	1995	31.4	1994	0.0	0.6	23.0	0.1
December	43.5	21.6	32.3	64	11/2004	-22	22/1990	38.1	1995	23.0	1990	0.0	3.1	26.4	0.5
Annual	64.4	36.4	50.4	105	20020711	-22	19901222	51.6	1992	47.9	1993	31.8	8.8	146.3	1.6
Winter	44.6	22.4	33.4	69	19860228	-22	19901222	38.2	1996	27.5	1993	0.0	8.0	77.6	1.5
Spring	62.1	35.1	48.6	94	20030528	7	19980307	52.7	1992	43.2	1991	0.5	0.2	35.8	0.0
Summer	85.0	52.2	68.6	105	20020711	30	19880605	71.6	2007	64.0	1993	29.7	0.0	0.3	0.0
Fall	66.0	35.8	51.0	94	20070903	0	19851112	54.7	1995	45.0	1985	1.6	0.6	32.6	0.1

Table updated on July 14, 2008

For monthly and annual means, thresholds, and sums:

-- Months with 5 or more missing days are not considered

-- Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons:

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Western Regional Climate Center, wrcc@dri.edu

Period of Record General Climate Summary – Precipitation

Station:(267820) STEAD

From Year=1985 To Year=2008

Period	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	1.60	5.98	1995	0.00	1991	1.89	21/1993	6	4	1	0	2.8	12.7	1993
February	1.98	11.77	1986	0.05	1988	3.05	18/1986	6	4	1	1	2.1	8.5	1993
March	1.36	7.55	1995	0.01	1997	2.00	10/1995	5	3	1	0	2.5	11.0	2006
April	0.60	2.65	2006	0.00	1985	0.76	03/1987	4	2	0	0	0.6	8.5	2003
May	0.60	2.21	1987	0.00	1985	1.42	16/1987	4	2	0	0	0.1	1.2	2007
June	0.56	1.93	1992	0.00	1994	1.00	04/1989	3	2	0	0	0.0	0.0	1985
July	0.31	1.81	1990	0.00	1987	0.80	22/1986	2	1	0	0	0.0	0.0	1985
August	0.26	2.02	1989	0.00	1986	1.06	07/1989	2	1	0	0	0.0	0.0	1985
September	0.53	3.14	1998	0.00	1993	1.49	27/1998	3	1	0	0	0.1	1.0	1986
October	0.59	2.87	2004	0.00	1995	1.68	20/2004	3	2	0	0	0.1	1.5	2003
November	0.97	2.68	2002	0.01	1986	1.60	25/1989	5	2	1	0	1.8	17.0	1985
December	1.94	9.56	2005	0.00	1989	3.79	31/2005	5	3	1	1	4.2	29.5	1992
Annual	11.31	23.55	1996	6.67	1990	3.79	20051231	48	26	7	2	14.3	33.6	1996
Winter	5.53	14.23	1986	0.81	1992	3.79	20051231	17	10	4	1	9.1	50.7	1993
Spring	2.56	9.28	1995	0.23	1997	2.00	19950310	13	7	1	0	3.3	11.0	2006
Summer	1.13	3.76	1989	0.10	2006	1.06	19890807	7	3	1	0	0.0	0.0	1985
Fall	2.09	5.61	1998	0.50	1995	1.68	20041020	10	5	1	0	2.0	17.0	1985

Table updated on July 14, 2008

For monthly and annual means, thresholds, and sums:

-- Months with 5 or more missing days are not considered

-- Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons:

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Western Regional Climate Center, wrcc@dri.edu

Fall 'Freeze' Probabilities (July 31 - Dec. 31)

Station:(267820) STEAD

Temp F	Earliest[1]	10%	20%	30%	40%	50%	60%	70%	80%	90%	Latest[2]
36.5	08/31	09/05	09/07	09/10	09/11	09/16	09/20	09/26	10/03	10/06	10/21
32.5	09/10	09/16	09/21	10/01	10/04	10/06	10/09	10/12	10/17	10/22	11/03
28.5	09/27	10/08	10/13	10/17	10/17	10/20	10/23	10/26	10/27	10/30	11/08
24.5	10/09	10/17	10/20	10/25	10/27	10/28	10/30	11/02	11/08	11/14	11/18
20.5	10/09	10/20	10/27	10/31	11/04	11/07	11/09	11/12	11/19	11/21	12/02

Graphic Output

[1] **Earliest** - Earliest date when a minimum temperature below the threshold occurred.

07/31 means the minimum temperature can go below the threshold temperature any day during the July 31 to Dec. 31 period. xx% is the percent probability that a minimum temperature below the threshold will occur on or before the given date.

[2] **Latest** - Latest date when a minimum temperature below the threshold occurred.

July 31 to Dec. 31 period or insufficient data to determine a date.

Spring 'Freeze' Probabilities (January 1 - July 31)

Station:(267820) STEAD

Temp F	Earliest[1]	90%	80%	70%	60%	50%	40%	30%	20%	10%	Latest[2]
36.5	05/25	05/30	05/31	06/04	06/07	06/08	06/12	06/16	06/22	06/29	07/18
32.5	04/24	04/30	05/02	05/06	05/10	05/16	05/19	05/28	06/01	06/07	06/08
28.5	03/31	04/15	04/19	04/20	04/22	04/22	04/23	04/24	05/01	05/08	05/15
24.5	03/03	03/13	03/20	04/05	04/11	04/13	04/13	04/15	04/19	04/21	05/02
20.5	02/04	02/19	03/06	03/16	03/19	03/25	03/27	04/03	04/10	04/14	04/19

Graphic Output

[1]**Earliest** - Earliest date when a minimum temperature below the threshold occurred.

xx% is the percent probability that a minimum temperature below the threshold will occur on or after the given date.

[2]**Latest** - Latest date when a minimum temperature below the threshold occurred.

07/30 means the minimum temperature can go below the threshold temperature any day during the Jan. 1 to July 31 period.

APPENDIX C

Water Rights

1. SUMMARY OF ADJUDICATED WATER RIGHTS
and Associated Priorities Pertaining to the
Hallelujah Junction Wildlife Area under the
Long Valley Creek Stream System,
Decree 12999

2. POINTS OF DIVERSION,
Hallelujah Junction Wildlife Area,
Query Results from the Electronic Water Rights
Information Management System

APPENDIX C

1. Summary of Adjudicated Water Rights and Associated Priorities Pertaining to the Hallelujah Junction Wildlife Area under the Long Valley Creek Stream System, Decree 12999

Name of Claimant	Diversion System	SWRCB Diversion No.	Use *	Section (s)	Town-ship	Range	LVC Decree Schedule, Priority and Acreage served and cfs (if indicated)	Comments and Footnotes from Decree (see previous columns)
Evans, Edith M., Estate of	Evans, East Branch	7a-2B	Irrigation	19	21N	18E	Schedule B1: East Branch and Unnamed Tributary 4th Priority[1] (See Diversion 34b-2C for acreage served and allotment of water)	[1] This allotment is equal in priority and correlative in rights with priority 5 allotment 34b-2C on Schedule C (Long Valley Creek)
	Evans, Upper Long Valley	34a-2C	Irrigation	19	21N	18E	Schedule C: Long Valley Creek (See Diversion 34b-2C for acreage served and allotment of water.) [1,2]	[1] These allotments are for domestic and stock watering purposes only and shall not be diverted for irrigation [2] Any portion of this allotment may be diverted through diversion 7a-2b as shown on Schedule B-1 in 4th priority
	Evans, Old Concrete Dam East	34b-2C	Irrigation	19	21N	18E	Schedule C: Long Valley Creek 120.7 acres served 1st Priority 0.05 cfs[1], 5th Priority 2.01 cfs[2]	[1] These allotments are for domestic and stock watering purposes only and shall not be diverted for irrigation [2] Any portion of this allotment may be diverted through diversion 7a-2b as shown on schedule B-1 in 4th priority
	Evans, Middle Long Valley East (10 points of diversion [POD])	51b-2C	Irrigation	12	21N	17E	Schedule C: Long Valley Creek (See Diversion 34b-2C for acreage served and allotment of water.) [1,2]	[1] These allotments are for domestic and stock watering purposes only and shall not be diverted for irrigation [2] Any portion of this allotment may be diverted through diversion 7a-2b as shown on schedule B-1 in 4th priority
			Irrigation	18, 19	21N	18E		
	Evans, Old Concrete Dam West (6 POD)	34c-2C	Irrigation	19	21N	18E	Schedule C: Long Valley Creek 28.3 acres served 5th Priority 0.47cfs[1]	

APPENDIX C1: Summary of Adjudicated Water Rights and Associated Priorities , Long Valley Creek Stream System, Decree 12999

Name of Claimant	Diversion System	SWRCB Diversion No.	Use *	Section (s)	Town-ship	Range	LVC Decree Schedule, Priority and Acreage served and cfs (if indicated)	Comments and Footnotes from Decree (see previous columns)
	Evans, Upper Balls Creek "(Proposed)"	47a-2B[1]	Domestic	23	21N	17E	Schedule B-4: Balls Creek and Tributaries 1st Priority 0.04 cfs	[1]On Balls Creek within parcel
	Evans, Upper Balls Creek Ditch	49-2B	Irrigation	13	21N	17E	Schedule B-4: Balls Creek and Tributaries (See Diversion 50-2B for acres served and allotment.)	
	Evans, Middle Balls Creek Ditch	50-2B[1]	Irrigation	-	-	-	Schedule B-4: Balls Creek and Tributaries 164.7 acres served 1st Priority 0.10 cfs 3rd Priority 3.90 cfs	[1]Movable point on Balls Creek through Evans property
		51a-2B	Irrigation				Schedule B-4: Balls Creek and Tributaries[1] 4th Priority[2]	[1]See Schedule C for acreage served and allotment of water. [2] This allotment is equal in priority and correlative in right with allotments in 5th priority, Schedule C
	Evans, Lower Balls Creek Ditch (11 POD)	51-2B	Irrigation	13, 12 18	21N 21N	17E 18E	Schedule B-4: Balls Creek and Tributaries (See Diversion 50-2B for acres served and allotment.)	
	Evans Long Valley Upper West "(Proposed)" (3 POD)	51a-2C	Irrigation	12 12	21N 21N	18E 17E	Schedule C: Long Valley Creek 7.6 acres served[1] 5th Priority 0.13cfs	
	Evans, Middle Long Valley West "(Proposed)" (5 POD)	51c-2C	Irrigation	12, 1	21N	17E	Schedule C: Long Valley Creek 26 acres served 1st Priority 0.03 cfs[1] 5th Priority 0.43 cfs	[1] These allotments are for domestic and stock watering purposes only and shall not be diverted for irrigation

APPENDIX C1: Summary of Adjudicated Water Rights and Associated Priorities , Long Valley Creek Stream System, Decree 12999

Name of Claimant	Diversion System	SWRCB Diversion No.	Use *	Section (s)	Town-ship	Range	LVC Decree Schedule, Priority and Acreage served and cfs (if indicated)	Comments and Footnotes from Decree (see previous columns)
	Evans Lower Long Valley "(Proposed)" (3 POD)	51f-3C	Irrigation	35, 26	22N	17E	Schedule C: Long Valley Creek 28 acres served 1st Priority 0.02 cfs[1] 5th Priority 0.47cfs	[1] These allotments are for domestic and stock watering purposes only and shall not be diverted for irrigation
	Evans Canyon Ditch (8 POD)	52-3B	Irrigation	35, 26	22N	17E	Schedule B-6 Evans Canyon Creek 67.2 acres served 1st Priority 0.10 cfs 2nd Priority 1.28 cfs 3rd Priority 0.20 cfs [1]	[1]This allotment is equal in priority and correlative in right allotments in 5th priority, Schedule C (SWRCB Diversion #34a-2C, 34b-2C, 51b-2C, 34c-2C, 51a-2C, 51c-2C, 51f-3C)
Green Gulch Ranch, Inc.	Upper Green Gulch East Branch	6-2-B	Irrigation	30	21N	18E	Schedule 1	
	Middle Green Gulch Ditch East	11-2B	Irrigation	30	21N	18E	Schedule B-1 East Branch and Unnamed Tributary (See Diversion 12-2B for acreage served and allotment)	
	Middle Green Gulch Ditch West	12-2B	Irrigation	30	21N	18E	Schedule B-1: East Branch and Unnamed Tributary 140 acres served 3rd Priority 2.33 cfs [1]	[1] This includes 45.0 acres that is also shown in Schedule B-3 (SWRCB Diversion # 28-2B, 29-2B, 30-2B, 33-2B, 34-2B)
	Lower Green Gulch Ditch	13-2B	Irrigation	30	21N	18E	Schedule B-1:East Branch and Unnamed Tributary (See Diversion 12-2B for acreage served and allotment)	
	Lower Green Gulch Surplus Ditch	14-2B	Irrigation	30	21N	18E	Schedule B-1:East Branch and Unnamed Tributary (See Diversion 12-2B for acreage served and allotment)	

APPENDIX C1: Summary of Adjudicated Water Rights and Associated Priorities , Long Valley Creek Stream System, Decree 12999

Name of Claimant	Diversion System	SWRCB Diversion No.	Use *	Section (s)	Town-ship	Range	LVC Decree Schedule, Priority and Acreage served and cfs (if indicated)	Comments and Footnotes from Decree (see previous columns)
	Green Gulch Upper Bottom Ditch "(Proposed)"	15-2B	Irrigation	19	21N	18E	Schedule B-1:East Branch and Unnamed Tributary 64.5 acres served 4th Priority 1.08cfs [1,2]	[1]This allotment is equal in priority and correlative in right with allotments in priority 5 in Schedule C [2] Any part of this allotment may be diverted from the South creek points at Diversions 22a and 23, if available (See Schedule B-2)
	Green Gulch South Creek Collection Ditch	22-2B	Irrigation	25	21N	17E	Schedule B-2: South Creek 249.7 acres served 1st Priority .10 cfs 3rd Priority 3.47 cfs 4th Priority .59 cfs	
	Green Gulch Oat Field Division "(Proposed)"	22a-2B	Irrigation	19	21N	18E	Schedule B-2: South Creek 6th Priority[1,2]	[1] See Schedule B1, Diversion 12-2B for acreage served and allotment [2] This allotment is equal in priority and correlative in right with allotments in 5th priority, Schedule C
	Green Gulch Lower South Creek "(Proposed)"	23-2B	Irrigation	19	21N	18E	Schedule B-2: South Creek 6th Priority[1,2]	[1] See Diversion 12-2B for acreage served and allotment [2] This allotment is equal in priority and correlative in right with allotments in 5th priority, Schedule C
	Green Gulch Unnamed Stream Interceptor	34-2B	Irrigation	24	21N	17E	Schedule B-3 Purdy Creek and Tributaries 245.5 acres served[1] 1st Priority 0.10 cfs 2nd Priority 3.41 cfs[2] 3rd Priority 0.58 cfs	[1] This includes 45 acres that is also shown in Schedule B-1 Diversion # 12-2B. [2] The total flow of School House Creek and North tributary (Diversion No. 34) shall be used to supply this allotment with and deficiency being made up from Purdy Creek

APPENDIX C1: Summary of Adjudicated Water Rights and Associated Priorities , Long Valley Creek Stream System, Decree 12999

Name of Claimant	Diversion System	SWRCB Diversion No.	Use *	Section (s)	Town-ship	Range	LVC Decree Schedule, Priority and Acreage served and cfs (if indicated)	Comments and Footnotes from Decree (see previous columns)
	Green Gulch Balls Creek Ditch (34 POD)	48-2B[1]	Irrigation	24, 13, 25	21N	17E	Schedule B-4 Balls Creek and Tributaries 139.3 acres served 1st Priority 0.10 cfs[2] 3rd Priority 3.90 cfs[2]	[1] Includes one POD on BLM land [2] Prior to June 15 of each year a maximum of 2.00cfs of the total allotment may be conveyed south of the Balls Creek Road shown on the SWRCB map. After June 15 of each year no water for irrigation and no more than 0.10cfs for domestic and stock watering purposes may be conveyed south of the Balls Creek Road
			Irrigation	19, 30, 31	21N	18E		
Occidental Land, Inc.	Occidental South Stream "(Proposed)"	51d-2B	Domestic	16	21N	17E	Schedule B-5 Occidental Unnamed Streams 1st priority 0.02 cfs	Within Occidental South Stream Watershed
	Occidental North Stream "(Proposed)"	51e-2B	Domestic	16	21N	17E	Schedule B-5 Occidental Unnamed Streams 1st priority 0.02 cfs	Within Occidental South Stream Watershed

cfs: cubic feet per second

USE: Irrigation: Limited to application of water for the purpose of meeting moisture requirements of growing crops

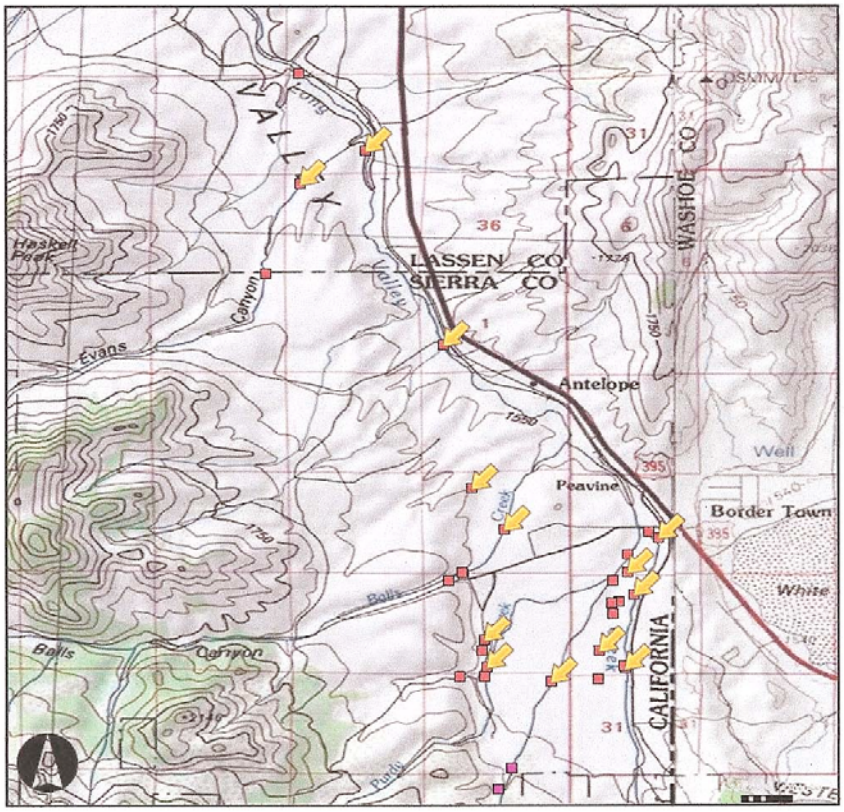
Domestic: Domestic and Stockwatering: Limited to water applied exclusively for household purposes, watering of domestic animals, and irrigation of up to one-half acre of yard, garden or family orchard. Stockwatering is limited to water required by commercial livestock or wildlife.

NOTE: Decree 12999 provisions that repeated only the Section and lacked a Township or Range were omitted from this summary.

Source: SWRCB 1976, 1998

2. Points of Diversion, Hallelujah Junction Wildlife Area

Query Results from the Electronic Water Rights Information Management System



A029569_01 (Points of Diversion)

A029142_02 (Points of Diversion)

A029141_02 (Points of Diversion)

A029141_03 (Points of Diversion)

A029143_02 (Points of Diversion)

A029377_01 (Points of Diversion)

A029377_04 (Points of Diversion)

A029377_07 (Points of Diversion)

A029377_03 (Points of Diversion)

A029568_01 (Points of Diversion)

A029377_02 (Points of Diversion)

A029377_06 (Points of Diversion)

A029376_01 (Points of Diversion)

Sierra (Counties)

Points of Diversion

- Adjudicated
- Cancelled
- Certified
- Claimed
- Claimed - LO
- Inactive
- Licensed
- Pending
- Permitted
- Registered
- Revoked
- State Filing
- Temporary

NGS USA Topographic Maps

Source: Electronic Water Rights Information Management System (eWRIMS) (SWRCB 2007)

APPENDIX D

Plant Inventory

Partial List of Vascular Plant Species
Observed in the Hallelujah Junction Wildlife Area
(Lassen and Sierra Counties)

Plant Inventory

Partial List of Vascular Plant Species Observed in the Hallelujah Junction Wildlife Area (Lassen and Sierra Counties)

Prepared by Ecosystems West Consulting for Sustain Environmental Inc., unpublished report, 2007

FERNS AND FERN-ALLIES

EQUISETACEAE

Equisetum arvense
Equisetum laevigatum

CONE-BEARING PLANTS (GYMNOSPERMAE)

CUPRESSACEAE

Juniperus occidentalis var. *occidentalis*
Juniperus osteosperma

EPHEDRACEAE

Ephedra viridis

PINACEAE

Abies concolor
Pinus jeffreyi

FLOWERING PLANTS (ANGIOSPERMAE - DICOTYLEDONEAE)

APIACEAE

Lomatium dissectum var. *multifidum*
Lomatium sp.

ASTERACEAE

Achillea millefolium
Agoseris glauca var. *laciniata*
Ambrosia acanthicarpa
Antennaria dimorpha
Artemisia dracunculus
Artemisia ludoviciana
Artemisia tridentata
Balsamorhiza macrolepis var. *platylepis*
Balsamorhiza sagittata
**Carduus nutans*
Chrysothamnus nauseosus
Chrysothamnus parryi
Chrysothamnus viscidiflorus ssp. *viscidiflorus*
**Cirsium vulgare*
Conyza canadensis
Crepis acuminata
Crepis occidentalis
Erigeron bloomeri var. *bloomeri*
Erigeron divergens
Gnaphalium canescens ssp. *thermale*
Gnaphalium palustre
Grindelia nana
Iva axillaris
**Lactuca serriola*
Madia elegans
Senecio integerrimus var. *exaltatus*
Stephanomeria spinosa
Symphyotrichum ascendens [= Aster ascendens]
Taraxacum officinale
Tetradymia canescens
Tragopogon dubius
Uropappus lindleyi
Wyethia mollis

BETULACEAE

Alnus incana ssp. *Tenuifolia*
Alnus rhombifolia

BORAGINACEAE

Amsinckia menziesii var. *intermedia*
Amsinckia tessellata
Plagiobothrys cognatus
Plagiobothrys tenellus

BRASSICACEAE

Arabis sparsiflora var. *sparsiflora*
**Capsella bursa-pastoris*
**Cardaria pubescens*
Cusickiella douglasii
Descurainia pinnata ssp. *halictorum*
**Descurainia sophia*
**Lepidium latifolium*
**Lepidium perfoliatum*
Rorippa curvisiliqua
(?) Rorippa nasturtium-aquaticum*
**Sisymbrium altissimum*

* non-native species, introduced or naturalized in the study area
*? probably introduced

CARYOPHYLLACEAE

Arenaria congesta var. *suffrutescens*
Sagina saginoides

CHENOPODIACEAE

**Atriplex rosea*
**Chenopodium botrys*

CONVOLVULACEAE

**Convolvulus arvensis*

FABACEAE

Astragalus andersonii
Astragalus filipes
Astragalus malacus
Astragalus purshii var. *tinctus*
Lathyrus brownii
Lathyrus lanszwertii var. *lanszwertii*
Lupinus argenteus var. *heteranthus*
Lupinus confertus
Lupinus nevadensis
**Medicago lupulina*
**Melilotus officinalis*
**Robinia pseudoacacia*
Trifolium andersonii ssp. *andersonii*
Trifolium macrocephalum
**Trifolium repens*
Trifolium wormskioldii

GENTIANACEAE

Centaurium muehlenbergii

GERANIACEAE

Erodium cicutarium

GROSSULARIACEAE

Ribes aureum var. *aureum*
Ribes velutinum

HYDROPHYLLACEAE

Hesperochiron californicus
Hydrophyllum capitatum var. *alpinum*
Phacelia humilis var. *humilis*

LAMIACEAE

Mentha arvensis
**Mentha spicata* var. *spicata*
Salvia dorrii var. *dorrii*

MALVACEAE

Sidalcea oregana ssp. *spicata*

ONAGRACEAE

Camissonia tanacetifolia ssp. *tanacetifolia*
Epilobium brachycarpum
Epilobium ciliatum ssp. *ciliatum*
Epilobium torreyi
Oenothera cf. elata

PAEONIACEAE

Paeonia brownii

PAPAVERACEAE

Eschscholzia californica

PLANTAGINACEAE

**Plantago lanceolata*
**Plantago major*

POLEMONIACEAE

Eriastrum sp.
Phlox diffusa
Phlox gracilis
Phlox hoodii ssp. *canescens*
Phlox stansburyi

POLYGONACEAE

Eriogonum douglasii var. *douglasii*
Eriogonum ovalifolium var. *ovalifolium*
**Rumex acetosella*
**Rumex crispus*
Rumex salicifolius var. *triangulivalvis*

PORTULACACEAE

Lewisia rediviva

RANUNCULACEAE

Ranunculus aquatilis
Ranunculus occidentalis

ROSACEAE

Amelanchier utahensis
Cercocarpus ledifolius var. *intercedens*
Potentilla gracilis var. *fastigiata*
Potentilla millefolia
Potentilla rivalis
Prunus andersonii
Prunus virginiana var. *demissa*
Purshia tridentata
Rosa woodsii var. *ultramontana*
**Rubus laciniatus*

SALICACEAE

Populus balsamifera ssp. *trichocarpa*
Populus fremontii
Populus tremuloides
Salix exigua
Salix geyeriana
Salix lasiolepis
Salix lucida ssp. *caudata*
Salix lucida ssp. *lasiandra*

SCROPHULARIACEAE

Collinsia parviflora
Mimulus guttatus
Mimulus moschatus
Mimulus pilosus
**Verbascum thapsus*
Veronica americana

SOLANACEAE

Nicotiana attenuata

ULMACEAE

**Ulmus* sp.

URTICACEAE

Urtica dioica ssp. *holosericea*

VIOLACEAE

*Viola cf. beckwithii (*possibly *V. sheltonii)*
Viola purpurea ssp. *purpurea*

FLOWERING PLANTS (ANGIOSPERMAE - MONOCOTYLEDONEAE)

ALISMATACEAE

Alisma triviale [= A. plantago-aquatica]

CYPERACEAE

Carex nebrascensis
Carex pellita [= C. languinosa]
Carex praegracilis
Carex subfusca
Eleocharis macrostachya
Scirpus microcarpus
Scirpus pungens

IRIDACEAE

Iris missouriensis

JUNCACEAE

Juncus balticus
Juncus bufonius
Juncus orthophyllus
Juncus saximontanus

LILIACEAE

Camassia quamash ssp. *brevflora*
Zigadenus paniculatus

POACEAE

Achnatherum hymenoides
Achnatherum thurberianum
**Agropyron desertorum*
**Agrostis stolonifera*
Alopecurus aequalis
**Bromus inermis* ssp. *inermis*
**Bromus tectorum*
**Crypsis schoenoides*
Deschampsia danthonioides
Distichlis spicata
Elymus elymoides ssp. *elymoides*
**Festuca pratensis*
Glyceria striata
Leymus cinereus
Leymus triticoides
Muhlenbergia asperifolia
Muhlenbergia richardsonis
**Phleum pratense*
**Poa bulbosa*
(?) Poa pratensis*
Poa secunda ssp. *secunda*
Poa wheeleri

TYPHACEAE

Typha domingensis

APPENDIX E

Wildlife Inventory[1]

1. Fish Species
2. Amphibian and Reptile Species
3. Bird Species
4. Mammal Species

[1] This inventory includes species observed on or near the Hallelujah Junction Wildlife Area as well as those species with reasonable potential to occur based upon habitat preferences and distributions. Unless historical occurrence records exist, it does not include species that have extremely low probability of occurring due to lack of suitable habitat in the Wildlife Area.

Wildlife Inventory

1. Fish Species

Federal Listing Status	State Listing Status
FE: Federal Endangered	SE: State Endangered
FT: Federal Threatened	ST: State Threatened
FC: Federal Candidate	SFP: State Fully Protected
BLMS: BLM Sensitive	SSC: State Species of Concern
FSS: Forest Service Sensitive	

Common Name	Scientific Name	Listing Status	Confirmed[1]
Brook trout	*Salvelinus fontinalis*		
Brown bullhead	*Ameiurus nebulosus*		
Brown trout	*Salmo trutta*		x
Cutthroat trout	*Oncorhynchus clarkii*		
Lahontan cutthroat	*O. clarkii henshawi*	FT	
Golden shiner	*Notemigonus crysoleucas*		
Rainbow trout	*Oncorhynchus mykiss*		
Speckled dace	*Rhinichthys osculus*		x
Tahoe sucker	*Catostomus tahoensis*		x
Tui chub	*Siphateles bicolor*		
Lahontan redside	*Richardsonius egregius*		x
Black bullhead	*Ameiurus melas*		x

Source: Moyle and Davis 2000 (http://www.dfg.ca.gov/wildlife/nongame/docs/fishofcalif.pdf)

[1] Presence confirmed during CDFG surveys (unpublished data), May 2006.

2. Amphibian and Reptile Species

Federal Listing Status	State Listing Status
FE: Federal Endangered	SE: State Endangered
FT: Federal Threatened	ST: State Threatened
FC: Federal Candidate	SFP: State Fully Protected
BLMS: BLM Sensitive	SSC: State Species of Concern
FSS: Forest Service Sensitive	

Common Name	Scientific Name	Status	Confirmed[1]
American bullfrog	*Rana (=Lithobates) catesbeiana*		x
Western toad	*Bufo (=Anaxyrus) boreas*		
Sierran tree frog	*Pseudacris (=Hyla) sierra*		
Great basin spadefoot	*Scaphiopus intermontana*		
Great basin collared lizard	*Crotaphytus bicinctores*		
Northern sagebrush lizard	*Sceloporus graciosus graciosus*	BLMS	x
Western fence lizard	*Sceloporus occidentalis*		x
Skilton's skink	*Plestiodon skiltonianus skiltonianus*		
Tiger whiptail	*Aspidoscelis tigris*		
Northern rubber boa	*Charina bottae*		
Western Yellow-bellied Racer	*Coluber constrictor mormon*		
California kingsnake	*Lampropeltis getula californiae*		
Desert striped whipsnake	*Masticophis taeniatus taeniatus*		
Pacific gopher snake	*Pituophis catenifer catenifer*		
Sierra gartersnake	*Thamnophis couchii*		
Mountain gartersnake	*Thamnophis elegans elegans*		x
Great basin rattlesnake	*Crotalus oreganus lutosus*		x

Source: Taxonomy follows CalHerps 2009 (http://www.californiaherps.com/index.html)

[1] Presence confirmed during CDFG surveys (unpublished data), May 2006, and SEI reconnaissance surveys (unpublished field data), 2006-2008.

3. Bird Species

Federal List Status	State Listing Status
FE: Federal Endangered	SE: State Endangered
FT: Federal Threatened	ST: State Threatened
FC: Federal Candidate	SFP: State Fully Protected
BCC: Birds of Conservation Concern	SSC: State Species of Concern
BLMS: BLM Sensitive	SWL: State Watch List
FSS: Forest Service Sensitive	

Family/Common Name	*Scientific Name*[1]	Status	Observed[2]
Waterfowl			
Canada goose	*Branta canadensis*		x
Tundra Swan	*Cygnus columbianus*		x
Mallard	*Anas platyrhynchos*		x
Cinnamon teal	*Anas cyanoptera*		x
Northern pintail	*Anas acuta*		x
Green-winged teal	*Anas crecca*		x
Quail, Partridges and Grouse			
Mountain quail	*Oreortyx pica*		
California quail	*Callipepla californica*		x
Chukar	*Alectoris chukar*		x
Greater sage-grouse	*Centrocercus urophasianus*	FSS, BLMS; SSC	n
Sooty (= blue) grouse	*Dendragapus fuliginosus*		x
Waders			
American bittern	*Botaurus lentiginosus*		
Great blue heron	*Ardea herodias*		x
Great egret	*Ardea alba*		
Green heron	*Butorides virescens*		x
Black-crowned night heron	*Nycticorax nycticorax*		
White-faced ibis	*Plegadis chihi*	SWL	x
Vultures			
Turkey vulture	*Cathartes aura*		x
Raptors			
Bald eagle	*Haliaeetus leucocephalus*	FD, BCC; SE, SFP	x
Northern harrier	*Circus cyaneus*	SSC	x
Sharp-shinned hawk	*Accipiter striatus*	SWL	
Cooper's hawk	*Accipiter cooperii*	SWL	x
Northern goshawk	*Accipiter gentilis*	FSS, BLM2; SSC	n
Swainson's hawk	*Buteo swainsoni*	FSS, BCC; ST	n
Red-tailed hawk	*Buteo jamaicensis*		x

Ferruginous hawk	*Buteo regalis*	BLMS, BCC, SWL	
Rough-legged hawk	*Buteo lagopus*		
Golden eagle	*Aquila chrysaetos*	BLMS, BCC; SFP, SWL	x
American kestrel	*Falco sparverius*		x
Merlin	*Falco columbarius*	SWL	
Peregrine falcon	*Falco peregrinus*	FD, FSS, BCC; SE, SFP	
Prairie falcon	*Falco mexicanus*	BCC; SWL	x
Gallinules, Coots			
Common moorhen	*Gallinula chloropus*		x
American coot	*Fulica americana*		x
Cranes			
Greater sandhill crane	*Grus canadensis tabida*	FSS; ST, SFP	x
Plovers & Sandpipers			
Killdeer	*Charadrius vociferus*		x
Spotted sandpiper	*Actitis macularia*		
Willet	*Catoptrophorus semipalmatus*		
Long-billed curlew	*Numenius americanus*	SWL	
Common snipe	*Gallinago gallinago*		n
Gulls			
California gull	*Larus californicus*	SWL	
Pigeons and Doves			
Rock pigeon	*Columba livia*		
Band-tailed pigeon	*Patagioenas fasciata*		x
Mourning dove	*Zenaida macroura*		x
Owls			
Barn owl	*Tyto alba*		x
Flammulated owl	*Otus flammeolus*	BCC	
Western screech-owl	*Megascops kennicottii*		
Great horned owl	*Bubo virginianus*		
Northern pygmy-owl	*Glaucidium gnoma*		
Burrowing owl	*Athene cunicularia*	BCC; SSC	n
Long-eared owl	*Asio otus*	SSC	
Short-eared owl	*Asio flammeus*	SSC	
Northern saw-whet owl	*Aegolius acadicus*		
Nighthawks, Nightjars			
Common nighthawk	*Chordeiles minor*		
Common poorwill	*Phalaenoptilus nuttallii*		
Hummingbirds			
Black-chinned hummingbird	*Archilochus alexandri*		

Calliope hummingbird	*Stellula calliope*		x
Broad-tailed hummingbird	*Selasphorus platycercus*		n
Kingfishers			
Belted kingfisher	*Ceryle alcyon*		n
Woodpeckers			
Lewis' woodpecker	*Melanerpes lewis*	BCC	n
Williamson's sapsucker	*Sphyrapicus thyroideus*		
Red-breasted sapsucker	*Sphyrapicus ruber*		x
Downy woodpecker	*Picoides pubescens*		x
Hairy woodpecker	*Picoides villosus*		x
White-headed woodpecker	*Picoides albolarvatus*	BCC	x
Black-backed woodpecker	*Picoides arcticus*		
Northern flicker	*Colaptes auratus*		x
Tyrant Flycatchers			
Olive-sided flycatcher	*Contopus cooperi*	BCC; SSC	
Western wood-pewee	*Contopus sordidulus*		x
Willow flycatcher	*Empidonax traillii*	FSS, BCC; SE	
Hammond's flycatcher	*Empidonax hammondii*		
Gray flycatcher	*Empidonax wrightii*		x
Dusky flycatcher	*Empidonax oberholseri*		
Black phoebe	*Sayornis nigricans*		
Say's phoebe	*Sayornis saya*		
Ash-throated flycatcher	*Myiarchus cinerascens*		
Western kingbird	*Tyrannus verticalis*		x
Shrikes			
Loggerhead shrike	*Lanius ludovicianus*	BCC; SSC	x
Vireos			
Cassin's vireo	*Vireo cassinii*		x
Warbling vireo	*Vireo gilvus*		x
Corvids			
Steller's jay	*Cyanocitta stelleri*		
Western scrub-jay	*Aphelocoma californica*		x
Clark's nutcracker	*Nucifraga columbiana*		x
Black-billed magpie	*Pica hudsonia*		x
American crow	*Corvus brachyrhynchos*		x
Common raven	*Corvus corax*		x
Larks			
Horned lark	*Eremophilia alpestris*	SWL	x
Swallows			

Tree swallow	*Tachycineta bicolor*		x
Violet-green swallow	*Tachycineta thalassina*		
Northern rough-winged swallow	*Stelgidopteryx semipennis*		x
Bank swallow	*Riparia riparia*	ST	n
Cliff swallow	*Petrochelidon pyrrhonota*		
Barn Swallow	*Hirundo rustica*		x
Chickadees & Titmice			
Mountain chickadee	*Poecile gambeli*		x
Juniper titmouse	*Baeolophus ridgwayi*		
Bushtit	*Psaltriparus minimus*		x
Nuthatches			
White-breasted nuthatch	*Sitta carolinensis*		x
Pygmy nuthatch	*Sitta pygmaea*		x
Wrens			
Rock wren	*Salpinctes obsoletus*		
Canyon wren	*Catherpes mexicanus*		
Bewick's wren	*Thryomanes bewickii*		x
House wren	*Troglodytes aedon*		x
Kinglets & Gnatcatchers			
Golden-crowned kinglet	*Regulus satrapa*		x
Blue-gray gnatcatcher	*Polioptila caerulea*		x
Thrushes			
Western bluebird	*Sialia mexicana*		
Hermit thrush	*Catharus guttatus*		
American robin	*Turdus migratorius*		x
Thrashers			
Sage thrasher	*Oreoscoptes montanus*		
Starlings			
European starling	*Sturnus vulgaris*		x
Warblers			
Yellow warbler	*Dendroica petechia (brewsteri)*	SSC	
Yellow-rumped warbler	*Dendroica coronata*		x
Black-throated gray warbler	*Dendroica nigrescens*		
Wilson's warbler	*Wilsonia pusilla*		
Tanagers			
Western tanager	*Piranga ludoviciana*		x
Towhees and Sparrows			
Green-tailed towhee	*Pipilo chlorusus*		
Spotted towhee	*Pipilo maculatus*		x

Chipping sparrow	*Spizella passerina*		x
Brewer's sparrow	*Spizella breweri*	BCC	x
Vesper sparrow	*Pooecetes gramineus*		x
Lark sparrow	*Chondestes grammacus*		
Black-throated sparrow	*Amphispiza bilineata*		
Sage sparrow	*Amphispiza belli*		x
Savannah sparrow	*Passerculus sandwichensis*		x
Fox sparrow	*Passerella iliaca*		
Song sparrow	*Melospiza melodia*		
White-crowned sparrow	*Zonotrichia leucophrys*		
Juncos			
Dark-eyed junco	*Junco hyemalis*		x
Grosbeaks			
Black-headed grosbeak	*Pheucticus melanocephalus*		
Buntings			
Lazuli bunting	*Passerina amoena*		x
Blackbirds			
Red-winged blackbird	*Agelaius phoeniceus*		x
Western meadowlark	*Sturnella neglecta*		x
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	SSC	x
Brewer's blackbird	*Euphagus cyanocephalus*		x
Brown-headed cowbird	*Molothrus ater*		x
Orioles			
Bullock's oriole	*Icterus bullockii*		
Finches			
Purple finch	*Carpodacus purpureus*		
Cassin's finch	*Carpodacus cassinii*		
House finch	*Carpodacus mexicanus*		x
Pine siskin	*Carduelis pinus*		
Lesser goldfinch	*Carduelis psaltria*		x
Old World Sparrows			
House sparrow	*Passer domesticus*		

Source: CDFG 2008a, 2009; USFWS 2008d-e; Shuford and Gardali 2008.

[1] Taxonomic order and nomenclature follows the AOU Checklist of North American Birds, 7th Edition 1999, with supplements through 2009. (Taxonomic changes are updated frequently. Please refer to the most recent checklist.)

[2] x= Observed on site (CDFG, SEI) ; n= Observed nearby (CNDDB, Lahontan Audubon, SEI).

4. Mammal Species

Federal Listing Status	State Listing Status
FE: Federal Endangered	SE: State Endangered
FT: Federal Threatened	ST: State Threatened
FC: Federal Candidate	SFP: State Fully Protected
BLMS: BLM Sensitive	SSC: State Species of Concern
FSS: Forest Service Sensitive	

Other Listing Status
WBWG High, Medium, Low:
Western Bat Working Group priority level

Common Name	*Scientific Name*	Status	Confirmed[1]
Shrews and Moles			
Trowbridge's shrew	*Sorex trowbridgii*		
American water shrew	*Sorex palustris*		
Vagrant shrew	*Sorex vagrans*		
Broad-footed mole	*Scapanus latimanus*		x
Bats			
Big brown bat	*Eptesicus fuscus*		
Spotted bat	*Euderma maculatum*	BLMS, SSC, WBWG High	
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC, FSS, WBWG High	
Hoary bat	*Lasiurus cinereus*	WBWG Medium	
Western small-footed myotis	*Myotis ciliolabrum*	WBWG Medium	
California myotis	*Myotis californicus*		
Long-legged myotis	*Myotis volans*	BLMS, WBWG High	
Little brown bat (=myotis)	*Myotis lucifugus*		
Fringed myotis	*Myotis thysanodes*	BLMS, WBWG High	
Western pipistrelle	*Pipistrellus hesperus*		
Pallid bat	*Antrozous pallidus*		
Brazilian free-tailed bat	*Tadarida brasiliensis*		
Rabbits and Hares			
Western white-tailed jackrabbit	*Lepus townsendii townsendii*	SSC	
Mountain (aka Nuttall's) cottontail	*Sylvilagus nuttallii*		x
Pygmy rabbit	*Brachylagus idahoensis*	SSC	
Black-tailed jackrabbit	*Lepus californicus*		x
Squirrels, Chipmunks and Marmots			
Belding's ground squirrel	*Spermophilus beldingi*		
California ground squirrel	*Spermophilus beecheyi*		x
Douglas' squirrel	*Tamiasciurus douglasii*		
Townsend's ground squirrel	*Spermophilus townsendii*		
Golden-mantled ground squirrel	*Spermophilus lateralis*		
Least chipmunk	*Neotamias minimus*		

Common Name	*Scientific Name*	Status	Confirmed[1]
Yellow-pine chipmunk	*Tamias amoenus*		
Yellow-bellied marmot	*Marmota flaviventris*		
Long-eared chipmunk	*Neotamaias quadrimaculatus*		
Pocket Gophers			
Mountain pocket gopher	*Thomomys monticola*		
Pocket Mice and Kangaroo Rats			
Panamint kangaroo rat	*Dipodomys panamintinus*		
Chisel-toothed kangaroo rat	*Dipodomys microps*		
Great Basin pocket mouse	*Perognathus parvus*		
Long-tailed pocket mouse	*Chaetodipus formosus*		
Ord's kangaroo rat	*Dipodomys ordii*		
Dark kangaroo mouse	*Microdipodops megacephalus*		
Beavers			
American beaver	*Castor canadensis*		x
Mice, Rats and Voles			
Long-tailed vole	*Microtus longicaudus*		
Common muskrat	*Ondatra zibethicus*		x
Sagebrush vole	*Lemmiscus curtatus*		
Northern grasshopper mouse	*Onychomys leucogaster*		
Deer mouse	*Peromyscus maniculatus*		x
Pinyon mouse	*Peromyscus truei*		
Western harvest mouse	*Reithrodontomys megalotis*		
Desert woodrat	*Neotoma lepida*		x
Bushy-tailed woodrat	*Neotoma cinerea*		
Brush mouse	*Peromyscus boylii*		
New World Porcupines			
Common porcupine	*Erethizon dorsatum*		x
Foxes, Wolves and Relatives			
Red fox	*Vulpes vulpes*		
Gray fox	*Urocyon cinereoargenteus*		
Kit fox	*Vulpes macrotis*		x
Coyote	*Canis latrans*		x
Bears			
Black bear	*Ursus americanus*		x
Raccoons and Relatives			
Ringtail	*Bassariscus astutus*	FP	x
Raccoon	*Procyon lotor*		x
Weasels and Relatives			
American badger	*Taxidea taxus*	SSC	x
Long-tailed weasel	*Mustela frenata*		x
Ermine (short-tailed weasel)	*Musela erminea*		
Skunks			
Striped skunk	*Mephitis mephitis*		

Common Name	*Scientific Name*	Status	Confirmed[1]
Western spotted skunk	*Spilogale gracilis*		
Cats			
Mountain lion	*Felis (=Puma) concolor*		x
Bobcat	*Lynx rufus*		x
Deer, Pronghorn and Sheep			
Mule deer	*Odocoileus hemionus*		x
Pronghorn	*Antilocapra americana*		x
Desert bighorn sheep[2]	*Ovis canadensis nelsoni*	FSS, BLMS	x

Sources: Mammal species presented in taxonomic order following the Complete List of Amphibian, Reptile, Bird and Mammal Species in California (excluding subspecies) (CDFG 2008c);listing status follows CDFG 2009. Species taxonomic designations change frequently. Please consult with CDFG and published literature for most up-to-date listing designations.

[1] Presence confirmed through direct observation of animal or sign (scat, hair, den, etc), SEI reconnaissance surveys (unpublished field data), 2006-2008, and J. Dawson, personal communication.

APPENDIX F

Non-Native Invasive (Weed) Management Plan for the Hallelujah Junction Wildlife Area

PREPARED FOR
California Department of Fish and Game, North Central Region

PREPARED BY
Sustain Environmental Inc.

2008

NON-NATIVE INVASIVE (WEED) MANAGEMENT PLAN FOR THE HALLELUJAH JUNCTION WILDLIFE AREA

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Perennial pepperweed

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1.0 INTRODUCTION

This plan provides a preliminary strategy for managing the highest priority invasive non-native plants at Hallelujah Junction Wildlife Area (HJWA). It includes information on non-native plants identified to date on wildlife area lands, the relative threats posed by those species, and considerations that should be taken when prioritizing species for management. The plan also includes an initial list of the highest priority species, but this list should be used only as a first cut; additional information will be required before a final priority list can be developed. This required information includes, but is not limited to, the following:

- detailed maps of individual occurrences of the species,
- density of the plants within those occurrences,
- potential for the species to spread,
- the proximity of the occurrences to water, and
- the proximity of the occurrences to special-status plant or wildlife populations or habitat.

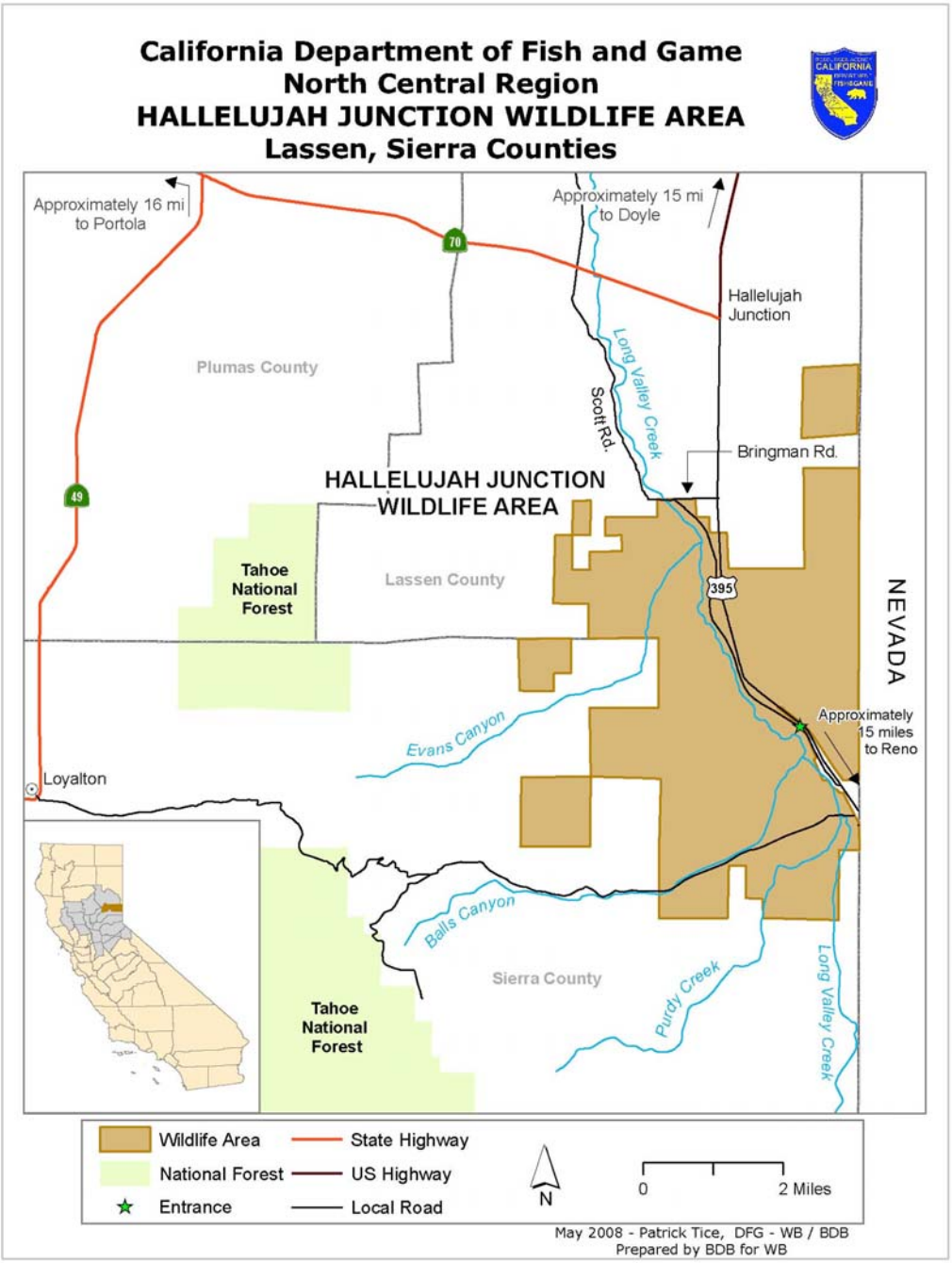
The plan also presents information on approaches, tools, and techniques available for controlling weeds in natural areas, site rehabilitation and restoration, and follow-up monitoring. The strategy presented in this plan must be used as an adaptive strategy, as it will require refinement when additional information about the target species, and about the effectiveness of various treatments, becomes available. This plan is designed to be a stand-alone document; therefore, some information contained in the HJWA LMP is repeated here. Input from the California Department of Fish and Game (CDFG) will be required to finalize this document for use in the field.

1.1 Project Location

Hallelujah Junction Wildlife Area is located at the eastern base of the northern Sierra Nevada in eastern Lassen and Sierra Counties, California. The area encompasses approximately 13,400 acres. It is located south of the community of Hallelujah Junction and between 13 and 20 miles northwest of Reno, Nevada. The Nevada state line forms the eastern boundary of the area. U.S. 395 crosses the area from north to south. Approximately one third of the area is east of Highway 395; the remaining approximately two-thirds is west of the highway (Figure 1). The area encompasses portions of Townships 21 and 22 North, and Ranges 17 and 18 East. Most of the Wildlife Area is on the Evans Canyon USGS 7.5’ quadrangle, with one detached parcel at the far northern end (T22N R18E Sec. 19) on the Beckwourth Pass 7.5’ quadrangle.

The bulk of the HJWA lies within the broad valley of Upper Long Valley, and slopes gently east or west toward perennial Long Valley Creek. Long Valley Creek flows south to north across the area, west of and closely paralleling U.S.395 except at the far south end of the watershed. On the west, portions of the area extend onto the lower slopes of the Sierra Nevada, and the easternmost portion of the area is occupied by steep north-south ridges that are part of Petersen Mountain. In these areas of the Wildlife Area, slopes are often steep. Two major canyons with perennial streams, Evans Canyon and Balls Canyon, drain the eastern slopes of the Sierra Nevada west of the area. Although the main canyons are mostly outside the boundaries of HJWA, the creeks flow into the area and empty into Long Valley Creek. Evans Canyon Creek enters the area toward the north end of the Wildlife Area, and Balls Canyon Creek enters the area near the southwest corner.

Figure 1. Hallelujah Junction Wildlife Area Location (entrance site corrected by SEI 2009)



2.0 MANAGEMENTAPPROACH AND CONSIDERATIONS

Non-native plant management is a component of an overall comprehensive site management and restoration program as described in the HJWA LMP. CDFG's focus is on promoting the native species and plant communities that are desired on the site, rather than on simply eliminating the undesirable species. In some cases, removing the targeted non-native species will result in colonization by desirable natives, but in many cases, such colonization does not occur without additional restoration work such as soil treatment, seeding, revegetating, transplanting, etc.

It is important to consistently re-evaluate initial goals, objectives and plans so they can be altered or modified as needed. In the long run, this will save time and money, and will reduce the chances of making mistakes. The following list presents a sequence of steps that aid in developing and implementing an adaptive plan:

a) Establish management goals and objectives for the site (see HJWA LMP, Section III).

b) Determine which plant species or populations block, or have potential to block attainment of the management goals and objectives.

c) Identify, document, and map those species or populations, and then assign a priority to these species or to individual occurrences, based on level of threat, feasibility of control, etc.

d) Consider all methods available to eradicate or control targets, or other ways to reduce their adverse impacts; if necessary, re-order priorities.

e) Develop and implement a management plan designed to move conditions toward management goals and objectives.

f) Monitor and assess the effectiveness of management actions in terms of moving conditions toward goals and objectives; and

g) Re-evaluate, modify, and start the cycle again.

It is also very important to implement a prevention program to keep the site free of non-native species that are not yet present, but which are known to be invasive elsewhere in the region. Managers must be particularly aware of species that are not yet on their site, but which occur nearby. The ultimate goal should be to preserve native species, communities and functioning ecosystems; this should be kept in mind when prioritizing efforts and when selecting control methods.

2.1 Rationale for Managing Non-Native Invasive Plants

It is widely recognized that non-native invasive plants (weeds) compete with and displace native plants and animals, and other organisms that depend on these native plants for food and shelter. They can alter ecosystem functions and cycles, hybridize with native species, and promote other non-native or undesirable species. Some species are known to increase the frequency and intensity of wildfire, damaging the ecosystems ability to restore itself through succession. Many plant invasions can be stopped, slowed, or even reversed. In certain situations, even badly infested areas

can be restored to healthy systems dominated by native species. In most cases this requires taking action to control and manage the invasive plants.

2.2 Data and Maps of Target Species Occurrences

Maps of the extent of species occurrences and estimates of density or cover are essential for a successful program. Maps and data on existing conditions will be used as a baseline (standard) for measuring success of control or removal efforts. Such information also facilitates cooperative efforts with adjacent land owners/managers. If and when herbicides are used, maps and density data will facilitate development of application rates. The initial cost of mapping can be high; however, if land managers work cooperatively with the regional Weed Management Area (WMA) group, the costs can be shared. Mapping is also needed for the California Environmental Quality Act (CEQA) compliance process.

Mapping and documentation of species that are anticipated to be the targeted highest priority species should be conducted first. A preliminary list of such species is presented in Section 3.3.

2.3 Prioritizing Species for Management

It is critical to set priorities for non-native invasive plant management actions. Managers must identify the highest priority species occurring on their land, and in many cases, the highest priority occurrences within species. In some cases, a no action alternative should be considered, such as when more damage would occur to native species and habitats by applying control methods than by maintaining the status quo. Setting priorities will ensure that resources available for non-native plant management are spent most effectively.

There are a number of systems in use for prioritizing removal and management efforts. The first step is to determine the level of threat posed by the invasive non-native species identified. This information can be obtained from lists maintained by the California Department of Food and Agriculture (CDFA 2008), by the California Invasive Plant Council (Cal-IPC 2006), and others. The CDFA list initially was prioritized based on threats to agricultural crop lands, but the list now incorporates threats to native habitats in California. The list uses an A-D rating system: A is the highest priority for eradication and D is of lower priority. Cal-IPC provides a list of invasive plant species occurring in California, as well as assessments of potential invasiveness and other basic information. Bossard et al. (2000) provide additional, detailed information about invasive plants in California. See Appendix 1 in this document for a list of additional resources on non-native plant management and prioritization.

Once the existing information on the species has been assessed, managers need to evaluate several other site-specific elements before establishing their priorities for treatment. Elements to consider include the following:

- **Extent of Infestations.** Small, incipient occurrences (new populations or outliers of larger infestations) of species posing a high level of threat would usually be high priority. Species present in large infestations that continue to expand would be a medium priority, and species present in large infestations that are not expanding would generally be lower.

- **Current and Potential Impacts of the Infestations.** For example, if the infestation is immediately threatening rare plants or their habitat, it would likely be high priority.
- **Ecological Value of Habitats or Areas that are Infested or May Become Infested.** Infestations that occur in the most highly valued habitats or areas, such as wetlands, areas with rare or highly valued species or communities, and areas that provide vital resources would be of highest priority; infestations in less highly valued portions of the site would be intermediate; and areas already badly infested with other invasive non-natives may be a lower priority, unless the species in question will make the situation significantly worse. Also consider threats to ecosystem parameters such as soil integrity, which can be changed by certain non-native species.
- **Feasibility of Success.** It is important to realistically consider the difficulty and cost of control, as well as establishment of replacement species. Clearly, highest priority would be given, in most cases, to species or occurrences likely to be controlled or eliminated with available technology and resources, and to sites that will be re-colonized by desirable native species with little further input. Lower priority would be given to species or occurrences that are likely to be controlled, but will not be replaced by desirable natives without an active restoration program. Species or occurrences that are difficult to control and/or whose control would likely result in substantial damage to desirable species, would be given even lower priority.

3.0 INVENTORY AND ASSESSMENT OF INVASIVE NON-NATIVE PLANTS

Baseline reconnaissance-level botanical surveys were conducted on July 29, 2007 and May 14- 26, 2008 (Sustain Environmental Inc., unpublished report). The surveys were conducted to fulfill the following objectives:

1) To characterize and map the habitat types (plant communities) of the HJWA; and
2) To compile a partial floristic list of vascular plant species occurring in the HJWA; and
3) To, as time permitted, survey for special-status plant species.

The Hallelujah Junction Wildlife Area LMP details the methods and results of this survey effort (III). The results of the botanical survey should be considered preliminary as time constraints precluded compiling a complete floristic list or conducting an exhaustive special-status plant survey. Data from these surveys were used in preparation of this weed management plan.

3.1 Summary of Vegetation in the Wildlife Area

Based upon the preliminary assessment, a total of 180 species of vascular plants were identified in the HJWA. Of these, 146 are native and 32 are non-native or naturalized. It is uncertain whether two species occurring in the area, common watercress (*Rorippa nasturtium-aquaticum*) and Kentucky bluegrass (*Poa pratensis*), are native or non-native based on differing descriptions by Munz and Keck (1973) and Hickman (1993). Additional surveys are recommended, to be conducted at intervals throughout the growing season, to develop a comprehensive species list.

There were eight primary habitat types found at HJWA. Table 1 presents a summary of the communities present and a crosswalk between the Holland (1986) and Sawyer and Keeler-Wolf (1995) plant community descriptions.

Table 1. Crosswalk of Plant Community Types, Hallelujah Junction Wildlife Area

HJWA Plant Community Types	Total Acres	CDFG 2003, Holland Habitat Types [1]	Sawyer/Keeler-Wolfe Habitat Series [2]
Big sagebrush scrub	6598	Great Basin scrubs (35000) Great Basin mixed scrub (35100) Big sagebrush scrub (35210) Sagebrush steppe (35300)	Big sagebrush series
Low sagebrush scrub	263	Low sagebrush dwarf scrub (35.120.00)	Black sagebrush series Low sagebrush series
Mountain mahogany scrub	125	Curlleaf mountain mahogany woodland and scrub (CDFG 2003) Broadleafed upland forest (81000)	Curlleaf mountain mahogany series
Interior-rose golden-currant big-sagebrush scrub	4	Great Basin mixed scrub (35100)	__
Spineless-horsebrush/herbs	175	__	__
Juniper woodland	861	Utah juniper woodland (CDFG 2003) Great Basin juniper woodland and scrub	Utah juniper series
Jeffery pine forest	93	Jeffery pine forest and woodland (CDFG 2003) Jeffery pine forest (85100)	Jeffrey pine series
Jeffrey pine woodland	215	Jeffery pine forest and woodland (CDFG 2003)	Jeffrey pine series
Riparian scrub	134	Low to high elevation riparian scrub (CDFG 2003) Pacific willow riparian forest (CDFG 2003) Montane riparian scrub (63500)	Montane wetland shrub habitat
Riparian forest/scrub	28	Montane black cottonwood riparian (61530), Modoc-Great Basin cottonwood-willow riparian forest (61610) Montane riparian scrub (63500) Modoc-Great Basin riparian scrub (63600)	Black cottonwood and mixed willow series
Meadow (dry to wet)	926	Montane meadow alliance (CDFG 2003) Great Basin Grassland (43000) Wet Montane Meadow (45110) Dry Montane meadow (45120)	Montane meadow habitat Nebraska sedge series
Spring	1	Meadows and seeps (CDFG 2003) Wet Montane Meadow (45110)	Montane meadow habitat Nebraska sedge series
Recent burns	3964	__	Cheatgrass series
Developed	7	__	__

[1] CDFG 2003, Holland 1986
[2] Sawyer and Keeler-Wolf 1995, (pending publication of Sawyer, Keeler-Wolf and Evens 2009)

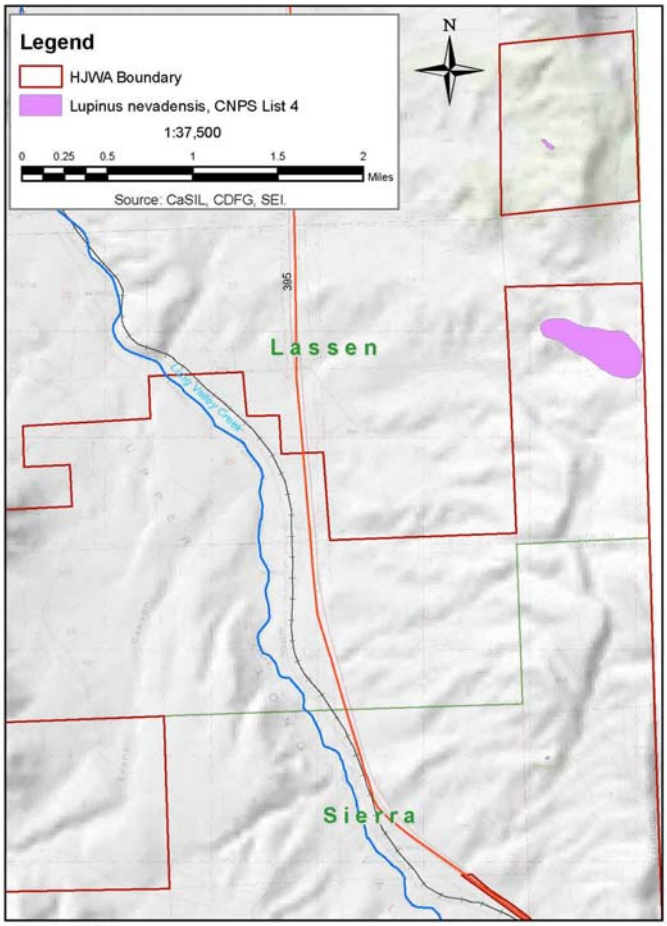
3.2 Special-Status Plants

Documenting the locations of special-status plants, prior to managing non-native plants, is critical in order to avoid causing direct or indirect (e.g., herbicide drift) harm. According to CNDDB records (CDFG 2008) and CNPS Inventory records (Tibor 2001, CNPS 2008), four special-status plant species that are legally protected under CEQA, have known occurrences within, or very near the boundaries of, the HJWA. They are:

- purple milk-vetch (*Astragalus agrestis*),
- Nevada daisy (*Erigeron nevadincola*),
- Webber's ivesia (*Ivesia webberi*), and
- golden violet (*Viola aurea*).

One special-status plant species, Nevada lupine (*Lupinus nevadensis*), was observed in the survey area. Nevada lupine is on List 4 (Plants of limited distribution) of the CNPS Inventory (Tibor 2001, CNPS 2008), and therefore does not fall under any specific legal authority. This species occurs locally in juniper woodland and big sagebrush scrub in the extreme northeastern portion of the survey area (Figure 2).

Figure 2. *Lupinus nevadensis* locations at Hallelujah Junction Wildlife Area



Map: SEI 2009

No other populations of special-status plants were observed during the 2007/2008 surveys, but additional surveys are recommended, timed to match the phenology of the species to document plant occurrences. Table 2 presents the known locations of special-status plants on or near the HJWA.

Table 2. California Natural Diversity Database (CNDDB) locations for special-status plant species[1] on or immediately adjacent to the Hallelujah Junction Wildlife Area

CNDDB Occurrence #	Location (Township, Range, Section)	Notes
Purple milk-vetch (Astragalus agrestis)		
1	T21N R18E Sec. 30	Just outside Wildlife Area boundary
Nevada daisy (Erigeron nevadincola)		
4	T22N R17E Secs. 25, 36	
5	T21N R18E Sec. 6	
6	T21N R17E Sec. 4	
7	T21N R17E Sec. 2	Within Balls Canyon fire area
8	T21N R18E Sec. 7	
9	T21N R17E Sec. 4	
10	T21N R18E Sec. 7	
11	T21N R18E Sec. 18	
12	T21N R17E Sec. 13	
13	T21N R18E Sec. 30	Just outside Wildlife Area boundary
28	T21N R17E Sec 1	
Webber's ivesia (Ivesia webberi)		
8	T21N R17E Sec. 11	Within Balls Canyon fire area. Mapped location searched 5/08, species not observed
10	T22N R17E Sec. 36	Just inside Wildlife Area boundary
Golden violet (Viola aurea)		
6	T21N R17E Sec. 12	Along U.S.395
7	T21N R17E Sec. 1 and T22N R17E Sec. 36	

[1] CDFG 2003

3.3 Preliminary List of High Priority Invasive Plant Species

This section should be considered preliminary, a first effort based on the baseline inventory for the LMP (Section III). Development of a fully prioritized weed management plan is beyond the scope of this effort because additional data collection, mapping, and internal decision-making must occur before priorities can be firmly established. The following priority list is based on Cal-IPC's Invasive Plant Inventory (2006), which categorizes non-native invasive plants that threaten the state's wildlands. Categorization is based on an assessment of the ecological impacts of each plant. This inventory represents the best available knowledge of invasive plant experts in the state. To quote Cal-IPC:

> ”The Inventory categorizes plants as High, Moderate, or Limited, reflecting the level of each species' negative ecological impact in California. Other factors, such as economic impact or difficulty of management, are not included in the assessment. It is important to note that even Limited species are invasive and should be of concern to land managers. Although the impact of each plant varies regionally, its rating represents cumulative impacts statewide. Therefore, a plant whose statewide impacts are categorized as Limited may have more severe impacts in a particular region. Conversely, a plant categorized as having a High cumulative impact across California may have very little impact in some regions.”

Table 3 shows a preliminary list of the invasive species likely to be of highest priority for management. The assessment that led to the development of this table included information from Cal-IPC and our best professional judgment.

Table 3. High-priority invasive plants at Hallelujah Junction Wildlife Area

Common Name	Scientific Name	Cal IPC Inventory Rating[1]	Impacts	Invasiveness	Distribution	Ecological types invaded and comments	State[2]
Cheatgrass	Bromus tectorum	High	A	B	A	Interior scrub, woodlands, grasslands. Most widely distributed invasive plant in the US.	None
Perennial pepperweed	Lepidium latifolium	High	A	A	A	Coastal and inland marshes, riparian areas, wetlands, grasslands. Has potential to invade montane wetlands.	B noxious weed list
Hairy whitetop	Cardaria pubescens	Limited	C	B	C	Grasslands and meadows. Impacts unknown but may be significant in meadows of Cascade Range.	B noxious weed list

[1] Cal-IPC rating: Scores A = severe, B = moderate, C = limited.
Accessed online: http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf
[2] USDA PLANTS Database; http://plants.usda.gov/java/noxComposite

3.4 Non-Native Invasive Plants

A list of the non-native plant taxa identified to date is included in Appendix 2 of this document. Distribution of these taxa within the various habitat types of the Wildlife Area is described in the HJWA LMP (III). Three invasive species are considered a management priority for treatment in this plan:

1) Cheatgrass (*Bromus tectorum*),
2) Perennial pepperweed (*Lepidium latifolium*) and
3) Hairy whitetop (*Cardaria pubescens*).

Additional surveys and detailed mapping of occurrences of these priority species may be necessary prior to treatment. This will provide the baseline for follow-up monitoring and facilitate analysis of treatment effectiveness. The following section summarizes the high priority invasive species (see Appendices 3 - 5 for additional information).

1. Cheatgrass

Cheatgrass *(Bromus tectorum)* is a winter or spring annual grass that produces nodding, open panicles. This species usually germinates in the fall or winter. When temperatures increase in the spring it grows quickly, often maturing and setting seed before most other grass species. At maturity during the late spring and early summer the foliage and seedheads take on a slight purple color before drying out completely and becoming brown. This species reproduces by seed only and control efforts must target the seed producing stage of plant growth in order to be successful.

Cheatgrass is the most extensive invasive species on the HJWA and is widespread throughout California. It is the dominant annual grass on sagebrush (*Artemisia* sp.) rangelands on the Modoc Plateau in northeastern California and along the eastern Sierra Nevada to Owens Valley. In wildlands it is most commonly found in sagebrush/bunchgrass communities, although its distribution extends to higher elevation juniper, pinyon-juniper, and pine woodlands.

Cheatgrass displaces native vegetation and triumphs over the seedlings of native and desirable species for soil moisture. It has been determined that cheatgrass also interferes with seedling establishment of shrubs such as antelope bitterbrush (*Purshia tridentada)* and with pine (*Pinus* sp.) transplants. Cheatgrass changes the frequency, extent, and timing of wildfires by creating a continuous fuel load between otherwise widely spaced shrubs, such as bitterbrush and sagebrush. Cheatgrass matures and dries early in the season and the increased fuel load in turn increases the frequency of fires. Areas disturbed by fire are readily colonized by cheat grass, continuing the cycle of cheatgrass establishment. With the colonization of cheatgrass in the Great Basin rangelands, fire frequency has changed from 60 to 100 years to 3 to5 years (Whisenant 1989), precluding the reestablishment of desirable shrub species, such as bitterbrush, after a fire.

2. Perennial pepperweed

Perennial pepperweed *(Lepidium latifolium)* is a perennial, multi-stemmed herb that grows three to eight feet tall. The stems and leaves of this plant are glabrous, dull gray-green and waxy, with occasional reddish spots. White flowers are produced in dense clusters at the tops of the stems from May to July, producing many small light brown fruits during June and July. Perennial pepperweed can reproduce from seed as well as from segments of the root system. Seeds usually germinate in the spring in wet sand or mud.

Perennial pepperweed invades brackish to saline or alkaline wetlands throughout California, from the coast to the interior and north and eastward into the Great Basin and Columbia Basin. It is an aggressive invader of agricultural and wetland areas in the Central Valley and east of the Sierra Nevada. Perennial pepperweed forms dense monospecific stands that exclude other plants, including natives. In waterfowl nesting areas it out-competes grasses that provide food for waterfowl. In Lassen County it has become widely established in native hay meadows, reducing the value of the hay crop (Bossard et al 2000). Perennial pepperweed has high concentrations in the riparian scrub habitat occurring along Long Valley Creek, the hay meadow, and along the roadways up into Balls Canyon (J. Dawson, CDFG, personal communication).

3. Hairy whitetop

Hairy whitetop (*Cardaria pubescens)*, also known as globe-podded hoary cress, is a perennial (family Brassicaceae) that develops an extensive system of deep vertical and horizontal roots that

vigorously produce new shoots. It can reproduce by root fragments or by seed. It produces white flat-topped inflorescences from May to June producing small pods containing seeds. The seeds germinate in the fall usually after the first rains and over winter as a rosette.

This plant is scattered throughout California, but is most frequently seen in the Sacramento Valley, Great Basin, and southwestern region of the state (Cal-IPC 2006). At HJWA, hairy whitetop was identified in the extreme southern portion of the Wildlife Area, in the interior-rose golden-currant sub-habitat type.

Hairy whitetop tolerates a wide range of soil types and moisture conditions. It persists under a wide range of environmental conditions and is found in irrigated croplands, roadsides, rangelands, and wildland areas. The plants are also found in riparian-upland ecotones and are somewhat salt and alkaline tolerant, but generally not shade tolerant. Hairy whitetop readily establishes in disturbed areas in range and wildlands and is favored during years of above average precipitation. Its invasion potential is greater under heavily grazed conditions or other disturbances. Infestations rapidly establish dense stands and may exclude native species, reduce biodiversity and decrease rangeland productivity and forage quality. In agricultural areas, they are most aggressive in irrigated fields and in areas where cultivation is infrequent (CDFA 2008).

4.0 CONSIDERATIONS FOR SPECIES-SPECIFIC MANAGEMENT STRATEGIES

Management strategies for non-native invasive plants must be species-specific, and sometimes specific to individual occurrences. For example, on some occurrences it may be safe to use herbicides, but other occurrences may be too close to water or rare species.

This section provides general information on techniques that can be used to control or eradicate some of the high priority species (Table 3). Site managers will need to collect additional information on specific locations of infestations before treatment protocols can be finalized.

All pesticide applications made on department-managed lands or for department-managed projects must first be approved by the department's pesticide use coordinator, a pest control adviser licensed by the California Department of Pesticide Regulation (DPR) and assigned to the department's Pesticide Investigations Unit (PIU) (CDPR 2006). CDFG's Pesticide Investigation Unit focuses on five general categories of pesticide work: (1) Incident investigations involving fish and wildlife and pesticides; (2) Hazard assessments of pesticides to fish and wildlife resources; (3) Protection of threatened and endangered species with regards to the use of pesticides; (4) Assessment of pest control and eradication programs on fish and wildlife resource; and (5) Coordination and approval of Department pesticide uses and training of CDFG personnel. PIU staff works closely with Department of Food and Agriculture, Department of Pesticide Regulations, and County Agriculture Commissioner staffs (CDFG 2009). Requests to use pesticides must be submitted to the PIU on the department's pesticide use request form (FG-880) at least 30 days before the intended use date. No pesticide applications can be made to department-managed lands without an approved FG-880 from the PIU. Copies of approved FG-880s must be maintained by department pesticide applicators for at least two years after the pesticide application date. This requirement does not apply to the control of indoor and landscape pests associated with department-managed buildings.

Except as indicated below, all pesticide applications made on department-managed lands or for department-managed projects must be supervised by department personnel who have obtained their qualified applicator certificate from the DPR.

Exceptions to this requirement include the following situations:

1) indoor and landscape pest control at department-managed facilities,
2) pesticide applications made by DPR-licensed commercial pest control companies, vector control districts, or similar agencies, and
3) pesticide applications made by farmers to crops grown under lease agreements with the department.

Herbicides and pesticides are considered hazardous materials and even with the best of care, accidents do occasionally happen. Appendix 6 of this document contains contact information concerning local medical treatment facilities. This information should be kept up to date by HJWA area managers.

4.1 Basic Treatment Options

The following list presents the basic menu of treatment options available for land managers for removing or slowing spread of non-native plants. They can be used separately or in combination:

- prevention of spread by stopping ongoing soil disturbance,
- manual removal (hand pulling),
- mechanical removal (mowing, weed-whacking),
- controlled grazing (cattle, sheep or goats),
- prescribed fire or scorching,
- herbicide application, and
- revegetation with natives.

4.2 Treatment Options for Highest Priority Species

The following sections provide some of the available treatment options for the highest priority species on HJWA lands (Table 3). Much of this information is derived from the California Invasive Plant Council (2006) and Erskine-Ogden et al. (2007). Additional management information on these species has been provided to CDFG Area Managers.

4. Cheatgrass

1) Tilling in the spring after cheatgrass is established can be effective if sufficient moisture is present to support perennial seedling establishment.
2) Grazing in late fall or early spring before seed set has shown significantly reduced plant numbers (heavy grazing will promote cheatgrass invasion).
3) Herbicide spraying has been shown to be effective against cheatgrass but many types cannot be used around streams and rivers.

4) Burning in late May or early June is an option after plants have died to help remove the seed bank, but then the site should immediately be drill seeded with native perennial grasses (Carpenter and Murray 2000)

5) A two to three-year combination of burning, herbicide application, and reseeding can be used to control and re-vegetate an area that is almost exclusively dominated by cheatgrass. Burn and re-seed the area with native perennial grasses during the first year. The following spring, apply herbicides before the seeded perennial grasses emerge in order to eliminate any cheatgrass that emerged from the seedbank after the burn. If necessary, apply a second round of herbicides early in the spring of the third year to control any new cheatgrass seedlings and provide time for native bunchgrasses to establish. This should control the cheatgrass, deplete the existing cheatgrass seed bank, and provide adequate time for perennial grasses to establish to the point where they can suppress any new cheatgrass invasions (ibid.).

5. Perennial pepperweed

1) Hand pulling is feasible only for seedlings. Established plants have a continuous mass of deep, interconnected roots that frequently break. Each segment can vegetatively reproduce, making it critical to grub out as much of the root system as possible.

2) Mechanical removal is not recommended given the plant's ability to spread easily from root fragments, but it will temporarily stop seed from spreading.

3) It may be possible to cut this plant back prior to flowering, and then cover the root system with cardboard or landscape fabric for a year to reduce the plant's ability to resprout.

4) An early season mowing has been shown to dramatically shift the total leaf area and the location of the leaf area within the plant canopy. Resprouting stems had 21-59% less leaf area than plants not mowed at the flowerbud stage. In mowed areas, 84-86% of the leaf area was found within the lower third of the canopy. If herbicide applications are made to resprouted shoots, more herbicide will be deposited onto the lower third of the canopy. This may in turn lead to the translocation and accumulation of more herbicide to below-ground perennial organs, enhancing control (Renz 2000).

5) The optimal timing for herbicide applications is the flowerbud stage. In riparian or wetland habitat, use a product that is not toxic to aquatic organisms and apply with a wick-type applicator to prevent herbicide drift.

6) Sheep and goats will graze on perennial pepperweed if the leaves are still young and there is nothing else to eat.

7) Keep roots away from waterways to minimize further infestations downstream. Wash equipment and the tires and undersides of vehicles after leaving the site.

8) Bag and dispose of pulled plants as household garbage or take them to a green waste facility. Alternatively, dispose of the plants through hot compost with grinding (but not ordinary compost, as very small fragments will reroot).

9) Any revegetation should be carried out as soon as possible. Natives with creeping perennial roots may be best.

10) Follow-up: Regular follow-up is essential as roots can lay dormant underground for several years. Return to the site in early spring and late summer for several years to check for regrowth and to remove rosettes. Scrape litter from the soil surface to allow other species to grow. Soil remediation may be required before planting native species.

6. Hairy whitetop/globe-podded hoary cress

1) Where physical conditions permit, hoeing at intervals of 3 to 4 weeks (depending on rate of regrowth) may be as effective as cultivation for eradication of hoary cress. Stands of globe-podded hoary cress have been eradicated in 1.5 to 2 seasons by hoeing at intervals of four weeks. Soils must remain moist between hoeing so that plants can regrow and deplete their root reserves (Lyons 2000).

2) Herbicides are effective in gaining initial control of new or severe infestations, but are rarely a complete or long-term solution to invasive species management (Zouhar 2004).

3) Effective management of hoary cress requires an integrated approach that includes 1) containment of known infestations; 2) prevention to assure new sites are not invaded; and 3) control to reduce or eliminate known infestations (ibid.).

4) Manage rangelands for plant communities in which all niches are occupied by vigorous plants. Grazing management plans consisting of moderate forage utilization and seasonal rotation of livestock can help desirable perennial plants maintain vigor and competitive ability and minimize hoary cress establishment and spread (ibid.).

5) Livestock should not be permitted to graze weed-infested areas during flowering and seedset. If animals do graze infested areas during and after seed production, they should be transported to a holding area for 10 to 14 days, to allow time to digest and excrete seeds, before moving to uninfested areas (ibid.).

6) Herbicides are more effective on large infestations when incorporated into long-term management plans that include replacement of weeds with desirable species, careful land use management, and prevention of new infestations (ibid.).

5.0 FOLLOW-UP MONITORING FOR TREATMENT EFFECTIVENESS

Follow-up monitoring to determine the effectiveness of treatments is a critical component of a successful non-native plant management program. Monitoring is valuable for providing information on the following:

1) progress of removal efforts,

2) effectiveness of treatments,

3) degree of re-establishment of target species after removal treatments have been applied (i.e., presence of seedlings or re-sprouts),

4) length of time follow-up visits are necessary,

5) status of natural or imposed re-vegetation on treated sites (e.g., the proportion of native vs. non-native plants re-colonizing the area), and

6) use of the treated area by native wildlife.

Monitoring and documentation also are valuable for determining costs of plant management programs, for reporting on the use of project funding, and for information exchange with other land managers dealing with similar species.

Monitoring can be done using a variety of methods, either qualitative or quantitative. Selection of methods will be contingent on the specific objectives and on available funding, and therefore should be prioritized as removal and control efforts are prioritized. The following information on examples of low, moderate, and high intensity monitoring are excerpted from Center for Invasive Plant Management (CIPM) (Appendix 1):

Low Intensity (Level I)

Objective: To detect new infestations and to assess the success of small scale chemical or mechanical control programs.

1) Annually survey size and density of weed infestations and vegetation trends.
2) Assemble data on past and current weed control activities within the WMA.
3) Annually update distribution/density map.
4) Annually examine areas that are determined to be particularly susceptible to weed infestations.

Moderate Intensity (Level II)

Objective: Assess the success of ongoing chemical, biological control, or prevention programs in order to evaluate the need for adjustments.

Include the elements of Level I, plus:

1) Establish permanent transects to aid visual monitoring.
2) Establish photo points. Catalog and store photos so they are useful for recording trends.
3) Collect weather data. This will require access to weather records and Palmer Drought Index (NOAA 2008).
4) Evaluate the success of public education programs.
5) Monitor funding from various sources.
6) Assess the prevention effort.
7) Compare the success of application timing, rates, and methods of treatment with that of applications on similar areas.
8) Make an annual visual inspection for symptoms of damage to desirable plants.
9) Make post-treatment inspections to determine possible damage and the need for retreatment.

High Intensity (Level III)

Objective: Assess the success of major, sensitive or experimental control programs.

Include the elements of Levels I and II, plus:

1) This level may require the use of statistical and chemical analysis.
2) Establish a computerized database. Geological Information Systems (GIS) lend themselves to this level of monitoring.
3) Automatic weather stations may be used to collect data.
4) May require more detailed maps.
5) Collect data on ground water, soils, health effects and impacts on wildlife management.

Also note that weed-free areas also deserve rigorous monitoring. Preventing weeds from becoming established is the most effective, economical, and ecologically sound approach to managing invasive plants at the Hallelujah Junction Wildlife Area.

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Renz, M. 2000. Element Stewardship Abstract for *Lepidium latifolium* L. (perennial pepperweed, tall whitetop). The Nature Conservancy Global Invasive Species Team, Arlington, VA. Accessed online: http://tncinvasives.ucdavis.edu/esadocs/documnts/lepilat.rtf

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Tibor, D. P., ed. 2001. Inventory of rare and endangered vascular plants of California. California Native Plant Society, special publication no. 1, ed. 6. California Native Plant Society, Sacramento, CA.

U.S. Department of Agriculture. 2008. Invasive and Noxious Weeds, PLANTS Database. Natural Resources Conservation Service, National Plant Data Center, Baton Rouge, LA. Accessed online: http://plants.usda.gov/java/noxComposite

Whisenant, S. G. 1989. Changing fire frequencies on Idaho's Snake River Plains: Ecological and management implications. *In* Proceedings of symposium on cheatgrass invasion, shrub die-off, and other aspects of shrub biology and management, eds. E. D. McArthur, E. M. Romney, S. D. Smith, and P. T. Tueller. USDA Forest Service, General Technical Report INT-276, Intermountain Research Station, Ogden, UT. 1-7.

Zouhar, K. 2004. Cardaria spp. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, Fort Collins, CO. Accessed online: http://www.fs.fed.us/database/feis/

Appendix 1: Additional Resources

Developing a Weed Management Plan

Adaptive Weed Management Plan Template. The Nature Conservancy. A three-part tool: (1) An introduction to the philosophy of adaptive management, (2) weed management plan template, including boiler-plate language to ease the planning process and help prioritize weeds, and (3) Excel workbook to keep track of your work and costs.

Weed Information Management System (WIMS). The Nature Conservancy. WIMS keeps track of weed occurrences (GPS point locations), assessments (size and status of the weed infestation to facilitate monitoring over time), and management treatments applied to those weed infestations.

The Colorado Natural Areas Program. 2000. Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values. *In* Caring for the Land Series, vol. 4, Colorado State Parks, Colorado Department of Natural Resources. Provides the tools and information necessary for public and private landowners to manage noxious weeds successfully in natural areas, wildlands, and rangelands.

Seven Steps to Managing Your Weeds: A Manual for Integrated Management in British Columbia. 2002. Open Learning Agency and British Columbia Ministry of Agriculture, Food and Fisheries. Burnaby, British Columbia, Canada.

Prioritizing Weed Threats

Criteria System. Cal-IPC 2006 Invasive Plant Inventory. For categorizing invasive non-native plants that threaten wildlands.

Evaluating Risk to Native Plant Communities from Selected Exotic Plant Species. U.S. Forest Service. Developed to help land managers identify the native plant communities most threatened by invasive plants.

Invasive Species Assessment Protocol: Evaluating Non-Native Plants for Their Impact on Biodiversity. NatureServe, Arlington, VA. The protocol is designed to make the process of assessing and listing invasive plants objective, systematic, and transparent and will help set priorities focusing scarce management resources.

Stohlgren, T J. 2006. Measuring Plant Diversity: Lessons from the Field. Oxford University Press, New York, NY. Because resident native diversity can affect the likelihood of invasion by non-native plants, it is critical that scientists accurately assess the composition of plant communities over large areas.

Inventory and Survey

California Weed Mapping Handbook. Provides information on (1) shared data standards, so that different data sets will be compatible, and (2) "how to" instructional information on mapping techniques. Its aim is to help those working on weed issues to develop mapping systems that will support project goals on both a local and state level. PDF (2 MB) download on Web site.

Elzinga, C. L., D. W. Salzer, and J. W. Willoughby. 2001. Measuring and Monitoring Plant Populations, technical reference 1730-1. BLM Library, Denver, CO.

Invasive Species Monitoring Resources. Guidelines, protocols, assessment, references, and more. National Park Service, Washington, D.C. (Accessed 2008).

Map Important Weeds for a Living Inventory, part 3. Nevada's War on Weeds, University of Nevada Cooperative Extension, Reno.

Mapping Standards from NAWMA. North American Weed Management Association, Meade, KS.

Photo Point Monitoring: How Can I Monitor without Spending a Lot of Time and Money? USDA Forest Service, Remote Sensing Applications Center, Salt Lake City, UT.

Remote sensing… and invasive species. The Global Invasive Species Team, Nature Conservancy. An introduction intended to help land managers decide if remote sensing could be a useful tool for them.

Rew, L. and B. Maxwell. 2007. Monitoring Non-Native Plant Populations, chap. 7. *In* Invasive Plant Management: CIPM Online Textbook. Center for Invasive Plant Management, Bozeman, MT. Center for Invasive Plant Management

Sutter, R. D. 1997. Monitoring Changes in Exotic Vegetation. *In* conference proceedings, Exotic Pests of Eastern Forests, ed. K. O. Britton. Nashville, TN, April 8-10. USDA Forest Service and The Nature Conservancy. An overview of the most important monitoring issues, modified to address the management of exotics.

Weed Manager's Guide to Remote Sensing and GIS. USDA Forest Service, Salt Lake City, UT.

Appendix 2: Partial List of Non-Native Vascular Plant Species[1] Observed in the Hallelujah Junction Wildlife Area, Lassen and Sierra Counties, CA

Name	Common Name	Invasiveness Ranking[2]
ASTERACEAE		
Carduus nutans	Musk thistle or nodding thistle	B
Cirsium vulgare	Bull thistle	B
Lactuca serriola	Prickly lettuce	D
BRASSICACEAE		
Capsella bursa-pastoris	Shepard's purse	-
Cardaria pubescens	Hairy whitetop, hoary cress	B
Descurainia sophia	Flix weed, Tansy mustard	B
Lepidium latifolium	Perennial pepperweed	A
Lepidium perfoliatum	Clasping pepperweed	-
Rorippa nasturtium-aquaticum (?)[3]	Common watercress	-
Sisymbrium altissimum	Tall tumblemustard	-
CHENOPODIACEAE		
Atriplex rosea	Tumbling saltweed	-
Chenopodium botrys	Jerusalem oak goosefoot	-
CONVOLVULACEAE		
Convolvulus arvensis	Field bindweed	B
FABACEAE		
Medicago lupulina	Black medick	-
Melilotus officinalis	Yellow sweet clover	C
Robinia pseudoacacia	Black locust	B
Trifolium repens	White clover	-
LAMIACEAE		
Mentha spicata var. *spicata*	Spearmint	-
PLANTAGINACEAE		
Plantago lanceolata	Narrow leaf, English plantain	C
Plantago major	Common plantain	-
POLYGONACEAE		
Rumex acetosella	Common sheep sorrel	
Rumex crispus	Curly dock	C
ROSACEAE		
Rubus laciniatus	Cutleaf blackberry	-
SCROPHULARIACEAE		
Verbascum thapsus	Great or common mullein	-
ULMACEAE		
Ulmus sp.	Elm	-
POACEAE		
Agropyron desertorum	Desert crested wheatgrass	-
Agrostis stolonifera	Creeping bentgrass	-
Bromus inermis ssp. *inermis*	Smooth brome	-
Bromus tectorum	Cheatgrass	-
Crypsis schoenoides	Swamp picklegrass, swamp grass	-
Festuca pratensis	Meadow fescue	-
Phleum pratense	Timothy grass	-
Poa bulbosa	Bulbous blue grass	-
Poa pratensis (?)	Kentucky bluegrass	B

[1] Cal-IPC 2006.
[2] Cal-IPC Invasiveness Rating:
A = Severe, B = Moderate, C = Limited, D = None, U = Unknown
[3] May be naturalized.

Appendix 3: Emergency Medical Facilities

The nearest hospitals and medical clinics are located in Reno and Sparks, Nevada.

Saint Mary's Regional Medical Center

235 West Sixth Street
Reno, Nevada 89503
(775) 770-3000

Saint Mary's Urgent Care on McCarran

6770 S. McCarran Blvd.,
Reno, Nevada 89519
(775) 770-3254

Renown Urgent Care

910 Vista Boulevard [map | driving directions]
Corner of Vista Blvd. and Prater Way
Sparks, NV 89434
(775) 982-4580

1155 West 4th Street, Suite 108 [map | driving directions]
Near Keystone Avenue
Reno, NV 89503

APPENDIX G

California Environmental Quality Act Negative Declaration/Initial Study

CDFG Notice of Completion (Signed and SCH Stamped)

CDFG Negative Declaration (Signed and SCH Stamped)

CEQA Environmental Checklist Form

State of California – The Resources Agency
ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov

State Clearinghouse
1400 Tenth Street
Sacramento, California 95814

November 16, 2009

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Proposed Negative Declaration for the draft Land Management Plan for the Hallelujah Junction Wildlife Area.

Enclosed are the Notice of Completion (NOC) and 17 copies of the proposed Environmental Checklist/Negative Declaration for the Management Plan for the Hallelujah Junction Wildlife Area.

Based upon the Initial Study/Environmental Checklist, the Department of Fish and Game has determined that the project will not have a significant effect on the environment. Because this is a proposed Negative Declaration, we request a 30-day review period. Also enclosed is a courteous electronic copy of the land management plan and proposed negative declaration.

If you have any questions or need further information, please contact Mr. Paul Raquel at (916) 358-2868 or Mr. Armand Gonzales at (916) 358-2876.

Sonke Mastrup
Deputy Director

Enclosure

cc: Mr. Paul Raquel, North Central Region
Mr. Armand Gonzales, North Central Region
Ms. Teresa Le Blanc, Lands Program

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Hallelujah Wildlife Area Land Management Plan

Lead Agency: Department of Fish and Game — Contact Person: Paul Raquel
Mailing Address: 1701 Nimbus Rd. Suite A — Phone: 916-358-2868
City: Rancho Cordova — Zip: 95670 — County: Sacramento

Project Location: County: Sierra Co and Lassen Co — City/Nearest Community: Cold Springs and Reno, NV
Cross Streets: US 395/SR 70 — Zip Code: ____
Longitude/Latitude (degrees, minutes and seconds): ____° ____' ____" N / ____° ____' ____" W — Total Acres: 13,394
Assessor's Parcel No.: various, see LMP — Section: ____ Twp.: 21N 22 N Range: R17 18 E Base: ____
Within 2 Miles: State Hwy #: US 395/SR 70 — Waterways: Long Valley/Balls Canyon Creeks
Airports: ____ — Railways: Union Pacific — Schools: ____

Document Type:

CEQA:
- ☐ NOP
- ☐ Early Cons
- ☑ Neg Dec
- ☐ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) ____
- Other: ____

NEPA:
- ☐ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other: ____

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Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Development
- ☐ Site Plan
- ☐ Rezone
- ☐ Prezone
- ☐ Use Permit
- ☐ Land Division (Subdivision, etc.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ☑ Other: Mngmt Plan

Development Type:

- ☐ Residential: Units ____ Acres ____
- ☐ Office: Sq.ft. ____ Acres ____ Employees ____
- ☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
- ☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
- ☐ Educational: ____
- ☐ Recreational: ____
- ☐ Water Facilities: Type ____ MGD ____
- ☐ Transportation: Type ____
- ☐ Mining: Mineral ____
- ☐ Power: Type ____ MW ____
- ☐ Waste Treatment: Type ____ MGD ____
- ☐ Hazardous Waste: Type ____
- ☑ Other: Wildlife Area

Project Issues Discussed in Document:

- ☑ Aesthetic/Visual
- ☐ Agricultural Land
- ☐ Air Quality
- ☑ Archeological/Historical
- ☑ Biological Resources
- ☐ Coastal Zone
- ☐ Drainage/Absorption
- ☐ Economic/Jobs
- ☐ Fiscal
- ☐ Flood Plain/Flooding
- ☑ Forest Land/Fire Hazard
- ☑ Geologic/Seismic
- ☑ Minerals
- ☐ Noise
- ☐ Population/Housing Balance
- ☐ Public Services/Facilities
- ☐ Recreation/Parks
- ☐ Schools/Universities
- ☐ Septic Systems
- ☐ Sewer Capacity
- ☑ Soil Erosion/Compaction/Grading
- ☐ Solid Waste
- ☐ Toxic/Hazardous
- ☐ Traffic/Circulation
- ☑ Vegetation
- ☑ Water Quality
- ☑ Water Supply/Groundwater
- ☑ Wetland/Riparian
- ☐ Growth Inducement
- ☑ Land Use
- ☐ Cumulative Effects
- ☐ Other: ____

Present Land Use/Zoning/General Plan Designation:

GF (general forest), None

Project Description: *(please use a separate page if necessary)*

This draft LMP describes the ecological conditions and managerial goals of the HJWA. The draft LMP contains a comprehensive description of the HJWA and its environment as well as an evaluation of compatible wildlife-related public uses. The Hallelujah Junction Wildlife Area (HJWA) is located in northeastern California, approximately 15 miles north of Reno, Nevada, and approximately 4 miles south of Hallelujah Junction (the intersection of Highway 395 and Highway 70). The HJWA is bisected east-west by Highway 395 and straddles the Sierra/Lassen County Lines. It is located on portions of Township 21 and 22 North, and Range 17 and 18 East on the Evans Canyon and Beckwourth Pass U.S. Geological Survey 7.5 minute topo.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

_____ Air Resources Board
_____ Boating & Waterways, Department of
_____ California Highway Patrol
_____ Caltrans District # _____
_____ Caltrans Division of Aeronautics
_____ Caltrans Planning
_____ Central Valley Flood Protection Board
_____ Coachella Valley Mtns. Conservancy
_____ Coastal Commission
_____ Colorado River Board
_____ Conservation, Department of
_____ Corrections, Department of
_____ Delta Protection Commission
_____ Education, Department of
_____ Energy Commission
_____ Fish & Game Region # _____
_____ Food & Agriculture, Department of
_____ Forestry and Fire Protection, Department of
_____ General Services, Department of
_____ Health Services, Department of
_____ Housing & Community Development
_____ Integrated Waste Management Board
X Native American Heritage Commission

_____ Office of Emergency Services
_____ Office of Historic Preservation
_____ Office of Public School Construction
_____ Parks & Recreation, Department of
_____ Pesticide Regulation, Department of
_____ Public Utilities Commission
_____ Regional WQCB # _____
X Resources Agency
_____ S.F. Bay Conservation & Development Comm.
_____ San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
_____ San Joaquin River Conservancy
_____ Santa Monica Mtns. Conservancy
_____ State Lands Commission
_____ SWRCB: Clean Water Grants
_____ SWRCB: Water Quality
_____ SWRCB: Water Rights
_____ Tahoe Regional Planning Agency
_____ Toxic Substances Control, Department of
_____ Water Resources, Department of

_____ Other: _____
_____ Other: _____

Local Public Review Period (to be filled in by lead agency)

Starting Date _____ Ending Date _____

Lead Agency (Complete if applicable):

Consulting Firm: Sustain Environmental Inc
Address: 3104 "O" Street
City/State/Zip: Sacramento, CA 95816
Contact: Rebecca Cull
Phone: _____

Applicant: CA Department of Fish and Game
Address: 1701 Nimbus Road, Suite A
City/State/Zip: Rancho Cordova, CA. 95670
Phone: _____

Signature of Lead Agency Representative: _____ **Date:** 11/4/09

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

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APPENDIX G

California Environmental Quality Act Negative Declaration/Initial Study

CDFG Negative Declaration

CEQA Environmental Checklist Form

Hallelujah Junction Wildlife Area Land Management Plan
NEGATIVE DECLARATION

Pursuant to Sections 15070 and 15071 of the California Environmental Quality Act (CEQA) guidelines, the California Department of Fish and Game proposed to adopt this Negative Declaration.

1. Title and Short Description of the Project: Hallelujah Junction Wildlife Area Land Management Plan

The California Department of Fish and Game (CDFG) is proposing to adopt an updated land management plan for the Hallelujah Junction Wildlife Area (HJWA) to help guide their planning and operations. The first parcel of the HJWA was purchased in 1989 for the express purpose of protecting the winter range and migration corridors of the Loyalton-Truckee deer herd. The initial land purchase totaled 3,742 acres. Since that time, six additional expansions have brought the total to 13,394 acres. As stated in the original land management plan, the Hallelujah Junction Wildlife Area was purchased by the State of California to (CDFG 1990):

1. Preserve critical deer winter range and migration corridors from development.
2. Protect, restore, enhance and develop riparian and wetland habitats.
3. Provide public use with an emphasis on interpretive and educational use.

The CDFG develops management plans for all its lands. Its purpose in preparing a land management plan (LMP) is multifold:

1. To guide management of habitats, species, and programs to achieve the department's mission to protect and enhance wildlife.
2. To identify appropriate public uses of the property.
3. To serve as a descriptive inventory of fish, wildlife and native plant habitats that occur on or use the property.
4. To provide an overview of the property's operation and maintenance, and personnel requirements to implement management goals. It also serves as a budget planning aid for annual regional budget preparation.
5. To provide a description of potential and actual environmental impacts and subsequent mitigation that may occur during management, and to provide environmental documentation to comply with state and federal statutes and regulations.

2. Location of the Project: The proposed project is located in northeastern California on the HJWA which is located in portions of Sierra and Lassen Counties. The HJWA is approximately 15 miles north of Reno, Nevada, and approximately 4 miles south of Hallelujah Junction (at the intersection of U.S. Highway 395 and State Highway 70).

3. Project Proponent: California Department of Fish and Game

4. Said project will not have a significant effect on the environment for the following reasons:

The proposed project is the adoption of an updated LMP, which of itself would cause no environmental impacts. LMP implementation may include actions that would physically alter the environment and these actions were anticipated and analyzed at a programmatic level. Although some LMP elements (restoration and enhancement activities) have the potential for environmental impacts, the LMP was designed with required tasks, protective measures and best management practices that, when implemented, avoid potentially significant impacts. Furthermore, the LMP projects are designed to enhance rather than degrade environmental resources. In addition, all projects that may be implemented in the future as a result of adopting the LMP must be subjected to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

5. As a result thereof, the preparation of an Environmental Impact Report pursuant of CEQA (Division 13 of the Public Resources Code of the State of California) is not required.

In accordance with Section 21082.1 of the California Environmental Quality Act, the California Department of Fish and Game (CDFG) has independently reviewed and analyzed the Initial Study and Negative Declaration for the proposed project and finds that the Initial Study and Negative Declaration reflect the independent judgment of the CDFG.

I hereby approve this project:

Sandra Morey

Date: 11/4/09

Hallelujah Junction Land Management Plan
CEQA Environmental Checklist Form

1.	**Project title:** Hallelujah Junction Wildlife Area Draft Land Management Plan		
2.	**Lead agency name and address:** California Department of Fish and Game, North Central Region 1701 Nimbus Road Rancho Cordova, CA 95670		
3.	**Contact person and phone number:** Terri Weist, Area Manager, (530) 836-0889		
4.	**Project location:** The Hallelujah Junction Wildlife Area (HJWA) is located in northeastern California, approximately 15 miles north of Reno, Nevada, and approximately 4 miles south of Hallelujah Junction (at the intersection of U.S. 395 and State Highway 70). The HJWA is bisected east-west by U.S. 395 and straddles the Sierra/Lassen County Lines. It is located on portions of Township 21 and 22 North, and Range 17 and 18 East on the Evans Canyon and Beckwourth Pass U.S. Geological Survey 7.5 minute topographic quadrangles.		
5.	**Project sponsor's name and address:** California Department of Fish and Game North Central Region 1701 Nimbus Road Rancho Cordova, CA 95670		
6.	**General plan designation:** GF (general forest), None	7.	**Zoning:** None
8.	**Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)** This project is a draft update of the HJWA Land Management Plan (LMP) originally prepared in 1990. The HJWA was first purchased by the state of California in 1989 and totaled 3,742 acres. Since that time, there have been six additional expansions bringing the total acreage to 13,394. The original LMP for this property only addressed the first acquisition. This document is designed to update the previous plan to include the subsequent acquisitions and to provide guidance for the long-term management of the HJWA. This draft LMP describes the dynamic ecological conditions and managerial goals of the HJWA. The draft LMP contains a comprehensive description of the HJWA and its environment as well as an evaluation of compatible wildlife-related public uses. It is written for a wide range of audiences with varying degrees of expertise in ecosystem level and adaptive management		

techniques. As area managers gather more information and data, LMP updating will continue and management goals will be refined and adapted. This LMP consists of five sections:

I. Introduction

II. Property Description

III. Habitats and Species

IV. Management Goals

V. Operations and Maintenance

This initial study (IS) was prepared in accordance with the provisions of the California Environmental Quality Act (CEQA) and the State CEQA Guidelines to identify and evaluate the potential environmental impacts of operating the HJWA under the provision of the HJWA LMP. This IS considers the whole of the project, and includes the following components:

- The ongoing operation of the HJWA including the public uses incorporated in this LMP;
- Maintenance activities (e.g., habitat management and agricultural) to sustain the biological communities that provide habitat for wildlife and fisheries resources;
- Minor improvements, such as signage, access control and maintenance and trails that do not involve substantial physical disruption of the Wildlife Area;
- Revegetation and enhancement of shrublands and riparian areas;
- Maintenance of the HJWA structures and facilities;
- Monitoring and educational activities, including scientific research;
- Ongoing coordination with public agencies and private interests consistent with the LMP goals;
- Dissemination of public information regarding the HJWA that may include hardcopy and online data as well as other media;
- Update to HJWA regulations; and
- Enforcement of duly adopted laws and regulations.

The draft LMP serves as a general policy guide for the management of the HJWA, including those project components listed above. Protective measure, avoidance strategies and best management practices were incorporated concurrently with the development of the LMP. These measures help ensure that planned actions described in the LMP, including those to be implemented in the future, will not result in significant environmental impacts. Therefore, the CEQA analysis summarized herein is intended to be adequate for many future projects implemented in a manner consistent with the goals and tasks of the adopted LMP. However, any substantive physical changes not included in the draft LMP project description will receive subsequent review and authorization as necessary.

	Because potential physical changes to the HJWA would be a part of subsequent projects that have yet to be conceived, designed, or funded, it is not reasonably possible to evaluate the impacts of any such projects at this time. If a subsequent project is not included within the scope of this LMP (i.e. specific goals and tasks), appropriate analysis and documentation pursuant to CEQA will be conducted prior to action on that project. All projects that may be implemented in the future as a result of adopting the LMP must be subjected to CEQA review according to CEQA Guidelines Section 15168. The appropriate type of additional CEQA documentation completed would be determined based on applicable legal requirements, including CEQA Guidelines Sections 15162-15164. This IS concludes that adoption and implementation of the LMP would result in "less-than-significant impacts" or "no impacts" to the environment.
9.	**Surrounding land uses and setting: (Briefly describe the project's surroundings.)** The HJWA is bordered by federal lands (Bureau of Land Management on the east, and United States Forest Service, Tahoe National Forest, on the west). The City of Santa Clara owns two undeveloped neighboring sections (3 and 9) on the Evans Canyon Quadrangle. Private land use on the north side is primarily grazing lands. Ranches here consist of large cattle and hay operations with houses and multiple outbuildings. Balls Canyon Ranch borders the HJWA's southwestern corner. The residential community of White Lake adjoins the Wildlife Area at the southeastern corner and the commercial outpost at Bordertown shares a common boundary along U.S. 395. Other nearby development consists of industrial parks, homes on large lots and small ranchettes (5-20 acres in size).
10.	**Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):** None.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

	Aesthetics		Agriculture Resources		Air Quality
	Biological Resources		Cultural Resources		Geology /Soils
	Hazards & Hazardous Materials		Hydrology / Water Quality		Land Use / Planning
	Mineral Resources		Noise		Population / Housing
	Public Services		Recreation		Transportation/Traffic
	Utilities / Service Systems		Mandatory Findings of Significance		

DETERMINATION:

On the basis of this initial evaluation:

X	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	11/18/09 Date
Signature	Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

I. AESTHETICS -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

DISCUSSION

a), b), d) No Impact.
The proposed LMP's goals include optimizing native vegetation, preserving existing agricultural practices and cultural resources and the protection of natural visual resources (LMP, Section IV). The HJWA is not within a state scenic highway, and the proposed LMP does not involve the construction of any new buildings or outdoor lighting. LMP adoption would not adversely affect scenic vistas, damage scenic resources or create adverse lighting that affects day or nighttime views in the area.

c) Less Than Significant Impact.
Some LMP management tasks would involve minor modifications to the existing landscape (e.g., restoration or enhancement activities, signage, and access improvements). However, LMP adoption and task implementation would improve the overall aesthetic conditions of the HJWA by incorporating protection, management, and enhancement strategies for its natural habitats.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

II. AGRICULTURE RESOURCES -- In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. **Would the project:**	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?			X	
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X

DISCUSSION

a) Less Than Significant Impact.
The California Department of Conservation's Farmland Mapping and Monitoring Program (2006) depicts the southernmost portion of the HJWA (the area formerly known as the Green Gulch Ranch) as important farmlands (Prime, Statewide importance and Locally Important). Some areas in the northern portion of the HJWA, alongside Long Valley Creek, are depicted as farmlands of Local Importance. The remaining parcels are classified as Grazing Lands or Other (government-owned lands with use restrictions). The nine parcels known as Green Gulch Ranch (LMP II, Table 1) consist of irrigated pastureland and include one 40 acre parcel (APN 021040010) designated by Sierra County as General Forest Land (Sierra County Planning Department 2005). Sierra County's permitted uses for this 40 acre parcel include growing and harvesting of agricultural and forest products, grazing of livestock, single family residences and accessory buildings (ibid.). These land use designations are consistent with the historical use of this property, and for many years, these parcels have been used primarily for livestock grazing. CDFG intends to continue livestock grazing on the property as long as it is appropriate and non-detrimental as part of the overall habitat management plan for the area.

a) No Impact.
None of the HJWA parcels contain Williamson Act contracts.

b) No Impact.
The LMP proposes to maintain a mix of natural communities and agricultural (grazing and hay production) lands on the Wildlife Area. There are no LMP tasks

that would establish any facilities, structures, or land uses that would physically or economically preclude returning the land to cultivation in the future, if there were to be such a public policy decision.

III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?				X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				X
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				X
d) Expose sensitive receptors to substantial pollutant concentrations?				X
e) Create objectionable odors affecting a substantial number of people?				X

DISCUSSION

a), b), c), d), e) No Impact.
Adoption of the proposed LMP would not generate automobile trips, construction activities, operational pollutants or odor emissions; therefore, adoption of the HJWA LMP would not adversely affect air quality or conflict with the Northern Sierra Air Quality Management District (NSAQMD) air quality plan (NSAQMD 2005). Some of the proposed LMP management tasks may involve the temporary use of construction equipment (e.g., installation of signs, habitat revegetation/restoration projects), and therefore may result in the temporarily increase of equipment emissions. These would be short-term impacts involving a limited number of construction machines and would not contribute to a cumulative net increase in any pollutants. The Wildlife Area is located in a remote portion of eastern California and there are no proposed activities that would expose sensitive receptors to objectionable odors.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

IV. BIOLOGICAL RESOURCES -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?			X	
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

DISCUSSION

a), b), c), d) Less than Significant Impact.
The LMP's goals and tasks provide guidance for CDFG's management of the HJWA for the benefit of the habitats and species found on the sites. The LMP restoration and enhancement activities will improve habitat connectivity and movement corridors for native species and improve wildlife habitat. Wetland and riparian habitat resources are especially valued for wildlife and fish species and the LMP proposes no actions that will remove, fill or disrupt the hydrological conditions that maintain these resources.

Implementation of some of the management actions described in the proposed LMP would involve temporary habitat disturbance, including disturbance to

sensitive and protected riparian and wetland habitats (e.g., revegetation and habitat enhancement activities, access control and maintenance or signage). This disturbance would also have a potential for adverse effects to special-status species (e.g. Northern Goshawk, yellow warbler, willow flycatcher), and fish and wildlife movement corridors. However, all restoration and enhancement actions are designed with the long-term goal of improving habitat conditions, supporting special-status species populations and monitoring for management success (e.g., IVB, Goal 2.1, Tasks 2.1.2-2.14; Goal 3.1, Task 3.1.1; Goal 4.2). In addition, goals and tasks in the LMP require protection measures for sensitive species and habitats which, when implemented, would reduce potential temporary adverse effects to less-than-significant levels (e.g., IVB, 2.1, Task 2.1.4; Goal 5.1, Tasks 5.1.3-5.1.4; Goal 6.1, Tasks 6.1.1-6.1.4).

Furthermore, any of these types of activities would be implemented in conformance with regulatory requirements such as CDFG, U.S. Fish and Wildlife Service (USFWS), and State Water Quality Control Board (SWQCB) regulations, as well as Section 404 of the Clean Water Act (CWA), and any applicable plans or ordinances protecting biological resources.

e), f) No Impact.
There are no Habitat Conservation Plans, Natural Community Conservation Plans or other local policies that conflict with the adoption and implementation of the plan.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

V. CULTURAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?			X	
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d) Disturb any human remains, including those interred outside of formal cemeteries?			X	

DISCUSSION

a), b), c), d) Less Than Significant Impact.
Adoption of the proposed will not adversely affect archaeological or paleontological resources, or disturb any human remains. Although implementation of some of the

management tasks described in the proposed LMP would involve minimal land disturbance (e.g., restoration or enhancement activities, installation of fencing or signage), the goals and tasks in the LMP include protection measures for cultural resources including the following:

1) conducting cultural resource surveys prior to ground disturbance,

2) consultation with a qualified archaeologist in the case of an inadvertent discovery,

3) submittal of resource documentation to the California Historical Resources Information System and the National Register of Historic Places, and

4) submittal of resource evaluations to the State Historic Preservation Officer and the Office of Historic Preservation, as appropriate.

These measures would identify and protect any prehistoric and historic resources prior to ground disturbance; therefore, impacts to cultural resources would be less than significant.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

VI. GEOLOGY AND SOILS -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X

DISCUSSION

a), c), d), e) No Impact.
LMP implementation will not change the current exposure risk to geologic hazards or expansive soils nor create a substantial risk to lives or property. The LMP does not specifically authorize or make a precommitment to any substantive physical changes to the Wildlife Area. With the exception of ongoing restoration and enhancement, and operations and maintenance activities, any substantive physical changes that are not currently approved will require subsequent authorizations.

The LMP does not include construction of septic tanks or alternative waste water disposal systems nor would any be required as a result of the implementation of any of the LMP goals or tasks; therefore, implementation of the LMP would result in no impact.

b) Less Than Significant Impact.
Implementation of some of the management tasks described in the proposed LMP could involve minimal ground disturbance (e.g., habitat restoration, enhancement or maintenance activities). These activities would be implemented using best management practices designed to minimize soil erosion and/or topsoil loss, and would be conducted in conformance with regulatory requirements regarding soil erosion (IVB, Goal 6.2, Task 6.2.6). Ultimately, the LMP proposes to restore fire damaged wildlife habitat (e.g., IVE, Goal 3; Appendices E and G) and the results will be beneficial, reducing topsoil loss through wind erosion.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

VII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	–		X	

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			X	

DISCUSSION

a), b) Less Than Significant Impact.
HJWA LMP implementation does not require the routine use, transport or disposal of hazardous materials; however, some of the management tasks could potentially expose people or the environment to such hazards (e.g., use of heavy equipment, pesticides/herbicides during restoration or enhancement activities, and potential hazardous materials in existing structures). The LMP requires a hazardous materials assessment be conducted prior to substantial ground disturbance or structural improvement activities. Likewise, prior to any herbicide or pesticide use, the LMP requires that the proposed areas be surveyed for sensitive biological resources and treated by a certified applicator using appropriate disclosure procedures, avoidance strategies and safety precautions to limit exposure and prevent accidental releases (IVB Goals; Appendix E). Due to the safety provisions discussed above, less than significant impacts are expected for hazardous materials handling or accidental release.

c), d), e), f), g) No Impact.
The Wildlife Area is not located within a quarter mile of a school; therefore, children will not be exposed to any hazardous materials. There are no public or private airports within two miles of the Wildlife Area; therefore LMP adoption will

not pose any safety hazards to aircraft or people residing or working in the project area.

A computerized database search of various agency lists was conducted for the Wildlife Area and surrounding properties to identify potential hazardous contamination sites; none were found (Environmental Protection Agency 2009). The LMP goals and tasks include drafting an emergency response plan for the HJWA in coordination with other local and federal first responder agencies (IVE, Goal 2, Tasks 2.1.1-2.1.6). Net project impacts related to emergency response would be beneficial.

h) Less than Significant Impact.
The Wildlife Area is located in a region where wildfire is a serious concern and a large portion of the area was damaged by recent wildfires. The LMP's fire management goals and accompanying tasks (IVE, Goal 2) would decrease potential risks of loss, injury or death involving wildland fires. Net project impacts related to wildfire hazards would be beneficial.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

VIII. HYDROLOGY AND WATER QUALITY -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Violate any water quality standards or waste discharge requirements?				X
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				X

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
f) Otherwise substantially degrade water quality?				X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X

DISCUSSION

a), b), c), d), e), f), g), h), i), j) No Impact.

Adoption and implementation of the proposed LMP do not include any actions that will result in violations of water quality standards or waste discharge requirements. Proposed LMP goals or tasks will not affect groundwater recharge, involve the use of storm drain systems, construct homes or structures that increase surface or polluted runoff nor impede or redirect flood flows. Therefore, adoption and implementation of the LMP would not threaten storm drain capacity, increase 100-year flood hazards, or increase flooding risks as a result of the failure of a levee or dam.

The proposed LMP requires all water related goals and tasks meet the applicable regulatory requirements protecting aquatic habitats and water quality, such as CDFG, USFWS, and SWRCB standards, as well as Section 404 of the Clean Water Act and any applicable local water resource protection plans or ordinances (IVB, Goal 6.2, Tasks 6.2.5-6.2.7). The goal of riparian habitat enhancement along Balls Creek, Purdy Creek and Long Valley Creek is to ultimately improve water quality, groundwater recharge and wildlife habitat in the Long Valley Creek watershed.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

IX. LAND USE -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

DISCUSSION

a), b), c) No Impact.
The draft HJWA LMP would not require any physical changes to an established community, nor would implementation of any activity following LMP adoption physically divide an established community. LMP adoption and implementation requires no changes to existing land uses in the Wildlife Area. The LMP has been developed in conformance with land management plans (e.g., general plans) for Sierra and Lassen Counties. The LMP goals provide for natural resource protection and preservation, and require that any projects implemented following LMP adoption conform to local or regional habitat conservation and natural community conservation plans that may be applicable at that time. The LMP also outlines resource coordination opportunities between agencies and interested parties to facilitate communication and information sharing so that no conflicts will arise in the future (Appendix H). Based upon these provisions no land use impacts will occur.

X. MINERAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			X	
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?			X	

DISCUSSION

a), b) Less Than Significant Impact.
LMP implementation will not involve any resource extraction or mining. Presently mineral extraction on the Wildlife Area is not permitted, as it would conflict with CDFG's current mission to manage for ecological values and wildlife-related public

uses. Nevertheless, the draft LMP serves as a general policy guide for the management of the HJWA. It does not specifically authorize or make a precommitment to any substantive physical changes to the Wildlife Area. With the exception of ongoing restoration and enhancement, operations and maintenance activities, any substantive physical changes that are not currently approved will require subsequent authorizations. Thus, the HJWA LMP contains no tasks that establish facilities, structures, or land uses that would physically or economically preclude mineral extraction in the future, if such a public policy decision were made and any potential mineral resource impacts are less than significant.

XI. NOISE -- Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

DISCUSSION

a), b), c), d) e), f) No Impact.
Although implementation of some of the management tasks described in the proposed LMP could involve the intermittent use of construction equipment (e.g., restoration, enhancement or maintenance activities) thus temporarily increasing ambient noise, these activities would not result in a substantial increase in ambient noise or groundborne vibration levels above those generated by existing management practices or public uses. Since any increase in ambient noise will be temporary, and due to the isolated nature of the area, people in the vicinity will not be exposed to excessive noise levels or significantly impacted.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

XII. POPULATION AND HOUSING -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

DISCUSSION

a), b), c) No Impact.
The proposed LMP does not involve any change in housing nor would it induce growth through new infrastructure or by removing any barriers to growth. Implementation of some of the management goals and tasks may require additional staff hours, but not to the extent that would require additional housing. LMP adoption and implementation would have no impact on population or housing.

XIII. PUBLIC SERVICES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?				X
Police protection?				X
Schools?				X
Parks?				X
Other public facilities?				X

DISCUSSION

a) Less Than Significant Impact.

Proposed LMP adoption would not require substantial changes to existing public service levels. Implementation of the public use, facilities, and fire management goals (LMP, IVE) could require a minimal increase in staff hours per year by the fire department, the County Sheriff's department, and CDFG staff, but these potential minimal increases do not create the need for new or altered facilities.

XIV. RECREATION -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			X	

DISCUSSION

a), b) Less Than Significant Impact.

The HJWA's overall recreation goal is to provide a variety of public uses to the extent that such uses do not have significant adverse impacts on biological resources. Suitable recreational activities for the area are those that are either wildlife dependent or related and have low to moderate potential to negatively affect wildlife or conflict with other uses (LMP, Section IV, 6, 7) Management Goal D). HJWA LMP adoption and implementation do not expand the Wildlife Area or change existing levels of wildlife-dependent recreational use. The existing use restrictions, coupled with the remoteness and limited access to the area, help ensure the number of recreational users will not exceed the carrying capacity of the natural resources or degrade existing natural features or recreational facilities.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

XV. TRANSPORTATION/TRAFFIC -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				X
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, that result in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?				X
f) Result in inadequate parking capacity?				X
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				X

DISCUSSION

a), b), c), d), e), f), g) No Impact.

There are no predicted increases in HJWA use levels following LMP adoption. No design changes are proposed for current road access, nor are any changes anticipated with traffic patterns; therefore, no traffic hazards are anticipated. Since changes to current traffic levels or patterns are not anticipated, no changes to emergency access or parking would result from plan adoption, and the plan would not interfere with alternative transportation.

XVI. UTILITIES AND SERVICE SYSTEMS -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g) Comply with federal, state, and local statutes and regulations related to solid waste?				X

DISCUSSION

a), b), c), d), e), f), g) No Impact.
Anticipated HJWA use levels will remain the same following LMP adoption. The LMP does not include a proposal for additional storm drain facilities, additional water supplies, additional wastewater treatment, or additional solid waste disposal. Neither LMP adoption nor goal and task implementation activities would require the construction of new residences or service-related facilities; and therefore, would not generate a new demand for or change existing storm drain facilities, water supply levels, wastewater treatment, or solid waste disposal.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFG would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information in this document, to determine if additional CEQA documentation in necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

DISCUSSION

a), b), c) Less than Significant Impact.

LMP adoption as well as goal and task implementation would help preserve and enhance natural resources. Some LMP implementation activities could have the potential for impacts to biological and cultural resources, e.g., restoration or enhancement activities (see Environmental Impacts IV and V, above). However, LMP goals and tasks include avoidance strategies, protection measures, and best management practices that would eliminate or minimize potential impacts to less-than-significant levels. Additionally, all conducted activities would follow applicable regulatory requirements and many of the goals and tasks are designed to have a net benefit to these resources. Furthermore, because no large scale projects are anticipated which could threaten entire populations or communities, adoption of the proposed LMP will not cause a significant impact to these biological or cultural resources.

Proposed LMP adoption and implementation would not require any substantial infrastructure improvements or new construction. All LMP implementation activities will follow applicable regulatory requirements as well as the protective measures, avoidance strategies and best management practices incorporated therein. In addition, the proposed goals and tasks are designed to provide a net benefit to environmental conditions. Therefore, although there is a potential for some temporary and less than significant impacts to the environment as described above, none of these impacts are cumulatively considerable.

The proposed project is a land management plan, with no construction or substantive physical changes proposed. The proposed LMP project continues or improves existing uses and environmental resources of the Hallelujah Junction Wildlife Area. LMP implementation would also comply with all applicable laws and regulations. As a result, adoption of the LMP's goals and tasks would not have any direct or indirect environmental effects which would cause substantial adverse effects on human beings.

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APPENDIX H

Range Management Guidelines

Foundational Elements for the Development of the
Hallelujah Junction Wildlife Area Grazing Plan

Range Management Guidelines

Foundational Elements for the Development of the Hallelujah Junction Wildlife Area Grazing Plan

Range management is not a static, one-size-fits-all process. To be effective, it is site specific and includes annual planning, monitoring, evaluation, and modification. The Range Management Guidelines for the Hallelujah Junction Wildlife Area are intended to be used in conjunction with the HJWA Land Management Plan to provide the wildlife area managers with the tools needed to develop an adaptive range management and monitoring plan. Additional planning will be required to fully develop and implement a range management plan for the Wildlife Area; specifically, a state licensed Certified Rangeland Manager will be required to assist with preparation of the range management plan.

BACKGROUND

HJWA Land Management Plan

The Land Management Plan (LMP) for the Hallelujah Junction Wildlife Area (HJWA) provides the context for development of a prescriptive range management plan for the Wildlife Area. It describes the management goals for the Wildlife Area, the geographical and cultural setting, the plant communities and species present or likely to occur, and special management considerations. An adaptive management plan, the HJWA LMP includes implementation of a monitoring program to assess whether the various management goals are being met and provisions to adapt management strategies over time to changing site conditions. Livestock grazing is an historic use of the Wildlife Area and CDFG is interested in continuing this practice as long as it is compatible with the mission, purpose and biological goals of the Wildlife Area (Jim Lidberg and Terri Weist, CDFG area managers, personal communications). Issues of particular concern include:

- Provision of habitat for wintering and migrating mule deer
- Control of invasive non-native plant species
- Protection for special-status wildlife
- Restoration of lands damaged by wildfire
- Riparian habitat protection and restoration

Legal Issues

California Senate Bill 1094 (1994) requires that a Certified Rangeland Manager (CRM) provide rangeland consulting services on non-federal “forested landscapes” throughout the state. While there is ongoing discussion as to what is meant by forested lands (Bagley 2008, Huff 2008), the currently accepted interpretation is that land that supports at least 10% native tree cover (or that has the potential) constitutes a forested landscape.

The California-Pacific Section of the Society for Range Management oversees CRM testing and certification. CRM licenses are issued by the California Board of Forestry and Fire Protection. Covered range management activities include making management recommendations, developing conservation plans and management plans, and conducting other activities associated with

professional rangeland management when made by professionals who work in the private sector, universities, state agencies, and federal agencies when they are working on non-federal land (California Code of Regulations [CCR], Title 14, Section 1651).

Since HJWA is on state-owned land and technically meets the definition of a forested landscape, we recommend that a California licensed CRM take the lead on preparation of a fully integrated range management plan. The recommendations presented here provide the basic information needed to start a range plan that can be integrated with the goals and monitoring strategies of the LMP.

Current Grazing Operations

Green Gulch Ranch, operated by the Azevedo family (A-Spear Cattle Company) was acquired by CDFG in 2004 as part of the HJWA. The ranch is approximately 2,100 acres and has been a family-run livestock operation for several decades. The Azevedo family resides on the property and uses the ranch for seasonal (spring and summer) continuous grazing on irrigated pasture and some rangeland above the pastures. They move the cattle off site for the winter months.

Current Lease Agreement

The Sierra Valley Resource Conservation District manages the grazing lease on behalf of CDFG. The current lease is for five years, with a five year option from the lessee. CDFG can terminate the lease if livestock grazing is determined to be incompatible with management of the property for wintering mule deer or other special-status species.

Range Plan Development

The range management guidelines for the HJWA are based on the concepts of ecosystem management (Keystone Center 1996, Grumbine 1997, Knight et al. 2002), the ecology of California's native perennial grasslands (King 1989; Edwards 1992; Edwards 1996; Kinney 1996; Hamilton 1997; Holstein 2001), the historic use of the site, and the desired landscape goals for the Wildlife Area (see HJWA LMP). The process of developing a biologically-based range management plan includes the following:

- Identification of the desired future landscape for the HJWA.
- Consideration of the site's historical land use, and the current facilities and infrastructure to implement planned grazing.
- Commitment to adaptive management: Managers must be flexible and have control over livestock behavior and stocking rates. Lack of control can result in the overgrazing of desirable species which may enhance invasive non-native plants or allow new invasive plants to become established (National Research Council 1994; Reed et al. 1999; Gadzia and Sayre 2007; Gadzia and Graham 2008).
- Creation of a tailored rangeland monitoring program (National Research Council 1994; Roberson 1996; Reed et al. 1999; Orchard and Mehus 2001; Bartolome et al. 2002; Gadzia and Graham 2008).

Desired Future Landscape Vision

The vision statement was the result of a half-day workshop held at the HJWA office on April 27, 2007 with CDFG representatives Jim Lidberg and Jan Dawson, Byrd Harrison (Sierra Valley Resource Conservation District), Manual Azevedo (A-Spear Cattle Company), and Sustain Environmental Inc. The workshop was facilitated by Kent A. Reeves, a Society for Range Management (SRM) Certified Professional in Rangeland Management and Certified Wildlife Biologist, and patterned on the recommendations of Savory and Butterfield (1998), Butterfield et al. (2006), and Gadzia and Graham (2008). The primary workshop goal was to identify a shared future vision for the Wildlife Area.

The workshop started with the basics: identifying the physical landscape, the influential agencies and decision makers, and the resource base for managing the Wildlife Area (financial as well as individual and group capabilities). From this foundation, the group identified shared quality of life goals as well as the short and long-term vision for the Wildlife Area that supports these goals, their "desired future landscape vision." The workshop minutes are on file at CDFG's HJWA office. Based upon this exercise, the resource team identified six primary goals for the Wildlife Area that can benefit from planned grazing:

- Enhance and maintain wintering mule deer habitat
- Increase vegetative cover
- Control erosion
- Curb the spread of invasive species
- Improve livestock production
- Restoration and enhancement of native riparian corridors

Preliminary Condition Assessment

In June 2007, a follow-up field meeting was held with Jan Dawson (CDFG) and M. Azevedo to discuss the current livestock operations, and to conduct a preliminary range condition assessment. The ranch supported 450 head of stocker cattle, 80 Corriente steers with 5 bulls, and 160 cow-calf pairs with 9 bulls during 2007 (M. Azevedo, personal communication).

Grazing operations have been mostly restricted to the historic ranch property, where there are eight pastures. Four of these pastures are irrigated and four are dry. CDFG recently installed fencing along Balls Creek to exclude livestock grazing and has undertaken a riparian restoration project along this section of creek. In 2007, five pastures were visited to assess the overall quality. In each pasture, managers estimated the area of land required to provide the volume of forage to support one cow-calf pair for one day (this is the Animal Unit Requirement [AUR]). Table 1 presents the various pastures with size estimates and estimated AUR.

Table 1. HJWA pastures, 2007

Pasture Name	Irrigated/Dry	Estimated Total Acres[1]	Estimated AUR[2]
Brush Field 1*	Dry	120	65
Brush Field 2*	Dry	120	30
Lower Field*	Irrigated	100	15
Big Field	Irrigated	450	15
W House Desert*	Dry	500	20
North Desert*	Dry	2000	20
Corral	Irrigated	200	15
40 acre	Irrigated	40	15
Total estimated pasture acreage		**3530**	

[1] Pasture acreage has not been measured or mapped, pasture names are not official.
[2] AUR's are based on field estimates
* Pastures visited in June 2007

Animal unit requirements are used to determine the animal days per acre that the land can support. Animal days/acre is a function that incorporates both volume forage and time: the higher the animal numbers or the longer the period of grazing, the greater volume of forage removed. Animal days/ acre calculations are best used during the dormant season or drought conditions and can support key decision making including:

- Assessing pasture qualities relative to one another
- Determining if a pasture can support future grazing
- Dormant season planning
- Reassessing pasture quality after grazing
- Emergency planning in case of fire or drought
- Weighing different management policies
- Accounting for wildlife needs
- Setting stocking rates

A visual assessment of several pastures identified the following management concerns:

- Herbaceous vegetation was sparse between sagebrush plants in the dryland pastures. Although common in arid landscapes, this may indicate a poorly functioning water cycle and mineral cycle.
- There was considerable fecal buildup on the soil, indicating little or no breakdown of dung, another strong indication of a poorly functioning mineral/nutrient cycle.
- There was little to no bitterbrush regeneration in areas with little or no grazing, a possible indication of poor succession and reduced biodiversity.

Next Steps

Completion of a range management plan requires additional site-specific ecological information that is currently lacking, including focused surveys for special-status species and natural communities, and mapping the locations of protected cultural resources, above and below-ground hydrology, existing infrastructure, erosion hazards and sites, and management problem areas in relation to the planned grazing. Additional information is needed concerning the current livestock operation, especially the number of livestock on each pasture and the frequency that they are moved. The

pastures need to be accurately mapped and quantified, and water sources need to be identified. It is important to assess the forage value and phenology of native species for wintering mule deer and other species. Some of this preliminary ecological data has been collected during development of the HJWA Land Management Plan (Table 2), but more detail is needed to formulate the range management plan.

Table 2. Native Grasses at the Hallelujah Junction Wildlife Area and Their Importance to Wildlife and Livestock

Scientific Name	Common Name	Importance to Wildlife and Livestock
Achnatherum hymenoides	Indian ricegrass	Considered good forage value for livestock and native ungulates, seed is important food source for many species of wildlife (Tirmenstein 1999).
Achnatherum thurberianum	Thurber needlegrass	Valuable forage for livestock and many species of wildlife. Produces a fairly large amount of leafage that is usually of "good," although not choice, palatability for all classes of livestock. It is most palatable in the spring and early summer while the plants are young and succulent (Archer 2000).
Alopecurus aequalis	Shortawn foxtail	Considered a good forage plant for domestic livestock (USGS 2006).
Deschampsia danthonioides	Annual hairgrass	Waterfowl and birds eat the annual hairgrass seeds; however, the foliage may be of less value for wildlife herbage and cover compared to other grasses because of its short stature, lifespan, and limited productivity. The palatability and nutritional value of annual hairgrass for livestock and game is not documented (Darris and Bartow 2008).
Distichlis spicata	Saltgrass	Saltgrass is a wiry, coarse grass with low palatability. It is utilized only when more desirable forage is unavailable. While largely unpalatable, it is relatively high in protein. Livestock generally avoid saltgrass due to its coarse foliage, and it is minimally utilized by ungulates. Seeds and rhizomes provide an important food source for waterfowl (Hauser 2006)
Elymus elymoides spp*. elymoides*	Squirreltail grass	Squirreltail is a dietary component of several wildlife species. It is a minor component of bison and cattle summer diets within sagebrush rangelands. Although of little importance, bottlebrush squirreltail may provide forage for mule deer and pronghorn. Townsend's ground squirrels, Nuttall's cottontails, and black-tailed jackrabbits all feed upon bottlebrush squirreltail. The long sharp awns of bottlebrush squirreltail greatly reduce its palatability, and may penetrate flesh around the mouth of grazing animals, producing inflammation (Simonin 2001).
Glyceria striata	Fowl Manna grass	Palatability of G. striata is rated good to very good for cattle and horses which consume both flower stems and leaves. The seed is food for waterfowl and birds while the foliage and tall stems provide good wildlife cover. Foliage is seasonally grazed at a light to heavy rate by deer, muskrat, and bears. Some strains or populations of G. striata may contain cynogenetic compounds and cause cyanide poisoning in cattle, so caution is warranted (Darris 2006).
Leymus cinereus	Great Basin wildrye	Early growth and abundant production make Basin wildrye a valuable source of forage for livestock and wildlife. Though unpalatable during the winter, basin wildrye may be utilized more frequently by livestock

Scientific Name	Common Name	Importance to Wildlife and Livestock
		and wildlife when snow has covered low shrubs and other grasses. It has been identified as valuable winter forage for mule deer and provides summer forage for blacktailed jackrabbits and rodents (Anderson 2002).
Leymus triticoides	Beardless wildrye	Considered palatable to all livestock. Growth is initiated in early spring and continues at a maximum rate until mid-summer. Leaves remain green into fall (Smoliak et al. 2008).
Muhlenbergia asperifolia	Scratchgrass	Scratchgrass is highly palatable to both livestock and wildlife. It is an important seed source for songbirds, waterfowl and small mammals (Hershdorfer et al. 2007).
Muhlenbergia richardsonis	Mat muhly	Young mat muhly is readily eaten by livestock. Plants become less palatable as they mature. Usually grows in scattered patches, so it is seldom sufficiently abundant to be of major importance for livestock. Considered to be poor quality forage for mule deer (Aleksoff 1999).
Poa pratensis (May be naturalized in the Western U.S.)	Kentucky bluegrass	Highly palatable to most large grazers during the spring when it is green and succulent, palatability is much reduced when semi dormant in the summer. In moist mountain meadows, its palatability remains somewhat high during the summer. Leaves and seeds are eaten by many species of small mammals and songbirds, considered good forage for mule deer (Uchytil 1993).
Poa secunda spp. *secunda*	Sandburg bluegrass	Widespread and highly drought-resistant forage grass. It is one of the earliest grasses to green up in spring and is sought by all classes of livestock. Matures early and remains choice for a shorter time than other forage bunchgrasses. Horses and cattle continue to make some use of it during the summer months (Howard 1997).
Poa wheeleri	Wheeler's bluegrass (also called Hooker's bluegrass)	As with other bluegrasses, Wheeler's bluegrass is considered highly palatable to most large grazers (livestock and native ungulates).

Source: Derived from Hallelujah Junction Wildlife Area Land Management Plan, Appendix D (Plant Inventory)

The HJWA LMP provides direction to implement collection of these critical data as well as general and specific resource monitoring strategies (Chapters IV and V). Planning should include two parts:

1. Development of a stand-alone Range Management Plan that can be used as the reference for the livestock management strategy.
2. Subsequent annual updates to modify the overall plan and determine tactical decisions for the next grazing period.

An appropriate range management prescription for the HJWA should control the timing and intensity of cattle to benefit ecosystem processes and ultimately the native vegetation and habitat for mule deer. A licensed CRM[1] should review the ecological site information, biological goals and biological

[1] The California Board of Forestry and Fire Protection requires a license (Certified Rangeland Manager) for professionals conducting rangeland management, planning, and conservation activities on non-federal rangelands that support or have the potential to support tree cover. A certified rangeland manager is a competent professional obligated to protect the public interest, to follow the code of professional ethics of the Society for Range Management, and to participate in the Society for Range Management and continuing education. Refer to http://www.casrm.org/certified.html and http://www.fire.ca.gov/cdfbofdb/licensing/licensing_current_docs.aspx for more information. Although the state resources

monitoring tasks within HJWA LMP as this provides the whole context for range management planning.

Annual grazing plan updates and modifications should be done by the grazing tenant and CDFG management staff at least two months before livestock are brought to the HJWA (Gadzia and Sayre 2007). The first planning session should be facilitated by a CRM experienced with planned grazing, and will require attendance for one full day by CDFG management staff and the grazing lessee.

An annual planning session will include the use of the range management plan to determine tactical decisions, including how much of the HJWA will be grazed, the number of pastured animals, the length of time they should remain in a given area, and the length of time before the pasture is grazed again. Key to this tactical planning is the ability of the lessee to move the livestock where and whenever necessary. Tools to manipulate livestock include fencing, herding, watering systems, and supplemental feeding. Several of the forage area calculations will be performed per pasture, averaged, and then the average used to calculate the animal days/acre that the pasture can support and still provide wildlife habitat value (ibid.).

Range Monitoring and Health Assessments

The range management plan will include an appropriate monitoring program to ensure that the goals and objectives of the Wildlife Area are being met. Range conditions should be monitored continually, but objectives and trends should be formally evaluated at least every three years. Many of the monitoring strategies outlined in the HJWA LMP are applicable to range management and can be integrated into the range plan. The key indicators of rangeland health are based upon ecological processes such as soil stability and watershed function, nutrient and energy cycle, and plant recovery mechanisms (Table 3).

Table 3. Key ecological processes, criteria and indicators of rangeland health

Ecological Process	Criteria	Indicators
Soil stability and watershed function	Soil movement by wind and water	Presence of soil A-horizon Rills and gullies Pedestaling Scour or sheet erosion Sedimentation
Nutrients and energy distribution	Spatial distribution of nutrients and energy	Plant distribution Litter distribution and incorporation
	Temporal distribution of nutrients and energy	Rooting depth Photosynthetic period
Plant recovery mechanisms	Plant demographics	Age and class distribution Plant vigor Germination and presence of microsites

Source: National Research Council 1994

Monitoring will provide refinement and a more accurate assessment as the range management program matures. A realistic monitoring program that can be implemented and maintained by CDFG staff and the grazing lessee should be developed based on time, resources and financial considerations

code might not apply to all of the HJWA, we recommend that it would be useful and efficient to employ a licensed rangeland manager to assist with that work because of the technically challenging nature of the monitoring, data analysis, management assessments, and plan modifications.

(Gadzia and Graham 2008). Monitoring rangeland health need not be overly complicated. Many of the key indicators can be examined visually and ranked according to the matrix in Table 4.

Table 4. Matrix of indicators of rangeland health

Indicator	Healthy	At Risk	Unhealthy
Soil Stability and Watershed Function			
A Horizon	Present and unfragmented	Present but fragmented distribution developing	Absent, or present only in association with dominant plants or other obstruction
Pedestaling	No pedestaling of plants or rocks	Pedestals present, but on mature plants only; no roots exposed	Most plants and rocks pedestaled; roots exposed
Rills and gullies	Absent, or with blunted or muted features	Small, embryonic and not connected into a dendritic pattern	Well defined, actively expanding, dendritic patterns established
Scour or sheet erosion	No visible scouring or sheet erosion	Patches of bare soil or scours developing	Bare areas and scours well developed and continuous
Sedimentation or dunes	No visible soil deposition	Soil accumulating around plants or small obstructions	Soil accumulating in large barren deposits or dunes or behind large obstructions
Distribution of Nutrient Cycling and Energy Flow			
Plant distribution	Plants well distributed across site	Plant distribution becoming fragmented	Plants clumped, often in association with prominent individuals; large bare areas between clumps
Plant litter distribution and incorporation	Uniform across site	Litter associated with prominent plants or obstructions	Litter largely absent
Root distribution	Plant community structure results in rooting throughout the available soil profile	Roots are absent from portions of the available soil profile	Community structure results in rooting only in one portion of the available soil profile
Distribution of photosynthesis	Occurs throughout the period for plant growth	Mostly occurs during one portion of the period for plant growth	Little or no photosynthesis on location during the period suitable for plant growth
Plant Recovery Mechanisms			
Age-class distribution	Distribution represents all species, most species are desired	Seedlings and young plants missing	Primarily old or deteriorating plants present, invasive non-natives present
Plant vigor	Plants display normal growth form	Plants developing abnormal growth form	Most plants in abnormal growth form
Germination microsite	Microsites present and distributed across site	Developing crusts, soil movement, or other factors degrading microsites, developing crusts are fragile	Soil movement or crusting sufficient to inhibit most germination and seedling establishment

Source: National Research Council 1994, Gadzia and Graham 2008

Along with conducting visual assessments and ranking rangeland health indicators, collecting quantitative data can be extremely useful to reveal changes and guide future management strategies. Of particular value are permanent photo plots, measurements of basal cover, plant spacing, and plant species diversity. Plant cover, spacing and species diversity are best measured using linear transects (Elzinga et al. 2001). Gadzia and Graham (2008) provide excellent instructions on setting up and conducting quantitative monitoring plots.

Permanent photo points should be established in each pasture to document existing conditions, evaluate changes and provide the basis for adaptation of management strategies over time. The locations for photo plots should be permanently marked in the field and mapped using a handheld global positioning system (GPS) for inclusion in the GIS database for the Wildlife Area. It is imperative that the photographer stands in the same location each year and that the photos are taken during the same season every year.

Monitoring Frequency

There is no one answer regarding how often a qualitative rangeland health assessment should be performed. Gadzia and Graham (2008) recommend the following guidelines:

- Twice per year following fire, herbicide treatment or other vegetation treatment.
- One per season when implementing a new grazing regime.
- Once every three years for general information gathering and early-warning detections.
- Once every five years in areas with less than 10 inches of precipitation per year.

Adaptive Management

Habitat management strategies that use grazing animals must be monitored and adjusted to accommodate variation among site types co-occurring within a pasture. Phenological differences among different pastures of the same type may change over the course of a season or year. Interannual variation will similarly dictate changes in timing, period of stay, etc. for each pasture each year.

Grazing regimes of different intensity and timing impact plant species uniquely based on their life history characteristics. For this reason, it is important to integrate this LMP's weed management plan (Appendix E) with all grazing efforts. Early blooming plants may benefit from later-season grazing, while later blooming plants may reproduce well with the opposite treatment. Taller plants may better succeed under grazing regimes of short duration, while shorter plants may easily endure regimes of longer duration. Management prescriptions that encourage a spectrum of grazing disturbance may facilitate conservation of more native species across the landscape (Hayes and Holl 2003).

Summary

To ensure compliance with state law, preparation of the HJWA Range Management Plan should be undertaken by a California licensed CRM. The annual updating of the Range Management Plan will require a minimal commitment on the part of the HJWA staff and grazing tenant, but will provide a powerful tool for meeting the ecological, social, and economic vision developed for the Hallelujah Junction Wildlife Area.

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APPENDIX I

Online Data Resources for Biological Monitoring and Adaptive Management

(hyperlinked)

Online Data Resources for Biological Monitoring and Adaptive Management

INTERNAL RESOURCES
CDFG Data and Maps

Data Portal: Use the data portal to query CDFG's constantly updated databases, and to generate up-to-date lists and reports. Topics covered include angling records, fishing contests, access to the department's complete species list, the habitat tracking and reporting tool, and many resources for authenticated CDFG employees, partners and subscribers.

Document Library: Use the dynamic search features of the document library to quickly and easily locate, view and download important documents held by CDFG. The holdings include species descriptions, monitoring reports and recovery plans, as well as news releases, resources for CDFG employees and much more.

BIOS: Biogeographic Information and Observation System. Online mapping tool designed to enable the visualization, management and analysis of a wide range of biogeographic data collected by CDFG and partner organizations.

Biogeographic Data Branch (BDB): BDB provides a leadership, policy, and standards setting role for biological and geographic data management activities for the entire California Department of Fish and Game, its contractors, and partner organizations. BDB contains biological data development programs that are especially dependent and closely linked with GIS and emerging related technologies.

> California Natural Diversity Database (CNDDB): A natural heritage program providing rare, endangered, and special status species information for use in conservation and resource management.
>
> RareFind: A data query and reporting application with access to all CNDDB data; regularly updated.
>
> California Wildlife Habitat Relationships (CWHR): CWHR contains life history, geographic range, habitat relationships, and management information on 694 species of amphibians, reptiles, birds, and mammals in California.
>
> The Vegetation Classification and Mapping Program (VegCAMP): VegCAMP's goal is to develop and maintain maps and the classification of all vegetation and habitats in the state to support conservation and management decisions at the local, regional and state levels.
>
> Geographic Information Systems (GIS): The GIS unit assists CDFG's divisions and regions with the collection, documentation, and analysis of spatial data needed to support good conservation decisions. This includes online mapping tools, a GIS data warehouse, software support, and custom tools.

EXTERNAL RESOURCES

Other Data and Mapping Resources

Coordination with larger regional resource planning serves to improve the long-term viability of habitats and species while providing access to additional data and technical expertise. Key resources for biological planning and monitoring that share common goals as well as local interest in protecting the ecological integrity of the HJWA include:

Assessment of Mule and Black-tailed Deer Habitats and Populations in California
California Digital Atlas, Inventory, Monitoring and Assessment Program (IMAPS)
California Environmental Digital Library Network (CalEDLN)
California Environmental Resources Evaluation System (CERES)
California Legacy Project
California Water Resources Control Board, Surface Water Ambient Monitoring Program (SWAMP)
California Watershed Funding Database
California Watershed Portal Maps and Tools
California Wetlands Information System
CalPIF Avian Conservation Plan for the Sierra Nevada Bioregion
CalPIF Riparian Bird Conservation Plan
CalPIF Sagebrush Bird Conservation Plan
Environmental Protection Indicators Program (EPIC)
IMJV Coordinated Implementation Plan for Bird Conservation in California
Natural Resource Projects Inventory (NRPI)
Nevada and Eastern California Sage-grouse Conservation Plan
Nevada Department of Wildlife Management Plan for Mule Deer
North American Mule Deer Conservation Plan

Inventory and Monitoring Assistance

California State University, Chico
Lahontan Audubon Society
Truckee Meadows Community College
University of Nevada, Reno

APPENDIX J

Regional Habitat Conservation Planning Resources

(hyperlinked)

Regional Habitat Conservation Planning Resources

California Department of Fish and Game (CDFG)

California Wetlands Conservation Policy

In 1993, California established a wetlands conservation policy framework and strategy. This policy guides all state agencies to ensure no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property.

California Wildlife Conservation Board (WCB)

California Riparian Habitat Conservation Program

The California Riparian Habitat Conservation Program (CRHCP) was created within the Wildlife Conservation Board (WCB) by legislation in 1991. The program has a basic mission to develop coordinated conservation efforts aimed at protecting and restoring the state's riparian ecosystems. The goals of the CRHCP, as noted in its enabling legislation, are to protect, preserve, restore and enhance riparian habitat throughout California. To achieve these goals the program has adopted the following seven objectives:

- Assess the current amount and status of riparian habitat throughout the state.
- Identify those areas which are critical to the maintenance of California's riparian ecosystems.
- Identify those areas which are in imminent danger of destruction or significant degradation.
- Prioritize protection needs based on the significance of the site and potential loss or degradation of habitat.
- Develop and fund project-specific strategies to protect, enhance, or restore significant riparian habitat.
- Develop, administer, and fund a grants program for riparian habitat conservation.
- Provide a focal point for statewide riparian habitat conservation efforts.

Habitat Enhancement and Restoration Program (General)

The Wildlife Conservation Board's Habitat Enhancement and Restoration Program (General) funds projects outside the agency's two main restoration programs (the California Riparian Habitat Conservation Program and the Inland Wetland Conservation Program). Included in the Habitat Enhancement and Restoration Program are restorations of fisheries, wetlands outside the Central Valley (inland wetlands), native grasslands, and forests. Eligible enhancement and restoration projects must provide for the long-term maintenance of the restored and/or enhanced habitat. Eligible applicants for restoration projects include nonprofit conservation organizations and federal, state or local governmental agencies. Habitat enhancement and restoration projects, like the acquisition and public access projects, are carried out pursuant to recommendations from CDFG. Restoration and public access projects may be located on department-owned or other lands.

California Department of Food and Agriculture (CDFA)

Plumas / Sierra Counties Weed Management Area
Lassen County Special Weed Action Team (SWAT)

Local stakeholder groups work on weed projects in Weed Management Areas (WMA). Typically, they are organized by a county through its Agricultural Commissioners' offices. All interested land management entities, public and private, may participate. Official WMA partners sign a Memorandum of Understanding indicating their commitment to working on invasive plant problems to the extent resources allow. Each WMA develops a strategic plan that identifies its top priorities for local management. Together, these partners plan and implement projects on-the-ground, and collaborate on mapping and public education. In the year 2000, there were fewer than 20 groups statewide—today there are 48 covering all counties. The mission of the Lassen County SWAT is to coordinate an integrated pest management partnership between public and private land managers and citizens for the control of noxious weeds in Lassen County.

Partners in Flight (PIF)
California Chapter of Partners in Flight (CalPIF)

Partners in Flight is an international cooperative endeavor initiated in 1990 in response to alarming population declines noted in species of neotropical migratory birds. The program encourages conservation through partnerships before species and their habitats become threatened or endangered, and provides a constructive framework for guiding non-game landbird conservation activities throughout the United States, Canada, Mexico, and Central America.

California Partners in Flight was formed in 1992 with the full participation of the state's land and wildlife managers, scientists and researchers, and private organizations interested in the conservation of non-game landbirds. Noting that the major cause of population declines in California appeared to be habitat loss, CalPIF began identifying critical habitats important to birds and worked to protect and enhance remaining fragments of those habitats. CalPIF has completed habitat and bioregion-based Bird Conservation Plans (BCP) for the following seven general habitat types: Riparian, Oak Woodlands, Coastal Scrub and Chaparral, Grasslands, Coniferous Forests, Sagebrush, and the Sierra Nevada Bioregion.

Intermountain West Joint Venture

The Intermountain West Joint Venture (IWJV) is one of 17 Joint Venture partnerships in the United States, established under the North American Waterfowl Management Plan (NAWMP), and funded under the annual Interior Appropriations act. It includes portions of eleven states, including eastern California. The mission of the Intermountain West Joint Venture is to work collaboratively through diverse partnerships to protect, restore, and enhance wetlands and associated habitats for waterfowl, shorebirds, waterbirds, and riparian songbirds, in accordance with conservation actions identified in the Joint Venture's implementation plan. In addition to PIF and the NAWMP, the key conservation initiatives for the IWJV are the U.S. Shorebird Conservation Plan (USSCP), North American Waterbird Conservation Plan (NAWCP), and National Sage-Grouse Conservation Planning Framework. IMJV's Coordinated Implementation Plan for Bird Conservation in California addressed all bird species within the three California bird conservation regions that fall within its jurisdiction.

U.S. Fish and Wildlife Service (USFWS)

Neotropical Migratory Bird Conservation Act

In 2000, the U.S. Congress passed the Neotropical Migratory Bird Conservation Act (NMBCA) (16 UCS 6101-6109). The purposes of the Act are to:

1. Perpetuate healthy populations of neotropical migratory birds.
2. Assist in the conservation of neotropical migrants by supporting conservation initiatives in the United States, Canada, Latin America, and the Caribbean.
3. Provide financial resources and foster international cooperation for these initiatives.

The USFWS manages the NMBCA's grant program to implement the terms of this legislation.

University of California Cooperative Extension, Sierra and Lassen County

The 64 University of California Cooperative Extension (UCCE) offices are local problem-solving centers. UCCE is a full partnership of federal, state, county, and private resources linked in applied research and educational outreach. Each UCCE tailors its programs to meet local needs including meetings, conferences, workshops, demonstrations, field days, video programs, newsletters and manuals. The Plumas Sierra Counties UCCE provides many resources and publications online.

APPENDIX K

Onsite Research

Hallelujah Junction Wildlife Area

Onsite Research

Past and Present Research Efforts at the Hallelujah Junction Wildlife Area

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APPENDIX L

Hyperlinks and Acronyms

Hyperlinks and Acronyms

Acronym	Reference	Hyperlink/Internet Address
	Adaptive Weed Management Plan template	http://tncinvasives.ucdavis.edu/products.html
	Annual Air Quality Monitoring Report, Northern Sierra Air Quality Management District	http://myairdistrict.com/Annual_Report__Full_version.pdf
	Assessment of Mule and Black-tailed Deer Habitats and Populations in California	http://www.dfg.ca.gov/wildlife/hunting/deer/docs/habitatassessment/fcover.pdf
	California Bird Conservation Implementation Plan	http://www.iwjv.org/Images/CAPlan2005.pdf
	California hunting regulations booklets	http://www.fgc.ca.gov/regulations/current/regs.asp
	California Legacy Project	http://legacy.ca.gov/
	California State Lands Commission	http://www.slc.ca.gov/
	California State Personnel Board Web site	http://www.spb.ca.gov/index.htm?e=1
	California Watershed Funding Database	http://www.calwatershedfunds.org/
	California Watershed Portal Maps and Tools	http://cwp.resources.ca.gov/map_tools.html
	California Wetlands Conservation Policy	http://ceres.ca.gov/wetlands/policies/governor.html
	California Wetlands Information System	http://ceres.ca.gov/wetlands/
	CEQA Guidelines, Sections 15162-15164	http://ceres.ca.gov/topic/env_law/ceqa/guidelines/15160-15170_web.pdf
	CNPS Volunteers in Parks Program	http://www.nps.gov/volunteer/
	Coordinated Implementation Plan for Bird Conservation in California, IMJV	http://www.iwjv.org/Images/CAPlan2005.pdf
	Creating an Integrated Weed Management Plan	http://parks.state.co.us/NR/rdonlyres/E4FAAC68-00B4-44A8-A4E3-4C88B185BC78/0/IWMhandbooktext.pdf
	Current Fish and Game Regulations	http://www.fgc.ca.gov/regulations/current/regs.asp
	Data Portal, CDFG	http://nrm.dfg.ca.gov
	Deer hunt zone X6b	http://www.dfg.ca.gov/wildlife/hunting/deer/docs/maps/x6b.pdf
	Deer hunt zone X7a	http://www.dfg.ca.gov/wildlife/hunting/deer/docs/maps/x7a.pdf

Acronym	Reference	Hyperlink/Internet Address
	Document Library, CDFG	http://nrm.dfg.ca.gov/documents/
	Eagle Lake Field Station, University of California	http://nrs.ucop.edu/Eagle-Lake.htm
	Envirofacts Data Warehouse, EPA	http://www.epa.gov/enviro
	Federal Resource Laws, USFWS	http://www.fws.gov/laws/lawsdigest/resourcelaws.htm
	Fish and Game Code § 1600-1616	http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fgc&group=01001-02000&file=1600-1616
	Fish and Game Code §1602, Section 1	http://www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=50176229681+12+0+0&WAISaction=retrieve
	Great Basin Institute	http://www.thegreatbasininstitute.org/
	Habitat Enhancement and Restoration Program (General), Wildlife Conservation Board	http://www.wcb.ca.gov/Pages/habitat_enhancement_and_restoration_program.asp
	Humboldt-Toiyabe National Forest, U.S.F.S.	http://www.fs.fed.us/r4/htnf/
	Lahontan Audubon Society	http://www.nevadaaudubon.org/
	Legal Mandates Related to the Conservation of Land and Natural Resources	http://legacy.ca.gov/pub_docs/CCRISP_LegalMandates_V8.1.pdf
	Nature Conservancy	http://www.nature.org/?src=t1
	NatureServe	http://www.natureserve.org/index.jsp
	Nevada and Eastern California Sage-grouse Conservation Plan	http://www.ndow.org/wild/conservation/sg/resources/WGAsagegrousereport.pdf
	North American Mule Deer Conservation Plan	http://www.muledeernet.org/NA%20Mule%20Deer%20Cons%20Plan%20Final.pdf
	North American Weed Management Association	http://www.nawma.org/
	Plumas-Sierra Counties, University of California Cooperative Extension	http://ucce-plumas-sierra.ucdavis.edu/
	Plumas-Sierra Weed Management Area	http://www.cal-ipc.org/WMAs/Plumas_Sierra_WMA.php
	Public Resources Code	http://www.leginfo.ca.gov/calaw.html
	RareFind, CDFG	http://www.dfg.ca.gov/biogeodata/cnddb/rarefind.asp
	Resource Status Assessment and Trends	http://legacy.ca.gov/pub_docs/Natural_Resource_Health_and_Condition_Methodology_Report_FINAL.pdf

Acronym	Reference	Hyperlink/Internet Address
	Methodology	
	Rocky Mountain Research Station	http://www.fs.fed.us/rm/
	Seven Steps to Managing Your Weeds	http://www.weedsbc.ca/pdf/7StepsToManagingYourWeeds.pdf
	Sierra Valley Important Farmland 2006	ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2006/srv06.pdf
	State Volunteers in Parks	http://www.parks.ca.gov/?page_id=886
	Truckee Meadows Community College	http://www.tmcc.edu/
	USFWS volunteers	http://www.fws.gov/volunteers/
	Weed Manager's Guide to Remote Sensing and GIS	http://www.fs.fed.us/eng/rsac/invasivespecies/
ADA	American With Disabilities Act	
af/a	acre feet per acre	
af/y	acre feet per year	
AQMD	Air Quality Management District	
AUM	Animal units per month	
AUR	Animal Unit Requirement	
AWB	Associate Wildlife Biologist	
BCP	Bird conservation plan	
BDB	Biogeographic Data Branch, CDFG	http://www.dfg.ca.gov/biogeodata/
BIOS	Biogeographic Information and Observation System, CDFG	http://bios.dfg.ca.gov/
BLM	Bureau of Land Management, U.S. Department of the Interior	http://www.blm.gov/wo/st/en.html
BMI	benthic macro invertebrate	
BMP	best management practices	
CAL FIRE	California Department of Forestry and Fire Protection	http://www.fire.ca.gov/
CalEDLN	California Environmental Digital Library Network (CalEDLN)	http://caledln.casil.ucdavis.edu/
CalEPA	California Environmental Protection Agency	http://www.calepa.ca.gov/
Cal-IPC	California Invasive Plant Council	http://www.cal-ipc.org/

Acronym	Reference	Hyperlink/Internet Address
Cal-IPC (cont.)	Cal-IPC "Criteria for Listing"	http://www.cal-ipc.org/ip/inventory/index.php#criteria
Cal-IPC (cont.)	Cal-IPC Invasive Plant Inventory	http://www.cal-ipc.org/ip/inventory/index.php
CalPIF	California Partners In Flight	http://www.prbo.org/calpif/
CalPIF Avian	CalPIF Avian Conservation Plan for the Sierra Nevada Bioregion	http://www.prbo.org/calpif/pdfs/sierra.v-1.pdf
CalPIF Riparian	CalPIF Riparian Bird Conservation Plan	http://www.prbo.org/calpif/htmldocs/riparian.html
CalPIF Sagebrush	CalPIF Sagebrush Bird Conservation Plan	http://www.prbo.org/calpif/htmldocs/sage.htm
Caltrans	California Department of Transportation	http://www.dot.ca.gov/
CCR	California Code of Regulations	http://ccr.oal.ca.gov/linkedslice/default.asp?SP=CCR-1000&Action=Welcome
CCR (cont.)	Title 14, Chapter 3, Section 15064.5	http://ohp.parks.ca.gov/pages/1054/files/california%20code%20of%20regulations.pdf
CDFA	California Department of Food and Agriculture	http://www.cdfa.ca.gov/
CDFG	California Department of Fish and Game	http://www.dfg.ca.gov/
CDHS	California Department of Health Services	
CEQA	California Environmental Quality Act	http://ceres.ca.gov/ceqa/
CEQA, CDFG	California Environmental Quality Act, Internal CDFG procedures	http://www.dfg.ca.gov/habcon/ceqa/intrnlproced/
CEQA, Guidelines	California Environmental Quality Act, CEQA Guidelines	http://ceres.ca.gov/topic/env_law/ceqa/guidelines/
CERES	California Environmental Resources Evaluation System	http://www.ceres.ca.gov/
CESA	California Endangered Species Act	http://www.dfg.ca.gov/habcon/cesa/
cfs	cubic feet per second	
CHP	California Highway Patrol	http://www.chp.ca.gov/
CIPM	Center for Invasive Plant Management	http://www.weedcenter.org/
CNDDB	California Natural Diversity Database	http://www.dfg.ca.gov/biogeodata/cnddb/
CNPS	California Native Plant Society	http://www.cnps.org/

Acronym	Reference	Hyperlink/Internet Address
CRHCP	California Riparian Habitat Conservation Program	http://www.wcb.ca.gov/Pages/california_riparian_habitat_conservation_program.asp
CRHR	California Register of Historical Resources	http://ohp.parks.ca.gov/?page_id=21238
CRM	Certified rangeland manager	
CSU, Chico	California State University, Chico	http://www.csuchico.edu/
CWA	Clean Water Act	http://www.epa.gov/watertrain/cwa/
CWHR	California Wildlife Habitat Relationships	http://www.dfg.ca.gov/biogeodata/cwhr/
DRI	Desert Research Institute	http://www.dri.edu/
DWR	California Department of Water Resources	http://www.water.ca.gov/
EBA	Epizootic bovine abortion	
ECC	Emergency Command Center	
EIR	Environmental Impact Report	
EPA	Environmental Protection Agency	
EPIC	Environmental Protection Indicators Program	http://www.oehha.ca.gov/multimedia/epic/index.html
ESA	Endangered Species Act	
ESAs	Element Stewardship Abstracts	http://tncinvasives.ucdavis.edu/
eWRIMS	Electronic water rights information management system database, SWRCB	http://www.waterboards.ca.gov/ewrims/
FWT	Fish and Wildlife Technician	
GIC	Geographic Information Center, California State University, Chico	http://www.gic.csuchico.edu/
GIS	Geographic Information System	
GIS-CDFG	Geographic Information Systems, CDFG	http://www.dfg.ca.gov/biogeodata/gis/
GLOBE	Global Learning and Observations to Benefit the Environment	http://www.globe.gov/r
GPS	Global Positioning System	
HCP	Habitat Conservation Plan	
HGE	human granulocytic ehrlichiosis	
HJWA	Hallelujah Junction Wildlife	http://www.dfg.ca.gov/lands/wa/region2/halljunction.html

Acronym	Reference	Hyperlink/Internet Address
	Area	
HRP	Habitat Restoration Program	
IBI	Index of Biological Integrity	
ICS	Incident Command System	
IHRMP	Integrated Hardwood Range Management Plan	
IMAPS	California Digital Atlas, Inventory, Monitoring and Assessment Program	http://www.dfg.ca.gov/biogeodata/gis/imaps.asp
IMJV	Intermountain West Joint Venture	http://www.iwjv.org/about.htm
IS	Initial Study	
IWCP	Inland Wetland Conservation Program	http://ceres.ca.gov/wetlands/introduction/inland_easement.html
IWJV	Intermountain West Joint Venture	http://www.iwjv.org/about.htm
LMP	Land management plan	
LVGWD	Long Valley Ground Water District	
MOU	Memorandum/a of Understanding	
MSCS	Multi-Species Conservation Strategy	
NAWCA	North American Wetlands Conservation Act	
NAWCP	North American Waterbird Conservation Plan	http://www.waterbirdconservation.org/nawcp.html
NAWMP	North American Waterfowl Management Plan	http://www.fws.gov/birdhabitat/NAWMP/index.shtm
NCCP	Natural Community Conservation Plan	http://www.dfg.ca.gov/habcon/nccp/
NCR	North Central Region, CDFG, Rancho Cordova, CA (Region 2)	http://www.dfg.ca.gov/regions/2/
ND	Negative Declaration	
NDOW	Nevada Department of Wildlife	http://www.ndow.org/
NDOW, mule deer	Nevada Department of Wildlife Management Plan for Mule Deer	http://www.ndow.org/about/pubs/plans/06_muledeer_manage_plan.pdf
NHPA	National Historic Preservation Act	e.g., http://www.nps.gov/history/local-law/FHPL_HistPrsrvt.pdf
NMBCA	Neotropical Migratory Bird Conservation Act	http://www.fws.gov/birdhabitat/Grants/NMBCA/index.shtm
NMFS	National Marine Fisheries Service	http://www.nmfs.noaa.gov/

Acronym	Reference	Hyperlink/Internet Address
NOAA	National Oceanic and Atmospheric Administration	http://www.noaa.gov/
NPS	National Park Service	http://www.nps.gov/
NRCS	Natural Resources Conservation Service	http://www.nrcs.usda.gov/
NRHP	National Register of Historic Places	http://www.nps.gov/nr/
NRPI	Natural Resource Projects Inventory	http://www.ice.ucdavis.edu/nrpi/
PIF	Partners in Flight	http://www.partnersinflight.org/
POD	points of diversion	
PRBO	Point Reyes Bird Observatory	http://www.prbo.org/cms/index.php
PY	Personnel Years (1.0 PY = 2080 hours)	
RAP	Resource Assessment Program	
RAPnet	Resource Assessment Program Network	Under construction, 2009
RHJV	Riparian Habitat Joint Venture	http://www.rhjv.org/
S.P.	Southern Pacific Railroad	
SEI	Sustain Environmental, Inc.	http://www.sustainenvironmental.com/
SFIDC	Sierra Front Interagency Dispatch Center	http://www.sierrafront.net/
SHPO	State Historic Preservation Officer	http://ohp.parks.ca.gov/?page_id=21755
SRM	Society for Range Management	http://www.rangelands.org/
SVRCD	Sierra Valley Resource Conservation District	http://www.sierravalleyrcd.org/
SWAMP	Surface Water Ambient Monitoring Program, SWRBC	http://www.waterboards.ca.gov/water_issues/programs/swamp/
SWAT	Lassen Special Weed Action Team	http://www.cal-ipc.org/WMAs/Lassen_SWAT.php
SWPP	Source water protection plan	
SWPPP	Storm water pollution prevention plan	http://cfpub.epa.gov/npdes/stormwater/swppp.cfm
SWRCB	State Water Resources Control Board	http://www.swrcb.ca.gov/
the Corps	U.S. Army Corps of Engineers	http://www.usace.army.mil/Pages/Default.aspx
the department	See CDFG	http://www.dfg.ca.gov/

Acronym	Reference	Hyperlink/Internet Address
TMDL	Total maximum daily load	
TNF	Tahoe National Forest, USDA Forest Service	http://www.fs.fed.us/r5/tahoe/
UCCE	University of California Cooperative Extension	http://ucanr.org/
UNR	University of Nevada, Reno	http://www.unr.edu/home/
USACE	U.S. Army Corps of Engineers	http://www.usace.army.mil/Pages/Default.aspx
USBR	Bureau of Reclamation, U.S. Department of the Interior	http://www.usbr.gov/
USDA	U.S. Department of Agriculture	http://www.usda.gov/wps/portal/usdahome
USFS	U.S. Forest Service	http://www.fs.fed.us/
USFWS	U.S. Fish and Wildlife Service	http://www.fws.gov/birdhabitat/
USGS	U.S. Geological Service	http://www.usgs.gov/
USSCP	U.S. Shorebird Conservation Plan	http://www.manomet.org/USSCP
VegCAMP	Vegetation Classification and Mapping Program	http://www.dfg.ca.gov/biogeodata/vegcamp/
WCB	Wildlife Conservation Board, State of California	http://www.wcb.ca.gov
WHA	Wildlife Habitat Assistant	
WIMS	Weed Information Management System	http://www.nature.org/success/art15416.html
WMA	Weed Management Areas	
WRCC	Western Regional Climate Center	http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv7820

APPENDIX M

CDFG Response to Public Comments

Hallelujah Junction Wildlife Area
Land Management Plan

CDFG Response to Public Comments

No comments received.

Notice of Determination

Form C

To:

☒ Office of Planning and Research

For U.S. Mail: P.O. Box 3044, Sacramento, CA 95812-3044

Street Address: 1400 Tenth St., Sacramento, CA 95814

☒ County Clerk

County of: Lassen:

Address: 221 S. Roop St., Suite 4 - Susanville, CA 96130

Sierra : P. O. Drawer D 100 Courthouse Square, Suite 11 Downieville, CA 95936

From:

Public Agency: Department of Fish and Game

Address: 1701 Nimbus Rd. Suite A, Rancho Cordova, CA 95670

Contact: Jason Holley

Phone: 916-984-7123

Lead Agency (if different from above):

Address:

Contact:

Phone:

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2009112077

Project Title: Hallelujah Junction Wildlife Area Land Management Plan

Project Location (include county): Lassen and Sierra Counties, US 395 and SR 70

Project Description:

The project being approved is the adoption and implementation of the Land Management Plan (LMP). The LMP will guide the Department's management, planning, and operations of the Hallelujah Junction Wildlife Area.

This is to advise that the CA Department of Fish and Game has approved the above described project on

☒ Lead Agency or ☐ Responsible Agency

_____ and has made the following determinations regarding the above described project:

(Date)

1. The project [☐ will ☒ will not] have a significant effect on the environment.
2. ☐ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☒ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☐ were ☒ were not] made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [☐ was ☒ was not] adopted for this project.
4. A statement of Overriding Considerations [☐ was ☒ was not] adopted for this project.
5. Findings [☐ were ☒ were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at: 1701 Nimbus Rd. Suite A, Rancho Cordova, CA 95670

Signature (Public Agency) [signature] Title Deputy Director

Date 7/19/10 Date Received for filing at OPR _____

RECEIVED
JUL 22 2010
STATE CLEARING HOUSE

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Revised 2005

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

Hallelujah Junction Wildlife Area Land Management Plan

Sierra and Lassen Counties, California

UPDATED:
DECEMBER 2009

RECEIVED
JUL 22 2010
STATE CLEARING HOUSE

PREPARED FOR:

California Department of Fish and Game
North Central Region Headquarters
1701 Nimbus Road, Suite A
Rancho Cordova, California 95670
Attention: Terri Weist
530.644.5980

PREPARED BY:

Sustain Environmental Inc.
3104 "O" Street #164
Sacramento, California 95816
916.457.1856

APPROVED BY:

Regional Manager — Date 2/25/10

Deputy Director — Date 7/19/10