State of California

California Natural Resources Agency

DEPARTMENT OF FISH AND WILDLIFE

FINAL

LAND MANAGEMENT PLAN

for

BY-DAY CREEK ECOLOGICAL RESERVE
Mono County, California

May, 2020

BY-DAY CREEK ECOLOGICAL RESERVE
FINAL LAND MANAGEMENT PLAN

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I. INTRODUCTION

A. Purpose of Acquisition

The By-Day Creek Ecological Reserve (Ecological Reserve) consists of 460 acres of land located in northern Mono County, approximately five miles west of Bridgeport, California. The primary purpose for the acquisition of the Ecological Reserve was to protect and enhance habitat for the only known endemic population of genetically pure Walker Basin Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), a federal and state listed threatened segment of the population.

The Ecological Reserve contains approximately one mile of By-Day Creek, associated riparian forest, meadow riparian wetlands, and adjacent upland habitat including mixed conifer forest, dry meadow, and shrublands. These habitat types support a variety of wildlife species including Sierra marten (*Martes caurina sierra)*, mountain lion (*Puma concolor)*, black bear (*Ursus americanus)*, mule deer (*Odocoileus hemionus)*, a number of raptor species including northern goshawk (*Accipiter gentilis)* and Cooper's hawk *(Accipiter cooperii)*, sooty grouse (*Dendragapus fuliginosus)*, mountain quail (*Oreortyx pictus)*, yellow warbler (*Dendroica petechia)*, and other neotropical migratory birds.

Public access is not a primary objective for the Ecological Reserve, but it is open to public uses that are consistent with management for wildlife and sensitive species. The By-Day Creek area provides opportunities for hunting, nature viewing, photography, and educational and scientific uses.

B. Acquisition History

The acquisition of the Ecological Reserve was a cooperative project involving the Wildlife Conservation Board, the California Department of Fish and Wildlife (CDFW), the US Fish and Wildlife Service (USFWS), and the US Forest Service (USFS).

In 1983 a 160-acre parcel consisting of the northeast quarter of section 28 and containing a ¾ mile reach of By-Day Creek was acquired using funding from the Environmental License Plate Fund (California Public Resources Code § 21191). In 1990 two additional parcels were added to the Ecological Reserve to protect the headwaters, an additional length of the creek, and the access road. These parcels, totaling 300 acres, were purchased with funding from the Wildlife and Natural Areas Conservation Program (Proposition 70, Section 2720).

C. Purpose of This Management Plan

Overall, the goal for management of CDFW lands is to optimize the ecological integrity of habitats and facilitate compatible public use. To accomplish this, CDFW strives to protect and maintain the biological and physical processes that contribute to this integrity, with an emphasis on adaptive management of habitats, and public uses that are compatible with these efforts. Toward these goals this Land Management Plan (LMP) serves the following purposes:

1. The plan guides the adaptive management of habitats, species, and programs described herein to achieve CDFW's mission to protect and enhance wildlife values.

2. The plan serves as a guide for appropriate public uses of the property.

3. The plan serves as a descriptive inventory of fish, wildlife and native plant habitats which occur on or use this property.

4. The plan provides an overview of the property's operation and maintenance, and personnel requirements to implement management goals. It serves as a budget planning aid for annual regional budget preparation.

5. The plan provides a description of potential and actual environmental impacts and subsequent mitigation which may occur during management, and contains environmental documentation to comply with state and federal statutes and regulation.

D. Relationship to Other Plans and Regulations

The LMP is consistent with plans and regulations at local, state, and federal levels. This section describes the key laws, regulations, plans, and policies that form the framework for the operation and management of the Ecological Reserve as described in this LMP.

The plan is consistent with the policies of the Mono County General Plan (2015). The Ecological Reserve parcels have been designated “Resource Management” in the Land Use Element. The management of these lands as described in this LMP is consistent with the policies of the Conservation/Open Space Element.

Regulations specific to uses of the Ecological Reserve are contained in California Code of Regulations (CCR), Title 14. Natural Resources, Division 1. Fish and Game Commission-Department of Fish and Game, Subdivision 2. Game, Furbearers, Nongame, and Depredators. Regulations applicable to all CDFW Lands are

enumerated in Chapter 8. Wildlife and Public Shooting Areas which can be found in Section 550 of the code (14 CCR § 550). Regulations specific to Ecological Reserves are located in Chapter 11. Ecological Reserves, Section 630 (14 CCR § 630). Property specific regulations for the Ecological Reserve include allowing for hunting, and the prohibition of fishing. A summary of all property specific regulations can also be found on the CDFW website.

This LMP is accompanied by an Environmental Document in the form of a Negative Declaration as considered under the California Environmental Quality Act (CEQA). CEQA serves to inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities, and identify ways that environmental damage can be avoided or significantly reduced; prevent significant, avoidable damage to the environment by requiring feasible project alternatives and mitigation measures. State and local public agencies must comply with CEQA before making a discretionary approval of a project. The LMP provides the context for individual project proposals as they may occur on the Ecological Reserve. Except for ongoing restoration and enhancement, and operations and maintenance activities, any substantive physical changes that are not currently approved will require subsequent environmental review to determine if additional documentation and permitting is necessary.

The California State Wildlife Action Plan (SWAP), prepared by CDFW in 2015, provides an ecosystem approach for conserving California's fish and wildlife resources by identifying strategies intended to improve conditions of Species of Greatest Conservation Need (SGCN) and the habitats upon which they depend. This LMP integrates the goals and strategies of SWAP to benefit a number of Conservation Targets and associated SGCN within the Sierra Nevada and Desert Provinces.

Management of the Humboldt-Toiyabe National Forest (HTNF) is directed by the Land and Resource Management Plan (LRMP) which was developed in 1986 prior to the merger of the Humboldt and Toiyabe National Forests. The National Forest lands that surround the Ecological Reserve are located within the Bridgeport Ranger District of what was the Toiyabe National Forest at the time the LRMP was written and continues to be managed under the direction of this plan and subsequent amendments. The most significant of these amendments is the Sierra Nevada Forest Plan Amendment (SNFPA) that was completed in 2004 affecting the Sierra Nevada portions of eleven National Forests to "improve protection of old forests, wildlife habitats, watersheds and communities in the Sierra Nevada mountains and Modoc Plateau". This LMP is consistent with numerous objectives of the LRMP and

SNFPA, particularly with regard to the cooperative management of fish, wildlife, and habitat resources.

The U.S. Fish and Wildlife Service (USFWS) regulates the take and incidental take of a species listed as threatened or endangered under the federal Endangered Species Act (ESA; 16 U.S.C. section 1531 et seq.). USFWS has defined "take" to include significant habitat modification or degradation where it kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. CDFW will continue to consult and coordinate closely with USFWS when planning and conducting management activities on the property related to this LMP and federally listed species.

The California Endangered Species Act (CESA; Fish and Game Code [FGC] section 2050 et seq.) states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline will be protected or preserved. The California Fish and Game Commission is responsible for listing or delisting a species under CESA and the CDFW Nongame Wildlife Program (NWP) acts as the Commission's scientific advisors during that process. The NWP focuses on Threatened and Endangered species and Species of Special Concern, and their responsibilities include resource assessments, research, conservation planning, recovery planning, science permitting, and outreach activities. The Native Plant Program (NPP) performs a similar function for plants. Both the NWP and NPP are within Habitat Conservation Planning Branch (HCPB) and also coordinate with CDFW staff in the various regions engaged in research, species conservation, and land management tasks.

The classification of fully protected species (FGC sections 3511, 4700, 5050, and 5515) was CDFW's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Except in very limited circumstances such as necessary scientific research, and efforts to recover a species, fully protected species may not be taken or possessed. Similarly, under the Native Plant Protection Act (NPPA; FGC section 1900 et seq.), which pre-dated CESA, the Fish and Game Commission designated 64 native plants as rare or endangered. While a number of rare plants occur in the vicinity of the Ecological Reserve no listed species have been documented there to-date (Table 6). CDFW Region staff will continue to consult and coordinate closely HCPB when planning and conducting management activities on the property related to this LMP and state listed and special status species (Table 7).

The Clean Water Act (CWA; 33 U.S.C. section 1251 et seq.) establishes structure for regulating discharges of pollutants into waters of the Unites States and regulating quality standards for surface waters. Section 404 of CWA establishes a requirement for project applicants to obtain a permit before engaging in any activity that involves any discharge of dredged or fill material into waters of the United States, including wetlands. Under Section 404 of CWA, the US Army Corps of Engineers (USACE) regulates and issues permits for activities that involve the discharge of dredged or fill materials into waters of the United States. Under Section 401 of CWA, an applicant for a Section 404 permit must also obtain a certificate from the appropriate state agency stating that the intended dredging or filling activity is consistent with the state's water quality standards and criteria. In California, the authority to grant water quality certification is delegated by the State Water Resources Control Board (SWRCB) to the nine Regional Water Quality Control Boards. This LMP does not propose any specific projects that would trigger Section 404; however, if any future project proposals are developed for the Ecological Reserve, CDFW would conduct appropriate coordination with USACE and the Lahontan Regional Water Quality Control Board.

II. PROPERTY DESCRIPTION

A. Geographical Setting

The By-Day Creek Ecological Reserve is centered along By-Day Creek in northern Mono County at the western edge of the Bridgeport Valley and approximately five miles west of the community of Bridgeport, California (Figure 1 and Figure 2). Elevations range from 7,500 to 8,300 feet above mean sea level in the New Range, a small desert mountain range located between the Sierra Nevada and Sweetwater Mountains. The New Range includes a group of five peaks over 10,000 feet including a single named peak visible from Bridgeport, Rickey Peak (10,126 ft), which is located 2 miles west of the Ecological Reserve at the head of the By-Day Creek watershed (Figure 6). The property is located about 15 miles east of the crest of the Sierra Nevada and three miles east from the Hoover Wilderness Boundary. Yosemite National Park is 16 miles to the southeast.

To reach the Ecological Reserve, visitors must travel approximately 3.5 miles north of Bridgeport on Highway 395, turn left onto Forest Service Road 017 (Buckeye Road) and drive an additional 1.5 miles southwest. They would then need to turn right onto Forest Service Road 076 which parallels By-Day Creek. The Ecological Reserve is located approximately 1.25 miles above Buckeye Road and is recognized by a locked gate and Department of Fish and Wildlife signs. The road beyond this point is closed to public vehicle access. Parking is available on federal public lands outside the gate.

Gated entrance to the Ecological Reserve

Using the Ecoregion classification system adopted in the SWAP, the Ecological Reserve is located at the westernmost extent of the Deserts Province. Ecoregions designate areas with similar ecosystems and are useful as a framework for implementing ecosystem management strategies, research, and monitoring (Griffith 2016, Omernik and Griffith 2014). Within the hierarchy of this classification system, large provinces are further divided into sections. The Ecological Reserve is located in the Mono Ecoregion directly adjacent to the Sierra Nevada (Bailey 1976, CDFW 2015). In 2016 the US Geological Survey and partners produced the more detailed Ecoregions of California (Griffith 2016) which includes new Level IV regions. At this

resolution the New Range and By-Day Creek watershed are located in the Sierra Nevada-Influenced Ranges (Level IV) of the Central Basin and Range (III), within the Cold Deserts (II) of the North American Deserts (I). Due to the location of the property near the margins of the Sierra Nevada and Central Basin and Range ecoregions the site has characteristics of both zones; the Ecological Reserve receives greater precipitation than mountain ranges in central Nevada to the east due to the proximity to the Sierra, yet the climate is also impacted by the rain shadow effect of the Sierra Nevada to the west (Figure 4).

In the Public Land Survey System (PLSS) the property is located in portions of Sections 21, 22, and 28, in Township 5 North, Range 24 East, Mount Diablo Base Meridian. It is mapped on the Mount Jackson 7.5 Minute USGS topographic quadrangle. A list of assessor's parcel numbers, assessor's parcel maps, and detailed parcel descriptions are included in Appendix A.

B. Property Boundaries and Adjacent Land Use

The Ecological Reserve is located at the western edge of the Bridgeport Valley, one of the largest mountain meadow areas in California. The valley consists primarily of private irrigated agricultural lands used for livestock grazing. The East Walker River flows out of the valley and is impounded in the Bridgeport Reservoir. Major tributaries to the East Walker in the valley include Green, Virginia, Robinson, and Buckeye Creeks.

Prior to acquisition by CDFW the land was a private inholding within the boundaries of the HTNF. One private parcel remains adjacent to the southeast corner of the Ecological Reserve with an associated access easement. Except for the gated entrance, the majority of the Ecological Reserve boundaries are unmarked, and no property surveys have been located.

The HTNF Buckeye Campground and trailhead are located approximately two miles south of the Ecological Reserve on Buckeye Creek. There are no developed trails or roads providing direct access to the CDFW parcels from these facilities.

The Ecological Reserve is located within the boundaries of two federal grazing allotments authorized for sheep, the Rickey allotment to the south and the South Swauger allotment to the north. Both allotments include riparian areas, meadows, and springs in the upper watershed of By-Day Creek. The Rickey allotment includes more restrictive allowable use standards due to the presence of Lahontan cutthroat trout.

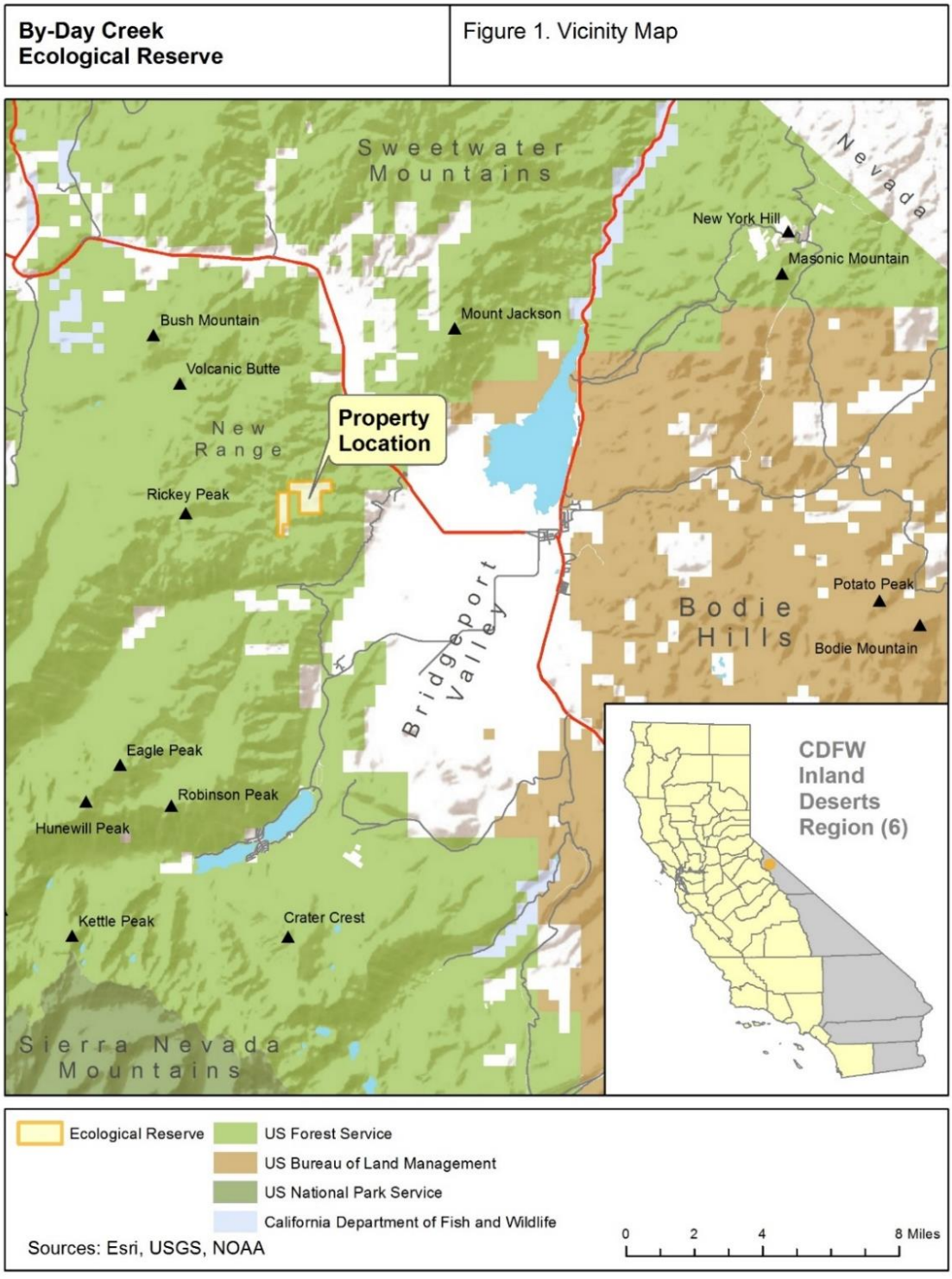

Figure 1. Map of California showing the location of By-Day Creek Ecological Reserve.

By-Day Creek Ecological Reserve	Figure 2. Property Map

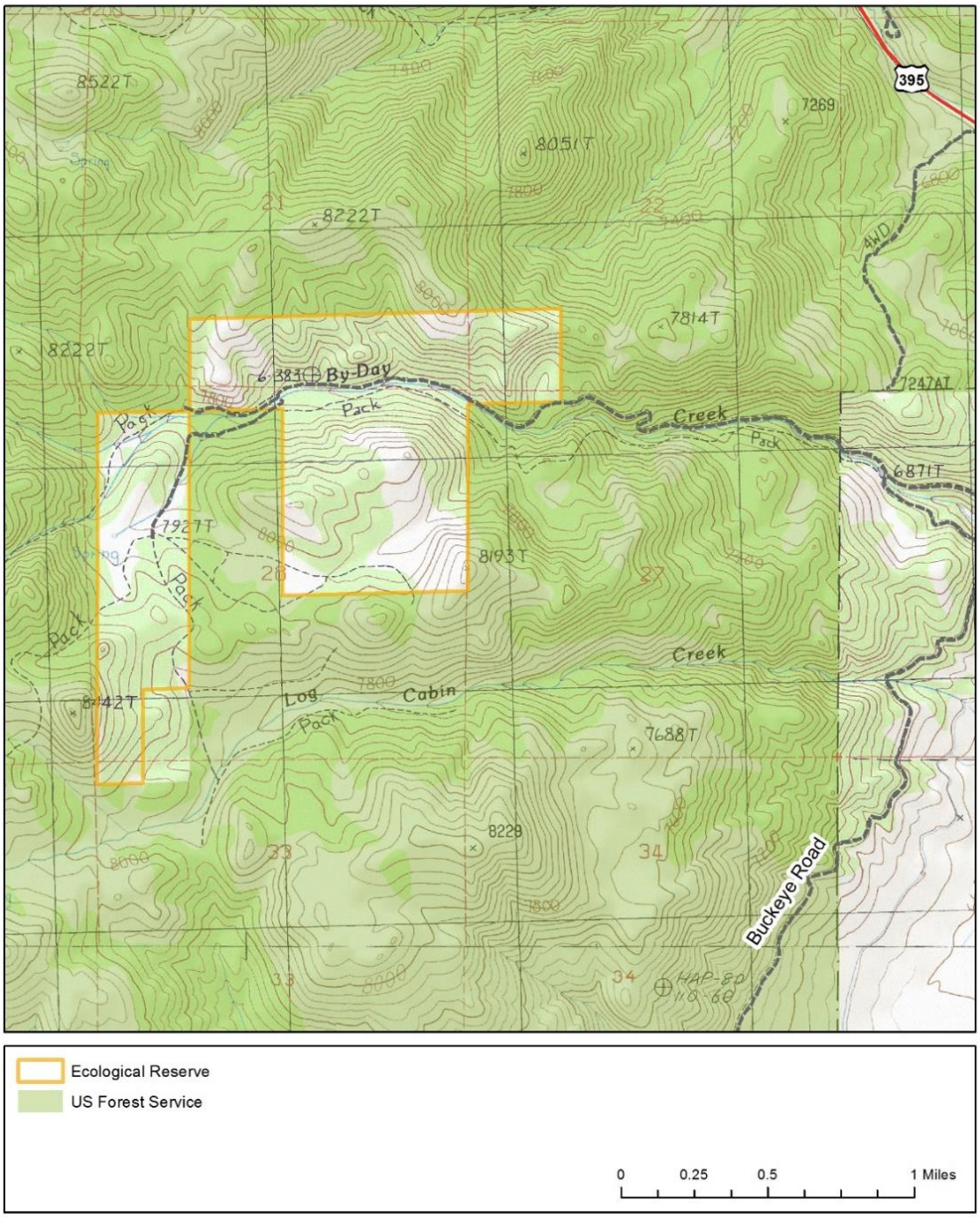

Figure 2. Map of By-Day Creek Ecological Reserve, Mono County, California - Mount Jackson 7.5 minute USGS.

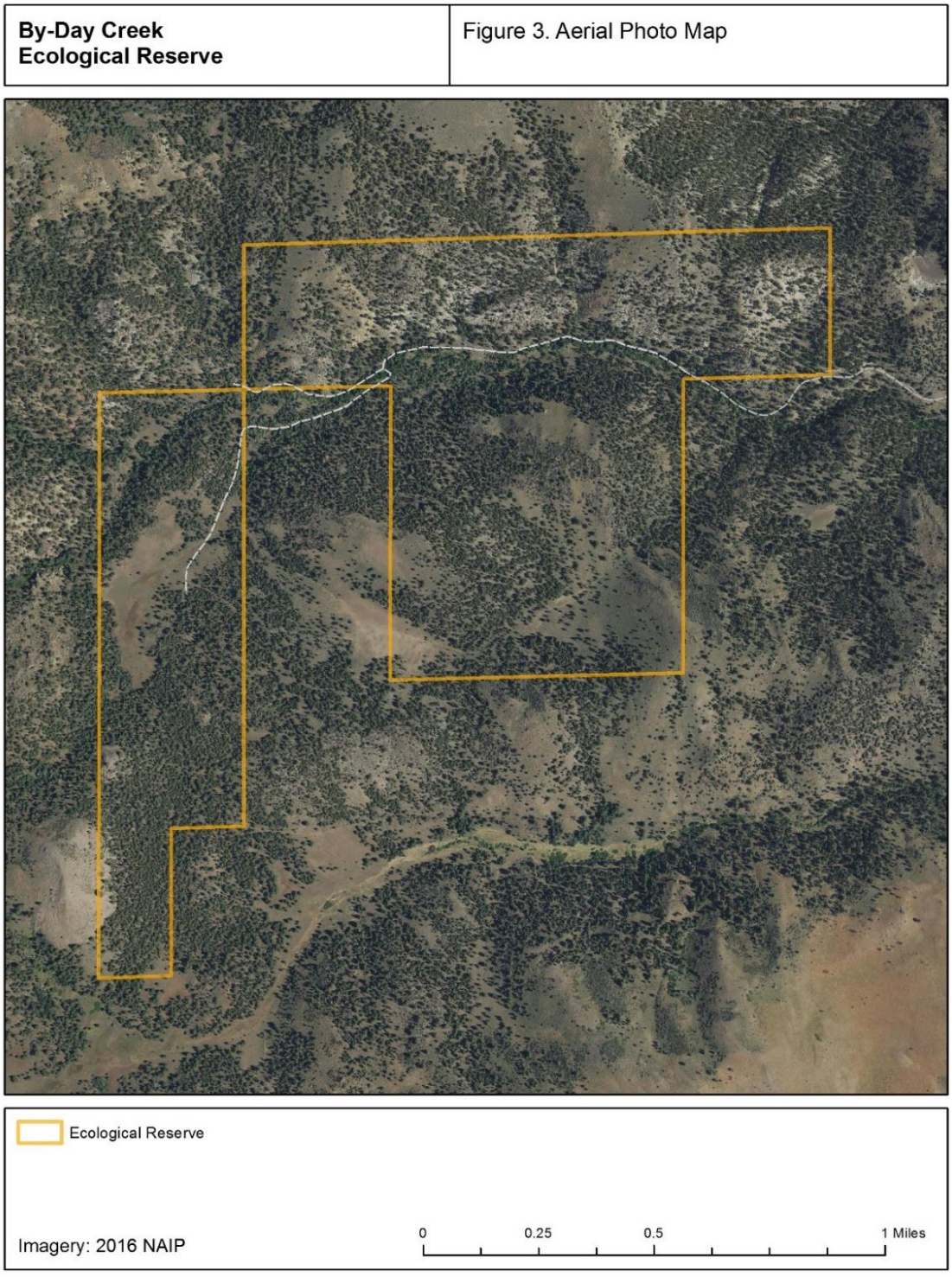

Figure 3. By-Day Creek Ecological Reserve aerial photograph map.

By-Day Creek Ecological Reserve	Figure 4. Ecoregions Map (1:250,000 scale)

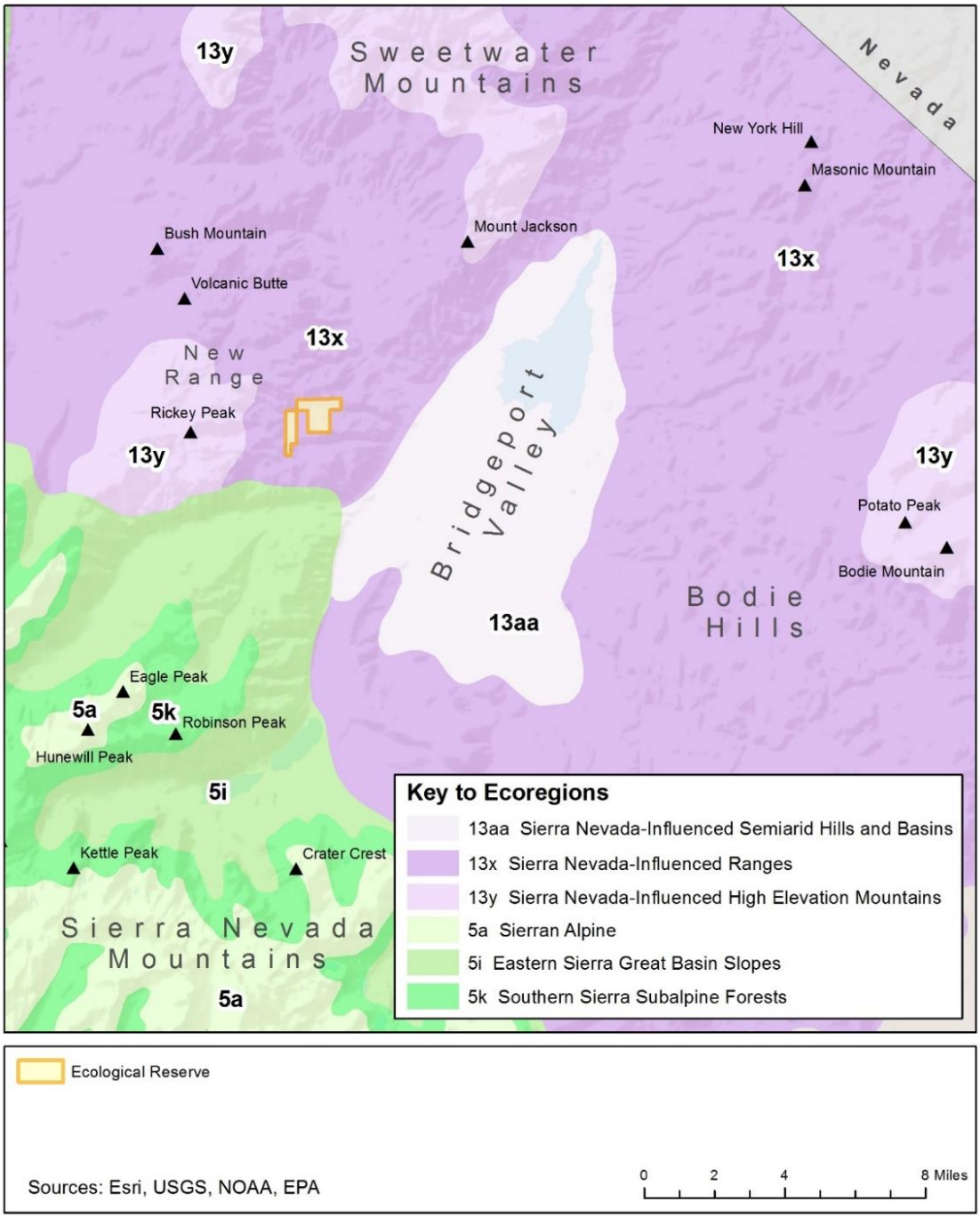

Figure 4. Ecoregions surrounding By-Day Creek Ecological Reserve.

C. Geology, Soils, Climate and Hydrology

Geology and Soils

The geologic and geomorphic setting of the By-Day Creek watershed is somewhat unique and probably explains the remnant population of Lahontan cutthroat trout (LCT) that exists in its waters. Basically, this is an unglaciated watershed arising at about 10,000 feet elevation and flowing to Walker Lake via the East Walker River. The surrounding tributary basins to the Bridgeport Valley were all glaciated and the resulting moraine and outwash complexes form some barriers to migration from the primary Walker Lake refugium. Because the By-Day Creek watershed is small and unglaciated, there are no lakes. A major fault at the base of the watershed creates a steep cascade that may have served to limit upstream migration of introduced fish species from the Bridgeport Reservoir and other adjacent watercourses (Purdy 1985, Wakabayashi 2001). In addition, irrigation canals and diversions in lower By-Day Creek reduce flows on the alluvial fan such that the creek is usually not hydraulically connected to Buckeye Creek, tributary to the East Walker River.

It is probable that many of the headwater streams above Walker Lake in the Sierra Nevada had LCT before other fish were introduced. The populations at Twin Lakes on Robinson Creek and along Buckeye Creek, both immediately adjacent, were legendary (Maule 1938). Green Creek and Virginia Creek may not have had LCT at the headwater lakes because of glacial moraine dam cascades, but Swauger Creek and its ancestral headwaters that are now the West Walker River certainly did. Remnant populations existed in Silver Creek on what is today the West Walker River headwater. That West Walker headwater region was captured sometime in the late Pleistocene, probably in the last 18,000 years.

Of the tributaries that are still connected to the East Walker River that flow directly into the Pleistocene Walker Lake (Snyder 1964) refugium, only By-Day has escaped habitation by introduced rainbow, brook, and brown trout. Construction of the Buckeye Creek road sometime prior to 1909 created a barrier to upstream migration of fish. The fault at the base of the creek, where it joins the Bridgeport Valley is probably responsible for the cascade that helped limit fish migration in the 1800s and early 1900s. That fault is part of the transtensional/extensional (pull-apart) system that defines the Bridgeport Valley (Unruh 2003). Today, the road culvert is still in place, and was enhanced by CDFW in 1996 to prevent upstream migration by non-native trout.

Regional glacial geology was mapped by Robert Sharp (1972) but focused on the moraine complexes of Robinson and Buckeye creeks and the piedmont lobe of ice that filled much of the Bridgeport Valley. These moraines would have isolated By-Day Creek and forced it to flow along the glacial margins, depositing material where

Swauger Creek empties into the Bridgeport Valley. It is improbable that fish could have migrated to By-Day or survived there during that last major glacial episode that ended about 18,000 years ago, but as the glaciers receded and the outwash streams incised, By-Day, Swauger, Robinson, and Buckeye tributaries would have become accessible by about 14,000 years ago.

The headwater divide is mapped as Cathedral Peak granite (Stewart 1982; Koenig 1963; Huber 1989). The main southern portion of By-Day Creek and much of the land currently owned by CDFW is underlain by a volcanic tuff believed to have erupted from the Little Walker Caldera located just to the north in what is now the Little Walker River drainage near Fales Hot Springs (Noble 1969, Nobel 1974, Noble 1976; Priest 1974, Priest 1979). The By-Day watershed was included in field maps that were compiled by the Stanford University field camp in Swauger Creek Canyon (1961) and Pleistocene chronology has been investigated by Sharp (1972) and Birkeland et al (1980). The contact zone between the underlying granitic rock and the By-Day volcanic member of the Eureka Valley Tuff complex lies along the approximate west-to-east course of the central part of By-Day Creek. That depositional ash flow tuff contact is hydrothermally altered and was deposited catastrophically over forested lands as the hot ash clouds and debris surged southward from the edge of the caldera.

The By-Day Creek watershed is the type section of the By-Day member of the Eureka Valley Tuff. This volcanic deposit underlies much of the glacial and glaciofluvial deposits that comprise Burcham and Wheeler Flats in the Sonora Junction area and is exposed along the West Walker River canyon. The volcanic rocks were deposited about 9 million years ago and blanket the older granitic and volcanic rocks beneath them. These ash flow and tuff deposits are porous and retain snowmelt after the thaw. This moisture then arises as spring flow in the headwaters and along the channel of By-Day Creek on the property owned by CDFW.

Surficial geologic mapping in the region includes the compilation of Dohrenwend, et al, 1982 and the lifelong work of Malcolm Clark that follows his PhD dissertation at Sonora Junction (1967). Contemporary mapping was completed by Dylan Rood (Rood 2005, Rood 2010). Soils on the glacial deposits of the Bridgeport Valley have been studied by Birkeland, et al, 1980.

Soil mapping for the area surrounding and including the Ecological Reserve was conducted by US Department of Agriculture, Natural Resources Conservation Service (NRCS) as part of the survey for the Toiyabe National Forest Area, California (CA729) completed in 2014. This survey identified four soil types occurring on the property, the Joecut, Elaeroo-Lockgate-Granhogany, Loope-Pinew-Heenlake, and Burchflat-Celeridge-Loope association.

Table 1. By-Day Creek Ecological Reserve Soil Types

Map Unit Name	Map Unit Symbol	Acres
Joecut association	382	290
Elaero-Lockgate-Granhogany association	530	14
Loope-Pinew-Heenlake association	592	42
Burchflat-Celeridge-Loope association	731	114

As illustrated in Figure 5 the primary soil type, Joecut unit, is associated with the forested hillslopes on the property while the second most abundant soil type, Burchflat-Celeridge-Loope, is found primarily on the sagebrush flats, bitterbrush, and mountain mahogany thickets on the property. All four of the soil types present on the Ecological Reserve have an erosion hazard ranking of severe, indicating that significant erosion can be expected in the construction and maintenance of roads and trails and that frequent maintenance and erosion-control measures may be needed.

Climate

Based on historic meteorological data, the average annual precipitation in Bridgeport is 9.36 inches with average summertime high temperatures in the low 80º F range, and lows temperatures around 40º F. Winters are cold with average highs in the 40º F range and average lows 9-10º F, negative temperatures are not uncommon (WRCC, accessed December 2018). Bridgeport has been noted as the second coldest place in California, behind nearby Bodie, based on mean annual temperature (King 2009). Precipitation is widely variable, coming primarily in the winter months (Appendix D).

The nearest weather station to the Ecological Reserve with a long-term record is located 5 miles east in the community of Bridgeport at an elevation of 6,470 feet. Meteorological records for station 04-1072 are available from the Western Regional Climate Center (WRCC) and date back to the early 1900s. Due to the location of this station relative to the Ecological Reserve the actual meteorological data are likely

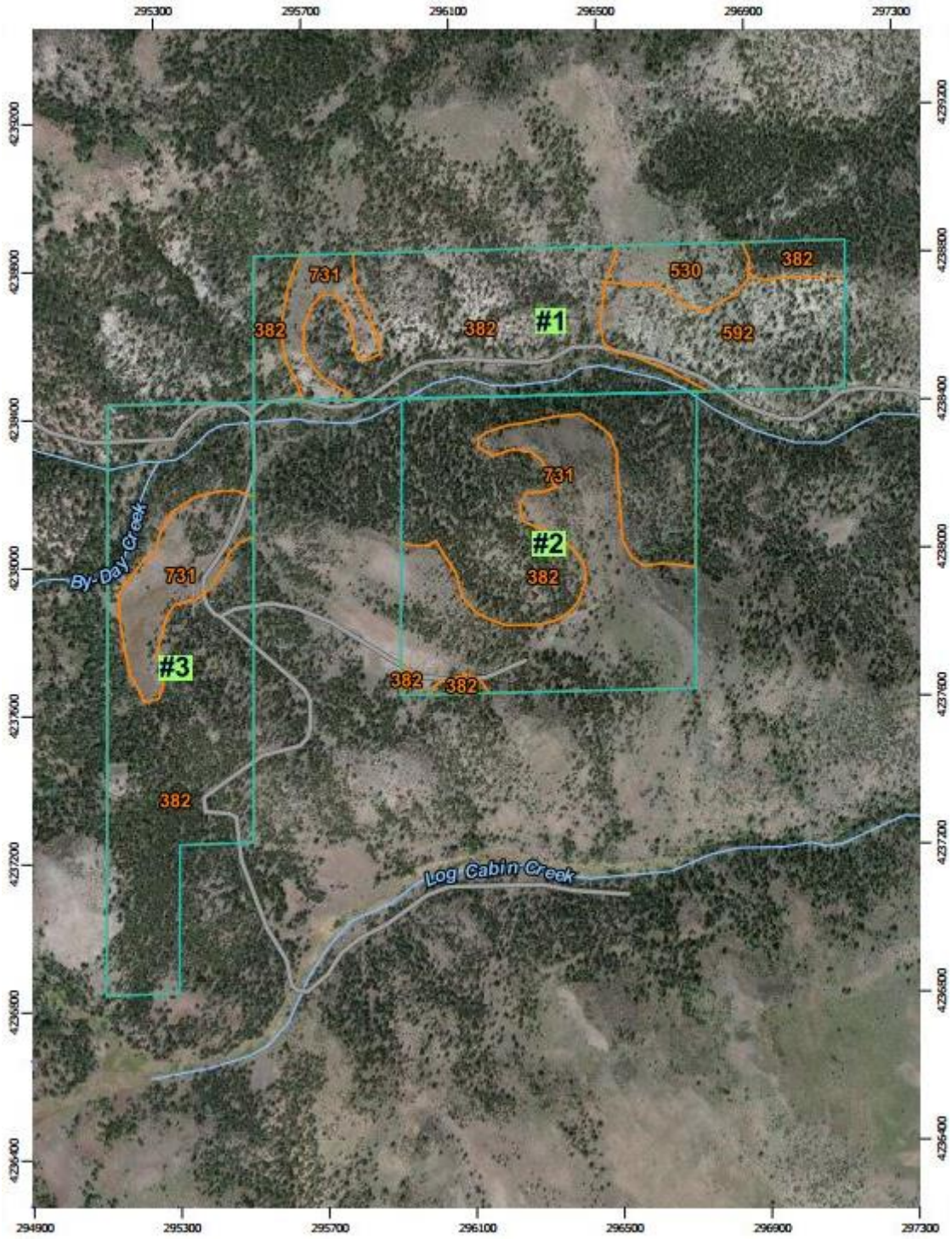

Figure 5. NRCS Soil Map for By-Day Creek Ecological Reserve

not accurate but the seasonal distribution and variance may be reflective of conditions at higher elevations. The Bridgeport Valley is an area of cold winter inversions and persistent cold winter temperatures. This does not imply that the middle elevations of the By-Day Creek watershed, at 8,200 to 8,800 feet elevation are characterized by the same low temperatures. Bridgeport Valley is cold because it is surrounded by high elevation mountains (above 10,000 feet) that feed cold air downslope. Rickey Peak is not as high as the primary cold air summit areas surrounding the valley, and By-Day Creek should not have consistent cold air drainage to alter its micro climate. By adding an orographic adjustment to historic weather data, the estimated historical annual mean precipitation at the Ecological Reserve would be nearly 23 inches (Livneh et al. 2015, CalAdapt.org, accessed December 2018).

The NRCS operates several automated snow monitoring stations in the upper Walker River basin as part of the Snow Telemetry (SNOTEL) network. The nearest station to the Ecological Reserve is the Sawmill Ridge snow course (19L34) located 6 miles south of the property on a ridge north of Twin Lakes at an elevation of 8,761 feet. This station has been in place since 1976 and reports snow depth and water content. This location is similar in elevation to the upper portions of the reserve; however, due to the proximity to the Sierra crest it likely receives more precipitation. Median start-of-month snow depth for the period of record (1981-2010) was 38 inches in February (11.3 inches snow water equivalent), 37 inches in March (12.8 in. snow water equivalent), and 45 inches in April (16.4 in. snow water equivalent).

The anticipated impacts of climate change, which are expected to include warmer average daily temperatures, an increase summertime extreme heat events, warmer winters with earlier snowmelt, and an overall increase in precipitation expected as rain, are described in more detail in Chapter IIIA and IIIC.

Hydrology

By-Day Creek is fed by a very small watershed of only about 4 square miles as shown in Figure 6 with a mean basin slope of 30% (USGS 2012). Despite its small size, perennial flow arises from headwater springs that are recharged through the high elevation snowmelt into porous soils. By-Day Creek flows eastward from its origins down 3,000 feet to the Bridgeport Valley. There it is diverted into ditches that irrigate the meadows around Buckeye Creek. There does not appear to be any natural connection to the East Walker River above the Bridgeport Reservoir. A culvert and barrier at the base of the watershed along the USFS Buckeye Road prevent any exchange of fish between Bridgeport Valley irrigation ditches and the upper watershed.

Culvert and fish barrier on By-Day Creek at Buckeye Road

A stream station was operated by the United States Geological Survey (USGS) on By-Day Creek downstream of the Ecological Reserve a short distance above the Buckeye Road between 1995 and 2007 (USGS Station 10291750). At this location USGS manually measured stream discharge multiple times per year. The highest average flows typically occur in May, with the minimum flows occurring in late summer. Average high flows in April, May, and June is 4 cubic feet per second (cfs) and late summer and winter flows are generally less than 1 cfs. The annual average discharge over this 12-year period of measurement was 1.7 cfs. During drought By-Day Creek has occasionally gone dry above the Buckeye Road crossing during late summer. The spring-fed nature of By-Day Creek and its short length typically prevent freezing in winter. It is apparent that pool habitats and underflow through stream gravel is necessary in By-Day Creek for overwintering the fish population.

There are no records for snow water accumulation in the By-Day watershed, and the headwater elevations around 10,000 feet would suggest that spring snowmelt peaks will not typically be large. It is noteworthy that on two instances occurring in May in the consecutive years of 2005 and 2006, the USGS stream station reported flows of nearly 20 cfs. However, excluding those two extremes the average high flow for May would be 4.3 cfs. Based on observations, intense summer thunderstorms, rain-on-

snow events, and exceptional snowmelt years may excessively increase fine sediment input from the adjacent road and friable banks and management activities to remedy this should be considered.

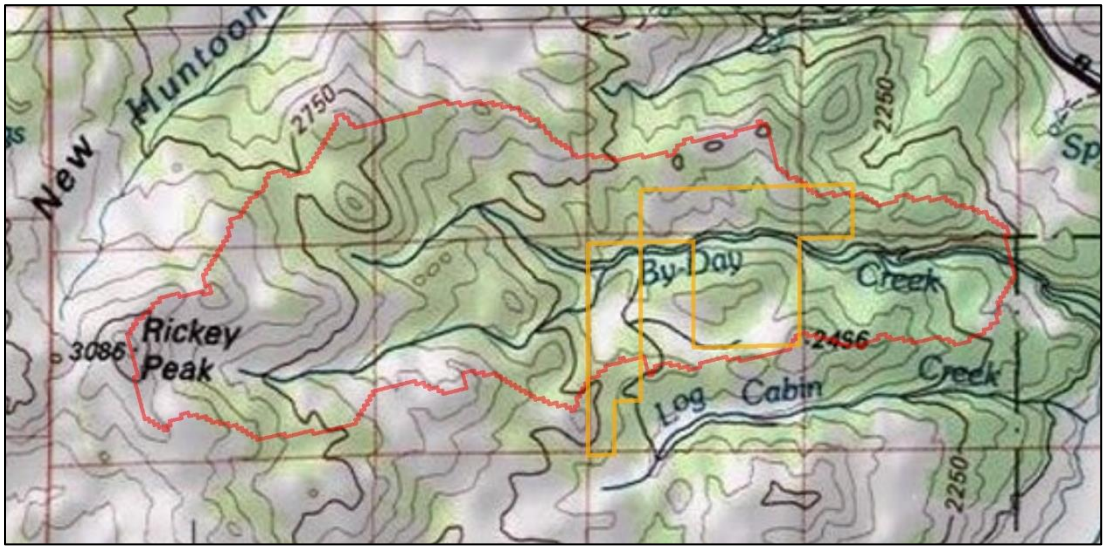

Figure 6 By-Day Creek Watershed (red) and Ecological Reserve (orange)

When CDFW acquired the Ecological Reserve property in 1983, the stream was in poor condition, with an incised channel and eroding banks as a result of ground disturbance, reduced cover of riparian vegetation, and sediment delivery from logging, road placement, and grazing activities in the watershed. As a result of past land use, drought, the breaching of beaver dams in 1978, and subsequent high flows in 1982-83, the streambed had incised as much as 6 feet in places. In 1985, the HTNF and CDFW worked cooperatively to design and install streambank stabilization structures consisting of logs and gabions (rock-filled wire-mesh) intended to prevent the loss of stream sinuosity and further erosion. However, the By-Day Creek Final Lahontan Cutthroat Trout Habitat Enhancement and Stream Restoration Plan (1993) determined that many of the structures were, by then, inhibiting natural functioning of stream processes. The report recommended the removal or modification of some of the structures, and the addition of some small new structures. Information from this report was used in conjunction with a 2004 field survey of the structures by HTNF and CDFW personnel and subsequently was used by USFS for the implementation of a project to replace the culvert bridge, remove two barriers, and complete bank contouring and stabilization below the bridge.

A headwaters retention project was implemented by CDFW in May 2018. The project was designed to enhance base flows in By-Day Creek in late summer and fall and restore meadow, riparian, and aspen habitats through increased floodplain connectivity by installing a series of small beaver dam-like structures (beaver dam

analogs or BDAs) in two forks of the creek. In addition to enhancing late season streamflow, studies have shown the benefits of beaver dam analog projects for fish by recovering ecosystem function and increasing habitat quality and complexity (Bouwes 2016, Weber 2017).

The watershed above the Ecological Reserve is managed by the HTNF where that agency has established three water rights with the California State Water Resources Control Board at springs identified as “By-Day Spring No. 5”, “Sheep Spring”, and “By-Day Spring No. 6”. The purpose of these diversions is stockwatering for sheep, and fish and wildlife protection and/or enhancement. However, past reporting suggests relatively minimal use (approximately 0.045 cfs and 11 acre-feet per year). The remote location of these springs makes additional diversions or water development unlikely, but occasionally monitoring of the springs is recommended.

D. Cultural Features

Archaeological and Ethnographic Overview

Ethnographically the Ecological Reserve is located within the territory of the Northern Paiute, specifically the Bridgeport Valley Paiute which identify themselves as the “Pogai-dukadu,” meaning arrow leaf balsam root, or sunflower seed eaters. They refer to the area around By-Day Creek as “Goyaba” (Joseph Lent, personal communication, August 5, 2019). In the 1933 Ethnography of the Owens Valley Paiute anthropologist Julian Steward also noted the Bridgeport Paiute as the “Paxai-dika” (Steward 1933). Their territory extended west into the acorn abundant areas of Hetch Hetchy, Strawberry and Donnell Valleys; northwest to the Sonora Junction area into Antelope Valley, northeast into the Sweetwater Mountains, east through the Bodie Hills, and south to Mono Lake (Joseph Lent, personal communication, August 5, 2019). Research suggests that hunter-gatherer occupation began approximately 10,000 years ago with groups moving seasonally to gather food resources (such as pinyon pine nuts, grass seed, bitterroot, and berries) and hunt (for mule deer, pronghorn, Lahontan cutthroat trout, bighorn sheep, rabbits, and rodents) (Busby 1980, Halford 2008). Camps with permanent structures such as rock rings, house structures, and tools were used by small groups during activities such as hunting, nut and seed gathering, and retooling (Halford 2008).

A cultural resources field survey was conducted in 1993 for a portion of By-Day Creek by M.C. Hall of the Archaeological Research Unit, University of California at Riverside. This field survey found no historic or prehistoric cultural resource sites within a 50-foot buffer along the creek, but other portions of the property have not been surveyed. CDFW staff and consultants have observed lithic fragments throughout the property while conducting fieldwork.

A records search completed by the Eastern Information Center at the University of California at Riverside determined that one cultural resources study (cited above) had been conducted within portions of the Ecological Reserve. No cultural resources were recorded within the boundaries of the Ecological Reserve or within a one-quarter mile radius. In addition, no listings for the area appear in the National Register of Historic Places, the Office of Historic Preservation's Directory of Properties, or the Office of Historic Preservation's Archaeological Determinations of Eligibility list.

Historic Land Use

Although early explorers such as Jedidiah Smith, Joseph Walker, and John Fremont traveled through the region in the early 1800s, the major influx of Euro-Americans followed the gold rush on the western slope of the Sierra in 1848. In the late 1850s gold was found at nearby locations such as Bodie, Aurora, and Masonic, which was followed by rapid population growth. To support the expanding population and demands of the mining industry the need for livestock, timber, and other commodities grew quickly. Enterprising settlers filed for patents with the General Land Office under the various Homestead Acts to claim parcels with high quality grazing and agricultural lands, timber, and water sources. By-Day Creek was named after one of the first settlers in the area, George Byron Day, who spent the winter of 1859-1860 in the Bridgeport Valley, originally called "Big Meadows", and later acquired ranch and mountain lands nearby.

CDFW lands in the By-Day Creek watershed were historically managed for timber production for a local sawmill and livestock grazing operations. Logging activities took place on what is now the Ecological Reserve up until the late 1960s. Sheep grazing continues on the surrounding US Forest Service lands under permit. Aspen tree carvings or "arborglyphs" indicate the presence of Basque sheepherders which have been visiting the region since the 1890s (Halford 2008).

The main access road on the Ecological Reserve was initially used for access to the upper watershed for timber harvest and grazing operations.

Existing Structures

There are no structures located on the Ecological Reserve.

III. HABITAT AND SPECIES DESCRIPTION

A. Natural Communities, Vegetation, and Habitats

Natural Communities

Natural Communities have been part of the Natural Heritage conservation triad, along with plants and animals, since the inception in 1979 of California's natural heritage program, the California Natural Diversity Data Base (CNDDB). Natural Community elements were at first classified according to "Preliminary Descriptions of the Terrestrial Natural Communities of California" (Holland 1986). Subsequently, the classification for California was published as the Manual of California Vegetation (MCV) in 1995, updated in the second edition of the Manual (Sawyer et al. 2009), and is now most easily accessed in the Online Manual of California Vegetation. The terms "natural communities" and "vegetation types" are used interchangeably.

Sierra Bog Orchid

A complete vegetation classification of By-Day Creek Ecological Reserve has not yet been completed, however two botanists inventoried the plant species and vegetation types during a two-day survey in June 2004. The Ecological Reserve was hiked to visually determine the composition of and boundaries between natural communities. Vegetation types were recorded on a topographic field map, transferred to aerial photographs, and later digitized into the map product shown in Figure 7. Natural Communities on the Ecological Reserve were identified to alliance or association level using descriptions in the MCV and reviewed against the "Key to Yosemite Alliances and Associations" (Keeler-Wolf et al. 2012). This report and associated mapping covered a large area of 1.4 million acres with a mapping boundary extending to within ½ mile west of the Ecological Reserve.

The MCV defines a hierarchy of classes that capture distinctions among communities at different scales. The more broadly defined classes, *groups* and

macrogroups, are regional categories (e.g. big sagebrush scrub). *Alliances* are more focused, and better distinguish among communities within a region in terms of species composition and diagnostic species. *Associations* are more locally useful because they describe narrower categories, with multiple diagnostic species that differentiate communities from one another at a smaller scale (Sawyer et al. 2009).

The preliminary vegetation classification at By-Day Creek Ecological Reserve consists of 10 communities at the alliance level. Jeffrey pine forest, accounts for 63% of the vegetation on the Ecological Reserve and was partially mapped to the association level but additional fieldwork is needed. Preliminary classification has identified 13 unique vegetation types at the Ecological Reserve as shown in Table 2. Generally, the vegetation is a matrix of forest, scrub, and meadow communities typical of the region. The majority of the property consists of vegetation types dominated or co-dominated by Jeffrey pine, which is widespread and common in the region. Big sagebrush is the most frequent shrub on the Ecological Reserve, common in Jeffrey pine understory and dominating the most common scrub community on the reserve and in the region. By-Day Creek supports aspen groves in a narrow strip near the watercourse.

Table 2: Natural Communities and acreages at By-Day Creek Ecological Reserve

Alliance Name	Association Name	Diagnostic Species	CaCode	Acreage
Big sagebrush	*Not identified*	*Artemisia tridentata*	**35.110.00**	75
Little sagebrush scrub	*Not identified*	*Artemisia arbuscula* ssp. *arbuscula*	**35.120.00**	6
Silver sagebrush scrub	*Not identified*	*Artemisia cana*	**35.150.00**	7
Bitter brush scrub	*Not identified*	*Purshia tridentata*	**35.200.00**	10
Bitter cherry thickets [Provisional]	*No associations described*	*Prunus emarginata*	**37.900.00**	2
Baltic and Mexican rush marshes	*Not identified*	*Juncus arcticus var. balticus*	**45.562.00**	6
Aspen groves	*Not identified*	*Populus tremuloides*	**61.111.00**	30
Curl leaf mountain-mahogany scrub	*Not identified*	*Cercocarpus ledifolius*	**76.200.00**	12
Jeffrey pine forest	*Not identified*	*Pinus jeffreyi*	**87.020.00**	170

Alliance Name	Association Name	Diagnostic Species	CaCode	Acreage
Jeffrey pine forest	*Pinus jeffreyi - Abies concolor / Symphoricarpos rotundifolius / Elymus elymoides*	*Pinus jeffreyi/ Abies concolor/ Symphoricarpos rotundifolius / Elymus elymoides*	87.205.07	75
Jeffrey pine forest	*Pinus jeffreyi / Cercocarpus ledifolius*	*Pinus jeffreyi / Cercocarpus ledifolius*	87.020.17	3
Jeffrey pine forest	*Pinus jeffreyi / Purshia tridentata var. tridentata*	*Pinus jeffreyi / Purshia tridentata var. tridentata*	87.020.21	42
White fir forest	*Not identified*	*Abies concolor*	**88.500.00**	22

Vegetation Types

The following descriptions discuss the 13 vegetation types found at the Ecological Reserve (Table 2); the minimum mapping unit was generally 1 acre. Preliminary mapping efforts of these vegetations types are presented in Figure 7. Three of these alliances have been identified as Sensitive Natural Communities, silver sagebrush scrub, bitter brush scrub, and aspen groves. These are ranked “S3” which indicates that they are vulnerable to extirpation in the state due to a restricted range, relatively few populations, recent and widespread declines, or other factors.

Big sagebrush
[*Artemisia tridentata* Shrubland Alliance]

Large areas of the Ecological Reserve contained stands of big sagebrush (*Artemisia tridentata*); this is a widespread vegetation type occurring throughout the Great Basin.

On a ridgeline on the western section of the Ecological Reserve, big sagebrush (*Artemisia tridentata* – 50%) occurred within a meadow complex containing scattered Jeffrey pine (*Pinus jeffreyi* – 5%) and stands of invading aspen (*Populus tremuloides* – 20%) along with a dense herbaceous cover of grasses (55%) and forbs (40%).

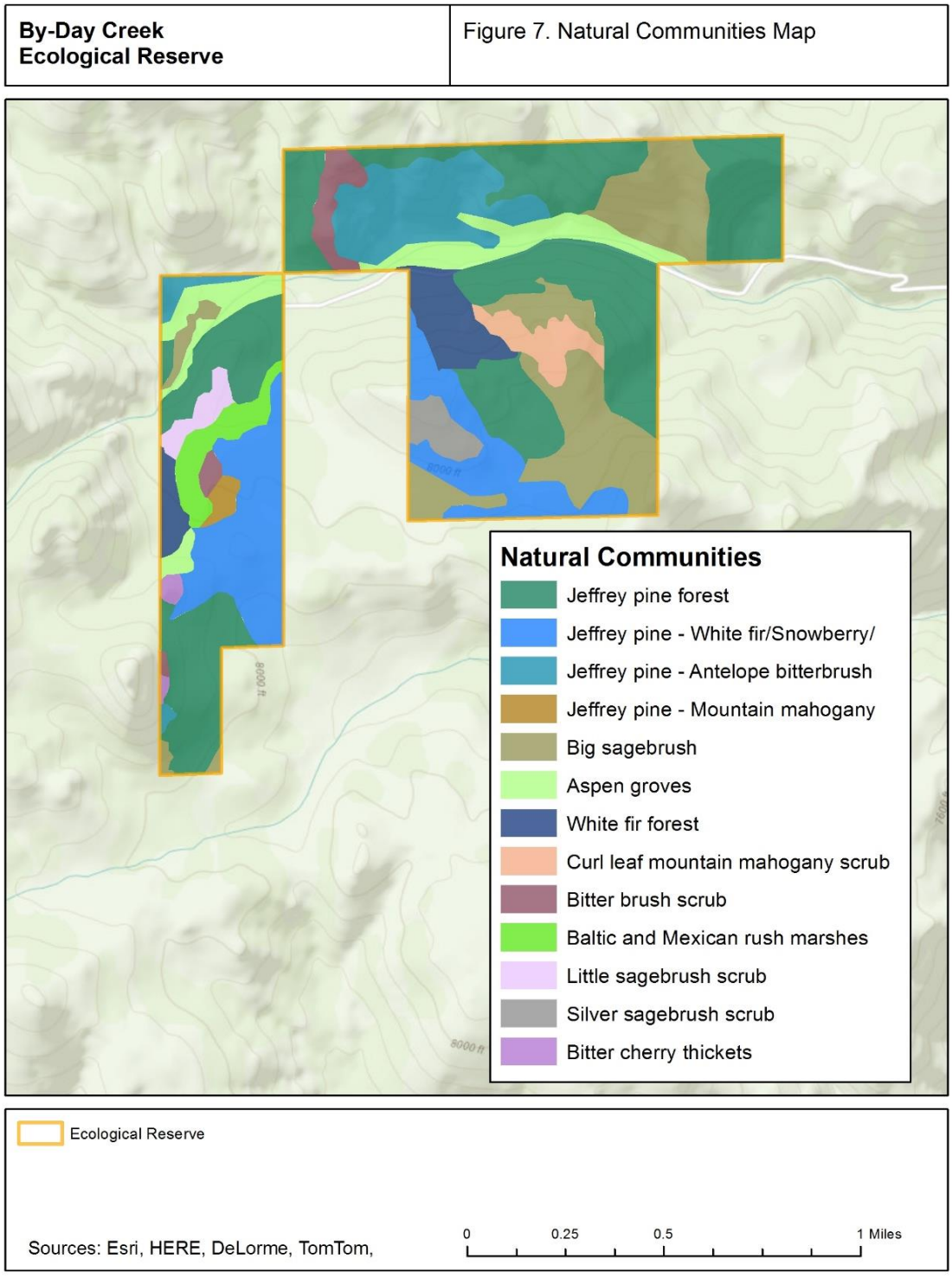

Figure 7. By-Day Creek Ecological Reserve Natural Communities Map

On many aspects and slopes within the middle section of the Ecological Reserve, big sagebrush dominated (*Artemisia tridentata* – 30-40%) but with very significant cover of round leaved snowberry (*Symphoricarpos rotundifolius* var. *rotundifolius* – 25%) and curlleaf mountain mahogany (*Cercocarpus ledifolius* – 2-15%) along with antelope bitterbrush (*Purshia tridentata* – 15-25%). Lupines (*Lupinus* ssp. – 15%) were only present on the north-facing slopes of this area whereas pinyon pines (*Pinus monophylla* – 2%) were only present on the south-facing slopes.

This widespread alliance occurs in numerous associations; Keeler-Wolf (2012) noted 3 big sagebrush association within the nearby mapping area with potential to occur on the Ecological Reserve including: *Artemisia tridentata, Artemisia tridentata ssp. tridentata/ Achnatherum hymenoides* [Provisional], *Artemisia tridentata ssp. vaseyana/ Monardella odoratissima* [Provisional].

Little sagebrush scrub
[*Artemisia arbuscula ssp. arbuscula* Shrubland Alliance]

A generally south-east facing meadow in the western section of the Ecological Reserve was dominated by low sagebrush (*Artemisia arbuscula* ssp*. arbuscula* – 75%) along with significant cover of Lemmon's needlegrass (*Achnatherum lemmonii* – 40%). Low sagebrush communities are common, associated with moist meadows, throughout the region. Keeler-Wolf (2012) noted a single little sagebrush scrub association within the nearby mapping area as *Artemisia arbuscula ssp. arbuscula* Dwarf-Shrubland [Provisional]. This is likely what occurs on the Ecological Reserve.

Silver sagebrush scrub
[*Artemisia cana* Shrubland Alliance]

Sensitive Natural Community (S3, vulnerable in California)

A higher elevation, southwestern slope contained a community co-dominated by silver sagebrush (*Artemisia cana* – 60%) and Mexican rush (*Juncus balticus/Juncus mexicana* – 60%). The association appears as a meadow community with scattered shrubs and includes diverse native grasses and rushes along with blue flag iris (*Iris missouriensis* – 7%). Keeler-Wolf (2012) noted a single silver sagebrush association within the nearby mapping area as *Artemisia cana/Iris missouriensis - Juncus balticus* Shrubland [Provisional]. This is likely what occurs on the Ecological Reserve, but it has not been confirmed.

Bitter cherry thickets
[*Prunus emarginata* Provisional Shrubland Alliance]

There were two small patches of this vegetation type on west-facing, steep, scree-covered slopes of the southern-most portion of the western section of the

property. These areas were mostly bare, though the dominant species was bitter cherry (*Prunus emarginata*) with around 1% cover. Other species included antelope bitterbrush (*Purshia tridentata*), fennel-leaved Lomatium (*Lomatium foeniculum* ssp. *fimbriatum*), and yellow rabbit brush (*Chrysothamnus viscidiflorus* ssp. *lanceolatus*), all with less than 1% cover. There are no described associations for this provisional alliance.

Bitter brush scrub
[*Purshia tridentata* Shrubland Alliance], Sensitive Natural Community (S3, vulnerable in California)

Big sagebrush (*Artemisia tridentata* 15-20%) and antelope bitterbrush (*Purshia tridentata* 15-20%) occurred as co-dominant species on large areas of west-facing slopes of the western section of the property; much of these slopes contained bare ground (10-25%). Another species which occurred with significant cover in this area was round leaved snowberry (*Symphoricarpos rotundifolius* var. *rotundifolius* – 8-10%). Some areas also contained white fir (*Abies concolor*) and Jeffrey pine (*Pinus jeffreyi*). Despite co-dominance of *Purshia tridentata* and *Artemisia tridentata*, data analysis in the Yosemite vegetation classification (Keeler-Wolf et al. 2012) suggest that stands with >5% absolute cover should be grouped in one alliance.

A somewhat steep, barren west-facing slope on the northern portion of the Ecological Reserve was dominated by Antelope bitterbrush (*Purshia tridentata*), a common shrub of the Great Basin. The species is more tolerant than big sagebrush of dry sites, which may help explain its occasional dominance.

This alliance is widespread throughout the Great Basin, including eastern California. Keeler-Wolf (2012) noted four provisional bitter brush scrub association within the nearby mapping area with potential to occur on the Ecological Reserve including: *Purshia tridentata - Artemisia tridentata - Tetradymia canescens, Purshia tridentata - Artemisia tridentata/Achnatherum hymenoides, Purshia tridentata - Artemisia tridentata/Achnatherum nevadense - (Achnatherum nelsonii ssp. dorei), Purshia tridentata - Artemisia tridentata - Symphoricarpos rotundifolius.*

Baltic and Mexican rush marshes
[*Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance]

As one of the branches of By-Day Creek drains into a wet meadow in the middle portion of the western section of the Ecological Reserve, Mexican rush dominated (*Juncus mexicanus* – 30%) with significant cover of silver sagebrush (*Artemisia cana* – 20%) and blue flag iris (*Iris missouriensis* – 12%). Creeping rye (*Elymus triticoides* – 4%) was also present along with a number of native forbs and other grasses. This is a widespread and common habitat type throughout the region.

Keeler-Wolf (2012) noted that one association is defined with mixes of both Mexican and Baltic rush as Baltic Rush-(Mexican rush) Herbaceous Vegetation [*Juncus balticus (Juncus mexicanus*) Herbaceous Vegetation]. Where *Juncus mexicanus* is dominant it may occur as *Juncus mexicanus* herbaceous alliance; this alliance is poorly defined and has no associations. Given the relatively high shrub cover it is likely that this community grades into the silver sagebrush scrub type.

Aspen groves
[*Populus tremuloides* Forest Alliance]

Sensitive Natural Community (S3, vulnerable in California)

The drainages of By-Day Creek on the Ecological Reserve contained aspen (*Populus tremuloides* – 30-60%*)* with Jeffrey pine (*Pinus jeffreyi* – 10-15%) and white fir (*Abies concolor* – 10%.). Shrubs such as round leaved snowberry (*Symphoricarpos rotundifolius* var. *rotundifolius* – 3-10%), big sagebrush (*Artemisia tridentata*), and lupine (*Lupinus* sp.) were present in the understory. Various forbs and grasses created a sparse herbaceous layer (10%). Aspen-dominated riparian systems are common in the eastern Sierra Nevada.

Keeler-Wolf (2012) noted five aspen grove association within the nearby mapping area with potential to occur on the Ecological Reserve including: *Populus tremuloides/ Artemisia tridentata* [Provisional], *Populus tremuloides/ Monardella odoratissima, Populus tremuloides/ Artemisia tridentata/ Monardella odoratissima - Kelloggia galioides* [Provisional], *Populus tremuloides - Pinus jeffreyi, Populus tremuloides/Rosa woodsia* [Provisional].

Curl leaf mountain mahogany scrub
[*Cercocarpus ledifolius* Shrubland Alliance]

The ridgeline in the center of the Ecological Reserve is dominated by curlleaf mountain-mahogany (*Cercocarpus ledifolius* – 60%), which occurs in dense stands with sparse understory grasses (*Achnatherum lemmonii* – 10%), shrubs (*Purshia tridentata* – 10%) and scattered trees (*Pinus jeffreyi* – 10%). This habitat type is common throughout the region. Keeler-Wolf (2012) noted a single association within the nearby mapping area as *Cercocarpus ledifolius/ Symphoricarpos rotundifolius*. While snowberry was not identified in the field notes this is likely the association occurring on the Ecological Reserve.

Jeffrey pine forest
[*Pinus jeffreyi* Forest Alliance]

The most prevalent vegetation type of the Ecological Reserve is dominated by Jeffrey pine (*Pinus jeffreyi* – 40-90%) with sparse understory shrubs, including antelope bitterbrush (*Purshia tridentata*), big sagebrush (*Artemisia tridentata*),

wax currant (*Ribes cereum*), and mountain mahogany (*Cercocarpus ledifolius*). Occasional white fir trees (*Abies concolor*) were often mixed through this community as were occasional patches of willow (*Salix* spp.), on the moister lower slopes. Meadow areas within the Jeffrey pine forest were composed of (*Wyethia mollis* – 20%) with other forbs and grasses (*Elymus elymoides*, *Poa* ssp. – 15%).

Two stands had particularly large individual Jeffrey pine trees: one on the northern portion of the western section (crossing the western boundary) and another on the north-eastern corner of the northern portion of the property. Because of large, old trees and the overall forest structure, these areas are of particularly high conservation importance. There appear to be particularly high accumulations of fuel in the area surrounding the northern stand and so this habitat could be in particular danger of being negatively impacted from wildfire.

Jeffrey pine dominated communities occur throughout California's major inland mountain ranges, but perhaps are most extensive in the eastern Sierra, especially in Mono County. Keeler-Wolf (2012) noted four Jeffrey pine forest associations within the nearby mapping area with potential to occur on the Ecological Reserve including: *Pinus jeffreyi - Pinus monophylla, Pinus jeffreyi/Purshia tridentata, Pinus jeffreyi/Cercocarpus ledifolius, Pinus jeffreyi - Abies concolor/ Symphoricarpos rotundifolius/ Elymus elymoides* [Provisional]. Three of these associations were identified during fieldwork and are further described below. The remainder of the Jeffrey pine forests present on the Ecological Reserve have only been mapped to the alliance level.

Jeffrey Pine-Curl-leaf Mountain Mahogany Woodland (Association)
[Pinus jeffreyi-Cercocarpus ledifolius]

In the center of the western portion of the property, a moderately sized patch of forest was co-dominated by Jeffrey pine (*Pinus jeffreyi* – 20%) and white fir (*Abies concolor* – 20%) along with an understory and patches of curlleaf mountain mahogany (*Cercocarpus ledifolius* – 20%). Sparse other shrubs included round leaved snowberry (*Symphoricarpos rotundifolius* var. *rotundifolius* – 4%), antelope bitterbrush (*Purshia tridentata* – 2%), and tobacco brush (*Ceanothus velutinus* – 2%).

Jeffrey Pine/Antelope Bitterbrush Woodland (Association)
[Pinus jeffreyi/ Purshia tridentata]

Across a wide variety of topographies there is a scrub community with scattered Jeffrey pines. Antelope bitterbrush (*Purshia tridentata* – 15%) and big sagebrush were co-dominant in the scrubby matrix; Jeffrey pine (*Pinus jeffreyi* – 15%) was dominant between patches of scrub. Curlleaf mountain mahogany was also present (*Cercocarpus ledifolius* – 10%) along with sparse white fir (*Abies concolor*) and juniper (*Juniperus occidentalis* var. *australis*).

Much of the ground was bare rock (50%) and bare soil (8%) along with an understory with a variety of grasses and herbs.

Jeffrey Pine-White Fir/ Roundleaf Snowberry/ Squirreltail Woodland (Association)
[Pinus jeffreyi/Abies concolor/Symphoricarpos rotundifolius/Elymus elymoides]

Slopes with varying aspects on a large area of the western section of the reserve contained stands of co-dominant Jeffrey pine (*Pinus jeffreyi* – 25%) and white fir (*Abies concolor* – 25%), with little understory and sometimes extensive bare soil (averaging 25%). This association was originally mapped as Jeffrey Pine-White Fir Woodland, however Keeler-Wolf (2012) noted that this association includes west side species of trees, shrubs, and herbs.

White fir forest
[*Abies concolor* Forest Alliance]

Across the more level portions of a broad ridge on the western section of the property, there was a large area of white fir dominated forest (*Abies concolor* – 45-65%). A smaller percentage cover of Jeffrey pine (*Pinus jeffreyi* – 15%) and, in some cases, aspen (*Populus tremuloides*) were also present. A very sparse herbaceous layer was patchily distributed. White fir dominated forests are found throughout the inland mountainous regions of California east to the Rocky Mountains. The species has increasingly dominated California forests during the recent era of fire suppression.

Keeler-Wolf (2012) noted that the white fir forest alliance is possible, but that the alliance is not well defined for this region of California. It appears that these groves of white fir are not unique stands but localized areas of fir dominance within the Jeffrey pine – white fir forest stands described above.

Ranked Vegetation Communities

These 13 Natural Communities fall into 7 broader Macrogroups within the National Vegetation Classification (USNVC) Hierarchy. This hierarchy was utilized for the ranking of priority conservation targets in SWAP based analysis of total biodiversity, vulnerability (rarity), and endemism.

Table 3. Macrogroups present at By-Day Ecological Reserve

Macrogroup	Common Name	Group Number
Rocky Mountain Subalpine and High Montane Conifer Forest*	**Subalpine Aspen Forests and Pine Woodlands**	**20**
Californian–Vancouverian Montane and Foothill Forest	North Coastal Mixed Evergreen and Montane Conifer Forests	23
Western Cordilleran Montane Shrubland and Grassland	Montane Upland Deciduous Scrub	49
Western North America Wet Meadow and Low Shrub Carr*	**Wet Mountain Meadow**	**75**
Western North America Tall Sage Shrubland and Steppe*	**Big Sagebrush Scrub**	**96**
Western North America Dwarf Sage Shrubland and Steppe	Great Basin Dwarf Sagebrush Scrub	97
Inter-Mountain Dry Shrubland and Grassland	Great Basin Upland Scrub	98

***[Bold]** Selected macrogroup for conservation strategy development in SWAP 2015

Of the above Macrogroups, North Coastal Mixed Evergreen and Montane Conifer Forests (MG023) and Wet Mountain Meadow (MG 75) were selected for the development of specific conservation strategies for the Sierra Nevada Ecoregion in SWAP. In the Mono Ecoregion, Big Sagebrush Scrub (MG096) was selected. The pertinent SWAP conservation strategies for these Macrogroups are integrated into Chapter IV of this plan.

Habitat Discussion

By-Day Creek supports a narrow corridor of riparian, aquatic, emergent wetland and transitional wildlife habitats including aspen, Jeffrey pine, white fir, willow, wild rose thicket habitats. In addition to these rich habitats along the stream corridors, the Ecological Reserve includes wet and dry meadow, conifer forest, mahogany scrub, and bitterbrush and sage areas.

In the riparian habitat there are mosaics of varying sizes of living and snag aspen and some large Jeffery pines and white fir. This overstory is accompanied by a healthy understory containing willows and other shrubs, young trees, forbs and

grasses. Stefani (1998) found that the area-to-perimeter ratio, willow shrub cover, and prevalence of snags in riparian vegetation are significant positive predictors of bird species richness in montane riparian areas of the northwestern Sierra Nevada. This type of habitat structure should be preserved and enhanced on the property.

Diversity and density of montane riparian breeding birds is associated with several components of riparian vegetation structure. Important habitat characteristics are the width of vegetation within the riparian zone, and the presence of several vegetation layers, including overall herbaceous cover, willow shrub cover, and tree cover.

CDFW staff survey topography along By-Day Creek

Heath and Ballard (2003) found that bird species diversity in mixed willow habitats was associated with herbaceous cover and the percent of riparian vegetation, and the presence of yellow warbler and song sparrow in riparian systems was associated with grass cover, riparian vegetation width and willow shrub cover.

The primary threats to aquatic, riparian, and wetland habitats on the Ecological Reserve include reduced streamflow due to a variety of factors such as a changing climate and past land management practices (e.g., alteration of springs, fire suppression, altered hydrology); accelerated erosion and down-cutting resulting from past land uses such as logging, road building, and grazing (Belsky 1999); and the introduction of invasive plant species that have the potential to reduce habitat quality and outcompete native vegetation. The Sierra Nevada Ecosystem Project (SNEP) identified aquatic, riparian, and meadow ecosystems as the most degraded of all habitat types in the Sierra (SNEP 1996). Due to the importance of providing a refuge for LCT on the Ecological Reserve it is recommended that projects that may address these threats be given the highest priority.

Although aspen snags do not stand for long periods of time, tall, mid- to large- sized decadent and dead aspen, Jeffrey pine, and white fir provide short-term structure for woodpeckers, owls, and a host of other cavity nesting birds. Sierra marten and several other mammalian species depend on pre-excavated or natural elevated cavities for nesting and/or winter denning. Some cavities in large living Jeffery pines are present on the Ecological Reserve. In general, trees with large existing cavities are uncommon on the property, and these should be protected because of their very high wildlife value for a group of species that requires large cavities such as pileated woodpecker (*Dryocopus pileatus*), and several owl species. Dead trees are valuable

beyond the snag stage as well. Once down, they provide excellent habitat for small mammals and mustelids that hunt and den among them, and they provide excellent fawn hiding cover. As logs decompose, they provide a source of invertebrate food for black bears and other wildlife.

Most of the upland areas supporting conifer forest cover, especially those to the south and west of By-Day Creek, still exhibit evidence of past logging activities and fire suppression. Much of the forest is overcrowded with relatively small, stunted trees, with a high concentration of fuel in the understory. These areas could benefit from selectively thinning some of the smaller trees in order to release the remaining trees from competition for light, moisture, and nutrients. Reducing stem density and ladder fuels while increasing spacing between tree crowns should also decrease the possibility of catastrophic fire impacting the area. If the conifer forest cover were to burn at or above the Ecological Reserve, there would be a significant increase in sediment delivery to the channel. Selective thinning at key locations may also benefit streamflow although this relationship is complex and variable by location (Hibert 1967, Saksa 2017).

There are two forested areas on the property that are significant in that they appear to have been subject to little, if any, historic timber harvesting activity and may serve well as reference sites to assist in restoring other forested areas on the property. These areas contain tall, mature trees with a relatively open understory.

Climate Change and Natural Communities

Global climate change is a major challenge to the conservation of California's natural resources (Thorne et al. 2018). The condition of many natural communities is already impaired due to a variety of pressures, many of which are interrelated, and these pressures are likely to be exacerbated by climate change and are already being observed in California (OEHHA 2018). The effects of climate change are typically described in terms of physical changes such as altered temperature and precipitation, as well as the resultant effects such as altered freshwater hydrologic regime, sea level rise, altered fire regime, habitat fragmentation, and increased prevalence of invasive species. These effects will vary considerably across the state and will be affected by which emission scenario[1] is actually realized. Climate projections were obtained from Cal-Adapt, the state's portal and visualization tool for the latest climate change data from California's scientific community. The site was developed by UC Berkeley's Geospatial Innovation Facility (GIF) with funding and advisory oversight by the California Energy Commission's Public Interest Energy Research (PIER) Program, and advisory support from Google.org.

[1] Climate models predict future climate conditions based on different emission scenarios. These scenarios predict concentrations of greenhouse gases and other pollutants in the atmosphere from both natural and man-made sources, and take into consideration land use, land cover, economics, human population trends, and technological advances over time (DRECP 2014; WMO 2016).

Climate projections extending to the end of the century (2100) from multiple global climate models and emissions scenarios represent a wide range of possible future conditions for the Ecological Reserve[2]. Average daily minimum and maximum temperatures are both expected to increase by approximately 6 to 10°F, and average annual precipitation may increase by up to 3 inches per year. Snowpack is projected to decrease significantly, with annual mean snow water equivalence in March decreasing over 60% from a historic baseline of nearly 6 inches to 2 inches or less (CalAdapt.org, accessed December 2018). Additionally, projections suggest that there will be a significant increase in extreme high temperature events, with an additional 35 extreme heat days per year (Snyder et al. 2004, PRBO 2011).

Expected decreases in snowpack will likely pose a serious threat to aquatic and riparian habitats and species due to changing intensity of stream flows and shifting peak stream flows earlier in the season. Snowpack-recharged springs may also be subject to drying out. Temperatures are expected to increase substantially, likely impacting species living on the edge of their thermal tolerance (Morelli 2009). Winters will be warmer, with spring warming beginning earlier and fall cooling occurring later (PRBO 2011). The risk of large wildfires will increase as a result of the above climatic changes.

In A Climate Change Vulnerability Assessment of California's Terrestrial Vegetation, prepared for CDFW by UC Davis (Thorne et al. 2016), an assessment of climate change vulnerability of major macrogroups was completed statewide in association with the preparation of the SWAP. As part of this assessment, Thorne et al. evaluated climate exposure of each vegetation type under several climate scenarios as a measure of vegetation stress. This report examined 6 of the 7 macrogroups present on the Ecological Reserve, and the highest exposure ranking for each macrogroup is presented in Table 4. Of these 6 macrogroups, 4 were scored as highly exposed, and 2 as nearly-highly exposed to projected climates by the end of century.

[2] Projections are based on CNRM-CM5 (cool/wet model) and HadGEM2-GS (warm/dry model), for both the RCP 4.5 (business as usual) and RCP 8.5 (continuing increase) greenhouse gas emissions scenarios; http://cal-adapt.org/

Table 4. Climate Change Exposure by Macrogroup

Common Name	Climate Exposure and Spatial Disruption Rank[34]
Subalpine Aspen Forests and Pine Woodlands (MG020)	High
Great Basin Dwarf Sagebrush Scrub (MG097)	High
Great Basin Upland Scrub (MG098)	High
Wet Mountain Meadow (MG075)	Mid-High
Big Sagebrush Scrub (MG096)	High
North Coastal Mixed Evergreen and Montane Conifer Forests (MG023)	Mid-High
Montane Upland Deciduous Scrub (MG049)	[Not assessed]

As part of the assessment, Thorne et al. also identified areas of vegetation with low exposure to climate change or "vegetation climate exposure refugia". The majority of the Ecological Reserve was identified as being a low exposure climate refuge in the years 2040-2069; however, in the subsequent period of 2070-2099 very little of the property retains the low climate exposure ranking.

Aspen forests are highly vulnerable to drought and high temperature; because they are deciduous, their water needs are often higher than those of surrounding conifers (Morelli et al. 2011). Drought and heat stress also make both aspen and pine more vulnerable to boring beetles and disease. This vegetation community may also be vulnerable to encroachment from mixed conifer forest in the lower part of its elevation range (Williams 2013).

Great Basin dwarf sagebrush scrub is generally found in cool, dry climates, and may be vulnerable to replacement by other vegetation groups if climates become hotter and/or wetter in parts of its range. Most of the species that compose Great Basin

[3] Thorne, J.H., R.M. Boynton, A.J. Holguin, J.A.E. Stewart, & J. Bjorkman. (2016) A climate change vulnerability assessment of California's terrestrial vegetation. California Department of Fish and Wildlife (CDFW), Sacramento, CA

[4] Thorne, J. H., H. Choe, R. M. Boynton, J. Bjorkman, W. Albright, K. Nydick, A. L. Flint, L. E. Flint, and M. W. Schwartz. 2017. The impact of climate change uncertainty on California's vegetation and adaptation management. *Ecosphere* 8 (12):e02021. 10.1002/ecs2.2021

dwarf sagebrush scrub (*Artemisia* spp.) are very vulnerable to fire and do not tend to re-sprout following a fire. Climate changes threaten to bring more frequent, more intense fires and the disturbance cause by these fires promotes the invasion by weedy annual grasses such as cheatgrass. These factors, individually and combined, put Great Basin dwarf sagebrush scrub habitat at risk.

Like the dwarf sagebrush scrub community, many of the key plant species that make up Great Basin upland scrub and big sagebrush scrub are highly fire sensitive, meaning that increased frequency and intensity of fires could cause areas to become unsuitable for this vegetation community. Also, the scrub types are adapted to drier, colder deserts, so a warmer, possibly wetter future will likely make some parts of its range unsuitable. A long-term study looking at snow manipulation near snow fences found that on plots with reduced snow, and resulting earlier snowmelt, antelope bitterbrush developed leaves and flowers earlier, potentially impacting reproduction if there were a phenological mismatch with pollinators (Loik et al. 2013). This study also documented increased shrub mortality, and thus fuel loading, in plots receiving less snow over a 50-year period, potentially attributable to either water stress or freezing damage without the insulating layer of snow, or both.

Wet mountain meadow habitat is highly sensitive to changes in snowpack and hydrology. Reduced snowpack may cause decreases in spring discharge, stream flow, and water tables during late summer. Many of the primary plants associated with wet mountain meadows are extremely sensitive to water availability and do not handle drought or drying well (Hauptfeld and Kershner 2014).

Montane conifer forests, including the Jeffrey pine and white fir alliances, are sensitive to prolonged water stress, forest pests, and catastrophic wildfire. The snow fence study documented that under conditions with less snow adult Jeffrey pine trees had reduced growth relative to sites with ambient or increased snow accumulations (Loik et al. 2013). Furthermore, Alpert and Loik (2013) suggest that climate change may lead to lower Jeffrey pine seedling survival, contraction of the regional distribution, and an upslope migration (Kershner 2014). Climate and fire trends suggest that habitat for old forest obligates will decrease, and habitats for postfire specialists will increase (Safford 2010). With climate change and the resulting stress, in addition to more than a century of fire suppression, Safford and Stevens (2017) suggest that the focus of management should perhaps not simply be on protecting old growth forest, but shifted towards preventing the loss of all coniferous forest habitat due to mounting stressors, fire, and insect and disease mortality.

Changing climatic conditions are likely to increase the occupied geographic ranges of invasive species. For example, the ranges of Russian knapweed (*Acroptilon repens)* and perennial pepperweed (*Lepidium latifolium)* are expected to increase by more than 10% by 2050 within the Mono Ecoregion (Brusati 2011, Cal-IPC 2017).

Wildfire

Alteration of natural fire regime is an important ecosystem stress, particularly in forest and shrub-dominated habitats. Fire suppression without active forest management, as well as increases in human-caused wildfires and introduced exotic grasses have altered fire regimes. Due to fire suppression, forests in the Sierra Nevada have experienced less frequent fires than occurred prior to Euro-American settlement, leading to dense, even-aged forest stands dominated by smaller trees and lacking habitat complexity (Safford and Stevens 2017). Suppression can also cause a build-up of fuels and deeper forest litter that can result in higher-than-natural intensity and heat of wildfires, which can destroy otherwise fire-adapted plants and damage soil structure (CDFW 2015, Safford and Stevens 2017). In the Great Basin, the trend is somewhat reversed with increased fire frequency and conversion from shrub dominated communities towards exotic grasses.

Dendrochronological studies in the Great Basin and Sierra Nevada have provided scientists and land managers with an understanding of pre-settlement fire regime in different habitat types (Safford and Van de Water 2014, USFS 2017). The last known significant fire to have occurred on the Ecological Reserve is outside the period of record (before 1908) indicating that it has been more than 110 years since the last wildfire at this location. This suggests that the majority of habitats on the Ecological Reserve are well outside the fire return interval for which they are adapted, particularly the forests. The metric of “fire return interval departure” (FRID) uses pre-settlement fire frequency information and time since last fire to provide a tool to assess ecosystem condition and restoration need. The NPS-FRID index (Caprio et al. 1997, Caprio and Graber 2000) has been the preferred metric used by National Parks in the Sierra Nevada region to model the ecological need for fire (Safford and Van de Water). NPS-FRID values are shown in Table 5.

Safford and Van de Water (2014) prepared and analyzed fire return data across the state and made several notable observations with implications for land management: 1) the Great Basin is experiencing more frequent and often large fires, driven by the spread of invasive plants such as cheatgrass, that have eliminated stands of pinyon pine, big sagebrush, and Jeffrey pine. In these lower elevation shrub-dominated ecosystems, the current fire frequency may be much greater than prior to Euro-American settlement with a trend towards degraded landscapes of exotic grasses and scattered shrubs. 2) In the Sierra Nevada, the forest ecosystems are experiencing major impacts from long term fire suppression. Often the mid- and lower- elevation forests that are most in need of fire are those that are considered the riskiest to burn due to proximity to human development, drier conditions, and large accumulated fuel loads. The Ecological Reserve contains vegetation types that are variously adapted to a fire frequency of between 11 and 151 years.

Table 5. Fire frequency, severity and return interval departure for major vegetation types

Vegetation Type	Mean Reference Fire Frequency	Reference Fire Severity	Ecological Need for Fire (NPS)
Big sagebrush	35 years	High	Moderate
Curl leaf mountain-mahogany	52 years	Mixed	Moderate
Black and low sagebrush	66 years	High	Moderate
Pinyon juniper	151 years	High	Low
Aspen	19 years	Mixed	High
Yellow pine	11 years	Low to Mixed	Extreme
Moist mixed conifer	16 years	Low to Mixed	Extreme

Low severity = surface fires
Mixed = <75% of dominant overstory vegetation replaced by fire
High = >75% of dominant overstory vegetation replaced by fire

At By-Day Creek the NPS-FRID index places the Jeffrey pine and white fir forests in the "extreme" category of ecological need and ranks aspen as "high". As a result, CDFW should pursue opportunities to work with partners such as the federal land management agencies and California Department of Forestry and Fire Protection (CAL FIRE) to maintain and restore desired forest structure where possible. An initial step would be the preparation of a Forest Management Plan, preferably at a scale that would include surrounding lands in the watershed, identifying feasible forest management actions such as thinning, prescribed fire, and areas that may be suitable to allow natural fires to burn.

The closest wildfire to the Ecological Reserve in recent history was the Buckeye fire (0.6 miles) which burned 1,140 acres of private and HTNF lands, primarily sagebrush and pinyon-juniper hillslopes, south and west of the property. This fire was ignited by lightning in September 2011. Much of the burn area has now become dense cheatgrass with minimal shrub recruitment. A lightning strike in August 2018 resulted in the ignition of a single snag near the Ecological Reserve boundary which spread to a small 0.8-acre surface fire before it was extinguished.

B. Plant Species

A list of plant species observed or possibly occurring on the Ecological Reserve is included in Appendix B. This is not a complete inventory as only preliminary botanical surveys have been completed at this time and additional fieldwork is needed for the property. Two exotic invasive plants are known to occur on the property, Canada thistle (*Cirsium arvense*), and cheatgrass (*Bromus tectorum*).

Sensitive Species

Botanical surveys identified 132 plant species at the Ecological Reserve. Additionally, the CNDDB was reviewed to determine the potential for sensitive plant species based on prior recorded occurrences in the vicinity. Appropriate habitat was specifically surveyed for these species in 2004 and no sensitive plant species observed. However, the Ecological Reserve has not received sufficient botanical fieldwork and as noted in Chapter 4, Biological Monitoring Element, additional focused surveys should take place to confirm the presence or absence of sensitive plant species.

Table 6 below lists sensitive species with potential to occur at the Ecological Reserve and its vicinity including those plant species given status under the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), Native Plant Protection Act (NPPA); and those determined to be sensitive by the California Native Plant Society (CNPS) in the California Rare Plant Ranking System (CRPR). Plants which are on the CNPS Inventory of Rare and Endangered Plants may meet the California Environmental Quality Act (CEQA) definition of rare or endangered under Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the Fish and Game Code. It is mandatory that all List 1 and List 2, and some List 3 species be fully considered during preparation of environmental documents.

Table 6: Sensitive plant species known from the vicinity of By-Day Creek Ecological Reserve.

Species	Rare Plant Rank	Ecology	Presence
Allium atrorubens var. atrorubens Great Basin onion	2B.3	Perennial herb (bulb); flowers May-June; occurs in rocky/sandy soil in sagebrush scrub and pinyon-juniper woodland	Possible on Reserve; nearest records in Bodie Hills 8 miles to the east
Astragalus oophorus var. lavinii Lavin's milk-vetch	1B.2	Perennial herb; flowers in June-July; occurs in dry open areas in sagebrush scrub	Possible; records in Bodie Hills and Sweetwater Mountains
Boechera bodiensis Bodie Hills rock cress	1B.3	Perennial herb; flowers July-August; occurs on rocky soil in sagebrush scrub, forest, and pinyon woodland	Possible; records in Bodie Hills and Sweetwater Mountains
Boechera cobrensis Masonic rock cress	2B.3	Perennial herb; flowers May-June; occurs on sandy soil under shrubs in sagebrush scrub, and pinyon woodland	Possible; nearest records near Twin Lakes and Bodie Hills
Botrychium crenulatum scalloped moonwort	2B.2	Fern; seeps and stream edges; occurs in freshwater wetlands	Possible; nearest records in Sweetwater Mountains (12 miles) north
Carex vallicola Western valley sedge	2B.3	Sedge; fruits July-August; occurs on moist montane slopes	Likely; nearby record in upper By-Day watershed
Cusickiella quadricostata Bodie Hills Cusickiella	1B.2	Perennial herb; flowers May-June; occurs on rock flats, sagebrush slopes, and pinyon woodlands	Possible; numerous records in Bridgeport Valley, Bodie Hills, and Sweetwater Mountains
Glyceria grandis American manna grass	2B.3	Perennial grass; flowers June-August; occurs in wet meadows and stream margins	Possible; few records but suitable habitat may exist
Helodium blandowii Blandow's bog moss	2B.3	Moss; occurs on moist humic soils with diffuse light	Possible; few records but occurs at similar elevation and habitat 9 miles north at Swauger Creek
Kobresia myosuroides seep kobresia	2B.2	Sedge; fruits in August; occurs in rocky seeps in alpine, sagebrush scrub, and dry meadow	Possible; multiple records on Burcham Creek to the north

Species	Rare Plant Rank	Ecology	Presence
Lomatium foeniculaceum ssp. macdougalii Macdougal's lomatium	2B.2	Perennial herb; flowers May-June; occurs in sagebrush scrub and pine woodland	Possible; few records for species in region
Mertensia oblongifolia var. oblongifolia sagebrush bluebells	2B.2	Perennial herb; flowers April-June, occurs on open slopes and dry meadows near springs in sagebrush scrub	Possible; few records for species in region
Phacelia monoensis Mono County Phacelia	1B.1	Annual herb; flowers May-June; occurs on fractured rhyolitic clay soils in sagebrush	Possible; nearest records in Sweetwater Mountains and Bodie Hills
Sidalcea multifida cut-leaf checkerbloom	2B.3	Perennial herb; flowers May-July August; occurs in dry locations in sagebrush scrub and pine forest	Possible; nearest records in Sweetwater Mountains at similar elevation and habitat
Sphenopholis obtusata prairie wedge grass	2B.2	Perennial grass; flowers April-June; occurs in wet meadows and streambanks	Possible; nearest records on East Walker River Wildlife Area and Sweetwater Mountains in similar habitat
Streptanthus oliganthus Masonic Mountain jewel-flower	1B.2	Perennial herb; flowers June-August; occurs in dry open areas in pinyon woodland and sagebrush scrub	Possible; nearest records in Sweetwater Mountains, Bodie Hills, and Conway/Jordan Basin
Viola purpurea ssp. aurea golden violet	2B.2	Perennial herb; flowers April-June; occurs on sandy slopes in sagebrush and pinyon woodlands	Present at Ecological Reserve

California Rare Plant Ranks: 1A-Plants presumed extirpated in California and either rare or extinct elsewhere; 1B-Plants rare, threatened, or endangered in California and elsewhere; 2A-Plants presumed extirpated in California but common elsewhere; 2B-Plants rare, threatened, or endangered in California but more common elsewhere; 3-Review List: Plants about which more information is needed; 4-Watch List: Plants of limited distribution. Threat Ranks: 0.1-Seriously threatened in California; 0.2-Moderately threatened in California; 0.3-Not very threatened in California.

C. Animal Species

Animal species in the Ecological Reserve area include mule deer, mountain lion, black bear, Sierra Nevada mountain beaver (*Aplodontia rufa californica*), raptors, sooty grouse, and mountain quail. Mule deer use the area for summer range and fawning. The property provides important riparian nesting habitat for many bird

species. Aquatic species include Lahontan cutthroat trout, and By-Day Creek contains the only known relictual population of genetically pure Walker River strain of this species. There are many aquatic invertebrate populations representing insects, mollusks, crustaceans, and annelids.

Wildlife Discussion

Montane riparian habitats provide important habitat for many species of migratory and breeding bird species. The Ecological Reserve is located on one of three major Pacific flyway routes in California.

Appendix C lists birds whose ranges encompass the Ecological Reserve, which contains suitable habitat. This list was compiled from information available in the California Wildlife Habitat Relationships Database, Version 9.0. Breeding bird surveys were conducted in By-Day Creek riparian habitats by Point Reyes Bird Observatory (now Point Blue Conservation Science) in 2001 and 2002 (Heath and Ballard 2002, Heath et al. 2002).

In addition to regular surveys conducted for LCT by CDFW Fisheries Program, it is recommended that the point count monitoring method should be adopted as a basic component of long-term stewardship of the Ecological Reserve for the following reasons as derived from California Partners in Flight Riparian Bird Conservation Plan (RHJV 2004):

- Birds are highly visible and cost effective to monitor.
- Birds can show relatively quick response in abundance and diversity to restored or managed habitats (3-5 years).
- As secondary consumers, birds are sensitive indicators of environmental damage.
- By managing for a diversity of birds, most other elements of biodiversity are conserved.
- Bird monitoring can avoid future listing of declining species by identifying problems and solutions early.

- Because of the increasing popularity of bird watching, there is great potential for public participation in and support for bird monitoring.
- Birds are tremendously important culturally and economically and their popularity can help raise awareness of land stewardship needs.

Point count monitoring should utilize sites established by PRBO in 2001 and should be conducted every five years according to standardized protocol as funding allows.

Climate Change and Wildlife

The impacts of changing climate on animal species is in many cases even more complex to predict than for the habitats on which they depend (Morelli et al. 2011). Changes in the climate and vegetation may upset food webs, alter predator and prey abundance and distribution, and result in new interactions with other species. As described in the Sierra Nevada red fox species account, these foxes are more frequently encountering other canids including other subspecies of red fox, and coyote. Morelli et al. 2011 note that migratory songbirds may be particularly at risk if timing of key life history events like breeding become out of sync with seasonal habitat and food. With reduced snow and its insulating properties, some species may experience colder winter temperatures in certain microclimates despite the predicted average increases in temperature. Finally, predictions for aquatic habitats and species, particularly those that are dependent on snowmelt, are dire: reduced annual flows, earlier and flashier runoff, and increased frequency and duration of low and zero-flow periods (Kershner 2014). Some aquatic species will experience significant reductions in suitable habitat or may require assisted migration/ translocation.

In a 2011 report, Point Blue Conservation Science (formerly PRBO) assessed the projected effects of climate change for wildlife by Ecoregion. This document notes the following threats to wildlife in the Great Basin and Sierra Ecoregions: 1) Changes in vegetation communities will be important for wildlife. These changes will include projected increases in the amount of pine and juniper forest, desert scrub, and grasslands, and a loss of sagebrush and other shrub habitats. This shift may be hastened by changes in fire severity and frequency; 2) High temperature events will become more common. Given the arid conditions throughout the Great Basin, this increase in temperature may increase heat and water stress for some wildlife; 3) Snow-fed streams will have less water, which may reduce habitat for some wildlife associated with riparian areas; 4) There will be severe changes in the timing of peak stream flows, with these flows occurring earlier in the spring. These changes may have important consequences for species sensitive to changes in seasonal phenologies and those dependent on a specific environmental trigger that is disrupted by changes in streamflow timing.

The Areas of Conservation Emphasis (ACE) was developed by CDFW as a compilation and analysis of the best-available statewide spatial information in

California on biodiversity, rarity and endemism, harvested species, significant habitats, connectivity and wildlife movement, climate vulnerability, climate refugia, and other relevant data. ACE was developed to evaluate conservation priorities and includes two datasets that are particularly relevant in the context of climate change and the potential future role of the Ecological Reserve for plants and wildlife; 1) the Terrestrial Climate Change Resilience, and 2) Terrestrial Habitat Connectivity.

The Terrestrial Climate Change Resilience data relies on the findings of Thorne et al. (2016) discussed above and ranked the lower elevations Ecological Reserve with a Climate Resilience Rank of 4 and the upper elevations 3, where 1 is low and 5 is high.

Notably, however, the Ecological Reserve is ranked 5 in the Terrestrial Connectivity dataset. This is the highest score possible, indicating the importance of this area for the ecological connectivity and movement of wildlife between the desert ranges and valleys and the higher elevations of the Sierra Nevada Mountains. This connectivity is anticipated to be critical for species seeking suitable habitat in response to the changing climate.

Several climate vulnerability studies have been completed for California species, often by taxa. Species of Greatest Conservation Need (SGCN) potentially occurring within the Ecological Reserve that have been identified as vulnerable to climate change include Sierra Nevada red fox (Stewart et al. 2016), California wolverine, Pacific marten, Sierra Nevada mountain beaver, Sierra Nevada snowshoe hare, and LCT (Moyle et al. 2012).

D. Endangered, Threatened and Rare Species

At least 26 species that have been listed as threatened or endangered under the state and federal endangered species acts, or that have been given other special conservation status, have ranges that may encompass the Ecological Reserve. According to CDFW records and a search of the CNDDB, special status species that may occur on the Ecological Reserve are included in Table 7, and are denoted in Appendix C.

Several bird species are given special consideration in this document due to their priority status and are further described in the species accounts below. The state threatened Sierra Nevada red fox (*vulpes vulpes necator*) and wolverine (*Gulo gulo*) have been sighted in the vicinity. Bald eagle (*Haliaeetus leucocephalus*) and northern goshawk (*Accipiter gentilis*) sightings have also been verified in the area. Each of the species listed in Table 7 will have some or their entire yearly habitat requirements satisfied within the Ecological Reserve, and management activities on the Reserve should reflect their possible presence. Wildlife surveys should be conducted yearly within the Ecological Reserve, and all management activities that alter existing habitats should be preceded with consultation with the USFWS for effects on federally listed species.

The list of Species of Greatest Conservation Need (SGCN) as expanded in the 2015 State Wildlife Action Plan (SWAP) includes over 1,000 species. The species on this list were selected based on 1) having existing status as threatened, endangered, or candidate; 2) being a California Species of Special Concern (SSC); or 3) an analysis of vulnerability to climate change. Due to the length of the SGCN list not all possible SGCNs are included in Table 7, but have been identified in Appendix C.

Table 7. Sensitive Animal Species Potentially at or in Vicinity of By-Day Creek Ecological Reserve

Species	Status	Ecology	Presence
Insects			
Morrison's bumble bee *Bombus morrisoni*	FESA None CESA None S-Rank: S1S2	Generalist forager; prefers meadows with abundant floral resources. Ground nesting.	Possible; nearest record only notes general Bridgeport Area.
Fishes			
Lahontan cutthroat trout *Oncorhynchus clarki henshawi*	FESA Threatened CESA None	Occupies small, cool, low-gradient streams and rivers. High tolerance for temperature, sediment, and alkaline water.	Present at Ecological Reserve.
Birds			
Bald eagle *Haliaeetus leucocephalus*	FESA Delisted CESA Endangered CDFW: FP	Requires large bodies of water for feeding, or free flowing rivers with abundant fish, and adjacent snags or other perches.	Possible; observed relatively frequently in Bridgeport Valley in winter and summer months.
Bank swallow *Riparia riparia*	FESA None CESA Threatened	Feeds primarily over open riparian areas, but also over water, brushland, crops, grassland, and wetlands. Nests colonially	Possible; nearest record along West Walker River 14 miles northwest.
Cooper's hawk *Accipiter cooperii*	FESA None CESA None CDFW: WL	Medium bodied woodland hawk that feeds on birds and small mammals in heavy cover.	Present at Ecological Reserve.

Species	Status	Ecology	Presence
Golden eagle *Aquila crysantos*	FESA None CESA None CDFW:FP, WL	Needs open terrain for hunting. Habitat typically rolling foothills, mountain areas, sage-juniper flats, desert. Eats mostly lagomorphs and rodents. Nests in cliffs and large trees in open areas.	Possible; observed relatively frequently in Bridgeport Valley.
Bi-State Greater sage-grouse *Centrocercus urophasianus*	FESA Proposed Threatened CESA None CDFW:SSC	Open areas within sagebrush communities are needed for courtship displays. Continuous sagebrush stands are required throughout the year.	Unlikely due to heavy forest cover and lack of meadow/ stringer connectivity but are present nearby.
Great gray owl *Strix Nebulosa*	FESA None CESA Endangered	Breeds in old-growth fir, mixed conifer, or lodgepole pine habitats, in the vicinity of wet meadows. Nests within 1,000 ft of wet meadows where hunting occurs.	Unlikely, requires meadow habitat nearby. Closest observation 20 miles west.
Loggerhead shrike *Lanius ludovicianus*	FESA None CESA None CDFW: SSC	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Possible, preferred habitat would be in Bridgeport Valley where it is relatively common.
Long-eared owl *Asio otus*	FESA None CESA None CDFW: SSC	Utilizes dense, riparian thickets near meadow edges and near forests. Hunts open areas.	Possible, preferred habitat would be in Bridgeport Valley.
Merlin *Falco columbarius*	FESA None CESA None CDFW: WL	Open habitats near water and tree stands. Favors coastlines, lakeshores, wetlands.	Possible in winter, preferred habitat would be in Bridgeport Valley where it is relatively common.
Northern goshawk *Accipiter gentiles*	FESA None CESA None CDFW: SSC	Prefers middle and higher elevations, and mature dense conifer forests. Hunts in wooded areas, feeding primarily on birds.	Likely at Ecological Reserve; multiple records of this species in similar habitat nearby.
Northern harrier *Circus hudsonius*	FESA None CESA None CDFW: SSC	Mostly found in flat, or hummocky, open areas of tall, dense grasses, moist or dry shrubs, and edges for nesting, cover, and feeding. Hunts in low flight and hovers.	Possible at Ecological Reserve, preferred habitat would be in Bridgeport Valley where it is relatively common.
Sharp-shinned hawk *Accipiter striatus*	FESA None CESA None CDFW: WL	Nest sites are usually located in small but dense stands of conifers, and near open areas and water.	Possible at Ecological Reserve, multiple records in region.

Species	Status	Ecology	Presence
Willow flycatcher *Empidonax traillii*	FESA None CESA Endangered	Dense willow thickets. Sallies for flying insects.	Likely at Ecological Reserve, multiple records in region in similar habitat.
Yellow Warbler *Setophaga petechia*	FESA None CESA None CDFW: SSC	Open-canopy riparian woodlands near water. Gleans and hovers eating insects.	Present at Ecological Reserve.
Mammals			
American badger *Taxidea taxus*	FESA None CESA None CDFW: SSC	Uncommon, found in drier open stages of moist shrub, forest, and herbaceous habitats, with friable soils. Preys on burrowing rodents. Digs burrows.	Likely at Ecological Reserve; multiple records in the surrounding region.
California Wolverine *Gulo gulo*	FESA Proposed Threatened CESA Threatened CDFW: FP	Uncommon, prefers areas with low human disturbance. Found in mixed conifer, red fir, and lodgepole habitats, and probably use subalpine conifer, alpine dwarf-shrub, wet meadow, and montane riparian habitats.	Possible at Ecological Reserve; multiple records in the surrounding region.
Pallid bat *Antrozous pallidus*	FESA None CESA None CDFW: SSC	Uncommon in Sierra; common elsewhere. Feeds on insects and spiders, including beetles, frequently gleans on the ground.	Possible at Ecological Reserve.
Sierra marten *Martes caurina sierrae*	FESA None CESA None CDFW:SGCN	Optimal habitats are mixed evergreen forests with dense crown closure, with large trees and snags. Uses cavities in large trees, snags, stumps, logs, or burrows, caves, and crevices in rocky areas for denning cover. Habitat with limited human use is important.	Likely at Ecological Reserve; suitable habitat and historic records in the surrounding region.
Sierra Nevada mountain beaver *Aplodontia rufa californica*	FESA None CESA None CDFW: SSC	Dense growth of small deciduous trees and shrubs, wet soil, and abundance of forbs in the Sierra Nevada and east slope. Needs dense understory for food and cover. Burrows into soft soil. Needs abundant supply of water.	Possible at Ecological Reserve.

Species	Status	Ecology	Presence
Sierra Nevada red fox *Vulpes vulpes necator*	FESA Proposed Endangered CESA Threatened	This elusive fox uses multiple habitat types in the alpine and subalpine zones including meadows, rocky areas, and high elevation conifer forest types.	Possible transient at Ecological Reserve; records in the surrounding region but typically higher elevation sites.
Sierra Nevada snowshoe hare *Lepus americanus tahoensis*	FESA None CESA None CDFW: SSC	Occurs in riparian communities characterized by thickets of deciduous trees and shrubs such as willows and alders. Active year-round and are most active at night and early morning, moving via runways to reach feeding areas.	Possible at Ecological Reserve.
Western white-tailed jackrabbit *Lepus townsendii*	FESA None CESA None CDFW: SSC	Sagebrush, subalpine conifer, juniper, alpine dwarf shrub and perennial grassland. Open areas with scattered shrubs and exposed flat-topped hills with open stands of trees, brush and herbaceous understory. Winters in sagebrush or young tree thickets.	Possible at Ecological Reserve; numerous records in the surrounding region.

Status Abbreviations: SSC-State Species of Special Concern, SCCN-Species of Greatest Conservation Need, FP-State Fully Protected, WL-CDFW Watch List. State Rank (S-rank): S1-Critically Imperiled, S2-Imperiled, S3-Vulnerable, S4-Apparently Secure, S5-Secure.

E. Species Accounts

The following species accounts were selected because of their special interest to CDFW. It is assumed that management for these focal species will address other species utilizing the same habitats in the Ecological Reserve. In the future, the status of habitat and species should be reevaluated, and species- specific management goals should be redefined as needed.

The following species information is based on the CDFW publication “California’s Wildlife” (Zeiner 1990) as maintained and updated by the California Wildlife Habitats Relationships (CWHR) Program. Additional information and opinions on the status and management of the species on the Ecological Reserve were provided by CDFW and are included at the end of the discussion for each species.

FISH

Lahontan cutthroat trout

(Oncorhynchus clarki henshawi)

Status: CESA none, FESA Threatened (1975)

Lahontan cutthroat trout (LCT) were endemic to Pleistocene Lake Lahontan, in what is now eastern California, northern Nevada, and southern Oregon. Two desert terminal lakes, Walker and Pyramid, and four watersheds, the Carson, Truckee, Humboldt, and Walker, now remain in the area that was formerly Lake Lahontan.

Lahontan cutthroat trout from By-Day Creek

Two desert terminal lakes, Walker and Pyramid, and four watersheds, the Carson, Truckee, Humboldt, and Walker, now remain in the area that was formerly Lake Lahontan. Although they once occupied this vast range they have now been extirpated from nearly 95% of their native habitat in California.

Lahontan cutthroat trout are a Threatened species under the Federal Endangered Species Act. In 1970, they were listed as Endangered, but in 1975 the listing was reclassified to allow for more flexible management and allow for regulated angling. At the time of the listing USFWS identified two primary factors impacting the species: destruction, modification, or curtailment of habitat or range; and natural or manmade factors affecting the species' continued existence. A Recovery Plan was prepared in 1995, and a subsequent Short Term Action Plan for the Walker River Basin population followed in 2003. USFWS designated the LCT within the Walker, Carson, and Truckee watersheds as the Western Distinct Population (DPS) Segment of LCT. However, genetic research has shown that the populations within this DPS in each of the major drainages are distinct micro-geographic races of LCT (Peacock et al. 2001).

The Walker strain of LCT formerly ranged from the terminus at Walker Lake in Nevada, throughout the mainstem, east, and west forks of the Walker River and its tributaries, up to impassible barriers, such as waterfalls. Walker strain LCT were thought to have been extirpated through competition and hybridization with introduced species, habitat degradation, and barriers that prevented access to spawning gravels. In 1975 extensive surveys resulted in the discovery of genetically pure Walker strain LCT in By-Day Creek. This small creek is only occasionally hydraulically connected to Buckeye and Robinson creeks through irrigation ditches. Prior to 1909 a culvert at the Buckeye Creek Road crossing created a barrier to upstream migration by fish that could potentially hybridize with or prey upon LCT. Subsequent recovery and restoration activities have resulted in the expansion of the original By-Day population into five other waters within the Walker Basin, including

on CDFW Lands at the Slinkard/ Little Antelope Wildlife Area, and also stabilized and improved the barrier at the Buckeye Road crossing.

Hickman and Raleigh (1982) summarize information on optimal habitat for LCT in the narrative for their habitat suitability index model. They note that “optimal cutthroat trout riverine habitat is characterized by clear, cold water; a silt free rocky substrate in riffle-run areas; an approximately 1:1 pool-riffle ratio with areas of slow, deep water; well vegetated stream banks; abundant instream cover; and relatively stable water flow, temperature regimes, and stream banks”. Ideal water temperatures are 54 to 59ºF, although the fish may tolerate temperatures of up to 79ºF for short durations. Cover is essential to sustaining numbers and weight of LCT with a recommendation of 25% cover of the total stream area for adults, and 15% for juveniles. Overwintering habitat may also be a limiting factor as LCT find refuge under boulders, logs, and roots when water temperatures are below 45ºF (Hickman and Raleigh 1982).

An obligatory stream spawner, LCT spawn in gravel riffles, pocket water, or pool crests in the spring, generally from April through July, with the female forming a depression in gravel where she deposits her eggs while the male fertilizes them. Gerstung (1986) found that LCT preferred water velocities of 1-2 feet per second and required water temperature of less than 57ºF from April through July for reproduction. In rivers and streams LCT feed primarily upon drifting aquatic and terrestrial invertebrates. Terrestrial insects make up a significant portion of the diet in small headwater streams in summer. LCT in streams may also eat bottom-dwelling insect larvae, crustaceans and snails.

Distribution of LCT within By-Day Creek is currently limited within the Ecological Reserve, although monitoring from the 1970’s through 1989 documented LCT in the lower reaches of the creek down to Buckeye Road. This section of stream was known to run intermittently under prolonged drought, and LCT were removed from this section periodically to stock other recovery waters during drought years.

In response to extreme low-flows during drought, a rescue of LCT was conducted by CDFW in the lower reaches of By-Day Creek in July and August 2015. These fish were relocated to two other established refuge populations in Slinkard and Wolf Creeks. Similar fish rescue efforts have been previously implemented in 1987 and 1991. Fortunately, it appears that a small number of fish that remained in the creek persisted and continue to occupy the Ecological Reserve.

Critical issues at the Ecological Reserve for LCT include protection of streamflow and reduction of sediment inputs. Past land management (timber harvesting and sheep grazing) has resulted in the downcutting of the stream and excessive sediment input. The adjacent road has exasperated the problem: during rain and snowmelt, water and mud from the road wash directly into the stream. In spring, excessive fine sediment reduces spawning success by suffocating eggs. In addition, stream productivity may be reduced by embedded substrates, with fewer

invertebrates available to sustain the fishery. Low flow and prolonged drought isolates LCT in small pools with limited cover, leaving them susceptible to predation and freezing over winter. A stream habitat inventory should be conducted at least every 10-years using the methods described in the CDFW California Salmonid Stream Habitat Restoration Manual (Fosi et al. 2010). Habitat restoration projects identified through this process should be implemented as resources allow. Additionally, due to the small number of fish occurring in what can be a relatively stressful environment, the current policy prohibiting fishing at the Ecological Reserve should be continued.

BIRDS

Northern Goshawk (*Accipiter gentilis*)

Status: CESA None, FESA None, CDFW Species of Special Concern

The northern goshawk is the largest North American forest-dwelling hawk and is found in coniferous forests in mountainous areas throughout the United States and Canada. It typically remains yearlong in breeding areas as an uncommon resident, however some birds migrate downslope to pinyon-juniper woodlands in winter.

Northern Goshawk © 2015 Keith Thompson

Goshawks prefer middle and higher elevations, and mature and old-growth, dense conifer and deciduous habitats. Forest structure appears to influence habitat selection more than prey abundance (Greenwald et al. 2005). Habitat loss and degradation are the primary known threats to the northern goshawk. Goshawks avoid open areas, particularly areas that have been logged.

Goshawks typically nest on north slopes, near water, and in the densest parts of forest stands, but close to openings. In eastern Oregon, nests were usually located in the forks of large horizontal limbs close to the trunk, at the bottom of live canopy 19-82 feet above ground. Nests are constructed in large live trees with diameters of 15 inches or more. Studies have indicated selection for forest stands with greater than 40% canopy closure (Greenwald 2005).

Northern goshawks require dense, mature conifer and deciduous forest, interspersed with meadows, other openings, and riparian areas. These hawks are extremely defensive of their nest area. When agitated, they are vociferous and will strike intruders, including humans. Territory is estimated to be 0.6 to 15 mi^2. Distances of 1.8 to 3.5 miles have been reported between nesting pairs. Northern

goshawks have relatively large spatial requirements and occur at low breeding densities.

Goshawk foraging habitat includes forests with dense to moderately open overstories and open understories interspersed with meadows, brush patches, riparian areas, or other openings. High canopy cover is the most consistent structural characteristic among studies of northern goshawk nesting habitat. This may be due to the presence of large trees for nest sites, a closed canopy for protection from predators and thermal cover, and open understories that provide for maneuverability and detection of prey below the canopy. The hawk uses snags and dead-topped trees for observation and prey-plucking perches. Goshawks feed mostly on robin- to grouse-sized birds. Small squirrel- and rabbit-sized mammals are also often taken. They catch prey in air, on ground, or in vegetation, using fast, searching flight, or rapid dash from a perch.

Northern goshawks begin breeding in April in southern California, and by mid-June in the north. Females lay eggs in 3-day intervals for an average clutch of 3 (range 1-5), and incubate eggs for 36-41 days, while males provide food. After eggs hatch, female feeds the brood for 8-10 days, then the male helps feed them. Young may leave the nest to perch at about 40 days and usually fledge by 45 days. Young begin to hunt by 50 days and are often independent by 70 days.

Critical issues at the Ecological Reserve for this species include maintaining the dense mature and old-growth forest habitats preferred for nesting and foraging by goshawk. Forest management activities should be restricted to cutting small trees and prohibiting large reductions in canopy closure (Greenwald 2005).

Willow Flycatcher (*Empidonax traillii*)

Status: FESA None, CESA Endangered (1991, includes all subspecies)

The willow flycatcher is a rare to locally uncommon, summer resident in wet meadow and montane riparian habitats in the Sierra Nevada and Cascade Range. It most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows. Willow flycatcher may still nest elsewhere in lowland California, but definite records are lacking.

Willow flycatcher © 2015 Stephen Dowlan

It is a common spring (mid-May to early June) and fall (mid-August to early September) migrant at lower elevations, primarily in riparian habitats throughout the state exclusive of the North Coast.

The species is usually found near languid streams, standing water, or seeps and is most numerous in extensive thickets of low, dense willows, or edges of wet meadows, ponds, or backwaters. The flycatcher makes short sallies for flying insects from exposed perches in willow thickets or from low perches in adjacent meadows. It occasionally eats berries and seeds. It requires dense willow thickets for nesting and roosting. Low, exposed branches are used for singing posts and hunting perches. In the Sierra Nevada, this species is consistently absent from otherwise apparently suitable areas where the lower branches of willows had been browsed heavily by livestock.

The species arrives from Central and South American wintering grounds in May and June, and departs in August, though transients are noted through mid-September. In the breeding season, home range is probably equal to territory. Density estimates range from 9.2 pairs per 100 acres in eastern Washington scrub habitat, to 60.7 individuals per 100 acres in Michigan scrub habitat. In Michigan, Walkinshaw (1966) found average territory of 1.7 acres, with a range of 0.8 to 2.9 acres.

The nest is an open cup placed in an upright fork of willow or other shrub, or occasionally on a horizontal limb, at a height of 1.5 to 10 feet. The flycatcher is monogamous and peak egg laying is in June. Incubation is 12-13 days, and clutches average 3-4 eggs. The species is probably single-brooded. Both sexes care for altricial young. Fledging age is 13-14 days.

The species is frequently parasitized by the brown-headed cowbird (*Molothrus ater*). It formerly bred commonly in willow thickets throughout most of lowland and montane California, but numbers have declined drastically in recent decades because of cowbird parasitism and habitat destruction (Gaines 1977, Remsen 1978, Serena 1982). Heavy grazing of willows by livestock apparently reduces numbers (Ehrlich et al. 1988).

Productivity may be the leading cause of the decline of riparian-breeding bird species in the Sierra, and net population losses due to nest parasitism can be extensive. Brown-headed cowbirds have been implicated in the extirpation of least Bell’s vireos and willow flycatchers from California’s Central Valley. The presence and abundance of the brown-headed cowbird is often associated with the presence of livestock (Belsky 1999, Goguen and Mathews 1999). Grazing, especially late season grazing that focuses intensively on riparian shrubs, likely alters vegetation in a manner that is beneficial to cowbirds, resulting in the potential for increased parasitism rates. Although grazing is not currently allowed on the Ecological

Reserve, cowbirds are known to fly up to 4 miles from foraging sites to lay eggs in host nests in the Sierra (Rothstein et al. 1984). Brown-headed cowbirds were found on the property during surveys in 2002.

The critical issue at the Ecological Reserve for this species is the protection of high quality breeding habitat. Any manipulation of riparian vegetation or habitats should be preceded by a survey for this species. Important nesting sites should be protected from humans during the nesting season. Livestock grazing should continue to be prohibited, particularly within riparian vegetation.

MAMMALS

California Wolverine *(Gulo gulo)*

Status: CESA Threatened, FESA Proposed Threatened, CDFW Fully Protected

The California wolverine is a scarce transient in the Sierra Nevada, likely individuals that have moved into historic range but have not established breeding populations. In the Sierra Nevada, wolverine have been found in a wide variety of montane habitats.

Wolverine, Gerald and Buff Corsi © California Academy of Sciences

Wolverine require cold conditions and persistent late season snow for year-round occupancy and reproduction. The species is understood to have been extirpated in California by about 1930; the present-day range is now believed to be limited to north-central Washington, northern and central Idaho, western Montana, and northwestern Wyoming (Ruggiero et al. 2007). Wolverines prefer areas with low human disturbance.

The wolverine is the largest member of the weasel family and feeds primarily on small mammals and carrion. Prey includes marmots, ground squirrels, gophers, mice, deer carcasses, other vertebrates, berries, and insects. Wolverine may kill large snowbound prey, but most large prey is found by scavenging carrion. They may drive bears or mountain lions from carcasses. Wolverine forage in open to sparse tree habitats on ground, in trees, burrows, among rocks, in or under snow, and sometimes in shallow water. They use caves, hollows in cliffs, logs, rock outcrops, and burrows for cover, generally in denser forest stages. Dens are in caves, cliffs, hollow logs, cavities in the ground, snow, and under rocks. Snow cover

that persists through the spring denning period appears to be critical to successful reproduction (Ruggiero 2007).

The wolverine is largely nocturnal but may be active at any time of day and are active yearlong. They frequently travel long distances and may leave usual home range for many days. Travels may take them out of normal elevation and habitats. The yearly home range in Montana was 156 mi^2 for males, and 144 mi^2 for females. A hunting route circumscribed a range of about 800 mi^2. Daily movements of up to 19 miles occurred in Montana and these animals can travel 6-9 miles without rest. The size and shape of a home range is not affected by mountains, rivers, highways, or other major topographical features.

Wolverines mate from May to July. Active gestation is 30-40 days, but because of delayed implantation, full gestation period may last 215-272 days. The young are born from January through April. One litter per year are produced, usually 2-4 “kits”. Young are weaned in 7-9 weeks, and are sexually mature in second or third year. Not all females reproduce each year. In captivity one individual lived 17 years.

Wolverines occur at low population densities, even in the best of range and were most likely never common in California. Trapping, human disturbance, and grazing of high Sierra Nevada meadows have contributed to their decline. Loss of cold conditions and persistent snow caused by a warming climate will limit opportunities for natural recolonization and population recovery in the Sierra Nevada (Ruggiero 2007).

Critical issues at the Ecological Reserve for this species are focused on minimizing human disturbance, particularly motorized uses. Studies have shown a negative association between wolverine occurrences and snowmobiles, roads, and helicopters (Ruggiero 2007). The road at the Ecological Reserve should continue to be closed to public use, including uses by all-terrain-vehicles and snowmobiles.

Mountain Beaver *(Aplodontia rufa californica)*

Status: CESA None, FESA None, CDFW Species of Special Concern

The mountain beaver is found throughout the Cascade, Klamath, and Sierra Nevada Ranges. Distribution often is scattered; populations are local and uncommon in the Sierra Nevada and other interior areas. Mountain beaver occur in dense riparian-deciduous and open, brushy stages of most forest types. Deep, friable soils are required for burrowing, along with a cool, moist microclimate.

Mountain beaver are muskrat-sized rodents, and have been called “living fossils” because they are considered to be the most primitive living rodent. As the only living member of the genus *Aplodontia* and family *Aplondontiidae*, mountain beavers

are most closely related to squirrels and are not closely related to true beavers.

Mountain Beaver © 2011 HDR Engineering, Inc.

Mountain beaver feed on vegetative parts of plants. Voth (1968) found changes in diet related to protein content of available vegetation. They forage underground, on ground, under snow, on surface of snow, and up to 15 feet in trees and bushes. Vegetation is stored near a burrow entrance or in underground chambers.

Burrows and dense understory vegetation provide cover. Burrows are located in deep soils in dense thickets, preferably near a stream or spring. Dry vegetation is used to line their nests. Nest chambers are situated 1 to 4.5 feet below the ground surface.

Mountain beaver are active yearlong, and are mostly nocturnal, though occasionally diurnal (Maser et al. 1981). They are sedentary and non-migratory. The home range for this species is small and often overlapping. Most activity occurs within 80 feet of the nest. In forest stands, densities seldom exceed 1.5 animals per acre. They defend burrow systems and nest sites.

Mountain beavers breed from December through March, peaking in February. Young are born February to June, most often March through May. They have one litter per year, with a gestation period of 28-30 days. Lactation lasts up to 60 days. Litter size averages 2-3 with a range of 1-5 kittens. Females usually do not bear young until their second year. Longevity is unknown, but individuals have lived 3 years in captivity (Martin 1971, Hooven 1977, Lovejoy and Black 1979b). Maximum life expectancy is estimated to be six years. Predators include bobcats, long-tailed weasels, minks, coyotes, and owls.

Critical issues at the Ecological Reserve for this species include bank stability, adequate dense streamside vegetation understory, downed logs, and other cover. Banks and streamside vegetation should be protected. The current policy prohibiting grazing should be continued.

Sierra Nevada Red Fox *(Vulpes vulpes necator)*

Status: CESA Threatened (1980), FESA Proposed Endangered (2020)

Sierra Nevada Red Fox © 2018 Brian Hatfield/ CDFW

The Sierra Nevada red fox (SNRF) is one of three elusive subspecies of montane red fox. These high elevation-dwelling subspecies are similar to each other but distinct from all other red foxes as a result of prolonged isolation in their boreal habitats (Perrine 2010).

There are currently only two known breeding populations in California and a total estimated population of less than 50 individuals (Quinn et al. 2017).

In January 2020 the USFWS issued a proposed rule to list the Sierra Nevada Distinct Population Segment (DPS) of SNRF as Endangered under FESA, without a critical habitat designation. After a comment period it is anticipated that a final rule will be issued within a year and federal recovery planning, including a recovery outline, draft and final recovery plans, would begin shortly thereafter. The SNRF was listed as Threatened under CESA in 1980 and has been protected from intentional trapping since 1974.

SNRF are small canids with long snouts, large ears, slender bodies, and bushy white-tipped tails. Montane red foxes are well adapted to cold areas with a thick winter coat, and toe pads that are covered by fur during winter. The small body size may also be beneficial for travel over snow. Red foxes most frequently have red fur, but also may have darker grayish-brown fur along the back, or with black and silver guard hairs. The darker colors are rare and are associated with cold areas in the mountains.

The SNRF may be found in a variety of habitats typical of the alpine and subalpine zones, including high elevation barren, conifer and shrub habitats, montane meadows, subalpine woodlands and fell-fields. In summer habitat is most typically open and rocky areas above tree line. Winter habitat may be associated with forest cover in mature forests with high canopy closure downslope from summer range. However, some research suggests that unlike the Lassen population, SNRF in the Sierra may not descend in winter, instead subsisting on available prey at elevation such as snowshoe hare and white-tailed jackrabbits.

SNRF are opportunistic predators and scavengers consuming a wide variety of foods based on seasonal availability. Scats have been documented containing mice, voles, pika, woodrats, squirrels and ground squirrels, chipmunks, jackrabbits, snowshoe hare, and weasels, as well as woodpeckers, mountain chickadee, and sooty grouse. Mule deer and livestock carrion, insects, and berries are also consumed (Perrine 2010). Pocket gophers are a particularly important food source in some populations. The species is active yearlong and forages primarily at night with daytime foraging likely more common in winter. SNRF are believed to use rocky areas for cover and den sites, which include natural cavities in talus and rock slides. Foxes may move pups between dens several times and reuse dens for many years.

SNRF in the Lassen Peak area have very large seasonal home ranges with significant elevational migration. In summer these foxes had an average home range size of 9 mi^2 with slightly larger winter home ranges of 12 mi^2. Home range size is influenced by food abundance and habitat and heavy snowfall on the summer range seems to drive the shift to lower elevation winter range.

The male red fox defends the territory, which is shared by the mated pair and pups. Defense consists of display, scent-marking, chasing, and rare physical conflict (Preston 1975). The entire home range may be defended, or territoriality may break down in times of food abundance (Orr 1971, Zarnoch et al. 1977, Samuel and Nelson 1982).

Mating likely takes place in mid-February, and young are born in April. Little is known of litter size but Perrine (2010) notes several observations suggesting that litters of two to three pups may be typical. Pups are born in a den and are dependent on parents for six months, becoming sexually mature at 10 months. Young typically disperse in fall.

SNRF are rare, and numbers may be continuing to decline. The animals occurring in Mono County are associated with the “Sonora Pass Sighting Area” with an estimated population of 29 adults and 14 breeding individuals (USFWS 2016). USFWS identifies the most significant issues impacting the Sierra DPS as small population size and isolation; hybridization with non-native red fox; climate change; and competition and predation from coyotes. Climate change is of particular concern since the DPS is already near the upper elevational limit of their range and less severe winters are believed to have allowed coyotes to become year-round residents.

These foxes may be rare transients at the Ecological Reserve, such as during severe winter weather or during dispersal of young. Critical issues for this species are similar to that of wolverine. The road at the Ecological Reserve should continue to be closed to public motorized uses, including by all-terrain-vehicles and snowmobiles. Coyotes have been observed using snowmobile trails during winter to facilitate travel through deep snow, thereby accessing terrain not otherwise available. Grazing, which may impact prey availably, should continue to be

prohibited. Domestic animals must be controlled on leash, except as engaged in authorized hunting or training. Camera surveys should be conducted to improve understanding of wildlife use of the Ecological Reserve, with particular interest in SNRF detections and coyotes.

IV. MANAGEMENT GOALS AND ENVIRONMENTAL IMPACTS

A. Definitions of Terms Used in This Plan

Element: An element refers to any biological, public use, or facility maintenance program as defined below for which goals and objectives have been prepared and presented within this plan.

Biological Element: These elements consist of species, habitats, or communities for which specific management goals and objectives have been developed within this plan.

Biological Monitoring Element: These elements describe activities by CDFW and partners to track and monitor the Biological Elements.

Public Use Elements: Public use elements are any recreational, scientific, or other use programs appropriate to and compatible with the purposes for which this property was acquired.

Facility Maintenance Element: This is a general purpose element describing the maintenance and administrative program which helps maintain orderly and beneficial management of the area.

Biological Goal: A biological goal is the statement of intended long-range results of management based upon the feasibility of maintaining, enhancing or restoring species populations and/or habitat.

Public Use Goal: A public use goal is the statement of the desired type and level of public use compatible with the biological element goals previously specified within this plan.

Tasks: Tasks are the individual projects or work elements which implement the objectives and are useful in planning operation and maintenance budgets.

It is important to note that the implementation of many of the Tasks that are identified in this LMP is dependent upon the availability of additional staff to perform those respective Tasks. The establishment of an adequate operations and maintenance budget is also required to support the management of the Ecological Reserve. The Ecological Reserve is currently underfunded and new resources will be required in order to accomplish the tasks identified in this Chapter. Because of limited resources the following goals and tasks are presented within each element type based on priority.

Due to the expected impacts of a changing climate on species and their habitats, as further discussed in Chapter III, Goals and Tasks related to climate change that may be appropriate to employ on the Ecological Reserve are included below under the related Elements. These actions are consistent with the climate adaptation goals and strategies

for biodiversity and habitat presented in SWAP and California's Climate Adaptation Strategy (CNRA 2018).

B. Biological Elements: Goals, Constraints, & Impacts

The purpose of the Biological Elements is to maintain and enhance aquatic, riparian, and upland ecosystems of the Ecological Reserve to support natural ecological processes, sustain healthy habitats for native plants and animals, and provide desired ecosystem functions.

Optimum habitat on the Ecological Reserve is a functioning, dynamic aquatic and terrestrial system with an associated mosaic of vegetation including wet and dry meadows populated by native herbaceous and grass vegetation, uneven-aged mosaic overstory, alternately consisting of aspen, Jeffrey pine and white fir dominance, with tall and short dense shrub understories consisting of mixed willow habitats with young aspen, rose, and associated species, and sagebrush uplands including an assortment of openings, young to mature sagebrush, bitterbrush, mountain mahogany, and associated shrubs, with maximum area-to-perimeter ratio.

Existing impacts within the riparian areas on the Ecological Reserve include soil disturbance, roads, log landings and skid trails. These should be evaluated to determine whether closure, removal, restoration, or relocation is feasible.

Biological Element 1: Aquatic and Riparian Habitats

Protect and, where possible, enhance aquatic and riparian habitats on the Ecological Reserve for the benefit of aquatic and riparian species such as Lahontan cutthroat trout, yellow warbler, and willow flycatcher.

Goal 1: Preserve and enhance aquatic habitat

Tasks:

1. Conduct a stream channel assessment for the length of By-Day Creek (CDFW and HTNF portions) and determine restoration needs. Use habitat inventory methods described in the CDFW California Salmonid Stream Habitat Restoration Manual.
2. Evaluate possible threats to the aquatic ecosystem and habitat (e.g. excessive erosion and deposition)
3. Develop strategies to reduce, eliminate, or mitigate threats to the aquatic ecosystem and habitat.
4. Allow natural recruitment of large woody debris into By-Day Creek. Do not clear log jams unless they pose an imminent threat to infrastructure or present a barrier to fish.

5. Install, and monitor the effectiveness of beaver dam analog (BDA) structures in suitable sections of By-Day Creek to benefit meadows and wetlands and enhance base stream flows.
6. Work cooperatively with the USFS and permitted road users to minimize impacts associated with the existing roads and road maintenance activities.
7. Work cooperatively with the USFS to protect the upper watershed, water sources, and evaluate possible threats to water quality and quantity.

Goal 2: Protect, restore, and enhance riparian and wetland vegetation types

Riparian and wetland vegetation types are critical for shading and providing terrestrial invertebrates to the aquatic habitats and providing habitat for bird species. Additionally, aspen groves are identified as a sensitive natural community in the state.

Tasks:

1. Monitor and promote shrub and aspen cover along By-Day Creek to shade the stream, increase terrestrial insects for fish, and promote climate resilience.
2. Map and document the extent and composition of aspen groves on the Ecological Reserve.
3. Conduct thinning of young conifer tree species encroaching in aspen groves and meadows. Consider other actions to promote aspen regeneration if necessary.

Goal 3: Maintain a self-sustaining and genetically viable population of Lahontan Cutthroat Trout (Walker Basin Strain) in By-Day Creek

The original purpose for the acquisition of the Ecological Reserve and focus of management activities have been related to sustaining the resident population of these threatened fish. The Walker River native fish assemblage, which includes LCT, is identified as a conservation target in SWAP 2015

Tasks:

1. Monitor aquatic habitat characteristics including water temperature, flow, and cover, particularly during drought.
2. In the absence of adequate stream flow, be prepared to transport fish to suitable refugia.
3. Continue cooperation with USFWS, USFS and other agencies regarding recovery of LCT.
4. Investigate options to reduce genetic bottleneck within this population through possible re-introductions, translocations, extension of habitat, etc.

Goal 4: Maintain, restore and enhance habitat for special status species and non-listed plants and wildlife

The aquatic and riparian ecosystems at the Ecological Reserve provide habitat for many plant and animal species, including several special-status species that are known or presumed to occur there (Table 7). Protecting and enhancing habitat is fundamental to the conservation of all these species.

Tasks:

1. Protect streambanks from compaction, disturbance and sloughing losses.
2. Protect riparian vegetation to maximize stream cover for fish and habitat for neotropical migratory birds.
3. Monitor for brown-headed cowbird (*Molothrus ater*) and consider treatment strategies if impacts on native species (e.g. willow flycatcher, yellow warbler) are deemed significant.
4. Conduct management activities and manage public uses, especially unauthorized grazing and vehicle use, to avoid impacts to areas known to be occupied by special status species, sensitive areas, and to enhance habitat values.

Goal 5: Control Invasive Species

The introduction and spread of nonnative invasive plants can degrade ecosystems. Nonnative plants are present at the Ecological Reserve or may spread onto the property. Attaining this goal will enhance habitats present and avoid the degradation that would result from further spread of harmful species.

Tasks:

1. Survey for and identify nonnative invasive plant species that have invaded the Ecological Reserve and prioritize management of weed species that have the greatest potential to impact ecosystem function and have the highest likelihood of control. Follow priorities of existing state and federal programs where appropriate.
2. Implement the following weed management measures:
    a. Implement control plans for invasive plant species whose ecological impacts have been rated “high” by the California Invasive Plant Council (Cal-IPC) and/or prioritized by the Eastern Sierra Weed Management Area (ESWMA).
    b. Eradicate satellite infestations of invasive plant species whose ecological impacts have been rated “moderate” by Cal-IPC or set and/or prioritized by ESWMA. Satellite infestations are discrete infestations of invasive plants, usually smaller than an acre, which are isolated from other infestations and thus present greater opportunities for eradication with focused treatment.
    c. Restore native plant communities when eradicating invasive plant infestations.

d. Clean equipment, vehicles, and clothing after leaving infested areas and before entering uninfected sites.
e. Minimize soil and vegetation disturbance and revegetate disturbed areas with native plant species.

3. Incorporate likely climate-induced shifts in invasive species ranges into monitoring, eradication, and control efforts.

4. Apply herbicides in conformance with the CDFW Pesticide Use Program and product labels to ensure safe and effective use that avoids or minimizes adverse environmental effects.
5. Conduct pre-activity surveys for special-status plant populations before applying herbicides to, or mechanically removing, invasive plant infestations. Avoid impacts if special-status plants are present.
6. Avoid impacts to special status and protected wildlife species.

Biological Element 2: Montane Conifer Forest

Montane conifer forests are identified as a conservation target for the Sierra Nevada Ecoregion in SWAP 2015 based on an assessment of biodiversity, rarity, and endemism. Areas of old forest ecosystem have been noted to be in decline across the Sierra Nevada as a result of overcrowding, making the forests more prone to disastrous wildfire, and vulnerable to disease, pests, and invasion by exotic species (USFS 2004). Special status species such as northern goshawk and forest carnivores may utilize these habitats.

Goal 1: Manage forest structure to maximize habitat value for plants and wildlife

Tasks:

1. Identify and map forest areas including old-growth areas, overcrowded forest, and unique habitat features (snags, nest sites, etc.).
2. Coordinate with appropriate partner agencies and professional foresters, biologists, botanists, and hydrologists to determine if forest management activities such as thinning would be beneficial to this habitat type. If so, seek technical assistance and funding for the preparation of a Forest Management Plan for the property, preferably including the surrounding watershed (with USFS coordination).
3. If snags and down logs decrease in numbers significantly, undertake a snag creation program to maintain an appropriate number of snags per acre.

Goal 2: Prevent large high intensity stand replacing wildfires and minimize threats to special status species when fires occur

Tasks:

1. Coordinate with state and federal wildfire management agencies (CAL FIRE, USFS, BLM) on wildfire planning and response for the watershed.

    a. If conditions allow, manage natural low-intensity surface fires by controlling fire path and severity to meet management objectives and reduce risk of catastrophic fires. If supported by forest planning, and as resources allow, use naturally occurring fires and prescribed burning to restore ecosystem function, minimize fuel loading, reduce potential fire severity, and reduce risk of insect and disease outbreaks.

    b. Minimize direct impacts of fire control efforts on sensitive species (e.g. retardant drops in the creek, construction of fire lines, introduced invasive species).

2. Implement Forest Management Plan actions (e.g. thinning, prescribed fire, etc.) with assistance from partnering fire agencies to reduce competition and increase water availability.

3. Sign, monitor, and enforce regulations prohibiting public uses such as camping, campfires, and off-road vehicles that may result in human-caused ignitions in the watershed.

Goal 3: Maintain, restore and enhance habitat for special status species and non-listed plants and wildlife

The montane conifer forest ecosystems at the Ecological Reserve provide habitat for many plant and animal species, including several special-status species that are known or presumed to occur there (Table 7). Protecting and enhancing habitat is fundamental to the conservation of all these species.

Tasks:

1. Inventory, maintain, and restore areas of old forest which may provide habitat for goshawk and forest carnivores.
2. Conduct management activities and manage public uses, especially unauthorized grazing and vehicle use, to avoid impacts to areas known to be occupied by special status species, sensitive areas, and to enhance habitat values.

Goal 4: Control Invasive Species

The introduction and spread of nonnative invasive plants can degrade ecosystems. Nonnative plants are present at the Ecological Reserve or may spread onto the property. Attaining this goal will enhance habitats present and avoid the degradation that would result from further spread of harmful species.

Tasks:

1. Survey for and identify nonnative invasive plant species that have invaded the Ecological Reserve and prioritize management of weed species that have the greatest potential to impact ecosystem function and have the highest likelihood of control. Follow priorities of existing state and federal programs where appropriate.
2. Implement the following weed management measures:
    a. Implement control plans for invasive plant species whose ecological impacts have been rated “high” by the California Invasive Plant Council (Cal-IPC) and/or prioritized by the Eastern Sierra Weed Management Area (ESWMA).
    b. Eradicate satellite infestations of invasive plant species whose ecological impacts have been rated “moderate” by Cal-IPC or set and/or prioritized by ESWMA. Satellite infestations are discrete infestations of invasive plants, usually smaller than an acre, which are isolated from other infestations and thus present greater opportunities for eradication with focused treatment.
    c. Restore native plant communities when eradicating invasive plant infestations.
    d. Clean equipment, vehicles, and clothing after leaving infested areas and before entering uninfected sites.
    e. Minimize soil and vegetation disturbance and revegetate disturbed areas with native plant species.

3. Incorporate likely climate-induced shifts in invasive species ranges into monitoring, eradication, and control efforts.

4. Apply herbicides in conformance with the CDFW Pesticide Use Program and product labels to ensure safe and effective use that avoids or minimizes adverse environmental effects.
5. Conduct pre-activity surveys for special-status plant populations before applying herbicides to, or mechanically removing, invasive plant infestations. Avoid impacts if special-status plants are present.
6. Avoid impacts to special status and protected wildlife species.

Biological Element 3: Wet Mountain Meadow

Wet mountain meadows are identified as a conservation target for the Sierra Nevada Ecoregion in SWAP 2015. Additionally, the sensitive natural community silver sage brush scrub is a component of this Macrogroup, along with Baltic and Mexican rush marshes.

Goal 1: Protect and restore wet mountain meadow ecosystems and provide for the viability of associated native plant and animal species

Tasks:

1. Map and document the extent and composition of meadows on the Ecological Reserve.
2. Evaluate existing roads and trails for potential impacts on meadows; consider rerouting or decommissioning.
3. Evaluate meadows for conifer encroachment and conduct managed thinning if needed.
4. Assess meadow hydrological function: meadow conditions should enhance floodwater retention and groundwater recharge and be free of head-cuts and gullies. Plan and implement restoration projects if needed.
5. Coordinate with USFS regarding impacts on and adjacent to the Ecological Reserve related to livestock grazing. Provide input on grazing management plans when the opportunity arises.

Goal 2: Maintain, restore and enhance habitat for special status species and non-listed plants and wildlife

The meadow ecosystems at the Ecological Reserve provide habitat for many plant and animal species, including several special-status species that are known or presumed to occur there (Table 7). Protecting and enhancing habitat is fundamental to the conservation of all these species.

Tasks:

1. Maintain meadow areas on the property, restore meadows if opportunities exist (such as closing and/or moving roads, treating invasive plant species, thinning).
2. Prevent unauthorized motorized access, especially off road vehicle use which may damage meadows, and snowmobiles which may compact snow and expose small mammals and plants to extreme low temperatures.
3. Conduct management activities and manage public uses, especially unauthorized grazing and vehicle use, to avoid impacts to areas known to be occupied by special status species, sensitive areas, and to enhance habitat values.

Goal 3: Control Invasive Species

The introduction and spread of nonnative invasive plants can degrade ecosystems. Nonnative plants are present at the Ecological Reserve or may spread onto the property. Attaining this goal will enhance habitats present and avoid the degradation that would result from further spread of harmful species.

Tasks:

1. Survey for and identify nonnative invasive plant species that have invaded the Ecological Reserve and prioritize management of weed species that have the

greatest potential to impact ecosystem function and have the highest likelihood of control. Follow priorities of existing state and federal programs where appropriate.

2. Implement the following weed management measures:
    a. Implement control plans for invasive plant species whose ecological impacts have been rated “high” by the California Invasive Plant Council (Cal-IPC) and/or prioritized by the Eastern Sierra Weed Management Area (ESWMA).
    b. Eradicate satellite infestations of invasive plant species whose ecological impacts have been rated “moderate” by Cal-IPC or set and/or prioritized by ESWMA. Satellite infestations are discrete infestations of invasive plants, usually smaller than an acre, which are isolated from other infestations and thus present greater opportunities for eradication with focused treatment.
    c. Restore native plant communities when eradicating invasive plant infestations.
    d. Clean equipment, vehicles, and clothing after leaving infested areas and before entering uninfected sites.
    e. Minimize soil and vegetation disturbance and revegetate disturbed areas with native plant species.

3. Incorporate likely climate-induced shifts in invasive species ranges into monitoring, eradication, and control efforts.

4. Apply herbicides in conformance with the CDFW Pesticide Use Program and product labels to ensure safe and effective use that avoids or minimizes adverse environmental effects.
5. Conduct pre-activity surveys for special-status plant populations before applying herbicides to, or mechanically removing, invasive plant infestations. Avoid impacts if special-status plants are present.
6. Avoid impacts to special status and protected wildlife species.

Biological Element 4: Big Sagebrush Scrub

Big sagebrush scrub is identified as a conservation target for the Mono Ecoregion in SWAP 2015, primarily due to the presence of the Bi-state greater sage-grouse. While this bird species is unlikely to occur on the Ecological Reserve, sagebrush scrub is a dominant vegetation type on the property and provides habitat for numerous plant and wildlife species.

Goal 1: Maintain, restore and enhance habitat for special status species and non-listed plants and wildlife

The sage brush scrub ecosystems at the Ecological Reserve provide habitat for many plant and animal species, including several special-status species that are known or

presumed to occur there (Table 7). Protecting and enhancing habitat is fundamental to the conservation of all these species.

Tasks:

1. Avoid unnecessary disturbance of sagebrush scrub habitat which may facilitate invasion by exotic species, particularly cheatgrass (*Bromus tectorum*).
2. Minimize exposure of the big sagebrush scrub vegetation type to increased frequency and intensity of fire, which may result in conversion to invasive exotic grasses with shrub cover reduced or absent.
3. Conduct management activities and manage public uses, especially unauthorized grazing and vehicle use, to avoid impacts to areas known to be occupied by special status species, sensitive areas, and to enhance habitat values.

Goal 2: Control Invasive Species

The introduction and spread of nonnative invasive plants can degrade ecosystems. Nonnative plants are present at the Ecological Reserve or may spread onto the property. Attaining this goal will enhance habitats present and avoid the degradation that would result from further spread of harmful species.

Tasks:

1. Monitor invasion by cheatgrass. Track developments in integrated pest management and consider treatment if effective control methods become available.
2. Survey for and identify nonnative invasive plant species that have invaded the Ecological Reserve and prioritize management of weed species that have the greatest potential to impact ecosystem function and have the highest likelihood of control. Follow priorities of existing state and federal programs where appropriate.
3. Implement the following weed management measures:
    a. Implement control plans for invasive plant species whose ecological impacts have been rated “high” by the California Invasive Plant Council (Cal-IPC) and/or prioritized by the Eastern Sierra Weed Management Area (ESWMA).
    b. Eradicate satellite infestations of invasive plant species whose ecological impacts have been rated “moderate” by Cal-IPC or set and/or prioritized by ESWMA. Satellite infestations are discrete infestations of invasive plants, usually smaller than an acre, which are isolated from other infestations and thus present greater opportunities for eradication with focused treatment.
    c. Restore native plant communities when eradicating invasive plant infestations.

   d. Clean equipment, vehicles, and clothing after leaving infested areas and before entering uninfected sites.
   e. Minimize soil and vegetation disturbance and revegetate disturbed areas with native plant species.

4. Incorporate likely climate-induced shifts in invasive species ranges into monitoring, eradication, and control efforts.

5. Apply herbicides in conformance with the CDFW Pesticide Use Program and product labels to ensure safe and effective use that avoids or minimizes adverse environmental effects.
6. Conduct pre-activity surveys for special-status plant populations before applying herbicides to, or mechanically removing, invasive plant infestations. Avoid impacts if special-status plants are present.
7. Avoid impacts to special status and protected wildlife species.

Constraints on Biological Elements

The primary constraint on achieving goals for biological elements is limited CDFW funding and staff time. Furthermore, large scale events such as wildfire and climate change are beyond the control of CDFW.

Environmental Impacts of Biological Elements

The installation of interpretive and regulatory signs, maintenance and construction of gates and fences, and removal of non-native plants constitutes a minor modification to the existing landscape. This may represent a degree of degradation to the area's aesthetic value. However, it is anticipated that these impacts would not be substantial and that these projects would have a net benefit to wildlife and sensitive habitats. Completion of some tasks may involve minimal ground disturbance. These activities would be implemented using best management practices designed to minimize soil erosion and topsoil loss and would be conducted in conformance with regulatory requirements. Herbicide or pesticide treatments, if needed to control invasive species, would be targeted to avoid unnecessary impacts to sensitive biological resources and conducted under the direction of a certified applicator using appropriate safety precautions.

The restoration and enhancement of aquatic, riparian, and meadow habitats, including the addition of woody debris, construction of BDA structures, and rerouting of roads, have the potential for temporary impacts to biological resources and water quality, however it is anticipated that these impacts would not be substantial and that these projects would have a net benefit to wildlife and habitat. Ground disturbance, if necessary to remove or alter diversions, would be implemented in conformance with regulatory requirements such as CDFW regulations, U.S. Fish and Wildlife Service regulations, State Water Quality Control board regulations, Section 404 of the Clean

Water Act and would be performed primarily during the dormant season and outside the season of use by nesting and migratory birds to minimize disturbance to wildlife.

The restoration and enhancement of forest habitats, such as prescribed fire and thinning, have the potential for impacts to air quality, soils, and biological resources. However, it is anticipated that these impacts would be temporary and that these projects would have a net benefit to wildlife and sensitive habitats. If prescribed fire is identified as a desirable management technique, it would be carefully coordinated with the appropriate agencies and implemented using best management practices to minimize impacts on air quality, soils, and biological resources.

C. Biological Monitoring Element: Goals, Constraints, & Impacts

All aspects of wildlife management, particularly efforts to restore species at risk, depend on biological information. The increasing stresses on wildlife resources, including the loss, degradation, and fragmentation of habitats, climate change, effects of water diversions, and proliferation of invasive species, have further increased the need to assess the status and trends of wildlife species and ecosystems in California. Pursuant to Fish and Game Code (FGC) section 703.3, resource management decisions by CDFW should incorporate adaptive management to the extent possible. CDFW's intent is to improve the management of biological resources over time by incorporating adaptive management principles and processes, as appropriate, into conservation planning and resource management (CDFW 2014).

Biological Monitoring Element 1: Species and habitat monitoring

Goal 1: Establish a thorough baseline inventory of wildlife and plant species which use the Ecological Reserve across seasons and habitats

Tasks:

1. Conduct baseline surveys for plants, birds, mammals, fish, reptiles, amphibians, and invertebrates.
2. Seek opportunities to collaborate with partners that may be interested in assisting with species inventories (academic, scientific, etc.).
3. Utilize technologies such as motion-triggered wildlife cameras to monitor use of the Ecological Reserve by wildlife.
4. Utilize wildlife acoustic recording devices and automatic acoustic bat identification software. These devices may be available from Wildlife Branch on a temporary basis.
5. Complete vegetation mapping efforts and prepare a final vegetation map for the Ecological Reserve. Map aspen groves, meadows, and riparian communities at as high a resolution as is feasible for use in future change detection.

Goal 2: Monitor populations of special-status species and non-listed plants and wildlife

Tasks:

1. Conduct annual stream bank observation surveys for LCT to document distribution, health, and population structure.
2. Conduct bird point counts using established sites and survey protocols to monitor for special-status species and invasive species as indicators for adaptive management.
3. Conduct surveys for all special status plant species known or with high potential to occur at the Ecological Reserve.
4. Conduct surveys for all special status animal species known or with high potential to occur at the Ecological Reserve.
5. Utilize technologies such as motion-triggered wildlife cameras to monitor use of the Ecological Reserve by wildlife.

Goal 3: Monitor trends in structure of riparian, meadow, forest, and sagebrush habitats over time

Tasks:

1. Conduct periodic qualitative (e.g. photo-point) and quantitative assessments (e.g. permanent plots) of plant species richness and cover to determine the age and structural character of the habitat across time.

2. Monitor for early indicators of climate-induced change and use this information to inform management options.

3. Work cooperatively with USFS to share results of habitat monitoring and participate in related livestock management planning efforts.

Goal 4: Monitor stream flows in By-Day Creek to detect trends, changes in water supply (e.g. source spring development or diversion), and stress for aquatic species

Tasks:

1. Encourage USGS to reactivate the stream gauging station on By-Day Creek.
2. As resources allow, conduct regular discharge measurement in By-Day Creek to contribute to baseline flow records.

Goal 5: Monitor success of management activities

Tasks:

1. Monitor pre- and post- restoration ecological conditions to evaluate the success of restoration and associated actions (e.g. best management practices) and to refine restoration techniques in an adaptive management framework.

2. Evaluate the effectiveness of methods for controlling invasive plants and adjust methods as needed.

Constraints on Biological Monitoring Elements

The primary constraint on achieving goals for biological monitoring elements is limited CDFW funding and staff time. Environmental conditions at the Ecological Reserve vary year to year and may influence management's ability to implement aspects of this plan. Access for performing biological monitoring is also limited seasonally due to winter and unimproved roads which occasionally become impassible due to snow and mud.

Environmental Impacts of Biological Monitoring Elements

Plant and wildlife assessments such as small mammal trapping and mist netting birds can at times negatively impact the individuals under study. However, the resulting benefits of study outweigh these potential impacts by better informing management decisions. All assessment and monitoring will be conducted according to established protocols and extreme care will be taken to minimize and prevent injury to wildlife.

D. Public Use Elements: Goals, Constraints, & Impacts

The purpose of the Public Use Element is to define, and provide support for, compatible public uses of the Ecological Reserve. CDFW's mission 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. Compatible public uses are those that are consistent with this mission, the purpose of the Ecological Reserve, and the LMP's Biological Elements. Compatible public uses are low-impact recreational activities (e.g. hiking, wildlife observation, nature photography), hunting, scientific research, and environmental education activities. Camping is prohibited. A USFS campground is located approximately 4 miles by road from the Reserve. Vehicles are not permitted beyond the locked gate at the Ecological Reserve boundary.

Public Use Element 1: Public Access and Recreation

Goal 1: Identify compatible public access and recreation opportunities

Because low-impact recreational activities are compatible with management of ecological values, allowing public access to the Ecological Reserve for these activities is an important means by which CDFW carries out its mission. However, incompatible and inappropriate public access and use of the property can adversely affect the resources that the Ecological Reserve was established to protect.

Tasks:

1. Post specific rules and allowable uses at points of entry onto the Ecological Reserve.

2. Install informational signs at the Ecological Reserve entrance. Signs will inform the public of the resource conservation and appropriate recreational use goals that CDFW is implementing on the property. Information provided may include interpretive materials (e.g. LCT information); information on management activities; safety information; and contact information. Signs (or kiosks) would be located to avoid resources such as special-status plants, sensitive natural communities, wildlife habitat features, and cultural resources.

Goal 2: Discourage incompatible public uses

The following is a general list of prohibited activities as established in CCR Title 14: camping and campfires; use of motor vehicles (e.g. passenger vehicles, all terrain vehicles, snowmobiles); possession and use of alcohol, marijuana, and controlled substances; boats and swimming; bicycles and other pedaled vehicles, horses, pack stock and horseback riding; pets, such as dogs and cats, except on a leash of less than ten feet or inside a motor vehicle, unless engaged in authorized hunting. This list does is not all inclusive but identifies a number of activities that may be permitted on nearby public lands but that are prohibited at the Ecological Reserve.

Due to the significance of the By-Day Creek population of LCT, By-Day Creek and tributaries are closed to fishing all year both on and off of the Ecological Reserve.

The use of motor vehicles can damage vegetation and soils, leading to soil compaction and increased erosion and sediment delivery to streams and meadows (van Vierssen and Wiersma 2015, USFS 2008). Over-snow vehicles such as snowmobiles can disturb wildlife and compact the subnivean (sub-snow) space, which is essential for the over winter survival of small mammal populations (Sanecki et al. 2006). This impairs their ability to get food, and they form the base food chain item for species such as owls, hawks, and forest carnivores. Compaction of snow and loss of the insulating air space can also influence plant density and composition (Davenport and Davenport 2006). Additionally, snowmobile trails may be used by coyotes to facilitate travel through deep snow, thereby accessing terrain not otherwise available and resulting in novel species interactions.

Sheep grazing occurs on federal public lands surrounding the Ecological Reserve in the By-Day Creek watershed. Grazing is not a compatible use of the Ecological Reserve and is prohibited. Grazing related concerns include soil erosion at stream crossing and livestock watering areas, water quality impacts, the introduction and spread of invasive plants, and potential negative impacts to wildlife (noise, sheep dog interaction, etc.).

Tasks:

1. Post boundaries and entry points with applicable regulations.
2. Maintain the entrance gate and adjacent fencing to prevent unauthorized access, maintain a record of parties with gate access and avoid abuse of access privileges.

3. Enforce existing regulations through warden patrols and coordination with USFS law enforcement.
4. Monitor for unauthorized and incompatible public uses.
5. Manage pets and equestrian uses consistent with sensitive species, habitat, and resource protection.
6. Survey boundaries and consider additional fencing or other management actions to prevent unauthorized grazing.
7. Coordinate with HTNF to ensure that shared infrastructure (e.g. road, culvert) is maintained.

Public Use Element 2: Scientific and Educational Use

Goal 1: Support and encourage appropriate scientific research

Scientific studies by legitimate investigators that are appropriate to the Ecological Reserve will be encouraged. Proposed uses of the Ecological Reserve for scientific purposes must be in compliance with FGC Title 14 regulations.

Tasks:

1. Establish and/or maintain long-term working relationships with regional academic institutions.
2. Review and evaluate proposed research projects based on their compatibility with current uses, management, and the purposes of the Ecological Reserve.
3. Obtain data, papers, and reports from scientific research.
4. Encourage long-term studies of water quality and quantity, special-status species populations, native plant and wildlife habitat, and other topics that could inform management.
5. Support efforts to document the history of human activities by encouraging academic research and cultural surveys where appropriate.
6. Make reports, maps, data, and results from studies conducted on the Ecological Reserve available to interested parties.
7. Incorporate pertinent findings of research and studies into future management goals and tasks.

Goal 2: Support and encourage environmental educational use

Environmental education will also be encouraged at the Ecological Reserve. It is the policy of the California Fish and Game Commission that CDFW encourage education programs that increase the public's respect and concern for wild animals and their knowledge of the interrelationships between wild animals, the environment, and society.

Tasks:

1. Install informational signs at the Ecological Reserve entrance. Signs will inform the public of the resource conservation and appropriate recreational use goals

that CDFW is implementing on the property. Information provided may include interpretive materials; information on management activities; safety information; and contact information. Signs (or kiosks) would be located to avoid resources such as special-status plants, sensitive natural communities, wildlife habitat features, and cultural resources.
2. Provide staff assistance, materials, and Letters of Permission for educational activities that are consistent with the goals of this LMP.
3. Partner with nonprofit groups and local schools to promote and support environmental education and volunteer opportunities.
4. Periodically conduct reviews of public uses of the Ecological Reserve and evaluate rules and regulations to ensure compatibility of public uses.

Public Use Element 3: Hunting

Goal 1: Maintain the existing level of hunting opportunities on the Ecological Reserve

Tasks:

1. Manage hunting opportunities consistent with the protection of sensitive species and habitats.
2. Continue to improve habitat for game species.
3. Monitor hunting activity and enforcement of related regulations.
4. Periodically conduct reviews of public uses of the Ecological Reserve and evaluate rules and regulations to ensure compatibility of public uses.

Constraints on Goals for Public Use Elements

The primary constraint on achieving goals for public use elements is limited CDFW funding and staff time. Volunteer work by local groups, schools, or organizations may provide opportunities for community involvement in some public use elements, such as creating resource interpretation materials. However, it is important to note that coordinating volunteer survey efforts still requires significant time and effort on the part of CDFW staff. Further, many of the goals within the Public Use Elements do not lend themselves to volunteer efforts and require the use of staff and contractors (e.g. surveying boundaries, agency coordination, monitoring human activities, and livestock trespass).

Environmental Impacts of Public Use Elements

The installation of interpretive and regulatory signs constitutes a minor modification to the existing landscape. This may represent a degree of degradation to the area's aesthetic value. However, LMP adoption and the implementation of its various tasks would improve the overall aesthetic conditions of the Ecological Reserve by incorporating protection, management, and enhancement strategies for its natural habitats.

E. Facility Maintenance Elements: Goals, Constraints, & Impacts

The purpose of the Facility Maintenance Elements is to guide management of the Ecological Reserve to support biological and public use goals. Supportive management practices consist of targeted application of funds and labor towards administration, maintenance, and enhancement projects; preservation of cultural resources; and collaboration with neighbors and partner agencies to better fulfill mutual objectives and optimize the use of staff, funds, and other resources.

Facility Maintenance Element 1: Signs and Roads

Maintenance of signs and roads contributes to resource protection, increases the safety of users, and discourages unauthorized uses of the Ecological Reserve.

Goal: Maintain adequate signage and roads for public and administrative traffic

Road access is provided to a locked gate located at the Ecological Reserve boundary on Forest Service Road 076. No public parking is available at the Ecological Reserve, however several unimproved areas for parking are available outside of the gate on USFS land. No unauthorized motorized vehicles are permitted beyond the gate.

Tasks:

1. Periodically monitor roads and identify those that need maintenance or are impacting resources; close and/or restore impacted areas.
2. Periodically inspect, maintain, and replace (as needed) informational signage pertaining to route-finding, permitted and prohibited uses/ regulations, environmental education, etc.
3. As signs are replaced, select sign locations and styles that are consistent with CDFW guidelines, the rural character of the area, and the aesthetics of the natural environment.
4. Work cooperatively with the USFS to ensure that the access road to the Ecological Reserve is maintained as passable (by high clearance vehicles with four-wheel-drive) and to minimize sediment input to By-Day Creek.
5. Perform maintenance activities or implement closure, restoration and monitoring of impacted sites as necessary. These activities will be modified and timed as necessary to avoid impacts to resources and sensitive species, minimize erosion, and employ best management practices as applicable.

Facility Maintenance Element 2: Boundaries, Fences, and Gates

The Ecological Reserve boundaries are primarily shared with USFS and are largely inaccessible and unfenced due to the remote location of the property. The single road entering the property is gated at the boundary and does not connect to any other accessible roads or trails.

Goal 1: Control unauthorized uses to protect resources

Tasks:

1. Post boundary signage, particularly at common entry points, to protect the Ecological Reserve resources from trespassing livestock, motor vehicles, and other incompatible uses.
2. Post boundary signs at all road and trail entrances to the property.
3. Periodically inspect, maintain, and replace (as needed) boundary markers and signs.
4. Periodically inspect and repair entrance gate to ensure that it is an effective barrier to unauthorized vehicle use.
5. Change locks or combinations to locks on the gate as necessary to prevent unauthorized users from obtaining access. Work with the USFS to provide range management and fire crews with separate locks to minimize trespass and unauthorized vehicle use.
6. Locate or complete a land survey of the Ecological Reserve boundary.

Facility Maintenance Element 3: Cultural Resources

The history and prehistory of the By-Day Creek area is important to the current management of this Ecological Reserve. CDFW upholds Executive Order W-26-92 and other historic resources preservation laws, to the extent prudent and feasible within existing budget and personnel resources. It is the intent of CDFW to provide long-term stewardship of cultural resources. Prior to any proposed ground disturbing activities CDFW will adhere to the California Environmental Quality Act (CEQA) by conducting appropriate surveys.

Goal 1: Inventory and protect cultural sites and artifacts.

Tasks:

1. Conduct cultural resource reviews and surveys before conducting any activity that involves substantial vegetation clearing or ground disturbance.

2. Avoid impacts to cultural resources or minimize impacts to the extent feasible.

3. If cultural resources or human remains are discovered during ground-disturbing activities or construction, stop work immediately and consult with a qualified professional archaeologist.

Facility Maintenance Element 4: Administration and Recordkeeping

Administrative records for the By-Day Creek Ecological Reserve are housed at CDFW's Inland Deserts (Region 6) Regional Field Office in Bishop, with copies maintained in the Lands Program Inventory files in Sacramento. These records may consist of title and

easement reports, legal descriptions of the property, cooperative agreements with other agencies, research permits and reports, and operations and maintenance records.

Goal 1: Comply with applicable state and federal laws and regulations

Tasks:

1. Ensure that all actions undertaken on the Ecological Reserve comply with applicable state and federal laws and regulations, including FESA and CESA, Sections 401 and 404 of the Clean Water Act, Section 1602 of the California Fish and Game Code, and other applicable plans or regulations aimed at the protection of special-status species and their habitats.

2. Ensure that all actions undertaken on the Ecological Reserve are consistent with CDFW policy.

Goal 2: Cooperate and collaborate with neighboring landowners to achieve mutual goals

It is Fish and Game Commission policy that CDFW cooperate with local, state, and federal agencies and with all interested persons, groups, or organizations in every way to further the aims and purposes of fish and game conservation, preservation, propagation, protection, management, and administration, and enter into agreements for those purposes (California Fish and Game Commission 2016).

Tasks:

1. Collaborate with USFS:

    a. To maintain the access road to the Ecological Reserve in a condition that is passable by high clearance four-wheel-drive vehicles and minimizes erosion.

    b. To manage By-Day Creek and the surrounding watershed and public uses such as grazing in a manner consistent with the objectives of the USFWS Recovery Plan and shared fish and wildlife management objectives.

    c. On wildlife studies throughout the Bridgeport Ranger District of the HTNF.

    d. On access to the upper By-Day Creek watershed on the gated road for permitted activities and emergency response.

    e. On weed management efforts.

2. Meet or correspond with local landowners and user groups as needed to maintain communication about management activities at the Ecological Reserve.

Goal 3: Collaborate with other entities to achieve mutual goals

Tasks:

1. Collaborate with neighboring agencies or nonprofit organizations in research, planning, and restoration projects.

2. Partner with other public entities or nonprofit organizations to apply for grant funding for cooperative research and management activities.

Goal 4. Coordinate with federal, state, and local agencies regarding plans that may affect the Ecological Reserve

Tasks:

1. Review and provide recommendations on proposed plans and projects to achieve consistency with this LMP.

2. Participate in regional planning and resource management efforts.

3. Coordinate with regional agencies, stakeholders, and educational institutions to facilitate knowledge/data exchange.

Goal 5: Avoid or minimize air and water quality, noise, and hazardous materials impacts

Air, water, noise, and hazardous materials impacts interfere with the attainment of biological and public use goals set forth in this plan.

Tasks:

1. When planning and conducting activities, integrate measures to avoid or minimize water quality impacts. These measures include:

    a. Minimizing vegetation and soil disturbance

    b. Implementing erosion control best management practices as necessary (e.g. using silt fencing, straw-bale dikes, or other siltation barriers to prevent silt and other material from entering streams)

    c. Performing instream work in low-flow or dry conditions,

    d. Covering stockpiled soil, and

    e. Revegetating disturbed areas.

2. Before conducting projects involving the use of hazardous materials, establish and implement plans and best management practices to prevent and contain unintentional releases.

Goal 6: Maintain existing data concerning management and resources

Tasks:

1. Maintain accurate financial records regarding expenditures, staff, maintenance, funding, and other administrative duties.

2. Regularly update geographic information systems (GIS) data sources as information becomes available.

3. Document facility needs in CDFW maintenance and capital outlay records.

4. Investigate options that may be available to obtain consistent, dedicated funding sources for management of the Ecological Reserve.

5. Store any sensitive cultural resource data in a secure area and restrict public access.

Constraints on Goals for Facility Maintenance Elements

The primary constraint on achieving goals for facility maintenance elements is limited CDFW funding and staff time. Maintenance requirements will depend largely on the severity of weather conditions. For example, heavy snow-load or high wind events may result in damage to infrastructure such as fences, gates, and signage. Additionally, some improvements such as signs may attract vandalism. The frequency and severity of vandalism may impact CDFW's ability to maintain the improvements or to continue to provide them over the long term. Access for performing property inspections and maintenance is also limited seasonally due to in winter due to snow and mud.

Environmental Impacts of Facility Maintenance Elements

The installation and maintenance of fences, gates, and signs constitutes a minor modification to the existing landscape. This may represent a degree of degradation to the area’s aesthetic value and may result in minimal ground disturbance. These activities would be implemented using best management practices designed to minimize soil erosion and topsoil loss and protect water quality. LMP adoption and the implementation of its various tasks would improve the overall aesthetic and biological conditions of the Ecological Reserve by incorporating protection, management, and enhancement strategies for its natural habitats.

V. OPERATIONS AND MAINTENANCE SUMMARY

A. Existing Staff and Additional Personnel Needs Summary

The Ecological Reserve is managed by CDFW's Inland Deserts Region (Region 6) Lands North Program under the supervision of Lands North Senior Environmental Scientist based in the Bishop Field Office. The Region 6 Lands North program is responsible for managing over 20,000 acres of Ecological Reserves and Wildlife Areas across Mono and Inyo Counties. These areas include diverse habitats from dry lakes and desert scrub to montane meadows, which support a wide array of fish, wildlife and plant species. The Lands North Program consists of the Senior Environmental Scientist, an Environmental Scientist, Wildlife Habitat Supervisor, Scientific Aid, and Retired Annuitants. Additional support for specific goals and tasks may be provided as needed by the Unit Biologist and other CDFW staff to fulfill biological monitoring requirements. Regional fisheries staff, in coordination with Fisheries Branch, are responsible for all monitoring and management tasks associated with the LCT Biological Element. Engineering Branch may provide technical expertise, such as for habitat restoration and enhancement projects. Law enforcement is provided by Fish and Wildlife Officers (Warden) from CDFW's Law Enforcement Division Central District.

VI. FUTURE REVISIONS TO LAND MANAGEMENT PLANS[5]

All planning documents eventually become dated and require revision so they can continue to provide practical direction for operational and maintenance activities associated with the property. A common and unfortunate situation is that the revision of planning documents is often neglected for budgetary or staff constraints, or other priorities. To address this challenge, this brief guide incorporates a suggested hierarchy of revision procedures in which the level of process and required involvement is proportionate to the level of change that is proposed. The LMP reflects the best information available during the planning process, but it is understood that new information or circumstances will arise over time and adjustments will be required to keep the LMP current. Such new information or circumstances may include:

- feedback generated by adaptive management of the site
- scientific research that directs improved techniques of habitat management
- research that directs improved management of agricultural resources
- documented threats to fish and wildlife species and their habitats
- new legislative or policy direction
- new acquisitions

When new information dictates a change to the LMP, it is important that there is an appropriate process established to facilitate this change. Public outreach and public input will be necessary in proportion to the proposed policy change established by the LMP. Unless a reasonable and clear revision process exists, the LMP could become outdated and irrelevant. If the appropriate procedure for a particular proposed revision is not apparent, the determination of which of the following procedures to use shall be made by the regional manager in consultation with the Lands Program/Wildlife Branch.

A. Minor Revisions

[5] Adapted from the Comprehensive Management Plan for the Sacramento Wildlife Area, California Department of Fish and Game. February 2004

Minor revisions may include the addition of new property to an existing ecological reserve or wildlife area or the adoption of limited changes to the goals and tasks through adaptive management, based on other scientific information or policy direction. This procedure will be applicable to revisions that meet the following criteria:

- No change is proposed to the overall purposes of this LMP
- CEQA documentation (if required) is completed and approved
- Appropriate consultation occurs within the region and with other appropriate branches in CDFW
- Appropriate consultation with other agencies occurs
- Adjoining neighbors are consulted regarding the revision, if the revision is related to a specific location or the acquisition of additional area

Minor revisions may be prepared by the staff members or with other CDFW resources, and require approval by the regional manager. If additional acquisitions require no changes in existing management, the parcels may be integrated within the current plan via a memo from the regional manager to the Director. The documentation is attached to the management plan and provided to the Lands Program/Wildlife Branch for their files.

B. Major Revisions

Major revisions or a new LMP, require a procedure comparable to the initial LMP planning process, but also proportionate to the level of policy change that is proposed. This procedure is applicable to revisions that meet the following criteria:

- Substantial revision and/or a new policy direction is proposed to the LMP, or the adoption of a completely new plan is proposed
- Appropriate CEQA documentation is completed and approved
- Appropriate consultation occurs throughout CDFW
- Appropriate coordination and consultation with other agencies occurs

- A public outreach program is conducted that is proportional to the level of the proposed revision

Major revisions or a new plan may be prepared using available CDFW resources. Any major revisions or new plan development require prior approval by the regional manager. If the appropriate procedure for a particular, proposed revision is not apparent, the determination of which of these procedures to use shall be made by the region in consultation with the Lands Program. The revised plan may need additional CEQA analysis if the revisions present substantive changes. A new plan and or new CEQA analysis for a revised plan would require the review and approval of the Deputy Director.

C. Plan Status Reports

Periodic evaluation is important to help ensure that the purposes and goals of the LMP are being met. The chapter or section that includes, “Management Goals,” may contain many specific tasks that involve monitoring of the site and evaluation of the adequacy of management activities. Cumulatively, these efforts will provide feedback regarding the success of the overall management effort. Periodic and detailed analysis of this feedback data will be necessary to assess the status of this LMP.

A review of the achievement of the goals of the LMP should be prepared every 5-10 years following the date of adoption of the LMP or subsequent revisions.

A status report documenting this review should, at minimum, include:

- An evaluation of the achievement of the purposes and goals of the LMP
- An evaluation of the completion or annual completion, as appropriate, of each task contained in this LMP
- Monitoring required as a result of a mitigated negative declaration
- A fiscal evaluation of the program
- An evaluation of the effectiveness of CDFW’s coordination efforts with local governments, and other property management and regulatory agencies involved with the site

- A notation of important new scientific information that has bearing on management
- A recommendation and schedule for revisions to the LMP to incorporate new information and improve its effectiveness

The status report should be prepared or coordinated by the site manager or other regional representative. It should be reviewed by appropriate Regional functions, then submitted to the Regional Manager and forwarded to the Lands Program, Wildlife Branch to be submitted to the Deputy Director. This report should serve as a basis for revision of the LMP and appropriate adjustment to ongoing management practices. Approved copies of the report are included in the management plan files in the region and Lands Program.

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APPENDIX A-1

Legal Description of Property

PARCEL 1:

THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, AND THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 21, AND THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 5 NORTH, RANGE 24 EAST, M.D.B&M., IN THE COUNTY OF MONO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

APN: 007-200-001

PARCEL 2:

THE NORTHEAST QUARTER OF SECTION 28, TOWNSHIP 5 NORTH, RANGE 24 EAST, M.D.B&M., IN THE COUNTY OF MONO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

APN: 007-200-002

PARCEL 3:

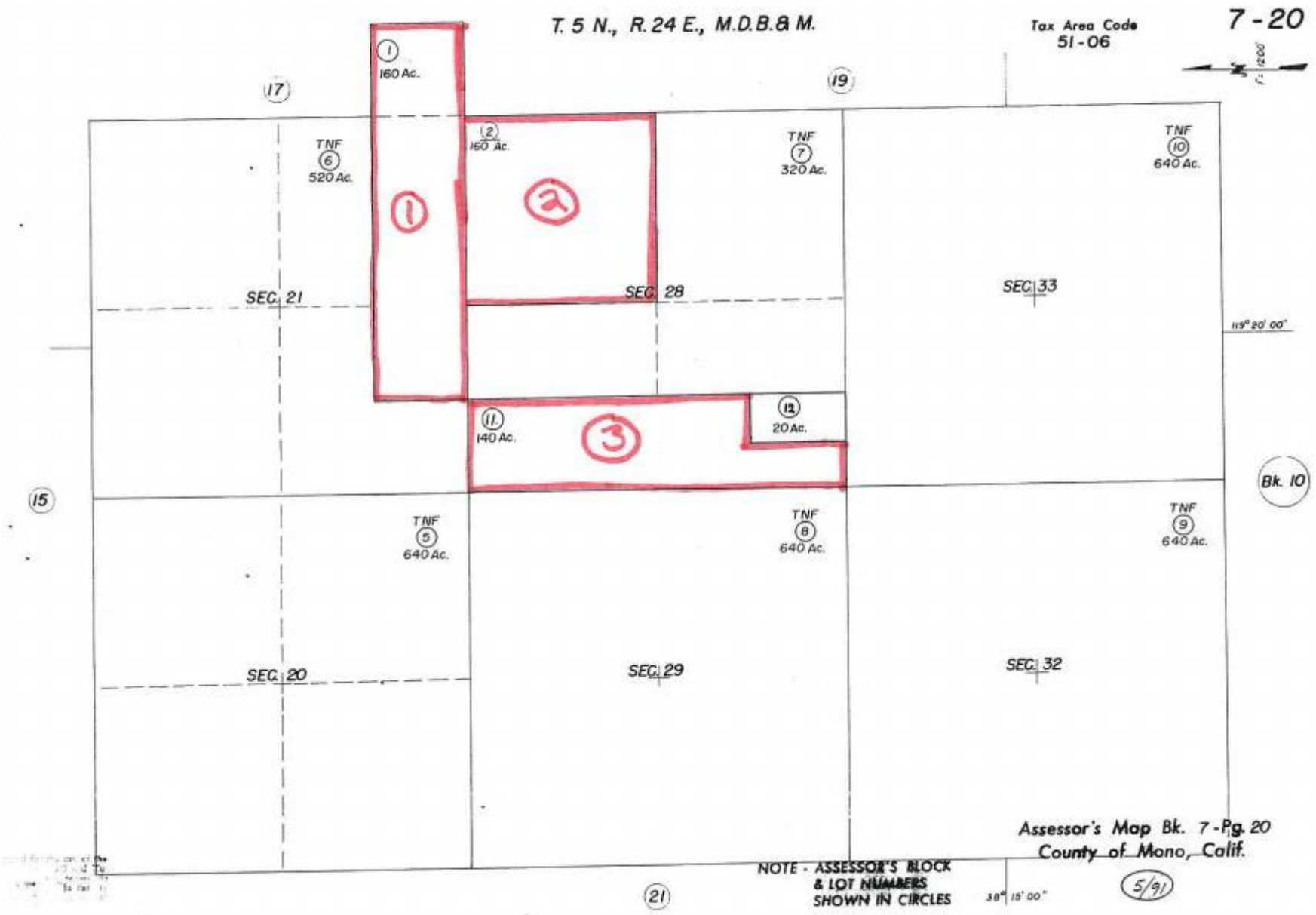
THE WEST HALF OF THE NORTHWEST QUARTER AND THE WEST HALF OF THE SOUTHWEST QUARTER OF SECTION 28, TOWNSHIP 5 NORTH, RANGE 24 EAST, M.D.B.&M., IN THE COUNTY OF MONO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

EXCEPTING THEREFROM THE EAST ONE-HALF OF THE SOUTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 28, TOWNSHIP 5 NORTH, RANGE 24 EAST, M.D.B.&M.

APN: 007-200-011

APPENDIX A-2

Parcel Map of Property


T. 5 N., R. 24 E., M.D.B.& M.
Tax Area Code 51-06
7-20
1" = 1200'
1
160 Ac.
2
160 Ac.
TNF 6 520 Ac.
TNF 7 320 Ac.
TNF 10 640 Ac.
17
19
SEC. 21
SEC. 28
SEC. 33
119° 20' 00"
11
140 Ac.
12
20 Ac.
Bk. 10
15
TNF 5 640 Ac.
TNF 8 640 Ac.
TNF 9 640 Ac.
SEC. 20
SEC. 29
SEC. 32
Assessor's Map Bk. 7 - Pg. 20
County of Mono, Calif.
NOTE - ASSESSOR'S BLOCK & LOT NUMBERS SHOWN IN CIRCLES
21
38° 15' 00"
5/91

APPENDIX B

Plants with Potential to Occur in Vicinity of By-Day Creek Ecological Reserve

APPENDIX B

Vascular Plants Known or with Potential to Occur in Vicinity of Indian By-Day Creek Ecological Reserve
(Preliminary List)

Family / Genus	Species	Common name	CRPR	Source
APIACEAE				
Amaranthus	*blitoides*	Prostrate pigweed		CDFW
Lomatium	*foeniculaceum ssp. fimbriatum*	fennel-leaved Lomatium		CDFW
Lomatium	*foeniculaceum ssp. macdougalii*	Macdougal's lomatium	2B.2	CNDDB
Lomatium	*plummerae*	Plummer's Lomatium		CDFW
Perideridia	*parishii var. latifolia*	wide leaf Parish's yampah		CDFW
APOCYNACEAE				
Apocynum	*androsaemifolium*	spreading dogbane		CDFW
ASTERACEAE				
Achillea	*millefolium*	Yarrow		CDFW
Agoseris	*glauca var. laciniata*	false dandelion		CDFW
Antennaria	*rosea ssp. rosea*	rosy puss toes		CDFW
Arnica	*mollis*	Cordilleran Arnica		CDFW
Artemisia	*arbuscula ssp. arbuscula*	dwarf sagebrush		CDFW
Artemisia	*cana*	silver sagebrush		CDFW
Artemisia	*tridentata ssp. vaseyana*	mountain sagebrush		CDFW
Balsamorhiza	*sagittata*	arrow-leaved balsam root		CDFW
Brickellia	*sp.*	unidentified bricklebush		CDFW
Chaenactis	*douglasii ssp. douglasii*	Douglas' dusty maiden		CDFW
Chrysothamnus	*viscidiflorus ssp. lanceolatus*	yellow rabbit brush		CDFW
Cirsium	*arvense*	Canada thistle		CDFW
Crepis	*acuminata*	tall hawksbeard		CalFlora
Crepis	*runcinata ssp. hallii*	Hall's meadow harksbeard	2B.1	CNDDB
Ericameria	*nauseosa*	rubber rabbitbrush		CalFlora
Erigeron	*aphanactis var aphanactis*	rayless shaggy fleabane		CDFW
Erigeron	*peregrinus var. callianthemus*	wandering fleabane		CDFW
Hackelia	*floribunda*	stickseed		CDFW
Microseris	*nutans*	nodding Microseris		CDFW
Pyrrocoma	*apargioides*	alpine pyrrocoma		CalFlora
Pyrrocoma	*racemosa*	racemose pyrrocoma		CalFlora
Raillardella	*argentea*	silky Raillardella		CDFW
Senecio	*canus*	woolly ragwort		CDFW
Senecio	*triangularis*	groundsel		CalFlora
Symphyotrichum	*spathulatum*	Western mountain aster		CalFlora
Taraxacum	*officinale*	dandelion		CDFW
Tragopogon	*sp.*	unidentified salsify		CDFW
Wyethia	*mollis*	mule-ears		CDFW
BORAGINACEAE				
Cryptantha	*flavoculata*	rough-seed cryptantha		CDFW
Cryptantha	*nubigena*	Sierra cryptantha		CDFW
Mertensia	*oblongifolia var. nevadensis*	sagebrush bluebells	2B.2	CDFW
BRASSICACEAE				
Boechera	*bodiensis*	Bodie hills rock cress	1B.3	CalFlora
Boechera	*cobrensis*	Masonic rock cress	2B.3	CNDDB
Boechera	*inyoensis*	Inyo rock cress		CDFW
Boechera	*repanda*	Yosemite rockcress		CalFlora
Descurainia	*californica*	Sierra tansy mustard		CDFW
Descurainia	*curvata*	mountain tansy mustard		CDFW
Erysimum	*capitatum ssp. capitatum*	Western wallflower		CDFW
Phoenicaulis	*cheiranthoides*	dagger pod		CDFW
Rorippa	*nasturtium-aquaticum*	water cress		CDFW

Family / Genus	Species	Common name	CRPR	Source
Streptanthus	*olinganthus*	Masonic mountain jewelflower	1B.2	CNDDB
CAPRIFOLIACEAE				
Sambucus	*racemosa var. microbotrys*	mountain red elderberry		CDFW
Symphoricarpos	*rotundifolius var. rotundifolius*	round leaved snowberry		CDFW
CARYOPHYLLACEAE				
Sagina	*saginoides*	Alpine pearlwort		CalFlora
Silene	*bernardina*	Palmer's catchfly		CDFW
CHENOPODIACEAE				
Chenopodium	*album*	lamb's quarters		CDFW
CUPRESSACEAE				
Juniperus	*occidentalis var. australis*	Utah juniper		CDFW
CYPERACEAE				
Carex	*pellita*	wooly sedge		CDFW
Carex	*nebrascensis*	Nebraska sedge		CDFW
Carex	*vallicola*	western valley sedge	2B.3	CNDDB
Kobresia	*myosuroides*	Bellardi bog sedge	2B.2	CNDDB
Scirpus	*microcarpus*	small-fruited bulrush		CDFW
DRYOPTERIDACEAE				
Cystopteris	*fragilis*	brittle fern		CDFW
EQUISETACEAE				
Equisetum	*sp.*	unidentified horsetail species		CDFW
FABACEAE				
Astragalus	*oophorus var. lavinii*	Lavin's milk vetch	1B.2	CNDDB
Astragalus	*platytropis*	broadkeel milk-vetch	2B.2	CNDDB
Astragalus	*purshii var. lectulus*	Pursh's milk vetch		CDFW
Lupinus	*argenteus var. montigenus*	silvery lupine		CDFW
Lupinus	*lepidus var. confertus*	clustered tidy lupine		CalFlora
Lupinus	*latifolius var. columbianus*	dwarf lupine		CDFW
Trifolium	*monanthum*	carpet clover		CalFlora
Trifolium	*variegatum*	variegated clover		CalFlora
GERANIACEAE				
Geranium	*californicum*	California geranium		CDFW
Geranium	*richardsonii*	Richardson's geranium		CDFW
GROSSULARIACEAE				
Ribes	*cereum var. cereum*	wax currant		CDFW
Ribes	*inerme var. inerme*	whitestem gooseberry		CDFW
Ribes	*velutinum*	desert gooseberry		CalFlora
HYDROPHYLLACEAE				
Nemophila	*spathulata*	sierra Nemophila		CDFW
Phacelia	*humilis var. dudleyi*	low Phacelia		CDFW
IRIDACEAE				
Iris	*missouriensis*	blue flag		CDFW
JUNCACEAE				
Juncus	*mexicanus*	Mexican rush		CDFW
Juncus	*phaeocephalus*	brown-headed rush		CalFlora
Juncus	*macrandrus*	long anthered rush		CDFW
Juncus	*nevadensis*	Sierra rush		CDFW

Family / Genus	Species	Common name	CRPR	Source
Juncus	*orthophyllus*	straight leaved rush		CalFlora
Juncus	*parryi*	Parry's rush		CalFlora
LAMIACEAE				
Agastache	*urticifolia*	horsemint		CDFW
Monardella	*villosa*	coyote mint		CDFW
LILIACEAE				
Allium	*bisceptrum*	twincrest onion		CDFW
Allium	*atrorubens var. atrorubens*	Great basin onion	2B.3	CNDDB
Calochortus	*leichtlinii*	Leichtlin's mariposa lilly		CDFW
Maianthemum	*stellatum*	starry false lily of the valley		CDFW
Zigadenus	*venenosus var. venenosus*	death camas		CDFW
LOASACEAE				
Mentzelia	*congesta*	clustered blazing star		CDFW
Mentzelia	*veatchiana*	Veatch's blazing star		CDFW
MALVACEAE				
Sidalcea	*multifida*	cutleaf checkerbloom	2B.3	CNDDB
Sidalcea	*oregana ssp. spicata*	Oregon checker mallow		CDFW
MARCHANTIACEAE				
Marchantia	*sp*	liverwort		CDFW
ONAGRACEAE				
Camissonia	*sp.*	unidentified suncups species		CDFW
Epilobium	*brachycarpum*	willow herb		CDFW
Epilobium	*ciliatum*	willow herb		CalFlora
Gayophytum	*diffusum ssp. parviflorum*	small-leaved groundsmoke		CDFW
Oenothera	*elata*	evening primrose		CalFlora
PINACEAE				
Abies	*concolor*	white fir		CDFW
Pinus	*contorta ssp. murrayana*	lodgepole pine		CDFW
Pinus	*jeffreyi*	Jeffrey pine		CDFW
Pinus	*monophylla*	single leaf pinyon		CDFW
POACEAE				
Achnatherum	*hymenoides*	indian rice grass		CDFW
Achnatherum	*lemmonii*	Lemmon's needlegrass		CDFW
Achnatherum	*speciosum*	desert needlegrass		CDFW
Agropyron	*desertorum*	desert crested wheatgrass		CDFW
Agrostis	*exarata*	bentgrass		CalFlora
Agrostis	*scabra*	rough bentgrass		CalFlora
Bromus	*sp.*	unidentified Bromus species		CDFW
Bromus	*tectorum*	cheat grass		CDFW
Glyceria	*grandis*	Amerian mannagrass	2B.3	CNDDB
Elymus	*cinereus*	Great basin wild rye		CalFlora
Elymus	*elymoides*	squirrel tail		CDFW
Elymus	*scribneri*	Scribner's wheat grass	2B.3	CNDDB
Festuca	*idahoensis*	Idaho fescue		CDFW
Hordeum	*brachyantherum*	meadow barley		CalFlora
Leymus	*cinereus*	alkali ryegrass		CDFW
Leymus	*triticoides*	alkali ryegrass		CDFW
Melica	*bulbosa*	oniongrass		CalFlora
Melica	*stricta*	nodding Melica		CDFW
Muhlenbergia	*richardsonis*	matted muhly		CDFW
Poa	*annua*	annual blue grass		CDFW
Sphenopholis	*obtusata*	prairie wedge grass	2B.2	CNDDB

Family / Genus	Species	Common name	CRPR	Source
Stipa	*nevadensis*	Nevada needle grass		CalFlora
Stipa	*occidentalis var. pubescens*	common western needle grass		CalFlora
POLEMONIACEAE				
Allophyllum	*gilioides ssp. violaceum*	dense false Gilia		CDFW
Collomia	*linearis*	tiny trumpet		CDFW
Leptodactylon	*pungens*	prickly phlox		CDFW
Linanthus	*pachyphyllus*	sierra Linanthus		CDFW
Phlox	*diffusa*	Douglas' phlox		CDFW
Phlox	*gracilis*	annual phlox		CDFW
Polemonium	*occidentale ssp. occidentale*	western sky pilot		CDFW
POLYGONACEAE				
Eriogonum	*baileyi var. baileyi*	Bailey's buckwheat		CalFlora
Eriogonum	*inflatum*	desert trumpet		CDFW
Eriogonum	*ovalifolium var. nivale*	cushion buckwheat		CalFlora
Eriogonum	*saxatile*	rock buckwheat		CDFW
Eriogonum	*spergulinum var. reddingianum*	spurry buckwheat		CDFW
Eriogonum	*umbellatum var. nevadense*	Sierra sulfur flower		CDFW
Polygonum	*arenastrum*	common knotweed		CDFW
PORTULACEAE				
Montia	*chamissoi*	spring beauty		CDFW
Montia	*fontana*	water Montia		CDFW
RANUNCULACEAE				
Aquilegia	*formosa*	crimson columbine		CDFW
Delphinium	*andersonii*	Anderson larkspur		CDFW
Thalictrum	*fendleri var. fendleri*	Fender's meadow rue		CDFW
Thalictrum	*occidentale*	Western meadow rue		CalFlora
Thalictrum	*sparsiflorum*	few flowered meadow rue		CalFlora
RHAMNACEAE				
Ceanothus	*velutinus var. velutinus*	tobacco brush		CDFW
ROSACEAE				
Amelanchier	*utahensis*	Utah serviceberry		CDFW
Cercocarpus	*ledifolius*	curl leaf mountain mahogany		CDFW
Geum	*macrophyllum*	large-leaved avens		CDFW
Holodiscus	*microphyllus var. glabrescens*	rock Spiraea		CDFW
Purshia	*tridentata*	antelope bitterbrush		CDFW
Potentilla	*gracilis var. elmeri*	Elmer's cinquefoil		CDFW
Prunus	*andersonii*	desert peach		CDFW
Prunus	*emarginata*	bitter cherry		CDFW
Rosa	*woodsii var. ultramontana*	interior rose		CDFW
RUBIACEAE				
Galium	*hypotrichium ssp. hypotrichium*	alpine bedstraw		CalFlora
Galium	*multiflorum*	Kellogg's bedstraw		CDFW
Kelloggia	*galioides*	Kellogia		CalFlora
SALICACEAE				
Populus	*balsamifera ssp. trichocarpa*	black cottonwood		CDFW
Populus	*fremontii*	Fremont cottonwood		CDFW
Populus	*tremuloides*	quaking aspen		CDFW
Salix	*eastwoodiae*	mountain willow		CDFW
Salix	*lutea*	yellow willow		CDFW
Salix	*exigua*	narrowleaf willow		CDFW
Salix	*lasiandra*	Pacific willow		CDFW

Family / Genus	Species	Common name	CRPR	Source
SCROPHULARIACEAE				
Castilleja	*angustifolia*	desert paintbrush		CDFW
Castilleja	*applegatei ssp. disticha*	pine paintbrush		CDFW
Castilleja	*exserta exserta*	common owl's clover		CDFW
Castilleja	*linariifolia*	desert paintbrush		CalFlora
Mimulus	*guttatus*	common monkeyflower		CDFW
Mimulus	*primuloides*	primrose monkeyflower		CalFlora
Penstemon	*patens*	Lone Pine beardtongue		CDFW
Penstemon	*rostriflorus*	beaked penstemon		CalFlora
Penstemon	*rydbergii var. oreocharis*	meadow beardtongue		CDFW
Scrophularia	*californica*	bee plant		CDFW
Verbascum	*thapsus*	mullein		CDFW
Veronica	*americana*	American brooklime		CalFlora
URTICACEAE				
Urtica	*dioica*	stinging nettle		CDFW
VIOLACEAE				
Viola	*purpurea ssp. aurea*	golden violet	2B.2	CDFW
VISCACEAE				
Unk	*unk*	unidentified mistletoe		CDFW

CDFW = Observed on site by CDFW staff, skilled volunteers, or contractors.
CalFlora = General plant list for vicinity from CalFlora "What Grows Here" search; https://www.calflora.org/entry/wgh.html
CNDDB = California Natural Diversity Database. Identified in 6-quadrangle search; not specific to site unless noted.

APPENDIX C

Animals with Potential to Occur in Vicinity of By-Day Creek Ecological Reserve

APPENDIX C

Animals with Potential to Occur in Vicinity of By Day Creek Ecological Reserve

		Status	SGCN	Occurance	Source
Amphibians					
Long-toed salamander	*Ambystoma macrodactylum*				CWHR
Western toad	*Anaxyrus boreas halophilus*			V	MVZ
Pacific tree frog	*Pseudaerus regilla*				CWHR
Great Basin spadefoot	*Spea intermontana*				CWHR
Reptiles					
Snakes					
Rubber boa	*Charina bottae*			P	CDFW
Great Basin rattlesnake	*Crotalis oreganus lutosus*			V	CWHR
Night snake	*Hypsiglena torquata*				CWHR
Common kingsnake	*Lampropeltis getalus*				CWHR
Coachwhip	*Masticophis flagellum*				CWHR
Striped whipsnake	*Masticophis taeniatus*				CWHR
Gopher snake	*Pituophis melanoleucus*				CWHR
Western aquatic garter snake	*Thamnophis couchii*				CWHR
Western terrestrial garter snake	*Thamnophis elegans*			V	MVZ
Lizards					
Northern alligator lizard	*Elgaria coerulea*				CWHR
Long-nosed leopard lizard	*Gambelia wislizenii*				CWHR
Sagebrush lizard	*Sceloporus graciosus*				CWHR
Western fence lizard	*Sceloporus occidentalis*				CWHR
Side-blotched lizard	*Uta stansburiana*				CWHR
Fish					
Lahontan cutthroat trout	*Oncorhynchus clarkii henshawi*	FT	X	P	CDFW
Birds					
Raptors, Buteos, Kites, Eagles, Falcons, Vultures					
Cooper's hawk	*Accipiter cooperii*	WL	X	P	PRBO
Northern goshawk	*Accipiter gentilis*	SSC	X	V	CNDDB
Sharp-shinned hawk	*Accipiter striatus*	WL	X		
Golden eagle	*Aquila chrysaetos*	FP, WL	X	V	
Red-tailed hawk	*Buteo jamaicensus*			P	PRBO
Rough-legged hawk	*Buteo lagopus*			V	
Ferruginous hawk	*Buteo regalis*	WL	X		
Turkey vulture	*Cathartes aura*			V	CDFW
Northern Harrier	*Circus cyaneus*			V	
Northern harrier	*Circus hudsonius*	SSC	X	V	GBBO
Merlin	*Falco columbarius*			V	
Prairie falcon	*Falco mexicanus*	WL	X	P	PRBO
American Peregrine Falcon	*Falco peregrinus*	FP	X	V	
American kestrel	*Falco sparverius*			V	
Bald eagle	*Haliaeetus leucocephalus*	SE, FP	X	V	CDFW
Osprey	*Pandion haliaetus*			V	
Upland Game Birds					
Chukar	*Alectoris chukar*			V	
California quail	*Callipepla californica*			V	
Greater sage grouse	*Centrocercus urophasianus*	SSC	X	V	
Sooty grouse	*Dendragapus fuliginosus*			P	CDFW
Mountain quail	*Oreortyx pictus*			P	PRBO
Shorebirds, Upland Plovers, Snipes					
Spotted sandpiper	*Actitis macularius*			V	
Killdeer	*Charadrius vociferus*			V	

		Status	SGCN	Occurance	Source
Wilson's snipe	*Gallinago delicata*			V	
Pigeons and Doves					
Rock pigeon	*Columba livia*				
Band-tailed pigeon	*Patagioenas fasciata*				
Mourning dove	*Zenaida macroura*			P	PRBO
Owls					
Northern saw-whet owl	*Aegolius acadicus*				
Short-eared owl	*Asio flammeus*	SSC	X		
Long-eared owl	*Asio otus*	SSC	X		
Great horned owl	*Bubo virginianus*				
Northern pigmy owl	*Glaucidium gnoma*			V	GBBO
Western screech owl	*Megascops kennicottii*				
Flammulated owl	*Psiloscops flammeolus*			V	MVZ
Great Gray Owl	*Strix nebulosa*	SE	X		
Common barn owl	*Tyto alba*				
Goatsuckers and Swifts					
White-throated swift	*Aeronautes saxatalis*				
Vaux's swift	*Chaetura vauxi*	SSC	X		
Common nighthawk	*Chordeiles minor*			P	PRBO
Common poorwilll	*Phalaenoptilus nuttallii*			V	PRBO
Hummingbirds					
Calliope hummingbird	*Selasphorus calliope*			V	
Kingfishers					
Belted kingfisher	*Megaceryle alcyon*			V	PRBO
Woodpeckers					
Northern flicker	*Colaptes auratus*			P	PRBO
White-headed woodpecker	*Dryobates albolarvatus*			P	CDFW
Downy woodpecker	*Dryobates pubescens*				
Lewis' woodpecker	*Melanerpes lewis*			V	GBBO
Black-backed woodpecker	*Picoides arcticus*				
Hairy woodpecker	*Picoides villosus*			P	PRBO
Red-breasted sapsucker	*Sphyrapicus ruber*			P	PRBO
Williamson's sapsucker	*Sphyrapicus thyroideus*			P	CDFW
Tyrant Flycatchers					
Olive-sided flycatcher	*Contopus cooperi*			P	PRBO
Western wood pewee	*Contopus sordidulus*			P	PRBO
Hammond's flycatcher	*Empidonax hammondii*				
Dusky flycatcher	*Empidonax oberholseri*			P	PRBO
Cordilleran flycatcher	*Empidonax occidentalis*			V	
Willow flycatcher	*Empidonax traillii*	SE	X	V	GBBO
Gray flycatcher	*Empidonax wrightii*			V	PRBO
Ash-throated flycatcher	*Myiarchus cinerascens*			V	GBBO
Say's phoebe	*Sayornis saya*			V	
Western kingbird	*Tyrannus verticalis*			V	GBBO
Shrikes and vireos					
Loggerhead shrike	*Lanius ludovicianus*	SSC	X	V	
Cassin's vireo	*Vireo cassinii*			V	GBBO
Warbling vireo	*Vireo gilvus*			P	PRBO
Plumbeous vireo	*Vireo plumbeus*				
Crows and allies					
Common Raven	*Corvus corax*			P	PRBO

		Status	SGCN	Occurance	Source
Steller's jay	*Cyanocitta stelleri*			P	PRBO
Pinyon jay	*Gymnorhinus cyanocephalus*			V	
Clark's nutcracker	*Nucifraga columbiana*			P	PRBO
Black-billed magpie	*Pica hudsonia*			P	PRBO
Larks					
California horned lark	*Eremophila alpestris actica*	WL	X	V	
Swallows					
Barn swallow	*Hirundo rustica*			V	GBBO
Cliff swallow	*Petrochelidon pyrrhonota*			P	PRBO
Bank swallow	*Riparia riparia*	ST	X	V	CNDDB
Northern rough-winged swallow	*Stelgidopteryx serripennis*			V	GBBO
Tree swallow	*Tachycineta bicolor*			P	PRBO
Violet-green swallow	*Tachycineta thalassina*			P	PRBO
Chickadee and allies					
Mountain chickadee	*Poecile gambeli*			P	PRBO
Bushtit	*Psaltriparus minimus*			V	GBBO
Nuthatches and Creepers					
Brown creeper	*Certhia americana*			P	PRBO
Red-breasted nuthatch	*Sitta canadensis*			P	PRBO
White-breasted nuthatch	*Sitta carolinensis*			P	PRBO
Pygmy nuthatch	*Sitta pygmaea*			P	PRBO
Wrens					
Canyon wren	*Catherpes mexicanus*				
Rock wren	*Salpinctes obsoletus*			P	PRBO
Bewick's wren	*Thryomanes bewickii*			P	PRBO
House wren	*Troglodytes aedon*			P	PRBO
Old World Warblers, Thrushes and allies					
Hermit thrush	*Catharus guttatus*			V	GBBO
Swainson's thrush	*Catharus ustulatus*			V	GBBO
American dipper	*Cinclus mexicanus*			V	PRBO
Townsend's solitaire	*Myadestes townsendi*			P	PRBO
Townsend's solitaire	*Myadestes townsendi*			P	PRBO
Blue-gray gnatcatcher	*Polioptila caerulea*			V	
Ruby-crowned kinglet	*Regulus calendula*			V	GBBO
Golden crowned kinglet	*Regulus satrapa*			V	GBBO
Mountain bluebird	*Sialia currucoides*			P	PRBO
Western bluebird	*Sialia mexicana*			V	
American robin	*Turdus migratorius*			P	PRBO
Wood-Warblers					
Wilson's warbler	*Cardellina pusilla*			P	CDFW
MacGillivray's warbler	*Geothlypis tolmiei*			P	PRBO
Common yellowthroat	*Geothlypis trichas*			V	PRBO
Black and white warbler	*Mniotilta varia*				
Orange-crowned warbler	*Oreothlypis celata*			P	PRBO
Nashville warbler	*Oreothlypis ruficapilla*			P	PRBO
Virginia's warbler	*Oreothlypis virginiae*	WL	X		
Black-throated blue warbler	*Setophaga caerulescen*				
Yellow-rumped warbler	*Setophaga coronata*			P	PRBO
Blackburnian warbler	*Setophaga fusca*				
Black-throated gray warbler	*Setophaga nigrescens*				
Hermit warbler	*Setophaga occidentalis*				
Yellow warbler	*Setophaga petechia*	SSC	X	P	PRBO
American redstart	*Setophaga ruticilla*				

		Status	SGCN	Occurance	Source
Thrashers					
Sage thrasher	*Oreoscoptes montanus*				
Pipits					
American pipit	*Anthus rubescens*				
Waxwings					
Cedar waxwing	*Bomycilla cedrorum*			V	
Pine Sisken and Goldfinch					
Pine siskin	*Spinus pinus*			V	
Lesser goldfinch	*Spinus psaltria*				
American goldfinch	*Spinus tristis*				
Emberizine Sparrows and Allies					
Dark-eyed junco	*Junco hyemalis*			P	PRBO
Song sparrow	*Melospiza melodia*			P	CDFW
Savannah sparrow	*Passerculus sandwichensis*				
Fox sparrow	*Passerella iliaca*			P	PRBO
Green-tailed towhee	*Pipilo chlorurus*			P	PRBO
Spotted towhee	*Pipilo maculatus*			P	PRBO
Vesper sparrow	*Pooecetes gramineus*			V	CWHR
Brewer's sparrow	*Spizella breweri*			P	PRBO
Chipping sparrow	*Spizella passerina*				
White-throated sparrow	*Zonotrichia albicollis*				
Golden-crowned sparrow	*Zonotrichia atricapilla*			V	
White-crowned sparrow	*Zonotrichia leucophrys*			P	PRBO
Tanagers					
Western tanager	*Piranga ludoviciana*			P	PRBO
Icterids and Starlings					
Red-winged blackbird	*Agelaius phoeniceus*			V	PRBO
Brewer's blackbird	*Euphagus cyanocephalus*			V	PRBO
Bullock's oriole	*Icterus bullockii*			V	GBBO
Brown-headed cowbird	*Molothrus ater*			P	CDFW
Western meadowlark	*Sturnella neglecta*			V	CDFW
European starling	*Sturnus vulgaris*			V	PRBO
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*			V	GBBO
Finches and Old-World Sparrows					
Cassin's finch	*Haemorhous cassinii*			P	PRBO
House finch	*Haemorhous mexicanus*			P	CDFW
Red crossbill	*Loxia curvirostra*			V	GBBO
House sparrow	*Passer domesticus*			V	GBBO
Grosbeaks and Dickcissel					
Evening grosbeak	*Coccothraustes vespertinus*				
Lazuli bunting	*Passerina amoena*			P	CDFW
Black-headed grosbeak	*Pheucticus melanocephalus*			P	PRBO
Pine grosbeak	*Pinicola enucleator*				
Mammals					
Artiodactyla (Order)					
Mule deer	*Odocoileus hemionus*			P	CDFW
Sierra Nevada bighorn sheep	*Ovis canadensis sierrae*	SE, FP, FE	X	H	MVZ
Carnivora (Order)					
Ring-tailed cat	*Bassariscus astutus*	FP	X	V	CWHR

		Status	SGCN	Occurance	Source
Coyote	*Canis latrans*			P	CDFW
California Wolverine	*Gulo gulo*	ST, FP	X	V	CNDDB
River otter	*Lutra canadensis*				CWHR
Bobcat	*Lynx rufus*			V	CDFW
Sierra marten	*Martes caurina sierrae*			V	CNDDB
Pacific fisher	*Martes pennanti*				CWHR
Striped skunk	*Mephitis mephitis*			V	MVZ
Long-tailed weasel	*Mustela frenata*			V	MVZ
Raccoon	*Procyon lotor*			V	MVZ
Mountain lion	*Puma concolor*			P	CDFW
Western spotted skunk	*Spilogale gracilis*				CWHR
American badger	*Taxidea taxus*	SSC	X	V	CNDDB
American black bear	*Ursus americanus*			P	CDFW
Sierra Nevada red fox	*Vulpes vulpes necator*	ST	X	V	CNDDB
Lagomorpha (Order)					
Sierra Nevada snowshoe hare	*Lepus americanus tahoensis*	SSC	X		CNDDB
Black-tailed jackrabbit	*Lepus californicus*			V	MVZ
Western white-tailed jackrabbit	*Lepus townsendii townsendii*	SSC	X	V	MVZ
Nuttail's cottontail	*Sylvilagus nuttalli*				
Rodentia (Order)					
White-tailed antelope squirrel	*Ammospermophilus leucurus*				
Sierra Nevada Mountain Beaver	*Aplodontia rufa californica*	SSC	X	V	CNDDB
American beaver	*Castor canadensis*				
Common porcupine	*Erethizon dorsatum*				
Northern flying squirrel	*Glaucomys sabrinus*				
Yellow-bellied marmot	*Marmota flaviventris*				
Montane vole	*Microtus montanus*			V	MVZ
Long-tailed vole	*Microtus longicaudus*			V	MVZ
House mouse	*Mus musculus*				
Bushy-tailed woodrat	*Neotoma cinerea*			V	MVZ
Common muskrat	*Ondatra zibethicus*				
Northern grasshopper mouse	*Onychomys leucogaster*				
California ground squirrel	*Otospermophilus beecheyi*				
Great Basin pocket mouse	*Perognathus parvus*			V	MVZ
Deer mouse	*Peromyscus maniculatus*			V	MVZ
Pinyon mouse	*Peromyscus truei*				
Heather vole	*Phenacomys intermedius*				
Western harvest mouse	*Reithrodontomys megalotis*				
Broad-footed mole	*Scapanis latimanus*				
Western gray squirrel	*Sciurus griseus*				
Water shrew	*Sorex palustris*			V	MVZ
Vagrant shrew	*Sorex vagrans*			V	MVZ
Yellow pine chipmunk	*Tamias amoenis*			V	MVZ
Least chipmunk	*Tamius minimus*			V	MVZ
Lodgepole chipmunk	*Tamius speciosus*			V	MVZ
Uinta chipmunk	*Tamias umbrinus*			V	MVZ
Douglas squirrel	*Tamiasciurus douglasii*			V	MVZ
Northern pocket gopher	*Thomomys talpiodes*			V	MVZ
Belding's ground squirrel	*Urocitellus beldingi*			V	MVZ
Western jumping mouse	*Zapus princeps*			V	MVZ
Chiroptera (Order)					
Pallid bat	*Antrozous pallidus*	SSC	X	V	CNDDB
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC	X		CWHR
Spotted bat	*Euderma maculatum*	SSC	X		CWHR
Silver-haired bat	*Lasionycteris noctivagans*			V	CNDDB
Long-eared myotis	*Myotis evotis*				CWHR
Little brown myotis	*Myotis lucifugus*				CWHR

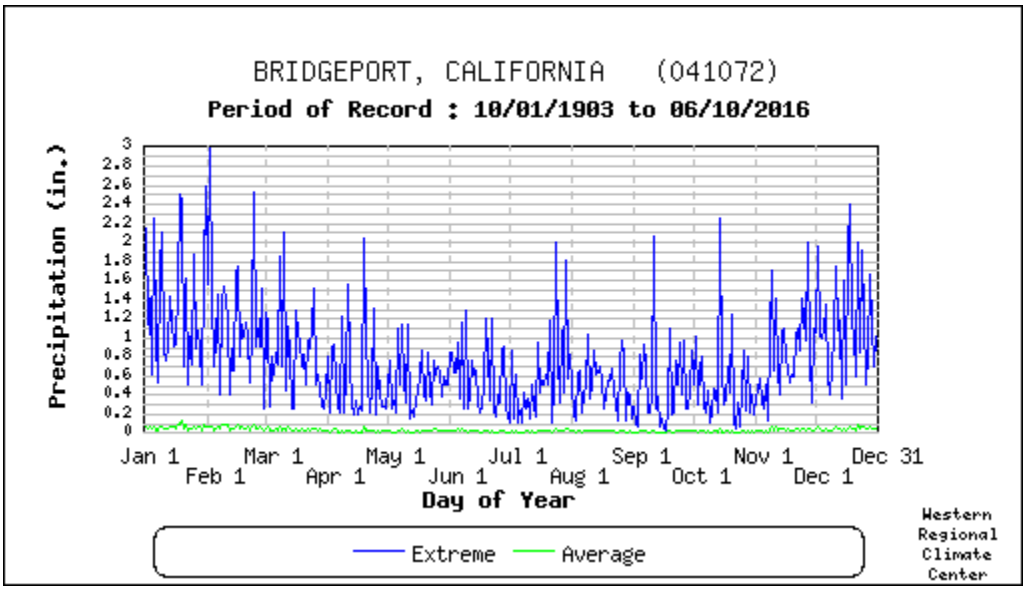
		Status	SGCN	Occurance	Source
Fringed myotis	*Myotis thysanodes*			V	CNDDB
Long-legged myotis	*Myotis volans*			V	MVZ
Yuma myotis	*Myotis yumanensis*			V	CNDDB

SE = State Endangered
ST = State Threatened
FE = Federally Endangered
FT = Federally Threatened
FP = State Fully Protected
SGCN = Species of Greatest Conservation Need, State Wildlife Action Plan 2015
SSC = State Species of Special Concern
WL = State Watch List species
P = Present on Ecological Reserve
V = Record of species in the vicinity of the Ecological Reserve
H = Historic specimen record

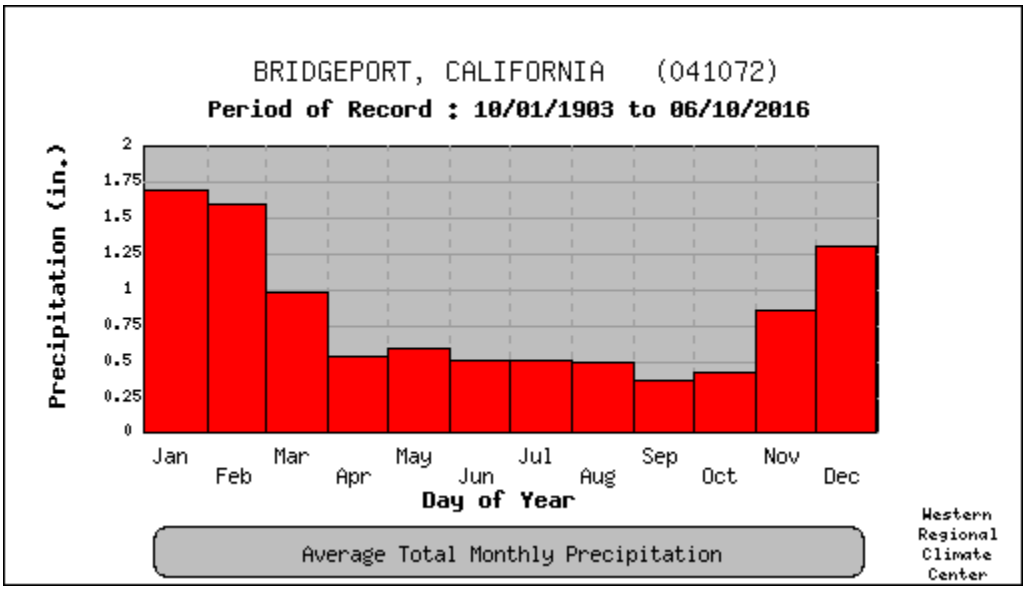
CDFW = Observed on site by CDFW staff, skilled volunteers, or contractors.
CNDDB = California Natural Diversity Database. Identified in 6-quadrangle search; not specific to site unless noted
CWHR = California Wildlife Habitat Relationships system
PRBO = Point Blue Bird Observatory record (Point Blue)
GBBO = Great Basin Bird Observatory record
MVZ = UC Berkeley Museum of Vertebrate Zoology (ARCTOS specimen search)

APPENDIX D

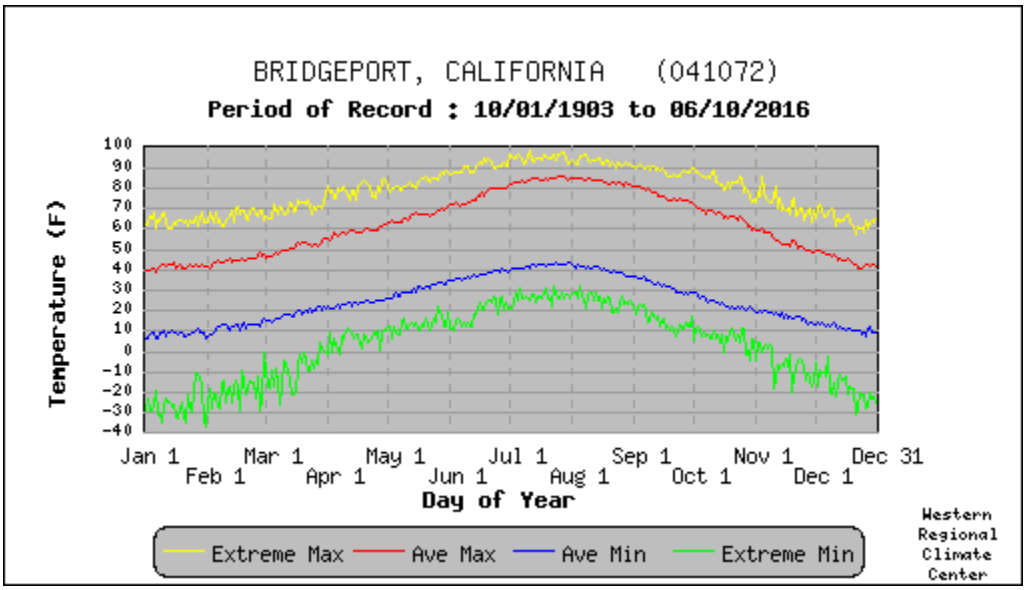
Climatic Information



D1. Extreme and average precipitation by month for the Bridgeport Valley area, Mono County, CA.



D2. Average total monthly precipitation for the Bridgeport Valley area, Mono County, CA.



D3. Average daily temperature averages and extremes for the Bridgeport Valley area, Mono County, CA.

APPENDIX E

ENVIRONMENTAL REVIEW

ENVIRONMENTAL CHECKLIST FORM

PROJECT DESCRIPTION AND BACKGROUND

1. **Project Title:** By-Day Creek Ecological Reserve (BDCER) Land Management Plan (LMP)

2. **Lead agency name and address:** California Department of Fish and Wildlife (CDFW), Region 6- Inland Deserts, 3602 Inland Empire Blvd. Suite C-220, Ontario, CA 91764

3. **Contact person and phone number:** Alisa Ellsworth, Senior Environmental Scientist, phone: (760) 872-1173

4. **Project Location:** By-Day Creek Ecological Reserve consists of 460-acres of undeveloped land located 5-miles northwest of the community of Bridgeport, County of Mono. The property is located in portions of Sections 21, 22, and 28, in Township 5 North, Range 24 East, Mount Diablo Base Meridian. It is mapped on the Mount Jackson 7.5 Minute USGS topographic quadrangle. The approximate geographic coordinates of the project are: 38.2719, -119.3278.

5. **Project sponsor's name and address:** Same as above.

6. **General plan description:** Resource Management (RM).

7. **Zoning:** N/A

8. **Description of project:** CDFW has prepared an LMP for the BDCER. The LMP establishes management goals and tasks that will ensure the long-term conservation of wildlife (invertebrates, amphibians, reptiles, birds, and mammals), special-status plants and plant communities, and their habitats on the BDCER. The LMP also describes appropriate public uses of the BDCER and provides environmental analysis of land management tasks and public uses.

9. **Surrounding land uses and setting; briefly describe the project's surroundings:** The BDCER is located along By-Day Creek in Mono County. The area is composed of montane aquatic and riparian habitat, aspen groves, meadows, sagebrush scrub, and forested hillsides. Public Land (US Forest Service) surrounds most of the property, except for a 20-acre private property adjacent to the southern boundary of the Ecological Reserve. Surrounding land uses include livestock grazing, passive recreation, hunting, and motorized use of the access road which is gated at the Ecological Reserve boundary.

10. **Other public agencies whose approval is required (e.g. permits, financial approval, or participation agreements):** None.

11. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?:** In compliance with PRC §21080.3.1 and the CDFW Tribal Communication and Consultation Policy, on April 5, 2019, CDFW requested a list of Tribes potentially affected by the LMP from the Native American Heritage Commission (NAHC). On April 25, 2019, upon receipt of the NAHC list of Tribes and contacts, CDFW provided official notification of the LMP by mail to those contacts as well as to those Tribes that had requested CEQA notification from CDFW for the region. The notification resulted in one request for consultation from which resulted in staff level communication and a review of the draft LMP. The resulting comments were integrated into the current document.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project. Please see the checklist beginning on page 4 for additional information.

☐	Aesthetics	☐	Agriculture and Forestry	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology/Soils
☐	Greenhouse Gas Emissions	☐	Hazards and Hazardous Materials	☐	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☐	Noise
☐	Population/Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Tribal Cultural Resources	☐	Utilities/Service Systems
☐	Mandatory Findings of Significance				

DETERMINATION:

On the basis of this initial evaluation:

☒	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.

/S/ Leslie MacNair	**2/20/2020**
Signature	Date
Leslie MacNair	Regional Manager
Printed Name	Title
California Department of Fish and Wildlife	Inland Deserts - 6
Agency	Region

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a) Earlier Analysis Used. Identify and state where they are available for review.
    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

    a) the significance criteria or threshold, if any, used to evaluate each question; and
    b) the mitigation measure identified, if any, to reduce the impact to less than significance.

This initial study was prepared in accordance with the provisions of CEQA and the State CEQA Guidelines to identify and evaluate the potential environmental impacts of operating the BDCER under the provisions of the BDCER LMP. This initial study concludes that adoption and implementation of the LMP would result in "less-than-significant impacts" or "no impacts" on the environment.

The LMP provides the environmental and regulatory setting description, as well as the project description, used for this CEQA analysis. Sections 1 through 3 serve as the environmental setting: Section 1 provides the purpose of the management plan and the BDCER and gives an overview of the planning process; Section 2 describes the physical and cultural characteristics and features of the BDCER, including the history of its acquisition by CDFW, current and past land uses, the geological and hydrological setting, and the area's prehistoric and historical context; and Section 3 presents an inventory of plant communities and species that are found on or that may use the BDCER. Sections 4 serves as the project description and defines the elements, goals, and objectives of the LMP; outlines the tasks that will be undertaken to meets these goals and objectives; and summarizes the environmental impacts expected to result from land management tasks; Section 5 summarizes the operations and maintenance tasks, and personnel needed to meet the goals of the plan.

With the exception of minor operations, maintenance activities, and stewardship activities, any physical changes that are not currently approved will require subsequent authorizations and approvals. Because any such possible changes will be a part of projects, which have not yet been conceived, designed or funded, it is not possible to reasonably evaluate the impacts of any such subsequent projects. Any such subsequent projects not included within the scope of this project will require analysis pursuant to CEQA when such projects are conceived and proposed.

Aesthetics

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS:				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion

a), b), d) No Impact. Adopting and implementing the BDCER LMP would preserve or enhance existing native vegetation and natural visual resources and would not involve the construction of any new buildings or outdoor lighting. Therefore, adoption of the LMP would not adversely affect scenic vistas, views, visual character, or scenic resources, nor would it create light or glare effects.

c) Less than Significant Impact. Some LMP management tasks would involve minor modifications to the existing landscape (e.g., signage and fencing). However, these improvements would be small in scale and designed to be in keeping with rural character and natural environment of the Ecological Reserve. Therefore, LMP adoption would not substantially degrade the existing visual character or quality of the site and its surroundings.

Agriculture and Forest Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FOREST 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. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
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?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion

a), b), c), d), and e) No Impact. Adoption and implementation of the BDCER LMP would conserve existing land resources and does not prohibit managed grazing for ecological benefit. It would not result in construction of new structures or impervious surfaces, beyond the installation of signs, kiosks, fencing, and, potentially, small devices needed for scientific research. The BDCER does not contain lands designated as Prime Farmland or Unique Farmland. There are not any Williamson Act contracts. There would be no impact.

Air Quality

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
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)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Discussion

a), d), e) No Impact. The BDCER is located in a remote area far from substantial populations or potentially sensitive receptors. No long-term operational emissions are anticipated, no net increase in automobile trips to and from BDCER are expected, nor are objectionable odors expected to affect a substantial number of people as a result of implementing the proposed LMP. Some of the proposed LMP management tasks may involve the temporary use of heavy equipment (e.g., road maintenance, habitat revegetation/restoration projects), and therefore may result in the temporary 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.

b), c) Less Than Significant Impact. The LMP suggests evaluating the benefits of prescribed fire as an enhancement/restoration technique. If prescribed burns are implemented, CDFW would register with the statewide Prescribed Fire Information Reporting System, coordinate burns with the Great Basin Unified Air Pollution Control District and prepare and implement an associated Local Smoke Management Plan. These measures would be sufficient to prevent air pollutant emissions from contributing to an air quality violation. As a result, this potential impact of the proposed LMP on air quality would be less than significant.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFW would subject them to CEQA review according to CEQA Guidelines Section 15168, in light of the information contained in this document, to determine if additional CEQA documentation is necessary. The type of CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

Biological Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES: Would the project:				
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?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

a), b), c), d) Less Than Significant Impact. The BDCER LMP was developed with the primary purpose of managing the property to achieve CDFW's mission to protect and enhance wildlife values. Implementation of the LMP would maintain the Ecological Reserve in a natural state and allow only compatible uses to occur.

One species that has been listed as federally threatened, Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), occurs on the property in By-Day Creek. One wildlife species designated by CDFW as a bird species of special concern is known to occur in riparian vegetation at BDCER, the yellow warbler (*Setophaga petechia*). Other special status species that are likely to occur at BDCER are the northern goshawk (*Accipiter gentiles*) (CA species of special concern, willow flycatcher (*Empidonax traillii*) (CA endangered), American badger (*Taxidea taxus*) (CA species of special concern), and Sierra marten (*Martes caurina sierra*) (CA Species of Greatest Conservation Need). No rare plant species have been identified at BDCER.

Although the purpose of the LMP is to protect and enhance wildlife values in the BDCER, some LMP tasks could temporarily disturb natural habitats and species, including sensitive natural

communities such as the stream, aspen groves, and meadows. Tasks that may result in limited ground disturbance (i.e., typically 1 acre or less) or in short-term increases in dust, noise, vibrations, human activity, and erosion would include minor thinning of conifer encroachment in meadows and aspen stands, weed control, installation of fences and signs, road maintenance, and performance of scientific research tasks.

For these tasks, the LMP requires appropriate measures to avoid or minimize adverse effects on biological resources. These measures include directing the public away from sensitive habitats (e.g. fishing and road closures), implementing erosion and sedimentation control measures, preventing the spread of weeds, and avoiding direct impacts on biological resources (e.g., permanent loss or alteration of habitat, mortality, or injury). Implementation of these measures alongside other LMP tasks would ensure that any adverse effects on special-status species or sensitive natural communities, including wetlands, are less than significant.

Furthermore, several federal and state agencies potentially have regulatory authority over LMP tasks that could adversely affect special-status species and sensitive natural communities (See LMP Section 1.D). The LMP requires appropriate agency coordination and compliance with the terms and conditions of any permits or other authorizations issued by these agencies to protect biological resources, further ensuring that any adverse effects on special-status species or sensitive natural communities would be less than significant.

Despite the potential for temporary, small-scale impacts on special-status species and sensitive natural communities because of some LMP tasks, the primary purpose of the LMP is to protect and enhance wildlife values in the BDCER. CDFW would manage, enhance, or restore biological resources in the BDCER consistent with the LMP, with the long-term goal of improving habitat conditions and enhancing special-status plant and animal populations at the Ecological Reserve. Because the LMP incorporates specific minimization and avoidance measures, the temporary and small-scale impacts on special-status species or sensitive natural communities that could result from LMP implementation would be less than significant, and, overall, implementation of the LMP is expected to have a net beneficial effect on biological resources over the long term.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFW would subject them to further CEQA review according to CEQA Guidelines Section 15168, in light of the information contained in this document, to determine if additional CEQA documentation is necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

e), f) No Impact. The BDCER LMP is consistent with the Mono County General Plan, Conservation-Open Space Element (2015). There are no other applicable regional, local, or state plans addressing biological resources, nor do any adopted Habitat Conservation Plans or Natural Community Conservation Plans apply to the Ecological Reserve. There would be no impact.

Cultural Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES: Would the project:				

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	☒

Discussion

a), b), c), d) No Impact. Implementing the BDCER LMP will not adversely affect historical, archaeological, or paleontological resources, or disturb any human remains. The goals and tasks in the LMP include inventory and protection of cultural resources.

In compliance with PRC §21080.3.1 and the CDFW Tribal Communication and Consultation Policy, on April 5, 2019, CDFW requested a list of Tribes potentially affected by the LMP from the Native American Heritage Commission (NAHC). On April 25, 2019, upon receipt of the NAHC list of Tribes and contacts, CDFW provided official notification of the LMP by mail to those contacts as well as to those Tribes that had requested CEQA notification from CDFW for the region. Notification letters were sent to the Utu Utu Gwaitu Tribe of the Benton Paiute Reservation, Bishop Paiute Tribe, Big Pine Paiute Tribe of the Owens Valley, Bridgeport Paiute Indian Colony, Walker River Reservation (Nevada), and the Washoe Tribe of Nevada and California. The notification resulted in one request for consultation from the Bridgeport Indian Colony which resulted in staff level communication and a review of the draft LMP. The resulting comments were integrated into the current document.

In addition, prior to implementation of any projects that are consistent with the LMP, the CDFW Tribal Consultation Policy, and CDFW would subject them to further CEQA review according to CEQA Guidelines Section 15168, in light of the information contained in this document, to determine if additional CEQA documentation is necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

Geology and Soils

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS: Would the project:				
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?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒

iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

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 pre-commitment to any substantive changes to the Ecological Reserve. 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 buildings, 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 ground disturbance, which could lead to soil erosion or loss of topsoil. These tasks include small-scale restoration or enhancement of creeks and meadows, minor thinning of conifer encroachment in meadows and aspen stands, weed control, installation of fences and signs, road maintenance, and performance of scientific research tasks. Although these activities have potential to temporarily cause erosion, over the long term they would achieve a net decrease in soil loss, by supporting and protecting healthy native plant and animal communities and habitats. Additionally, the LMP requires that measures be implemented using best practices to minimize adverse erosion effects during management activities. Furthermore, all management activities would conform to regulatory requirements regarding soil erosion. Therefore, implementation of the LMP would have a less-than significant short-term effect as a result of erosion and loss of topsoil, and a net beneficial effect over the long term.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFW would subject them to further CEQA review according to CEQA Guidelines Section 15168, in light of the information contained in this document, to determine if additional CEQA documentation is necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

Greenhouse Gas Emissions

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion

a), b) Less Than Significant Impact. The BDCER LMP would not generate greenhouse gas (GHG) emissions, either directly or indirectly, that would have a significant impact on the environment. The activities required to implement the LMP mostly would continue the current BDCER operations and level of public use, and so would not result in a measurable net increase in GHG emissions emanating from the BDCER or in off-site emissions related to its management and use. The LMP suggests evaluating the benefits of prescribed fire as an enhancement/ restoration technique. If prescribed burns are implemented, they will generate greenhouse gas emissions, but the duration and extent of the burns would be limited and localized, and would be implemented in compliance with conditions enforced by the Great Basin Unified Air Pollution Control District. Furthermore, small management fires would be implemented in part to prevent much larger catastrophic fires and the significant GHG emissions associated with such events. Therefore, implementing the LMP would not generate greenhouse gas emissions that would have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Further, implementing the goals and tasks of the LMP will most likely lead to an overall reduction in greenhouse gases through habitat preservation, wetland restoration, and carbon sequestration.

In addition, prior to implementation of any projects that are consistent with the LMP, CDFW would subject them to further CEQA review according to CEQA Guidelines Section 15168, in light of the information contained in this document, to determine if additional CEQA documentation is necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

Hazards and Hazardous Materials

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒

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?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
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?	☐	☐	☒	☐

Discussion

a), c), d), e), f), g), No Impact. The LMP does not require the routine use, transport or disposal of hazardous materials. Herbicide or pesticide treatments, if needed to control invasive species, would be targeted to avoid unnecessary impacts to sensitive biological resources and conducted by a certified applicator using appropriate safety precautions. The BDCER 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 BDCER; therefore, LMP adoption will not pose any safety hazards to aircraft or people residing or working in the project area. The BDCER is not located on a site that is included on a list of hazardous materials sites compiles pursuant to California Government Code Section 65962.5. Implementation of the LMP would not interfere with an adopted emergency response plan or emergency evacuation plan.

b) Less Than Significant Impact: Some LMP tasks could involve the use of heavy equipment and vehicles, which require small amounts of hazardous materials such as oils, fuels, and other fluids. Also, weed control may employ herbicides that could be toxic to some organisms at certain concentrations. However, implementation of the LMP would not result in an increase in the size or frequency of activities requiring equipment, vehicle use, or potentially toxic chemicals relative to current conditions. Furthermore, the LMP requires the use of spill prevention and control best management practices (BMPs) during equipment use, to avoid or minimize potential adverse effects from spills or leaks. The LMP also specifies that herbicides be applied safely and effectively, in compliance with herbicide label instructions, California and federal law, and CDFW rules that aim to protect the environment. With implementation of these measures, this impact would be less than significant.

h) Less Than Significant Impact: The LMP suggests evaluating the benefits of prescribed fire as an enhancement/restoration technique; however, no specific prescribed burn project has been identified in the proposed LMP. If proposed in a Forest Management Plan or similar

document, such a plan would be consistent with the LMP and would be subject to further CEQA review according to CEQA Guidelines Section 15168, in light of the information contained in this document, to determine if additional CEQA documentation is necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

Hydrology and Water Quality

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
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)?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
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?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
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?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒

Discussion

a), f) Less Than Significant Impact. The BDCER is located in the planning area for, and consistent with the objectives of, the Lahontan Regional Water Quality Control Board's Water Quality Control Plan for the Lahontan Region (Basin Plan 1995). The Basin Plan establishes

water quality standards for surface and ground waters, identifies beneficial uses, water quality problems, and provides control measures. Under implementation of the LMP, the BDCER will remain largely undeveloped and in a natural or semi-natural state. The proposed LMP would not require any substantial construction or excavation, so management tasks would not contribute any pollutants that might degrade the beneficial uses of downstream waters. Instead, the area will be managed for conservation of natural resources and compatible public uses. Goals and tasks in the LMP require that measures be implemented to abate erosion and protect aquatic habitats and water quality from impacts that could result from routine operations. Spill prevention and control BMPs would be implemented to prevent and contain any leaks or spills of fluids used for equipment and vehicles. These measures would reduce potential temporary adverse effects of management activities to less than significant levels. Furthermore, the LMP prescribes tasks that will ultimately enhance water quality; for example, the LMP calls for actions to restore watersheds, maintain healthy wildlife and plant populations, control invasive weeds, achieve sustainable fire regimes, and support biodiversity. Net project results on hydrology and water quality would be beneficial over the long term. LMP tasks will comply with all applicable water quality requirements adopted by the Lahontan Regional Water Quality Control Board. If applicable, this includes compliance with the conditions of general waste discharge requirements (GWDR) and waste discharge requirement waivers for timber and vegetation management.

In addition, LMP goals and tasks require that all management actions meet applicable regulatory requirements protecting aquatic habitats and water quality. Requirements include CDFW regulations, applicable sections of the Clean Water Act, and relevant county policies and ordinances. Actions necessary to comply with these regulatory requirements would further protect water resources. Also, before implementing any projects that are consistent with the LMP, CDFW would subject them to further CEQA review according to CEQA Guidelines Section 15168, in light of the information contained in this document, to determine if additional CEQA documentation is necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

b), c), d), e), g), h), i), j) No Impact. Implementation of the LMP would require no new wells or drilling; therefore, it would cause no decrease in aquifer volumes. The BDCER would remain largely undeveloped and managed for conservation of natural resources; thus, there would be no impacts on groundwater recharge, elevations, or volumes. The LMP does not call for the use of storm drain systems, the construction of structures or new sources of surface runoff, the use of a dam, or the redirection of stream courses or drainage patterns. Therefore, adoption and implementation of the LMP would not threaten storm drain capacity, increase 100-year flood hazards, add to surface runoff, create the potential for failure of a levee or dam, or cause substantial erosion or siltation. Restoration and monitoring activities, if implemented, would abate erosion and likely would reduce the risk of mudflows and landslides. Lastly, LMP implementation would not involve the construction of new housing or the exposure of more people to hazards involving floods, impaired -water quality, or mudflows. There would be no impact.

Land Use and Planning

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING: Would the project:				

a) Physically divide an established community?	☐	☐	☐	☒
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?	☐	☐	☐	☒
c) Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?	☐	☐	☐	☒

Discussion

a), b), c) No Impact. Under implementation of the LMP, the BDCER will remain largely undeveloped and in a natural or semi-natural state. The area will continue to be managed for conservation of natural resources and compatible public uses. The proposed 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. The LMP is consistent with all applicable land use plans, policies, and regulations. Applicable regional plans and rules consist of the Mono County General Plan (2015), related county ordinances, and the Lahontan RWQCB's Basin Plan (1995). No adopted Habitat Conservation Plans or Natural Community Conservation Plans apply to the Ecological Reserve. There would be no impact.

Mineral Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES: Would the project:				
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

a), b) No Impact. Implementation of the LMP would not result in resource extraction. The BDCER is not located within a mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan; therefore, the proposed LMP would not 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 or conflict with mineral resource protection plans or result in the loss of a known mineral resource. There would be no impact.

Noise

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XII. NOISE: Would the project result in:				
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?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

a), b), d) Less Than Significant Impact. Visitors to the BDCER and surrounding public lands may occasionally be exposed to temporary noises and ground vibrations resulting from management tasks that require construction equipment or vehicles or power tools such as chainsaws. For example, road and parking area maintenance, fence installation, scientific research tasks, and vegetation and weed management activities could require the temporary use of loud machinery or vehicles and could cause ground vibrations. However, the remote BDCER is surrounded by undeveloped open space with no schools, hospitals, libraries, housing developments, or other sensitive noise receptors nearby. Therefore, there is not potential for a conflict with noise policies or standards. The LMP supports continued use of the property by hunters, who generate noise by discharging firearms. However, any occasional and transient changes in noise levels or ground vibrations would not represent an increase over current conditions. Management tasks would not increase in size or frequency, nor would hunting increase in a manner that prolongs or worsens related noises. Public uses, including hunting, would be managed to avoid crowding and be compatible with the natural character of the Ecological Reserve. Thus, this impact would be less than significant.

c), e), f) No Impact. Adoption and implementation of the LMP would involve no changes that would result in permanent increases in ambient noise, expose additional workers or residents to excessive noise levels, or an increase in the size or frequency of management activities in the area. The BDCER is not located within 2 miles of an airport land use plan or a public airport, or in the vicinity of a private airport. There would be no impact.

Population and Housing

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING: Would the project:				
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)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

a), b), c) No Impact. The LMP would not involve any change in housing nor would it induce growth by the provision of new infrastructure or by the removal of any barriers to growth. Implementation of some of the management goals and tasks may require additional staff hours, but this would not be anticipated to induce a population growth that would require additional housing. There would be no impact on population and housing.

Public Services

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES:				
a) Would the project 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?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion

a), b), c), d), e) No Impact. Implementation of the LMP would not require substantial changes to existing public service levels. Implementation of public use and facilities could require minimal increase in staff hours per year by CDFW, but these potential minimal increases do not create the need for new or altered facilities. No adverse environmental effects would result from alterations in public services or efforts to maintain service standards; thus, there would be no impact.

Recreation

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION:				
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

a), b) No Impact. Adoption and implementation of the proposed LMP would not significantly increase the levels of recreational use the BDCER area. The number of these recreational users would not exceed the carrying capacity of the natural resources or degrade existing natural features. The proposed LMP does not require construction of any recreational facilities. There would be no impact related to changes in recreational resources.

Transportation/ Traffic

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Discussion

a), b), c), d), e), f), g) No Impact. There are no predicted increases in BDCER 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.

Tribal Cultural Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVII. TRIBAL CULTURAL RESOURCES: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☒	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

Discussion

a), b) Less Than Significant Impact. Implementing the BDCER LMP will not adversely affect the significance of a tribal cultural resource.

In compliance with PRC §21080.3.1 and the CDFW Tribal Communication and Consultation Policy, on April 5, 2019, CDFW requested a list of Tribes potentially affected by the LMP from the Native American Heritage Commission (NAHC). On April 25, 2019, upon receipt of the NAHC list of Tribes and contacts, CDFW provided official notification of the LMP by mail to those contacts as well as to those Tribes that had requested CEQA notification from CDFW for

the region. Notification letters were sent to the Utu Utu Gwaitu Tribe of the Benton Paiute Reservation, Bishop Paiute Tribe, Big Pine Paiute Tribe of the Owens Valley, Bridgeport Paiute Indian Colony, Walker River Reservation (Nevada), and the Washoe Tribe of Nevada and California. The notification resulted in one request for consultation from the Bridgeport Indian Colony which resulted in staff level communication and a review of the draft LMP. The resulting comments were integrated into the current document. No potential for significant impacts to tribal cultural resources have been identified.

In addition, prior to implementation of any projects that are consistent with the LMP, the CDFW Tribal Consultation Policy, and CDFW would subject them to further CEQA review according to CEQA Guidelines Section 15168, in light of the information contained in this document, to determine if additional CEQA documentation is necessary. The type of additional CEQA review completed would be determined based on CEQA Guidelines Sections 15162-15164.

Utilities and Service Systems

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVIII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
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?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

a), b), c), d), e), f), g) No Impact. Implementation of the LMP would involve no changes in wastewater generation or treatment, use of storm drain facilities, or solid waste disposal, and would create no demand for additional water supplies or entitlements. Small-scale restoration or enhancement projects would make use of existing available water supplies. There would be no impact.

Mandatory Findings of Significance

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE				
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, substantially 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?	☐	☐	☐	☒
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)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Discussion

a) No Impact. The LMP was developed to document management actions that will be undertaken with the purpose of protecting natural and cultural resources in the BDCER. Some activities that may be conducted under the LMP (e.g., hunting and restoration or enhancement activities) could affect the resources listed in the criterion. However, goals and tasks in the LMP include protection measures for these resources that would eliminate or minimize potential impacts. Ultimately, adoption of the LMP and implementation of the goals and tasks contained therein would have a net benefit in protecting and enhancing the environment, including biological and cultural resources.

b) Less Than Significant Impact. Adoption of the proposed LMP and implementation of the goals and tasks contained therein would not require any substantial infrastructure improvements or new construction, and LMP related activities would be conducted following all applicable regulatory requirements. In addition, implementation of the LMP is anticipated to result in a net benefit to environmental conditions. Therefore, although there is a potential that some temporary and less-than-significant impacts on the environment could occur, none of these impacts would be cumulatively considerable.

c) No Impact. The proposed project is adoption and implementation of a land management plan that generally continues the existing uses of the Ecological Reserve, with improvements to operations and protection and enhancement of the environment. Implementation of the LMP would comply with all applicable laws and regulations. As a result, adoption of the proposed LMP and implementation of the goals and tasks contained therein would not have any direct or indirect environmental effects that would cause substantial adverse effects on human beings.

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; Sundstrom v. County of Mendocino,(1988) 202 Cal.App.3d 296; Leonoff v. Monterey Board of Supervisors, (1990) 222 Cal.App.3d 1337; Eureka Citizens for Responsible Govt. v. City of Eureka (2007) 147 Cal.App.4th 357; Protect the Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal.App.4th at 1109; San Franciscans Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal.App.4th 656.

Revised 2016

Authority: Public Resources Code sections 21083 and 21083.09
Reference: Public Resources Code sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3/ 21084.2 and 21084.3

APPENDIX F

PUBLIC COMMENTS AND CDFW RESPONSES

No public comments were received during the public comment period