Appendix D
Biological and Aquatic Habitat Assessment

Plumas-Sierra Telecommunications
Middle Mile Fiber Project

Biological & Aquatic Habitat Assessment

Plumas-Sierra Telecommunications

Middle Mile Fiber Project

California and Nevada

7 April 2011

Summary

The Plumas-Sierra Rural Electric Cooperative (PSREC) is proposing to build, operate, and maintain a 183 mi long fiber optic communications network in northeastern California and northwestern Nevada (the Proposed Project). The Proposed Project would provide access capabilities for Plumas, Sierra, and Lassen counties in California and a portion of Washoe Co. in Nevada. The Proposed Project would also accommodate future Statewide interconnection of major Public Safety Answering Points, a future California statewide and Nevada public safety network.

Approximately 162 mi of the 183 mi long new fiber cable installation would be placed on existing PSREC pole infrastructure; the remaining ±21 mi would be installed underground. New underground construction will occur for eight mi in the Caltrans US 395 ROW from the CA-NV State Line at Bordertown, Nevada to Hallelujah Junction, California; for approximately one mile in existing NDOT US 395 ROW in T20N, R18E, section 2; and for seven miles in existing city/county/state ROWs within existing developed areas in California. For approximately five miles in the City of Reno, new fiber is proposed to be placed in existing conduits.

In August 2010, Plumas-Sierra Telecommunications (PST) received a $13.77-million dollar American Recovery and Reinvestment Act of 2009 (ARRA) Grant Award to provide fiber cable to their service territory in rural northeastern CA and northwestern NV. The Grant Award is administered by the U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA). Because federal dollars are used to fund the planning and construction activities, it is necessary for the Proposed Project to fully comply with the provisions of the National Environmental Policy Act (NEPA). Therefore an Environmental Assessment (EA) is being prepared to thoroughly analyze the effects of the proposed project.

On 25 February 2010, the California Public Utilities Commission (CPUC) approved a $1,721,280 California Advanced Services Fund (CASF) matching grant for the Proposed Project. The CPUC has determined that California Environmental Quality Act (CEQA) compliance must be demonstrated prior to the release of CASF monies to PST. A combined EA Initial Study/Proposed Mitigated Negative Declaration (IS/Proposed MND) was prepared.

The federal-listed Carson wandering skipper is known from four extant populations, two in Washoe Co., Nevada, one in Lassen Co., California (near Honey Lake). Carson wandering skipper inhabits lowland grasslands on alkaline substrates. The Biological Study Area (BSA) does not cross the margin of Honey Lake or any area dominated by alkaline vegetation.

There are no known occurrences of Carson wandering skipper in the BSA, and the Proposed Project will have no affect on any known occurrences of Carson wandering skipper outside the BSA. The Proposed Project will not affect Carson wandering skipper.

The BSA provides suitable habitat for two federal-listed fish species (Cui-ui and Lahontan cutthroat trout). In the BSA habitat for these two species is restricted to the Truckee River. Completion of the Proposed Project will not result in temporary or permanent impacts to the Truckee River in the BSA. Fiber optic conduit will be placed on the Virginia Street Bridge over the Truckee River. No in-water construction will occur at this crossing. The Proposed Project will not affect Cui-ui or Lahontan cutthroat trout.

A letter was sent by PSREC to the USFWS Reno and USFWS Sacramento offices on 11 February 2011 requesting written concurrence from USFWS of a 'No Effects' determination for the project. In a letter dated 8 March 2011 the USFWS Reno office provided written concurrence that the project is not likely to adversely impact federal listed species. In an email dated 30 March 2011 USFWS Sacramento office concurred with the determination made by the USFWS Reno office.

Waterbodies, west of Big Grizzly Creek (SR70 corridor) in the BSA provide potential habitat for Sierra Nevada yellow-legged frog, a federal-candidate species. There are no known occurrences of Sierra Nevada yellow-legged frog in the BSA. Completion of the Proposed Project will not result in temporary or permanent impacts to waterbodies west of Big Grizzly Creek in the BSA. No in-water construction will occur. With implementation of the appropriate environmental protection measures listed in Chapter 1, the Proposed Project will not affect Sierra Nevada yellow-legged frog.

The BSA provides suitable habitat for the Greater sage-grouse (GSG), a federal-candidate species. The BSA provides potential GSG foraging and nesting habitat only along approximately 1.5 mi of the Red Rock Fire Department Lateral. The BSA does not contain potential Greater sage-grouse leking sites. Completion of the Proposed Project along the Red Rock Fire Department Lateral will consist of hanging fiber optic conduit on existing utility poles within the PSREC ROW. With implementation of the appropriate environmental protection measures listed in Chapter 1, the Proposed Project will not affect GSG.

The BSA east of Big Grizzly Creek (SR 70 corridor) provides marginal habitat for two federal candidate mammal species, Pacific fisher and wolverine. The wolverine is also designated as threatened and fully protected by the State of California. It is unlikely that wolverines or Pacific fisher would den in the BSA because of the presence of ongoing traffic and/or maintenance activities. With implementation of the appropriate environmental

protection measures listed in Chapter 1, the Proposed Project will not affect Pacific fisher or wolverine.

The BSA provides suitable habitat for Webber's ivesia, a federal candidate species (also designated as critically endangered in Nevada). There are no known occurrences of Webber's ivesia in the BSA, and the project will have no affect on any known occurrences of Webber's ivesia outside the BSA. With implementation of the appropriate environmental protection measures listed in Chapter 1, the Proposed Project will not affect Webber's ivesia.

The BSA provides suitable habitat for five California State-listed bird species: Swainson's hawk (threatened), willow flycatcher (endangered), peregrine falcon (endangered), sandhill crane (threatened and fully protected), and bank swallow (threatened). With implementation of the environmental protection measures listed in Chapter 1, the Proposed Project will not affect these species.

The BSA provides suitable habitat for the spotted bat (listed as threatened in NV) and marginal habitat for the Sierra Nevada red fox (listed as threatened in CA). With implementation of the environmental protection measures listed in Chapter 1, the Proposed Project will not affect spotted bat. The BSA is outside the known summer elevation range of the Sierra Nevada red fox. No work will occur in the BSA between 15 November and 15 April when Sierra Nevada red fox could potentially occur at lower elevations. The Proposed Project will not affect Sierra Nevada red fox.

The BSA provides suitable habitat for other special-status plant and wildlife species, including birds of prey and migratory birds. With implementation of the environmental protection measures listed in Chapter 1, the Proposed Project will not adversely affect these species.

Wetland and waters in the BSA were mapped using the National Hydrography Dataset (USGS 15 January 2011), National Wetland Inventory (USFWS 15 January 2011), aerial photographs, and field observations. A formal jurisdictional delineation of wetlands and waters of the U.S. was not conducted in the BSA. The BSA traverses several rivers, perennial and intermittent creeks, irrigation canals, ephemeral drainages, willow thickets, and wet meadows. The largest water features in the BSA are the Middle Fork Feather River, Truckee River, and Susan River. The Middle Fork Feather River is a tributary to the Sacramento River. The Truckee River is tributary to Pyramid Lake, a closed depression in the Great Basin. The Susan River is tributary to Honey Lake, a closed depression entirely in CA. The Proposed Project will not require in-water work. With implementation of the

environmental protection measures listed in Chapter 1, the Proposed Project will not adversely affect wetlands and waters in the BSA.

Invasive plant species were observed in the BSA during reconnaissance level biological surveys. With implementation of the environmental protection measures listed in Chapter 1, the Proposed Project will not affect the establishment or spread of invasive plants.

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List of Abbreviated Terms

ac	acre(s)
ADSS	Aerial Dielectric Self Supporting
ARRA	American Recovery and Reinvestment Act of 2009
BLM	U.S. Bureau of Land Management
BSA	Biological Study Area
CA	California
CAI(s)	Critical Anchor Institution(s)
CalFish	California Cooperative Anadromous Fish and Habitat Data Program
Cal-IPC	California Invasive Plant Council (previously California Exotic Pest Plants Council [CalEPPC])
Caltrans	California Department of Transportation
CASF	California Advanced Services Fund
CDFA	California Department of Food and Agriculture
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Co.	County
CoE	County Office of Education
Corps	Army Corps of Engineers
CPUC	California Public Utilities Commission
CSC	Species of Special Concern
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
CWS	Carson wandering skipper
dbh	Diameter breast height
(C)DFG	California Department of Fish and Game
DPS	distinct population segments
EA	Environmental Assessment
EFH	Essential Fish Habitat
ELFO	Eagle Lake Field Office
EO	Executive Order
ESA	Environmentally Sensitive Area
ESU	Evolutionarily Significant Unit
F	Fahrenheit
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FRCC	Feather River Community College
ft	feet/foot
FYLF	Foothill yellow-legged frog
GBBO	Great Basin Bird Observatory
GPS	Global Position System
GSG	Greater sage-grouse

HDD	Horizontal Directional Drill
IBA	Important Bird Areas
IS/Proposed MND	Initial Study/Proposed Mitigated Negative Declaration
kV	Kilovolt
LCT	Lahontan cutthroat trout
LMUD	Lassen Municipal Utility District
LOP	Limited Operating Period
LSAA	Lake and Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MFFR	Middle Fork Feather River
mi	mile(s)
Mt	Mount
Mts	Mountain
NDA	Nevada Department of Agriculture
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NLF	Northern leopard frog
NMFS	National Marine Fisheries Service, a division of National Oceanic and Atmospheric Administration
NNHP	Nevada Natural Heritage Program
NOC	Network Operating Center
NRCS	Natural Resources Conservation Service
NTIA	National Telecommunications and Information Administration
NV	Nevada
NWR	National Wildlife Refuge
O&M	Operations and Maintenance
PAC(s)	protected activity centers
PDH	Plumas District Hospital
pers. comm.	Personal Communication
PFMC	Pacific Fishery Management Council
PNF	Plumas National Forest
PSREC	Plumas-Sierra Rural Electric Cooperative
PST	Plumas-Sierra Telecommunications
Quad	USGS topographic quadrangle
RMP	Resource Management Plan
ROW(s)	Right-of-way(s)
RUS	Rural Utilities Service
RWQCB	Regional Water Quality Control Board
SEINet	Southwest Environmental Information Network
SFFO	Sierra Front Field Office
SIR	Susanville Indian Rancheria
SNFPA	Sierra Nevada Forest Plan Amendment
SNMB	Sierra Nevada mountain beaver
SNRF	Sierra Nevada red fox
SNYLF	Sierra Nevada yellow-legged frog

SPI	Sierra Pacific Industries
SR	State Route
St	Street
STATSGO2	United States General Soil Map
UG	Underground
US 395	United States Highway Route 395
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WEAT	Worker Environmental Awareness Training
WMA	Wildlife Management Area
WPT	Western Pond Turtle

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Chapter 1. Introduction

The Plumas-Sierra Rural Electric Cooperative (PSREC) is proposing to build, operate, and maintain a 183-mi fiber optic communications network (the Proposed Project) in northeastern CA and northwestern NV. The proposed network would provide access capabilities for the following three CA counties: Plumas, Sierra, and Lassen counties, CA, and a portion of Washoe Co., Nevada. The proposed network would also accommodate future Statewide interconnection of major Public Safety Answering Points, a future CA statewide and NV public safety network.

Of the approximately 183 mi of the proposed new fiber cable installation, approximately 162 mi would be placed on existing pole infrastructure; the remaining ±21 mi would be installed underground. New underground construction will occur for eight mi in the Caltrans US 395 ROW from the CA-NV State Line at Bordertown, Nevada to Hallelujah Junction, California; for approximately one mile in existing NDOT US 395 ROW in T20N, R18E, section 2; and for seven miles in existing city/county/state ROWs within existing developed areas in California. For approximately five miles in the City of Reno, new fiber is proposed to be placed in existing conduits.

The project description in this document is based on PSREC's project description being prepared for the Environmental Assessment. The full version of the project description is in Chapter 2 of the Environmental Assessment.

1.1. Project History

In August 2010, Plumas-Sierra Telecommunications (PST) received a $13.77-million dollar American Recovery and Reinvestment Act of 2009 (ARRA) Grant Award to provide fiber cable to their service territory in rural northeastern CA and northwestern NV. PST is a wholly-owned non-profit subsidiary of PSREC. The Grant Award is administered by the U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA). Because federal dollars are used to fund the planning and construction activities, it is necessary for the Proposed Project to fully comply with the provisions of the National Environmental Policy Act (NEPA). Therefore an Environmental Assessment (EA) is being prepared to thoroughly analyze the effects of the proposed project.

On 20 December 2007, the CA Public Utilities Commission (CPUC) established the $100 million California Advanced Services Fund (CASF) to provide matching infrastructure grants to broadband providers willing to finance the remaining portion of a project's funding

requirement, to better serve the nearly 2,000 California communities that are currently unserved and underserved by broadband. On 25 February 2010, the CPUC approved a matching grant of $1,721,280 from the CASF to PST for the Proposed Project. The CPUC has determined that CEQA compliance must be demonstrated prior to the release of CASF monies to PST. A combined EA Initial Study/Proposed Mitigated Negative Declaration (IS/Proposed MND) is being prepared.

1.2. Project Location

The Proposed Project would occur mainly in rural, northeastern CA and portions of northwestern Nevada, from the City of Reno north along US 395 and westerly along SR 70. The construction route will follow the corridor of PSREC's existing electrical powerline infrastructure. This route primarily follows local, state, and federal roads and highways, both urban and rural, connecting the critical anchor institutions and focusing on educational, institutional, federal, state, local governmental, and tribal facilities in each of the three CA counties and Washoe Co., Nevada described below.

The Biological Study Area (BSA) for the Proposed Project is ± 40 ft wide and located along approximately 183 mi of existing PSREC electrical powerline infrastructure corridor (Figure 1 in Appendix H and Figure 2 in Appendix I). The BSA traverses portions of 26 USGS topographic quads (Table 1) and stretches from Susanville south to Reno and west to Quincy. Table 2 is a summary of the route segments and lists the 18 anchor institutions.

The BSA traverses or is immediately adjacent to land owned or administered by private parties, Bureau of Land Management (BLM; Eagle Lake Field Office and Sierra Front Field Office), Plumas National Forest, ,and the CA Department of Fish & Game (DFG; Doyle and Bass Hill Wildlife Areas). The Project Proponent, PSREC, holds existing grant of right of way authorizations from the BLM and the USFS for their electrical power infrastructure.

Figure 1. Project Location Map.

Project Location Map figures are in Appendix H.

Figure 2. Biological Resources Map.

Biological Resources Map figures are in Appendix I.

Table 1. Project USGS quads.

County/ State	USGS Quad Name	Township, Range, and Sections
California		
Lassen	Susanville	T 29N 12E S4/T30N R12E S21,28,29,32,33
Lassen	Johnstonville	T29N R12E S3,4,10,11,/T29N R13E S3,4,11
Lassen	Litchfield	T29N R13E S13,19,24,30
Lassen	Janesville	T29N R12E S13,19,24/T29N R13E S30,31,32/T28N R13E S4,5,9,10
Lassen	Standish	T28N R13E S14,15,23,24,25/ T28N R14E
Lassen	Stony Ridge	T28N R13E S31,36/ T28N R14E/T27N R14E S 5,6,8,9,16,22
Lassen	Milford	T27N R14E S 26,35,36/TN27 R15E S31,32,33/TN26 R15E S 2,3,4
Lassen	Herlong	T26N R16E S3, T27N R16E S34
Lassen	Ferris Creek	T26N R15E S11
Lassen	McKesick	T26N R15E S 7,12/T26N R16E S 10,15,17,18,20,21,22,27,34,35/ T25N R16E S1/ T25N R17E S6,7,17,18,20
Lassen	Doyle	T25N R17E
Lassen	Constancia	T25N R17E S 28,29,33/T24N R17E S4,9,10,11,12,13,24,25,36/T23N R17E S1,2
Lassen	Beckwourth Pass	T23N R17E S2,11,14,15,22,27,34/T22N R17E S3,4,5,6,10,11,15
Plumas	Chilcoot	T23N R16E S 31,32,33,34,35,36/T23N R15E
Plumas	Reconnaisance Peak	T23N R15E S 31,32,33,34,35,35,36.T23N R14E S25,26T22N R14E/
Sierra	Antelope Valley	T22N R14E S24,25,36/ T22N R15ES31/ T21N R15E S6,8
Plumas	Portola	T23N R14E S 20,21,26,27,28,29,30/T23N R13E S 5,34,35,36 /T22N R13E S 2/ T22N R14E
Plumas	Blairsden	T23N R13E S4/T22N R12E S10,11,12,13,14/T22N R13E S4,5,7,8
Plumas	Johnsville	T22N R12E S5,9/ T23N R12E S 19,30,32/ T23N R11E S10,11,13,14
Plumas	Mt.Ingalls	T23N R11E S4
Plumas	Spring Garden	T23N R11E S5,6/ T24N R11E S 3031/ T24N R10E S21,22,23,25,26
Plumas	Quincy	T24N R10E S19,20/ T24N R9E S2,10,11,13,14,15, 24
Sierra	Evans Canyon	T22N R17E S22,23,26,35/ T21N R17E S1,2,12/ T21N R18E S18,19
Nevada		
Washoe	Reno NW	T21N R18ES 20/ T20N R18E S 1,2,3,28,29,33,34
Washoe	Verdi	T20N R18E S1, 12,T21N R19E S6,8
Washoe	Reno	T21N R19E/ T20N R19ES 8,9,1015,22,23,25,2636/ T20N R20E

Table 2. Route segment summary

Trunk Line Segments and ***Laterals to Critical Anchor Institutions*** [a]	**Overhead Length (mi)**	**Underground Length (mi)**	**# of Vaults** [c]	**Route Book Sheet #**
US 395 Corridor				**395A-395R**
Reno, NV N. McCarran/US 395 Peering Point to CA/ NV Stateline	10.57	0.95	2	395A-395C
Peering Point to 200 S Virginia Lateral	0.0	4.65	7	395A-395C
CA/ NV Stateline to Hallelujah Junction	0.0	8.09	12	395C-395E
Hallelujah Junction to Herlong Substation	27.0	0.0	0	395E-395K
Red Rock Fire Department Lateral	3.95	0.0	0	395G
Herlong Substation to Patton Substation	4.22	0.0	0	395K
CAI#8 Sierra Army Depot Substation	2.10	0.0	0	395K
Herlong Substation to Milford Substation	10.94	0.0	0	395J-M
Milford Substation to Edgemont Substation	14.09	0.0	0	395M-P
Edgemont Substation to Leavitt Substation	8.23	0.0	0	395P-
CAI#6 High Sierra Co-Gen Plant	0.0	0.0	0	395Q
CAI#5 California Correctional Center	0.0	0.0	0	395Q
CAI#7 High Desert Prison	0.0	0.0	0	395Q
Leavitt Substation to Susanville Substation	6.98	0.0	0	395P-395R
CAI#4 Lassen CoE Lateral	1.85	0.0	0	395Q-395R
CAI#3 Windjammer Cable Co. Lateral	1.44	0.0	0	395R
CAI#2 Lassen College Lateral	1.98	0.0	0	395R
CAI#1 Susanville Indian Rancheria Lateral	0.0	0.81	1	395R
SR 70 Corridor				**395E and 70A-70L**
Hallelujah Junction to Chilcoot Substation	5.91	0.0	0	395E-
Chilcoot Substation to Beckwourth Substation	12.21	0.0	0	70A-70F
CAI#18 City of Loyalton Lateral	10.43	0.0	0	70B-70C
Beckwourth Substation to Mohawk Substation	16.05	0.0	0	70E-I
Marble Substation Lateral	4.65	0.0	0	70F
CAI#16 City of Portola Lateral	0.11	1.11	2	70G
CAI#17 Eastern Plumas Health Care Lateral	0.0	0.27	0	70G
CAI#15 New Day Broadband Cable Co. Lateral	0.33	0.0	0	70G
CAI#14 GotSKY (Colocated at CAI#17)	0.0	0.0	0	70G
CAI#13 PSREC NOC [b] *Lateral*	0.14	0.0	0	70G
Graeagle Substation Lateral	0.99	0.0	0	70H
Mohawk Substation to Quincy Substation	17.48	0.0	0	70I-70L
CAI#12 USFS Quincy Lateral	0.0	2.81	4	70L
CAI#11 Plumas CoE Lateral	0.0	0.39	1	70L
CAI#10 Plumas District Hospital Lateral	0.0	0.86	1	70L
CAI#9 Feather River College Lateral	0.38	0.52	1	70L
TOTALS:	**162.03**	**20.46**	**31**	**--**

[a] Critical Anchor Infrastructure (AI)
[b] NOC = Network Operating Center
[c] Estimated Number of Underground Vaults (=UG miles x 5,280ft /3,500ft)

1.2.1. Plumas, Sierra, Lassen Counties, California

Quincy, CA to Reno, NV: In northeastern CA, the westernmost anchor facilities that the Proposed Project would attach to are the Plumas County Office of Education (CoE), the Plumas District Hospital (PDH), and the Feather River Community College (FRCC), located in the town of Quincy. Underground through Quincy, except for the overhead lateral portion from the PDH to the FRCC, the route follows the powerline alignment and/or the existing county/state road ROWs along SR 70 until it connects with the existing PSREC transmission line overhead on the eastern edge of Quincy. Continuing along SR 70 ROW, the fiber would be hung overhead from existing infrastructure as it traverses the Plumas National Forest until reaching the City of Portola. In Portola, the alignment is proposed to go underground in existing city/county/state ROWs. Several construction alternatives are being evaluated for the crossing of the Middle Fork Feather River, a Wild and Scenic River, including an under deck attachment to the bridge or hang on existing utility poles adjacent to Gulling Street.

Following the alignment and attached to the existing transmission line along SR 70 to Hallelujah Junction, the route would continue south along US 395 to Bordertown, NV in the Caltrans US 395 ROW corridor as an underground conduit.

Northern Route to City of Susanville: Roughly 0.75 mi west of Hallelujah Junction, the proposed fiber alignment would follow and hang from the existing 69kV Long Valley Transmission Line which travels in a northwesterly direction in the US 395 corridor.

At Red Rock Road, approximately 9 mi north of Hallelujah Junction, a fiber lateral would follow the existing PSREC overhead distribution line for 4 mi and would cross the CA/NV border, and into the rural community of Red Rock.

Approximately 17 mi north of Red Rock Road, at the Herlong Substation #1, a lateral of the fiber would cross US 395, and follow the existing Herlong 69kV overhead alignment along Garnier Road (Lassen County Road A-26) for 6.3 mi to the Federal Corrections Facility and the Sierra Army Depot.

The main fiber route continues overhead as it follows the existing 69kV transmission line in the US 395 corridor for approximately 23 mi to Janesville. At Janesville, the existing powerline corridor moves roughly 5 mi east of the US 395 corridor and continues in the existing powerline ROW for approximately 10 mi to the Leavitt Substation. At Leavitt Substation, there is an existing dark fiber conduit hanging from the 69kV line to the Co-

Generation plant/ CA Correctional Facility/High Desert Prison, a distance of 1.0 mi. As part of this NTIA project, the dark fiber will be lit.

The main fiber route continues overhead as it follows the existing corridor from Leavitt Substation west along the county road ROW on the existing distribution alignment for 3 mi to where it intersects at Travis Lane with Lassen Municipal Utility District (LMUD) 60kV overhead transmission line. The fiber would remain overhead on LMUD's transmission line, which is partially located along the abandoned railroad ROW, and would cross SR 36 to LMUD's Millwood Substation in the City of Susanville, a distance of approximately 4 mi.

At the Millwood Substation, the route is overhead along city ROWs and turns west and parallels Riverside Drive to Weatherlow Street. At this location, the route remains overhead and follows City ROWs past LMUD's Chestnut Substation, to an existing utility corridor near the Lassen Cemetery, where one lateral turns north and goes underground for approximately 0.5 mi, and then turns west to the Susanville Indian Rancheria (SIR) Diamond Mountain Casino and Hotel.

The other lateral continues east overhead until reaching SR 139, then turning north and running overhead on LMUD powerlines for approximately 1.5 mi and terminating on the eastern edge of the Lassen Community College campus.

From the LMUD take off on Travis Lane, a south lateral along county road ROWs would terminate at the Lassen County Office of Education (CoE) across the road from the Susanville Municipal Airport, a distance of approximately 2 mi.

Southern Lateral Routes to Graeagle Substation, Marble Substation, and City of Loyalton, CA:

From SR 70 near Blairsden and east of SR 89 intersection, the fiber lateral would follow the existing PSREC overhead 69kV transmission line corridor in county/state roads ROWs for approximately 1.0 mi to the Graeagle Substation on the Graeagle-Blairsden Road.

From SR 70 near Beckwourth, a south overhead lateral would follow Plumas County Road A-23 in the existing powerline corridor and county road ROW to the Marble Substation, a distance of approximately 5 mi.

From SR 70 near Chilcoot, a south overhead lateral would follow PSREC's existing distribution line for approximately 5 mi to Plumas County Road A24, then along city/county/state road ROWs for 6 mi terminating at the City of Loyalton offices.

1.2.2. Washoe County, Nevada

From Bordertown, NV south to the McCarran/US 395 Peering Point., approximately 10.5 mi would be overhead on existing infrastructure and one mile would be underground in existing city/county/state ROWs The conduit connects to an existing fiber optic backbone at the McCarran/US 395 Peering Point. An underground lateral would travel south in existing city/state ROWs to a second connection to a fiber optic backbone on South Virginia St., a distance of about 4.5 mi.

1.3. Description of the Proposed Project

The Proposed Project would provide new fiber-based infrastructure in 183 route mi. This route includes approximately 8 mi of new underground construction in Caltrans US 395 ROW, 1 mi of new underground construction in NDOT US 395 ROW, 7 mi of underground construction in existing city/county/state ROWs in urban hardscape, 4.5 mi of new fiber to be placed in existing conduits in the Reno area, and use of 162 mi of existing utility pole infrastructure, thus providing currently unserved and underserved users in the project service area access to robust, state of the art, broadband services.

1.3.1. Existing Facilities and Connection to Existing Facilities

Existing PSREC overhead electrical powerline pole structures are proposed to be used for 162 mi of the 183 mi proposed route. Of the remaining ±21 mi, proposed new underground construction would occur within the Caltrans US 395 ROW for 8 mi between Bordertown, Nevada and Hallelujah Junction, California, which is the intersection with SR 70. Centralized network management facilities would be located at existing PSREC headquarters or substations and would be capable of jointly or individually managing facilities across the entire PSREC network in the event any facility became unavailable due to unforeseen circumstances or disasters.

In addition to the use of existing infrastructure, conduits, and existing fiber, the project would connect to client institutions and to future cellular towers.

1.3.2. Critical Anchor Institutions

Interconnection points along the proposed route would be provided, allowing for services to be extended to critical anchor institutions (Table 2) including, but not limited to state and federal facilities, Department of Defense reservations, county offices of education, community colleges, libraries, hospitals, public safety institutions, tribal reservations, and other future customers.

1.3.3. Cellular Transmission Towers

Fixed wireless access would be provided in the future to unserved and underserved rural areas of Plumas, Sierra, and Lassen counties, CA, and would deliver capacity through fiber connection to future cellular towers.

1.3.4. Proposed Facilities

New Fiber Conduit: Approximately eight mi of new fiber conduit would be installed along local, county, state road ROWs and an additional four mi of new fiber would be installed in existing conduit and would not involve ground disturbance. In the areas of new underground construction, three conduits with microducts would be installed approximately 48 inches below the existing ground surface. Each of the three conduits would be approximately 1.0 inch diameter standard dimension polyethylene pipe. To access the cable for operations and maintenance (O&M) activities, 4 ft x 4 ft x 4 ft pre-fabricated concrete below-ground vaults would be constructed approximately every 2,500 to 4,500 ft.

Dependent upon variations in geology, route accessibility, terrain or environmental issues, the proposed cable construction may include the following construction methods: Cable Plowing (a vibrating blade to split the ground, cut a narrow slit to insert a bundle of conduit), Horizontal Directional Drill (HDD, is a type of trenchless boring whose benefits include less traffic disruption, deeper installations, shorter completion times, and safety), trenching (temporarily open trenches and backfill as the conduit is placed). With utilization of any of the aforementioned methods, the maximum trench width would be 2 ft, with a depth of 4 ft in existing ROW and in Caltrans and NDOT ROW, 36-42 inches of cover would be required. HDD would occur in the US 395 Caltrans and NDOT ROW in at least 74 locations, including highway access crossings.

Network Operating Centers and Nodes: One Network Operating Center (NOC), one re-generation site which would boost the fiber light signal, a secondary NOC, and two secondary/ancillary nodes would be required along the 183 mi proposed route. With the exception of the proposed re-generation site at the Caltrans maintenance facilities at the SR 70 and US 395 intersection, all of the sites would be located in existing buildings and/or facilities. The PSREC offices in Portola, CA would house the NOC which would require round-the-clock monitoring and surveillance. The secondary nodes housing equipment are proposed to be 12 ft x 20 ft pre-fabricated modular units to be installed at the existing PSREC Quincy #2 Substation located on SR 70 and the existing PSREC Leavitt Substation.

Installation on Existing Overhead Structures and New Underground Construction: Overhead cable would hang on 162 mi of existing PSREC electrical pole structures, most of which

follow existing roads or access roads; approximately 2,135 poles would have cable hung from the existing structures, all in compliance with wire and ground clearances as mandated by the National Electrical Safety Code. In environmentally-sensitive areas of steep terrain or difficult accessibility, primarily in the Plumas National Forest (PNF), approximately 30% of the roughly 320 poles on PNF lands, or approximately 100 poles would be accessed by an individual pole climbing and no bucket truck would be used. There would be other locations along the route ROW where the pole would be climbed due to the efficiency of installing the conduit. At each pole (approximately 1,495 poles) where cable is to be hung with the use of a bucket truck, approximately 200 sq ft of ground area would be utilized to set the cable, a total of approximately 6.86 ac of construction activities within the existing ROWs. In addition, the pulling and tensioning construction activities along the 148 mi of existing overhead structures for "blowing the fiber" would comprise 1,000 sq ft per mi or approximately 3.4 ac. HDD in the approximate 74 locations along US 395 would occur roughly every 1,500 linear ft and would disturb a total of 3,552 sq ft (pers. comm., Praxis Associates Inc., William "Barney" Schwedler); construction of approximately 34 vaults (each disturbing 16 sq ft) in the US 395 ROW would disturb 544 sq ft (Ibid). Thus, construction activities in the existing ROWs would total approximately 10.35 ac.

Cabinets: Connection to Critical Anchor Institutions (CAI) would be accomplished through installation of cabinets and connection of the cabinets to the primary fiber line. Most of the CAIs have existing facilities to house the cabinets in a secure and maintained environment. Each cabinet facility would be powered by electrical power with backup generators as necessary.

The requisite equipment to light the fiber at the CAIs would be provided by the Grant Award. Each CAI will need hardware, e.g., router, personal computers, and network system installed in order to operate the fiber system.

Future Installations: As the need arises and budget is available, future installations, laterals, and additional fiber would be developed and constructed throughout the PSREC service territory and project area, including the cities and counties.

Future system upgrades would be accomplished by card addition or replacement at cabinets to meet future capacity requirements. Cabinets have been designed to accommodate future addition of card shelves.

1.4. Description of Construction Methods

1.4.1. Urban Areas

Underground Installation

Within urban areas, the conduit would be installed primarily by directional drilling (boring), with drilling access points spaced intermittently. Mid-block locations under existing sidewalks and/or intersections would be the preferred locations for access box placement. Typically, conduits would be installed up to 12 ft under street intersections to avoid concentrations of other existing utilities. Under some specific circumstances or due to the preference of a local jurisdiction, the conduit may be installed by cutting pavement, excavating a narrow trench, and backfilling and repaving the cut pavement.

In areas where existing conduit would be used to install new fiber optic lines, microducts and fiber would be air-jetted or blown into the existing conduit at existing access locations. Installation of fiber into existing conduits using these methods would not require any new ground disturbance, only access to existing buried boxes, and would require two vehicles and an air compressor.

Overhead Installation

The existing pole infrastructure would be accessed from the existing associated ROWs or easements. Most of the poles would be accessed with the use of a bucket truck; however, in some locations it may be more efficient to climb the poles than to set up the bucket truck. It is estimated that at each pole location, irrespective of the use of climbing or use of bucket truck, it will take approximately three hours at each existing pole to install the new fiber conduit.

PSREC is proposing to utilize state-of-the-art technology and trunion assembly for installation of the fiber conduit. Although this type of technology is evolving at a rapid rate; it is proposed to use the Aerial Dielectric Self Supporting (ADSS) assembly.

Installation specifics would include the following methodology:

Install the trunion assembly on the pole, feed a ½ inch rope (P line) through the bracket; each pole bracket will have its own 70-ft P-line hanging from it. The roughly 28,000-ft long reel of fiber is then attached to a “sockline” (another rope). The reel of conduit would remain on the conveyance truck located in the existing ROW.

The “sockline” is tied to the end of the P-line, pulled through, and then attached to the next P-line and pulled through. The conduit remains above the ground and does not touch the surface, thereby not disturbing the ground vegetation.

The splice box locations to be installed on the existing pole structures would be identified prior to the field activities. Since the conduit reels average 28,000-feet (5.3 mi) in length, the splice box would be located at the end of each reel. The exception to these splice locations would be in urban areas where CAIs are located. These interconnection points to the CAIs would be identified prior to field activities.

Prior to mobilizing the conduit reels in the field, and prior to attaching the conduit, the fiber is tested to ensure the fiber glass integrity has not been compromised. Once the conduit is attached and splice boxes installed, the fiber is secure. Uninstalled conduit would not be left over a weekend; consequently, the reels would be completely installed and not left unsecured in the ROW.

1.4.2. Non-Urban Areas

Underground Installation: In non-urban areas, the conduits would typically be installed using a plowing technique, where a tine incises the soil to a depth of 48 inches below the existing ground surface and the conduits are placed in the incised slit at the same time. In areas where the soil matrix prohibits the use of plowing, a narrow trench would be excavated and the conduit placed at the bottom of the trench and the trench would be back-filled and compacted. In areas of very narrow ROW, in areas where sensitive environmental resources or habitats need to be avoided, or where other circumstances dictate, it may be necessary to plow install the conduits underground and in a narrow trench. In such circumstances, the trench would be backfilled with slurry to ensure proper compaction and pavement integrity. Plowing is the preferred method of construction, where practicable and feasible.

The exact underground conduit installation location within road ROWs will be determined based on several factors including: presence and location of sensitive environmental resources such as biological habitat, wetlands, drainages, and cultural resources; locations of existing buried utilities; constructability, and preference of jurisdictional agencies.

Several railroad crossings would also be necessitated by the proposed route alignment. Railroad alignments would be crossed with the use of directional drilling below the railroad tracks at a minimum of 18 ft below the base of the centerline of railroad tracks, or on existing overhead crossings for the electrical utility powerlines. Directional drilling would originate and terminate in public road rights-of-way outside of the railroad right-of-way. The route alignment also crosses several major State Routes (70, 89, 36, and 139) as well as US 395. In each case, the highway would be crossed using aerial crossings, directional drilling under the highway or attachment to the bridge structure over the highway depending on the age and condition of the bridge and preferences of Caltrans, NDOT, city or county government.

Stream and river crossings in the underground installation areas may be accomplished with conduit attachment to existing bridges, using a 4 -6 inch galvanized iron pipe attached to the underside of the bridge, depending on the age and condition of the bridge and the preferences of the jurisdictional agency. Existing conduit located in the bridge deck would be used where possible.

Overhead Installation: The existing pole infrastructure would be accessed from the existing associated ROWs or easements. The poles that are located in environmentally sensitive areas, such as in the rugged, mountainous terrain on the Plumas National Forest or in wet meadows, would be individually climbed to install the hardware and associated fiber conduit. It is estimated that at each pole location, irrespective of the use of climbing or use of bucket truck, it will take approximately three hours to install the new fiber conduit. A limited number of angle poles may require additional ground anchors with guy wire to carry the weight of the conduit. Ground disturbance in these areas would be roughly one square foot at each location for a total of 500 sq ft.

1.4.3. Construction Sequencing

Construction would occur in separate segments, some of which would be constructed simultaneously. Any individual segment may have two separate construction crews working at any given time, with plowing installation, trenching installation, and HDD installation occurring at the same time in different locations of the same segment. It is possible that 2-3 construction crews could be working simultaneously within the 37 mi of proposed new conduit alignment. It is anticipated that the maximum width of ground disturbance within road ROWs would be 9 ft, the maximum width of tracked construction equipment.

All construction activity that would be conducted along roads and highways will employ standard traffic control measures in accordance with the Caltrans *Manual of Traffic Controls for Construction and Maintenance Work Zones*.

1.4.4. Construction Schedule

If the Proposed Project is funded and approved, it is anticipated that construction would begin second quarter 2011, assuming receipt of all environmental clearances, approvals, permits, and authorizations. Some segments of the route would be constructed concurrently and some segments would be constructed consecutively. It is anticipated that the entire construction project would be completed within approximately 20 months due to the inability to work from 15 November through 15 April as a result of winter conditions. Sections of conduit that are incomplete as of 15 November 2011 will be capped.

1.4.5. Construction Vehicles and Equipment

The types of construction vehicles and equipment used during construction varies depending on the type of installation being conducted at any specific location (such as plowing, trenching, boring). The types of equipment that would be used include pickup/utility trucks, cable plows, trenchers, excavators with a rock saw or rock breaker, dump trucks, backhoes, boring rigs, and bucket trucks for the aerial installation.

1.4.6. Construction Staging and Equipment Lay-Down Areas

The approximate locations of up to 15 construction staging areas and equipment lay-down areas have been preliminarily identified every 18-20 mi along the 185 mi long route. Wherever practical, the staging areas will be located in disturbed areas, at existing facilities or on private property. Equipment lay-down areas and equipment storage areas would be located as close to the construction areas as possible.

1.5. Design Criteria/Committed Environmental Protection Measures

The following environmental protection measures are part of the proposed alternative. Additional avoidance measures are described in Chapter 4 for some specific species or environmental resources.

1. PSREC will conduct Worker Environmental Awareness Training (WEAT) to make construction crews aware of sensitive biological resources, environmentally sensitive areas (ESA), and avoidance measures.
2. PSREC will retain qualified biologists to conduct a pre-construction botanical survey, consistent with DFG (2009b) guidelines, to map the location of special-status plants and noxious weeds wherever drilling or trenching will occur, or wherever vehicles will be driven along the route. Sensitive botanical resources and noxious weed populations will be mapped and identified on construction drawings or project maps prior to construction.
3. One of the two measures below shall be implemented in order to prevent establishment of swallow nests prior to construction on bridges where new conduit will be attached. Swallows arrive in mid February, increase in numbers until late March, and remain until October. Nesting begins in April, peaks in June, and continues into August.
    a. Beginning 15 February and continuing every week thereafter, remove partially completed nests using either hand tools or high pressure water; <u>or</u>

b. Hang netting from the bridge before nesting begins. If this technique is used, netting will be in place from late February until construction within 250 ft is complete.

4. If Project construction activities are scheduled to occur during the bird nesting season (1 Feb – 31 August), PSREC will retain a qualified biologist to conduct a nest clearance survey using the methods described below.

   Birds of Prey and Special-Status Birds

   a. A qualified biologist shall conduct nest clearance surveys for birds of prey and special-status birds within 2 weeks prior to the start of construction. No further mitigation measures are necessary where no active nests of a bird of prey or special-status bird are found.

   b. If an active nest of a bird of prey or special-status bird (i.e., an actively defended nest, or a nest containing eggs or young) is found, PSREC will coordinate with the appropriate agency (e.g., BLM wildlife biologist if the nest is on BLM land, USFS wildlife biologist if the nest is on USFS land, or DFG environmental scientist if the nest is on state or private land) to determine if construction activities should be restricted near active nests for a specific distance and/or period of time. The potential ESA and extent of the seasonal restriction would be determined on a case-by-case and species-specific basis. Some bird species are more tolerant of human presence and disturbance than other species and whether a nest is within line-of-sight of the construction activities is integral to determining whether avoidance measures would be warranted.

   c. The Eagle Lake Resource Management Plan (RMP; BLM 2007, 2008) delineates the applicable buffer zone distances and seasonal restriction dates by bird-of-prey species. Where an active nest occurs on BLM land, the RMP will be used as a guideline for construction restrictions.

   d. The applicable ESA and seasonal restrictions can vary and shall take into account the species affected, topography, habitat suitability, degree of existing disturbance, associated prey base, breeding phenology, and degree or extent of proposed disturbance. Protection of active bird-of-prey and special-status bird nests shall apply during project construction and the breeding season period until the young have fledged or if the nesting attempt fails.

Non Special-Status MBTA Birds

a. A qualified biologist shall conduct nest clearance surveys for nesting MBTA birds where drilling or trenching will occur, or wherever vehicles will be driven along the route within 2 weeks prior to the start of construction. No further mitigation measures are necessary where no active MBTA bird nests are found.

b. If a nesting MBTA bird is found, then the biologist shall flag a minimum 50-ft ESA around the nest. No construction activity shall be allowed in the ESA until the biologist determines that the nest is no longer active. The ESA may be reduced if the biologist monitors the construction activities and determines in coordination with appropriate resource agency staff (e.g., BLM, USFS, or DFG), that no disturbance to the active nest is occurring.

5. PSREC will retain a qualified biologist to conduct a preconstruction survey for roosting bats within 2 weeks prior to the start of construction. The survey can be conducted concurrently with the nesting bird preconstruction survey. The survey will include, but is not limited to, the underside of bridges and culverts and rock crevices and overhangs. If no roosting bats are found, then no further mitigation measures are necessary. If roosting bats are found, PSREC will coordinate with the appropriate agency (e.g., BLM, USFS, or DFG) to determine if construction activities should be restricted near bat roosts for a specific distance and/or period of time. The potential Environmentally Sensitive Area (ESA) and extent of the seasonal restriction would be determined on a case-by-case and species-specific basis.

6. PSREC will retain a qualified biologist to conduct a preconstruction survey for active burrows of special-status burrowing animals in the BSA within 2 weeks prior to the start of construction, wherever drilling or trenching will occur, or wherever vehicles will be driven along the route. If no active burrows are found, then no further mitigation measures are necessary. If active burrows of special-status burrowing animals are found, PSREC will coordinate with the appropriate agency (e.g., BLM, USFS, or DFG) to determine if construction activities should be restricted nearby for a specific distance and/or period of time. The potential ESA and extent of the temporal restriction would be determined on a case-by-case basis.

7. Prior to construction, PSREC will retain a qualified biologist to direct the establishment of environmentally sensitive areas (ESA) around special-status plant populations or other sensitive resources to be avoided. ESAs will be marked both in the field with temporary fencing, and on the construction drawings. Construction-

related activities will be prohibited within ESAs, unless construction personnel on foot need to cross part of an ESA to access and climb an existing pole.

8. Perennial and intermittent waters in the BSA, including any adjacent willow thickets, riparian corridors, and wetlands, shall be avoided by either hanging new conduit on existing utility poles, installing conduit underneath waters with horizontal directional drills, or blowing new fiber in existing conduit. No vehicles or equipment staging shall be allowed in perennial or intermittent waters, wetlands, willow thickets, or riparian corridors. Construction personnel, on foot, may need to cross narrow portions of wetlands, willow thickets, or riparian corridors, if a pole is surrounded by such a feature.
9. PSREC will retain qualified biologists and resource specialists to monitor construction activities in areas near sensitive resources.
10. Specific fiber optic vault locations are flexible and will be placed to avoid sensitive resources including, but not limited to, riparian areas, water courses, wetlands, special-status plant populations, etc.
11. PSREC will implement the appropriate noxious weed control measures from the following; Partners against Weeds (BLM 1996), The National Invasive Species Management Plan (National Invasive Species Council 2008), and the Weed Prevention and Management Guidelines for Public Lands (BLM 2011).
12. Structures (if needed) will be constructed to conform to RUS (Rural Utilities Service) raptor-safe specifications. Additional resources used in design will be the *Avian Power Line Interaction Committee's Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*.
13. Construction holes left open overnight will be covered to prevent injury to wildlife. Covers shall be secured in place and shall be strong enough to prevent wildlife from falling through and into the hole.
14. If construction of any associated project infrastructure (e.g., re-generation site, secondary NOCs, etc.) requires installation of outdoor lighting, the lighting will be designed to minimize bird attraction or nocturnal insect attraction and swarming. At a minimum, lights should be down shielded to minimize attracting birds or insects. This measure will minimize the potential for nocturnal bird foraging (e.g., nighthawks).

15. To minimize the potential for siltation and sedimentation, temporary erosion and sediment control devices, including sediment barriers, will be installed promptly after soil disturbance. These devices will be inspected on a daily basis in areas of active construction; on a weekly basis in areas with no active construction; and within 24 hours of each 0.5-inch or greater rainfall. PSREC will install temporary sediment barriers such as silt fence or staked straw bales, on either side of a water body channel, as applicable, across the width of the construction ROW; around spoil and topsoil stockpiles; and, at the edge of the ROW to contain topsoil or spoil material and flow of sediment into adjacent areas. Sediment barriers will be maintained as necessary to ensure effectiveness during construction. In steep terrain, temporary sediment barriers will be installed during clearing to prevent the movement of disturbed soil off the ROW. Temporary slope breakers consisting of mounded and compacted soil will be installed across the ROW during grading.
16. Prior to removal of soils, PSREC or its contractors will ensure soil storage sites are located within the appropriate areas along the ROW to prevent impacts to sensitive biological resources.

1.6. Alternatives to the Proposed Project

1.6.1. No-Action Alternative

Under the No Action Alternative, NTIA would not fund the Proposed Project and CPUC would not approve or fund the Proposed Project. The construction of the Proposed Project would be infeasible without federal and state funding; thus, it is likely that the proposed fiber optic network would not be constructed and operated in the near future. The rural areas of Plumas, Sierra, Lassen, Washoe counties would continue to be unserved or underserved by a wireless broadband network. Other communities and anchor institutions that would be served by the Proposed Project would likely continue to be unserved or underserved by high-speed broadband. Future CA and NV interconnection of major Public Safety Answering Points, future statewide public safety networks, and a future California Telehealth Network connection of health facilities in the Proposed Project's four-county service area would not be possible.

1.6.2. Alternative 1 – Combination of Aerial and Underground Installation of Fiber Cable (Preffered Alternative)

This alternative includes installation of approximately 183 miles of fiber cable, with 162 miles of aerial installation on existing overhead electrical pole structures and 21 miles of underground installation of fiber conduit. The aerial portion of this alternative would follow the existing powerline corridors in existing federal and state/county/city ROWs and easements. The alternative would minimize effects on the environment, cultural and historical resources, biological resources, and disruption of traffic. Constructability of this alternative would be more efficient due to the constraints associated with the seasonal nature of construction activities in this climate and environment, and by utilizing existing power pole infrastructure.

New underground construction will occur for eight miles in the CALTRANS US395 ROW from Bordertown, NV to Hallelujah Junction, CA; for approximately one mile in existing NDOT US395 ROW in T20N, R18E, section 2; and for seven miles in existing city/county/state ROWs within existing developed areas in CA. For approximately five miles in the City of Reno, new fiber is proposed to be placed in existing conduits.

1.6.3. Alternatives Considered but Eliminated from Detailed Study

During the planning stages of the Project, PSREC considered using wireless technology to complete the network, or installing new infrastructure as an all-aerial or all-underground network. The suitability and reliability of this technology would be compromised because of the rugged and mountainous terrain of a large portion of the service territory and lack of line of sight. Additionally, this wireless technology would reduce the available bandwidths and speeds across the network and would not optimize the availability of the existing electrical infrastructure, existing ROWs, easements, and PSREC's 75 years of experience in operating and maintaining a wire-based network.

An alternative that would include an all aerial fiber installation was considered because the cost would be less than the preferred alternative. A significant number of PSREC's existing pole structures are over 30 years old and are scheduled for replacement in the near future. These distribution poles are typically not tall enough to support an additional conduit and would require immediate replacement which would result in additional ground disturbance and increased time for permitting activities.

An all underground fiber conduit installation would not maximize the use of existing infrastructure and would result in significant cost increases. Additionally, the environmental disturbance generated by this alternative would be unwarranted, disruptive, and intensely time consuming, which would not allow the Proponent to meet the optimistic time lines of the ARRA grant.

These aforementioned alternatives would not meet the requirements for a successful and efficient implementation of the Project.

1.7. Preparation History

Sycamore Environmental Consultants, Inc. is under contract to PSREC to prepare a Biological and Aquatic Habitat Assessment report for the Proposed Project. Jeffery Little, Vice President, is the Project Manager. Field surveys were conducted by Chuck Hughes, M.S., Botanist/ Biologist, Jessica Easley, Wildlife Biologist, Mike Bower, M.S., Botanist/ Biologist, and Shelby Howard, Wildlife Biologist. This document was prepared by R. John Little, Ph.D. (President) and Jeffery Little with the assistance of Sycamore Environmental staff. Aramis Respall, CAD specialist, prepared report figures and calculated project impacts. Cynthia Little, Senior Editor, edited documents and ensured quality control.

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Chapter 2. Study Methods

An evaluation of biological resources was conducted to determine whether any special-status plant or wildlife species, or their habitat, or sensitive habitats occurs in the BSA. Data on special-status species and habitats known in the area was obtained from state and federal agencies. Maps and aerial photographs of the BSA and surrounding areas were reviewed. A reconnaissance field survey was conducted to determine the types of habitats present. Several agency biologists were contacted to discuss the overall project and/or specific resources. The reconnaissance field survey, map review, agency contacts, and a review of the biology of evaluated species and habitats were used to determine the special-status species and sensitive habitats that could occur in the BSA (Appendix E).

Special-status species in this document are those:

- Listed (or candidate or proposed) under the federal or CA endangered species acts,
- Listed under the California Native Plant Protection Act,
- Listed as a California species of special concern or fully protected by DFG,
- On List 1 or 2 of the California Native Plant Society's Inventory of Rare and Endangered Plants of California (CNPS 2010)
- Listed as U.S. Forest Service sensitive species (USFS Undated, 2007, 2008)
- Listed as BLM sensitive (2003, 2009, 8 February 2010, 29 November 2010, 3 December 2010).

The CNDDB tracks other species that have not been designated by DFG as a California species of special concern, or do not otherwise meet the criteria above; these species were not evaluated as special-status species in this document.

2.1. Regulatory Requirements

The purpose of the report is to document biological studies and perform analyses and evaluations necessary to satisfy the legal requirements of state and federal statutes. These statutes include:

- National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.);

- Section 404 of the Clean Water Act (33 U.S.C. 1251-1376);
- Section 401 Water Quality Certification (33 U.S.C. 1341);
- Section 10 of the Rivers and Harbors Act (33 U.S.C. 401 et seq.);
- Sections 1601-1603 of the California Fish and Game Code that pertain to streambed alterations;
- Federal Endangered Species Act (16 U.S.C. 1531-1543);
- Fish and Wildlife Coordination Act (16 U.S.C. 661-666);
- National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287);
- Executive Order 11990, Protection of Wetlands (May 24, 1977);
- California Environmental Quality Act (P.R.C. 21000 et seq.);
- California Endangered Species Act (California Fish and Game Code 2050 et seq.);
- Native Plant Protection Act (California Fish and Game Code 1900-1913);
- California Wild and Scenic Rivers Act (P.R.C. 5093.50 et seq.);
- Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711);
- Magnuson-Stevens Fishery Conservation and Management Act (as amended through 11 October 1996);
- Executive Order 13112, Invasive Species (3 February 1999).

Section 404 Permit - U.S. Army Corps of Engineers (Corps)

The Corps and the U.S. Environmental Protection Agency regulate the discharge of dredge and fill material into “waters of the United States” under Section 404 of the Clean Water Act (33 U.S.C. 1344). The Corps issues permits for certain dredge and fill activities in waters of the U.S. pursuant to the regulations in 33 CFR 320-330.

Section 401 Water Quality Certification - Regional Water Quality Control Board

Under Section 401 of the Clean Water Act (33 U.S.C. 1341), applications for a federal permit or license for any activity that may result in a discharge to a water body, require a State Water Quality Certification to ensure that the proposed activity complies with state water quality standards.

Federal Endangered Species Act (FESA)

FESA defines take (Section 9) and prohibits taking of a federal-listed endangered or threatened animals without an Incidental Take Permit (16 U.S.C. 1532, 50 CFR 17.3). If a federal-listed species could be harmed, harassed, injured, or killed by a project, a Section 7 consultation is initiated by a federal agency or a Section 10 consultation is initiated by a local

agency or private applicant. Formal consultations culminate with a Biological Opinion and may result in the issuance of an Incidental Take Permit.

Federal Migratory Bird Treaty Act (MBTA)

All migratory birds are protected under the federal MBTA of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10 including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR Part 21). Any construction-related disturbance that causes direct injury, death, nest abandonment, or forced fledging of migratory birds, is restricted under the MBTA. Any removal of active nests during the breeding season or any disturbance that results in the abandonment of nestlings is considered a "take" of the species under federal law.

Section 1602 Streambed Alteration Agreement - Department of Fish and Game (DFG)

Section 1602 of the DFG Code requires any person, government agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel or bank of any river, stream, or lake, or proposes to use any material from a streambed, must first notify DFG of such proposed activity.

California Endangered Species Act (CESA)

CESA prohibits take of wildlife and plants listed as threatened or endangered by the California Fish and Game Commission. "Take" is defined under California Fish and Game Code as any action or attempt to "hunt, pursue, catch, capture, or kill." CESA allows exceptions for take that occurs during otherwise lawful activities. Section 2081 of the California Fish and Game Code describes the requirements needed for incidental take applications under CESA. Incidental take of state-listed species may be authorized if an applicant submits a plan that minimizes and mitigates the impacts of take.

California Fish and Game Code

The California Fish and Game Code defines "take" (Section 86) and prohibits "taking" of a species listed as threatened or endangered under CESA (California Fish and Game Code Section 2080) or otherwise fully protected, as defined in California Fish and Game Code Sections 3511, 4700, and 5050.

Other Special-Status Species Classifications

Other Special-Status Species Classifications evaluated in this report include California Species of Special Concern (CSC), species listed on California Native Plant Society (CNPS 2005) lists 1B and 2, and active raptor nests.

Invasive Plant Species

The California Invasive Plant Council (Cal-IPC) maintains an inventory of invasive nonnative plants that threaten wildland areas of California (Cal-IPC 2006). Assessments are based on Warner et al. (2003; "Criteria for Categorizing Non-Native Plants that Threaten Wildlands"). The Cal-IPC inventory involves evaluation of ecological impacts, invasive potential, and ecological distribution. Species receive an overall rating of High, Moderate, or Limited. Ratings are defined below.

> **High:** "These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically" (Cal-IPC 2006).
>
> **Moderate:** "These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread" (Cal-IPC 2006).
>
> **Limited:** "These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic" (Cal-IPC 2006).

2.2. Studies Required

A letter was obtained from the U.S. Fish and Wildlife Service (USFWS), Sacramento Field Office, which identifies federal-listed species that could potentially occur in or could be affected by projects in Lassen, Plumas and Sierra counties, California (Appendix A). A copy

of Nevada's Endangered, Threatened, Proposed and Candidate Species listed by county was obtained and is also in Appendix A.

The California Natural Diversity Database (CNDDB; DFG 2010a) was queried for the 23 project USGS topographic quad and the 38 surrounding quads, in California, to determine known occurrences of special-status species in or near the BSA (Appendix B).

On 24 November 2010, the Nevada Natural Heritage Program (NHHP) was contacted to obtain occurrence information for of special-status species in or near the BSA. The NNHP provided occurrence information for the 6 project quads located in Nevada (Appendix B).

Current DFG lists reviewed include: 1) *Special animals* (CDFG 2009a); 2) *State and federally listed endangered and threatened animals of California* (CDFG 2010c); 3) *Special vascular plants, bryophytes, and lichens list* (CDFG 2010b); and 4) *State and federally listed endangered, threatened, and rare plants of California* (CDFG 2010d).

Lists of BLM sensitive plant and wildlife species were obtained from the Eagle Lake Field Office (ELFO) and the Sierra Front Field Office (SFFO). These lists are included in (Appendix B).

Lists of U.S.F.S sensitive plant and wildlife species were obtained from the Plumas National Forest (Region 5) and the Humboldt-Toiyabe National Forest (Region 4). These lists are included in (Appendix B).

Data received from USFWS, BLM, USFS, NNHP, and CNDDB records were used to compile a table of regional species and habitats of concern. Reconnaissance level biological surveys consisted of walking or driving through accessible portions of the BSA to determine if any special-status species or their habitat were present. Plant species and plant communities were identified and recorded. Wildlife species observed, their sign, and potential habitats were recorded. Appendix C is a list of plant and wildlife species observed during reconnaissance level surveys. Photographs of the BSA are in Appendix D.

Biological communities were mapped based on the reconnaissance field visit and aerial photographs.

2.3. Personnel and Survey Dates

Table 2 contains the date, personnel, and purpose of field surveys that were conducted in support of the Project.

Table 3. Personnel and survey dates.

Date	Personnel *	Purpose
8–10 December 2010	Chuck Hughes, M.S., and Mike Bower, M.S.	Reconnaissance biological survey
13 December 2010	C. Hughes, Jessica Easley, and Shelby Howard,	Reconnaissance biological survey of willow flycatcher habitat
14 December 2010	C. Hughes and J. Easley	Reconnaissance biological survey
4–5 January 2011	Jeffery Little	Field review

* Sycamore Environmental Consultant's staff and S. Howard of Helix Environmental Planning.

2.4. Agency Coordination and Professional Contacts

Ms. Roxanne Bittman, DFG, at CNDDB was contacted on 4 January 2011 to obtain sensitive CNDDB location data for Carson wandering skipper. Ms. Marcy Haworth, USFWS-Reno, was contacted on 6 January 2011 to discuss the project relative to the Carson wandering skipper.

Mr. Richard Callas, Senior Environmental Scientist, Department of Fish and Game was contacted on 12 January 2011 to discuss the fisher reintroduction project. He said that all of the released fishers were given a radio transmitter and none had moved into the Project area. He said that the fishers could potentially move into the Project area in the future, but the anticipated level of disturbance from the Project would not likely disturb fishers and that Project construction timing should not be adjusted due to fishers. He said that when the Project goes to construction, DFG can be contacted to ascertain if fishers are denning near the Project route.

Mr. George C. Garcia, Wildlife, Fish, and Rare Plants Program Manager, Plumas National Forest was contacted on 29 November 2010 to obtain a list of USFS sensitive species known or suspected to occur on the Plumas National Forest. Mr. Garcia emailed the lists to Sycamore Environmental on 29 November 2010. Ms. Lynee Crawford, Botanist, Beckwourth Ranger Station, Plumas National Forest, was contacted on 14 January 2011 to obtain lists of weeds of concern in Plumas National Forest and weeds known from along the proposed Project route. Ms. Crawford emailed the lists to Sycamore Environmental on 18 January 2011.

Ms. Carolyn Gibbs, Weed Specialist, BLM ELFO was contacted on 30 November 2010 regarding the Carson wandering skipper and BLM pepperweed control efforts.

Mr. Russell Nickerson, District Wildlife Biologist, Plumas National Forest, was contacted on 19 January 2011 to obtain the Project Initiation Notice (PIN) wildlife response and discuss the GIS data of special-status bird records provided by the PNF. Mr. Nickerson provided the PIN wildlife response by email the same day. Mr. Nickerson was contacted by email on 21 January 2011 to obtain any additional special-status wildlife records within a mile of the Project route. He provided amphibian GIS data in an email the same day and noted that no other special-status wildlife records occurred within a mile of the Project route. Mr. Nickerson was also contacted on 30 March 2011 via phone and email to discuss species impact determinations for several USFS sensitive bird species.

Mr. Erik Miskow, Biological Data Manager, NNHP, was contacted on 1 December 2010 regarding NNHP occurrence information for special-status species in or near the BSA.

Ms. Mary Ann Mix, MPE, Inc. was contacted on various dates regarding various project details.

Ms. Julie Newman, Environmental Scientist, DFG, Region 2, was contacted via email on 29, 30 December 2010 and 5 January 2011 to notify Region 2 of the Proposed Project and request input regarding biological resource issues. Mr. Richard Lis, Environmental Scientist, DFG, Region 1, was contacted via email (on 29, 30 December 2010 and 5 January 2011) and voice mail (29 December 2010) to notify Region 1 of the Proposed Project. Mr. Bob Hosea, Environmental Scientist, DFG, Region 2, Lake and Streambed Alteration Agreement (LSAA) program to notify Region 2 LSAA program of the Proposed Project.

Mr. Ryan Olah, Branch Chief, Forest/Foothills Branch, USFWS Sacramento, was contacted via email and voicemail on 29 December 2010 to notify the Forest/Foothills Branch of the proposed project. Ms. Karen Leyse, Listing Coordinator, USFWS Sacramento, was contacted via phone on 30 December 2010 to request listing details pertaining to greater sage grouse.

Mr. Dean Tonenna, Botanist, BLM SFFO, was contacted on 29 November 2010 to obtain a list of BLM sensitive species. Mr. Tonenna emailed the list of Nevada BLM sensitive species to Sycamore Environmental on 29 November 2010. Mr. Brian Buttazoni, Planning & Environmental Coordinator, BLM SFFO was contacted on 3 December 2010 regarding the BLM SFFO sensitive species.

A letter was sent by PSREC to the USFWS Reno and USFWS Sacramento offices on 11 February 2011 requesting written concurrence from USFWS of a 'No Effects' determination for the project. In a letter dated 8 March 2011 the USFWS Reno office provided written concurrence that the project is not likely to adversely impact federal listed species. In an email dated 30 March 2011 USFWS Sacramento office concurred with the determination made by the USFWS Reno office.

2.5. Limitations That May Influence Results

The reconnaissance level field surveys were conducted at a time of year that special-status plant species with the potential to occur in the BSA would not be evident and identifiable. Access was limited to portions of the BSA. No other problems or limitations were encountered that may have influenced the results.

Chapter 3. Results: Environmental Setting

3.1. Description of the Existing Physical and Biological Conditions

3.1.1. Physical Conditions in the BSA

The approximately 184.6 mi long by 40 ft wide BSA includes existing utility and transportation ROWs in Lassen, Plumas, and Sierra counties in California and in Washoe Co., Nevada (Figure 1, Figure 2). Elevation in the BSA ranges from approximately 3,425 to 5,400 ft above sea level. The BSA is in the Honey-Eagle Lakes (hydrologic unit code 18080003), East Branch North Fork Feather (hydrologic unit code 18020122), Middle Fork Feather (hydrologic unit code 18020123), and Truckee (hydrologic unit code 16050102) watersheds.

The BSA traverses rural and urban areas. Land use adjacent to the BSA includes agriculture, residential, industrial, transportation, and open space. The BSA traverses three major ecological regions; the Sierra Nevada Section, Northwestern Basin and Range Section, and Mono Section. The following discussion is from the *Ecological Subregions of California, Section and Subsection Descriptions* (USDA 1997).

3.1.1.1. SIERRA NEVADA SECTION

The portion of the BSA from Beckwourth Pass east to Quincy is located in the Sierra Nevada Section. The Sierra Nevada Section is divided into 21 subsections. The BSA traverses three of the subsections; Sierra Valley Subsection; Frenchman Subsection, and Greenville-Graeagle Subsection.

The Sierra Nevada Section includes temperate to very cold parts of the Sierra Nevada. The Sierra Nevada is a tilted block mountain range composed of Mesozoic granitic and ultramafic rocks, Paleozoic and Mesozoic strongly metamorphosed sedimentary and volcanic rocks, and Cenozoic volcanic rocks. Soil taxa present include Alfisols, Andisols, Aridisols, Entisols, Inceptisols, Mollisols and Ultisols. Elevation ranges from 1,000 to 14,495 ft. Average annual precipitation ranges from 10 to 90 inches and occurs primarily in the fall, winter, and spring. Summers are generally dry with low humidity. Average temperatures range from 20º to 60ºF and the growing season ranges from 10 to 200 days. Surface waters are characterized by numerous rapid flowing rivers and streams that flow west from the crest in deeply incised canyons with bedrock, to the Great Valley and Pacific Ocean or to the east terminating in

basins in the Mojave Desert, Mono or Northwestern Basin and Range sections. A brief discussion of defining features of each Sierra Nevada subsection traversed by the BSA follow.

Sierra Valley Subsection: This subsection includes the Sierra Valley and occurs on nearly level basin floor that was occupied by a shallow Pleistocene lake. The Sierra Valley is at the head of the Middle Fork Feather River watershed. Mean annual precipitation is approximately 10 to 25 inches and predominately falls as snow. Mean annual temperature is approximately 45° to 48° F and the mean freeze-free period is 50 to 100 days. Surface runoff is generally slow and drains to the Middle Fork Feather River.

Frenchman Subsection: This subsection is predominantly composed of Tertiary volcanic terrain north of Sierra Valley. Topography is dominated by steep and moderately steep slopes. Mean annual precipitation is approximately 15 to 30 inches and predominately falls as snow. Mean annual temperature is about 40° to 50° F with a mean freeze-free period of 50 to 100 days. Surface water runoff is predominately rapid and drains to Feather River. Large reservoirs, Lake Davis and Frenchman Lake occur in this subsection.

Greenville-Graeagle Subsection: This subsection extends from the northwestern edge of the Sierra Nevada (adjacent to Lake Almanor) along the Plumas Trough to its southern terminus in Mohawk Valley. Geologically this subsection is dominated by strongly folded basement rocks including Triassic marine sedimentary and Paleozoic marine sedimentary and metavolcanic rocks. A large intrusion of Mesozoic ultramafic rock occurs in the Red Hill area.

3.1.1.2. NORTHWESTERN BASIN AND RANGE SECTION

The portion of the BSA from Susanville south approximately to Doyle is located in the Northwestern Basin and Range Section (USDA 1997, USDA 2006). The Northwestern Basin and Range Section is divided into five subsections. The BSA traverses only the Honey Lake Subsection.

The Northwestern Basin and Range Section includes the northern, and particularly the northwestern, part of the Great Basin. This section is defined by its isolated mountain ranges (predominately dissected block mountains) separated by aggraded desert plains composed of quaternary alluvial and lacustrine deposits, and Pliocene and Miocene volcanic rocks. Soil taxa present include Aridisols, Entisols, Inceptisols, and Mollisols. Elevation ranges from 4,000 to 8,000 ft. Average annual precipitation ranges from 4 to 20 inches. Average

temperatures range from 30º to 52º F and the growing season ranges from 25 to 150 days. Surface waters are characterized by few moderately slow rivers and streams occurring in deeply incised canyons with bedrock controlled channels at higher elevations and alluvial channels at lower elevations. Surface waters drain to basins or lakes within the section, or in basins and lakes in the Bonneville Basin section. A brief discussion of defining features of the Honey Lake Subsection follows.

> **Honey Lake Subsection:** This subsection includes the Honey Lake Valley, just northwest of the Diamond Mts., which are at the northwestern end of the Sierra Nevada Mountain Range. Geologically this subsection is dominated by gently sloping to nearly level alluvial fans, floodplain, and basin floor that form a large alluvial - lacustrine plain. Honey Lake is a remnant of much larger Pleistocene and older lakes that occupied the valley.

3.1.1.3. MONO SECTION

The portions of the BSA from approximately Doyle south to Reno and from the Beckwourth Pass (SR70) east to US 395 are located in the Mono Section (USDA 1997; USDA 2006). The Mono Section is divided into 13 subsections. The BSA traverses one of the 13 subsections, the Fort Sage Mts. - Lemmon Valley Subsection.

The Mono Section includes is in the western part of the Great Basin, just east of the Sierra Nevada. This section is defined by its isolated mountain ranges (predominately dissected block mountains) separated by aggraded desert plains (alluvial fans and basins) composed of Cenozoic volcanic rocks and alluvial deposits, Paleozoic sedimentary and volcanic rocks, and Mesozoic granitic rocks. Soil taxa present include Alfisols, Aridisols, Entisols, Inceptisols, Mollisols, and Vertisols. Elevation ranges from 4,400 to 14,200 ft. Average annual precipitation ranges from 5 to 30 inches. Average temperatures range from 30º to 58º F and the growing season ranges from 20 to 200 days. Surface waters are characterized few rapid flowing rivers and streams that occur in deeply incised canyons with bedrock controlled channels at higher elevations and alluvial channels at lower elevations. Surface waters drain to basins or lakes within the section, or in basins and lakes in the Mojave Desert, Bonneville Basin and Northwestern Basin and Range sections. A brief discussion of defining features of the Fort Sage Mts. - Lemmon Valley Subsection follows.

> **Fort Sage Mts. - Lemmon Valley Subsection:** This subsection includes mountains, hills, and valleys between the Sierra Nevada on the west and the Pah Rah Range and Pyramid Lake (in Nevada) on the east. Larger mountain ranges and valleys in the subsection include the Fort Sage Mts., Virginia Mts., Dogskin Mountain, Petersen

Mountain, Long Valley, Lemmon Valley, and Warm Springs Valley. Tertiary lacustrine deposits are extensive in Long Valley.

3.1.2. Soils

Soils present in the BSA were determined using the U.S. General Soil Map (STATSGO2) dataset (NRCS 2010a). The U.S. General Soil Map is composed of general soil association units and was created by generalizing more detailed soil survey maps. The BSA traverses 22 general soil association units (Table 4). The soils that compose each general soil association unit are briefly described below (NRCS 2010b).

Table 4. General soil association units in the BSA.

General Soil Association Unit Name & ID#	Occurs in County [1]
Ramelli-Massack-Keddie (s520)	P
Woodseye-Waca-Inville (s526)	P
Toem-Cagwin (s527)	P
Voltaire-Vamp-Truckee-Fettic (s5405)	W
Springmeyer-Mellor-Jowec-Godecke-Doten (s5406)	W
Toll-Mottsville-Kayo (s5410)	W
Springmeyer-Orr-Oest-Fleischmann (s5412)	W
Rock outcrop-Graufels-Glenbrook-Acrelane (s5414)	L
Tristan-Duco (s5415)	S, W
Terca-Sumine-Softscrabble-Gabica (s5417)	W
Galeppi-Aquinas (s5421)	W
Kistirn-Hollowtree-Deadwood (s550)	P
Pit-Humboldt-Herjun-Bobert (s599)	L
Stiles-Mcdermott (s602)	L
Springmeyer-Mottsville-Leviathan-Haybourne (s604)	L
Cleghorn-Chime (s605)	L
Searles-Petescreek-Fredonyer (s606)	L
Toiyabe-Lasco-Chimney-Bonta (s611)	L
Trojan-Rock outcrop-Lithic Xerorthents (s638)	P, L
Martineck-Lovejoy-Dotta-Calpine (s639)	P, L
Trosi-Galeppi (s640)	S, L, W
Ramelli-Ormsby-Loyalton-Beckwourth (s641)	P

[1] P = Plumas County, CA; L = Lassen County, CA; S = Sierra County, CA; W = Washoe County, NV

Ramelli-Massack-Keddie Soil Association Unit (s520)

The Ramelli series consists of very deep, poorly and very poorly-drained soils formed in mixed alluvium and occurs on flood plains and depressional basins with slopes ranging from 0 to 2 percent. Mean annual precipitation is ± 18 inches and the mean annual temperature is ± 48ºF. Soils are slightly acid (pH 6.1). Typical vegetation includes meadow with sedges and bluegrass (NRCS 2010b).

The Massack series consists of very deep, poorly-drained soils formed in alluvium from mixed rock sources and occurs on floodplains with slopes ranging from 0 to 2 percent. Mean annual precipitation is ± 30 inches and mean annual temperature is ± 50ºF. The soils are slightly acid to neutral. The soils are usually saturated during the late winter and spring due to a seasonal water table depth of 12 to 30 inches. Typical vegetation includes timothy, fescue, clover, meadow foxtail, and other grasses and forbs (NRCS 2010b).

The Keddie series consists of very deep, poorly-drained soils formed in alluvium weathered from mixed rock sources and occurs on floodplains with slopes range from 0 to 2 percent. Mean annual precipitation is ± 30 inches and mean annual temperature is ± 50ºF. Soils are slightly acid to neutral. Soils are poorly drained with very slow to slow runoff and moderate or moderately slow permeability. These soils are usually saturated during the late winter and spring due to a seasonal water table depth of 20 to 40 in. The average texture is loam or gravelly loam. Typical vegetation includes pasture species of timothy, fescue, clover, meadow foxtail, and forbs (NRCS 2010b).

Woodseye-Waca-Inville Soil Association Unit (s526)

The Woodseye series consists of shallow, well-drained soils with moderate permeability that formed in material weathered from metamorphic rocks and occurs on gently sloping to very steep slopes. Mean annual precipitation is ± 65 inches and mean annual temperature is ± 40° F. These soils are usually moderately acid. Typical vegetation includes huckleberry oak, green leaf manzanita, whitethorn, scattered junipers, Jeffrey pine, and lodgepole pine (NRCS 2010b).

The Waca series consists of moderately deep, well-drained soils formed in material weathered from andesitic tuff and occurs on mountain slopes of 5 to 75 percent. Mean annual precipitation is ± 50 inches and mean annual temperature is ± 41° F. Soils are moderately to slightly acidic. Soils are well-drained with medium to high runoff and moderately rapid permeability. Typical vegetation includes red fir, white fir, mountain hemlock, and western white pine (NRCS 2010b).

The Inville series consists of very deep, well-drained soils that formed in mixed alluvium and glacial outwash and occurs on alluvial fans and outwash terraces with slopes ranging from 2 to 30 percent. Mean annual precipitation is ± 25 inches and mean annual temperature is ± 43° F. Soils are moderately acid to slightly acid. Soils are well-drained with low to rapid runoff and moderate or moderately rapid permeability. Typical vegetation includes Jeffrey pine and white fir with understory of manzanita and ceanothus (NRCS 2010b).

Toem-Cagwin Soil Association Unit (s527)

The Toem series consists of shallow, excessively-drained soils that formed in colluvium and residuum from granitic rocks and occurs on convex, rolling to very steep slopes ranging from 5 to 75 percent. Mean annual precipitation is ± 40 inches and mean annual temperature is ± 40° F. Soils are slightly or moderately acid throughout. Soils are excessively-drained with high runoff and rapid permeability. Typical vegetation includes open to semi-dense stands of mixed conifers such as Jeffrey pine, white fir, red fir, and western white pine. Pine mat manzanita, greenleaf manzanita, squaw carpet, mountain whitethorn, and huckleberry oak are common as a shrub understory (NRCS 2010b).

The Cagwin series consists of moderately deep, somewhat excessively-drained soils that formed in material weathered from granitic rock and occurs on mountain sideslopes ranging from 5 to 75 percent. The mean annual precipitation is ± 40 inches and mean annual temperature is ± 41° F. Soil surfaces are slightly to strongly acid. Soils are somewhat excessively-drained with low to medium runoff and moderately rapid and rapid permeability. Typical vegetation includes semi-dense to dense stands of mixed conifers such as white fir, Jeffrey pine, and California red fir (NRCS 2010b).

Voltaire-Vamp-Truckee-Fettic (s5405)

The Voltaire series consists of very deep, poorly and very poorly drained soils that formed in alluvium from mixed rocks and occurs on alluvial fans, stream terraces, and floodplains with slopes of 0 to 2 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 48° F. Soils are moderately to very strongly alkaline and are poorly and very poorly drained with slow or very slow runoff and slow permeability. Typical vegetation includes mainly meadow type grasses and salt tolerant plants (NRCS 2010b).

The Vamp series consists of moderately deep, somewhat poorly drained soils that formed in alluvium derived from mixed rocks and occurs on low terraces with slopes of 0 to 2 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 50° F. Soils are moderately to very strongly alkaline and are somewhat poorly drained with slow runoff and moderate or moderately rapid permeability. Typical vegetation includes saltgrass, rabbitbrush, black greasewood, pepperweed, and wiregrass (NRCS 2010b).

The Truckee series consist of very deep, poorly drained soils that formed in mixed alluvium and occurs on flood plains and stream terraces with slopes of 0 to 2 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 50° F. Soils are moderately to strongly alkaline and are poorly drained with very slow or slow runoff moderately slow permeability. Typical vegetation includes big sagebrush, sweet clover, red top, wiregrass, bluegrass, Timothy, willows, and wildrose (NRCS 2010b).

The Fettic series consist of very deep, moderately well drained soils that formed in alluvium derived from mixed sources and occurs on low stream terraces with slopes of 0 to 2 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 50° F. Soils are moderately to very strongly alkaline and are moderately well drained with very high runoff very slow permeability. Typical vegetation includes saltgrass, greasewood, big sagebrush, rubber rabbitbrush, alkali sacaton, beardless wildrye, and basin wildrye (NRCS 2010b).

Springmeyer-Mellor-Jowec-Godecke-Doten (s5406)

The Springmeyer series consists of very deep, well-drained soils that formed in alluvium derived from mixed igneous rocks and occurs on fan remnants and inset fans with slopes ranging from 0 to 50 percent. Mean annual precipitation is ± 11 inches and mean annual temperature is ± 50° F. Soils are slightly acid to neutral and are well-drained with medium to high surface runoff, moderately slow permeability and moderately high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, mountain big sagebrush, antelope bitterbrush, rabbitbrush, singleleaf pinyon, bottlebrush squirreltail, and Sandberg's bluegrass (NRCS 2010b).

The Mellor series consists of very deep, well and moderately well drained soils that formed in alluvium derived from sedimentary rocks and occur on alluvial fans, alluvial flats, lake plains, flood plains and lake terraces with slopes ranging from 0 to 6 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 47° F. Soils are strongly to very strongly alkaline and are well and moderately well drained with slow to high surface runoff, and slow permeability. Typical vegetation includes greasewood, shadscale, and bottlebrush squirreltail (NRCS 2010b).

The Jowec series consists of deep, well drained soils that formed in mixed alluvium and occur on low lake terraces with slopes ranging from 0 to 4 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 49° F. Soils are slightly acid to neutral to strongly alkaline and are well drained with slow permeability. Typical vegetation includes big sagebrush, bottlebrush squirreltail, cheatgrass, and wild onion (NRCS 2010b).

The Godecke series consists of very deep, moderately well drained soils that formed in alluvium derived from mixed sources and occur on stream terraces with slopes ranging from 0 to 2 percent. Mean annual precipitation is ± 9 inches and mean annual temperature is ± 49° F. Soils are moderately to strongly alkaline and are moderately well drained with high runoff and slow permeability. Typical vegetation includes rubber rabbitbrush, greasewood, saltgrass, spiny hopsage, fourwing saltbush, big sagebrush, and basin wildrye (NRCS 2010b).

The Doten series consists of very deep, moderately well drained soils that formed in alluvium derived from mixed rocks and lacustrine sediments and occur on lake plains, alluvial flats and lake terrace with slopes ranging from 0 to 15 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 48° F. Soils are slightly too strongly alkaline, with very slow to medium runoff, and very slow permeability. Typical vegetation includes big sagebrush, bottlebrush squirreltail, and greasewood (NRCS 2010b).

Toll-Mottsville-Kayo Soil Association Unit (s5410)

The Toll series consists of deep, somewhat excessively-drained soils that formed in eolian deposits and alluvium from mixed rocks and occurs on alluvial fans and terraces with slopes of 0 to 15 percent. Mean annual precipitation is ± 10 inches and mean annual temperature is ± 49° F. Soils are slightly acid to neutral and are somewhat excessively-drained with slow or very slow runoff and rapid permeability. Typical vegetation includes desert peach, big sagebrush, rabbitbrush, horsebrush, cheatgrass, Indian ricegrass, needlegrass, and squirreltail (NRCS 2010b).

The Mottsville series consists of very deep, excessively-drained soils that formed in alluvium derived from granitic rocks and occurs on alluvial fans, fan remnants, and fan aprons with slopes from 0 to 15 percent. Mean annual precipitation is ± 11 inches and mean annual temperature is ± 48° F. Soils are moderately acid to neutral and are excessively-drained with negligible or very low surface runoff, and rapid or very rapid permeability. These soils are susceptible to rare flooding for extremely brief periods throughout the year. Typical vegetation includes big sagebrush, antelope bitterbrush, Anderson's peachbrush, and needlegrass (NRCS 2010b).

The Kayo series consists of very deep, well-drained soils that formed in mixed alluvium and occurs on fan piedmonts with slopes from 2 to 30 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 50° F. Soils are slightly acid to neutral and are well-drained or somewhat excessively-drained, with moderately rapid permeability, and slow to medium runoff. Typical vegetation includes spiny hopsage, low rabbitbrush, big sagebrush, desert peach, squirreltail, and Indian ricegrass (NRCS 2010b).

Springmeyer-Orr-Oest-Fleischmann Soil Association Unit (s5412)
See Springmeyer-Mellor-Jowec-Godecke-Doten write-up for Springmeyer description.

The Springmeyer series consists of very deep, well-drained soils that formed in alluvium derived from mixed igneous rocks and occurs on fan remnants and inset fans with slopes ranging from 0 to 50 percent. Mean annual precipitation is ± 11 inches and mean annual temperature is ± 50° F. Soils are slightly acid to neutral and are well-drained with medium to high surface runoff, moderately slow permeability and moderately high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, mountain big sagebrush, antelope bitterbrush, rabbitbrush, singleleaf pinyon, bottlebrush squirreltail, and Sandberg's bluegrass (NRCS 2010b).

The Orr series consists of very deep, well-drained soils that formed in alluvium derived from mixed igneous rocks and occurs on fan remnants, stream terraces, inset fans, and hills with slopes ranging from 0 to 15 percent. Mean annual precipitation is ± 9.8 inches and mean annual temperature is ± 50° F. Soils are well-drained with moderately slow permeability and moderately high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, Sandberg's bluegrass, cheatgrass, and bottlebrush squirreltail (NRCS 2010b).

The Oest series consists of very deep, well-drained soils that formed in alluvium derived from mixed igneous rocks and occurs on fan remnants and stream terraces with slopes ranging from 0 to 50 percent. Mean annual precipitation is ± 9.8 inches and mean annual temperature is ± 50° F. Soils are slightly acid or neutral. Soils are well-drained with low, medium, or high surface runoff, moderate permeability, and moderately high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, antelope bitterbrush, bottlebrush squirreltail, and cheatgrass (NRCS 2010).

The Fleischmann series consists of moderately deep, well-drained soils formed in mixed alluvium and occurs on terraces with slopes ranging from 2 to l5 percent. Mean annual precipitation is ± l0 inches and mean annual temperature is ± 48° F. Soil surfaces are moderately acidic. Soils are well-drained with slow or medium runoff and slow permeability and are used for pasture or occur in urban areas (NRCS 2010b).

Rock outcrop-Graufels-Glenbrook-Acrelane Soil Association Unit (s5414)
The Graufels series consists of moderately deep, somewhat excessively-drained soils that formed in residuum and colluvium derived from granitic rocks and occur on hills and mountains with slopes of 4 to 60 percent. Mean annual precipitation is ± 11 inches and mean annual temperature is ± 49° F. Soils are slightly acid or neutral and somewhat excessively-drained with very low or low surface runoff, rapid permeability, and high or very high

saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, antelope bitterbrush, Anderson's peachbrush, Indian ricegrass, bottlebrush squirreltail, and scattered pine trees (NRCS 2010b).

The Glenbrook series consists of shallow, somewhat excessively-drained soils that formed in residuum and colluvium derived from granitic rock and occur on rock pediments, hills, and mountains from with slopes ranging from 5 to 75 percent. Mean annual precipitation is ± 12 inches and mean annual temperature is ± 48° F. Soils are slightly acid or neutral, somewhat excessively-drained with low or medium surface runoff, rapid permeability, and high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, antelope bitterbrush, green ephedra, Anderson's peachbrush, Indian ricegrass, and bottlebrush squirreltail (NRCS 2010b).

The Acrelane series consists of shallow, well-drained soils that formed in residuum and colluvium derived from granodiorite and similar granitic rocks and occur on hills and mountains with slopes ranging from 4 to 50 percent. Mean annual precipitation is ± 10 inches and mean annual temperature is ± 48° F. Soils are neutral to moderately acid, well-drained with medium or high surface runoff, moderate permeability, and moderately high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, low rabbitbrush, ephedra, Anderson's peachbrush, antelope bitterbrush, desert needlegrass, Indian ricegrass, and bottlebrush squirreltail with Utah juniper common in a few areas (NRCS 2010b).

Tristan-Duco Soil Association Unit (s5415)

The Tristan series consists of deep, well-drained soils that formed in residuum and colluvium derived from basaltic rocks and occur on mountain slopes from 15 to 50 percent. Mean annual precipitation is ± 11 inches and mean annual temperature is ± 48° F. Soils are neutral or slightly alkaline, well-drained with moderately slow permeability and moderately high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, Douglas rabbitbrush, bottlebrush squirreltail, antelope bitterbrush, and some Utah juniper (NRCS 2010b).

The Duco series consists of shallow, well-drained soils that formed in colluvium and residuum derived chiefly from volcanic rocks and occur on structural benches, hills, and mountains with slopes ranging from 4 to 75 percent. Mean annual precipitation is ± 12 inches and mean annual temperature is ± 48° F. Soils are slightly acid to slightly alkaline, well-drained with very high surface runoff, moderately slow permeability, and moderately high saturated hydraulic conductivity. Typical vegetation includes a canopy of singleleaf pinyon and Utah juniper with an understory of Wyoming big sagebrush, antelope bitterbrush,

Ribes ssp., Thurber's needlegrass, bluebunch wheatgrass, Sandberg's bluegrass, and bottlebrush squirreltail (NRCS 2010b).

Terca-Sumine-Softscrabble-Gabica Soil Association Unit (s5417)

The Terca series consists of shallow, well-drained soils that formed in residuum and colluvium derived from volcanic rocks that occur on hills and mountains with slopes ranging from 15 to 75 percent. Mean annual precipitation is about ± 11 inches and mean annual temperature is ± 46° F. The soil is neutral or slightly alkaline. Typical vegetation includes mountain big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Thurber's needlegrass (NRCS 2010b).

The Sumine series consists of moderately deep, well-drained soils that formed in residuum and colluvium derived from mixed rocks and occur on hills, mountains, and plateaus with slopes ranging from 8 to 75 percent. The mean annual precipitation is ± 12 inches and the mean annual temperature is ± 43° F. Soils are neutral or slightly alkaline, well-drained with high or very high surface runoff, moderate permeability, and moderately high saturated hydraulic conductivity. Typical vegetation includes mountain big sagebrush, low rabbitbrush, bluebunch wheatgrass, cheatgrass, and Sandberg's bluegrass (NRCS 2010b).

The Softscrabble series consists of very deep, well-drained soils that formed in residuum and colluvium derived mainly from volcanic rocks and occur on plateaus, hills, and mountains with slopes ranging from 4 to 75 percent. Mean annual precipitation is ± 16 inches and the mean annual temperature is ± 44° F. Soils are slightly acid or neutral, well-drained with high or very high surface runoff, slow permeability, and moderately low saturated hydraulic conductivity. Typical vegetation includes mountain big sagebrush, golden currant, mule's ears, and Douglas rabbitbrush (NRCS 2010b).

The Gabica series consists of shallow, well-drained soils that formed in residuum and colluvium derived from volcanic rocks and occurs on hills and mountains with slopes ranging from 8 to 30 percent. Mean annual precipitation is ± 16 inches and the mean annual temperature is ± 44° F. Soils are moderately acid to neutral, well-drained with high or very high surface runoff and moderately slow permeability. Typical vegetation includes low sagebrush, Sandberg bluegrass, and cheatgrass with minor amounts of rabbitbrush, lupine, buckwheat, Idaho fescue, and yarrow (NRCS 2010b).

Galeppi-Aquinas (s5421)

The Galeppi series consists of very deep, well drained soils that formed in alluvium derived from mixed igneous rocks and occur on fan remnants and stream terraces with slopes ranging from 2 to 50 percent. Mean annual precipitation ± 11 inches and mean annual temperature is

± 49° F. Soils are slightly acid to neutral to slightly alkaline, well-drained with medium to very high runoff and moderately slow permeability. Typical vegetation includes big sagebrush, antelope bitterbrush, Anderson's peachbrush, Thurber's needlegrass, and bottlebrush squirreltail (NRCS 2010b).

The Aquinas series consists of moderately deep, well drained soils that formed in alluvium derived from granodiorite and occur on fan remnants with slopes ranging from 4 to 15 percent. Mean annual precipitation ± 9 inches and mean annual temperature is ± 49° F. Soils are moderately acid to moderately alkaline, well-drained with slow permeability. Typical vegetation includes big sagebrush, green ephedra, Anderson's peachbrush, bottlebrush squirreltail, and cheatgrass (NRCS 2010).

Kistirn-Hollowtree-Deadwood Soil Association Unit (s550)

The Kistirn series consists of deep, well-drained soils formed in material weathered from metasedimentary rock and occur on sideslopes with slopes ranging from 30 to 75 percent. Mean annual precipitation ± 65 inches and mean annual temperature is ± 50° F. Soils are moderately acid, well-drained with medium runoff and moderately slow permeability. Typical vegetation includes Douglas-fir, tanoak, and madrone, with some bigleaf maple and ceanothus (NRCS 2010).

The Hollowtree series consists of moderately deep, well-drained soils formed in residuum weathered from sandstone and occur on hills and mountains with slopes ranging from 9 to 75 percent. Mean annual precipitation is ± 65 inches and the mean annual temperature is ± 55° F. Soils are strongly to slightly acid, well-drained with medium to high surface runoff under bare soil conditions and moderately high saturated hydraulic conductivity. Typical vegetation includes tanoak, Pacific madrone, Douglas-fir, California huckleberry, and interior live oak (NRCS 2010).

The Deadwood series consists of shallow, somewhat excessively-drained soils formed in material weathered from hard metasedimentary rocks and occur on mountainous uplands with slopes ranging from 2 to 100 percent. Mean annual precipitation is ± 55 inches and mean annual temperature is ± 53° F. Soils are slightly to strongly acid, somewhat excessively-drained with very low to medium runoff and moderately rapid permeability. Typical vegetation includes open, mixed stands of ponderosa pine, sugar pine, Douglas-fir, incense-cedar, canyon oak, greenleaf manzanita and pinemat manzanita (NRCS 2010).

Pit-Humboldt-Herjun-Bobert Soil Association Unit (s599)

The Pit series consists of very deep, poorly-drained soils that formed in fine-textured alluvium weathered from extrusive and basic igneous rocks and occur on floodplains and in

basins with slopes ranging from 0 to 5 percent. Mean annual precipitation is ± 12 inches and mean annual temperature is ± 47° F. Soils are neutral or slightly alkaline, poorly-drained with ponded to slow runoff and slow permeability. The soils are flooded for brief to long durations from December to May, during which time the water table depth fluctuates between 2 and 3 ft deep. Drained phases have a water table between 5 to 6 ft deep. Typical vegetation includes tuffed hairgrass, alpine timothy, Baltic rush, sedges, bluegrass, and scattered silver sagebrush in the drier locations (NRCS 2010b).

The Humboldt series consists of very deep, poorly-drained soils that formed in alluvium derived from mixed rocks with a component of volcanic ash and occur on floodplains with slopes ranging 0 to 2 percent. Mean annual precipitation is ± 7 inches and mean annual temperature is ± 50º F. Soils are slightly alkaline to very strongly alkaline, the higher values being only in sodium affected areas. Soils are poorly-drained, exhibit very slow runoff, moderately slow permeability, and moderately low saturated hydraulic conductivity. The soils are usually subject to flooding one year out of two if unprotected. Native areas subject to periodic flooding produce native meadows consisting of creeping wildrye, basin wildrye, sedges, and saltgrass. On sodium-affected areas, typical vegetation is greasewood, saltgrass, and alkali sacaton (NRCS 2010b).

The Herjun series consists of very deep, moderately well-drained soils formed in alluvium and lacustrine sediments and occur on lake terraces with slopes ranging 0 to 2 percent. Mean annual precipitation is ± 10 inches and mean annual temperature is ± 51º F. Soils are moderately or strongly alkaline, moderately well-drained with slow runoff and moderate permeability. A seasonal high water table fluctuates between depths of 50 and 60 inches from December through May. Some phases are subject to rare flooding. Typical vegetation includes greasewood, bluegrass, and inland saltgrass (NRCS 2010b).

The Bobert series consists of very deep, moderately well-drained or well-drained soils that formed in alluvium derived from mixed rocks and occur on lake terraces and stream terraces with slopes ranging from 0 to 2 percent. Mean annual precipitation is ± 10 inches and mean annual temperature is ± 51º F. Soils are slightly alkaline or moderately alkaline, moderately well-drained or well-drained with medium surface runoff and slow permeability. Endosaturation is present with an apparent seasonal high water table between 3.5 and 5 ft between December and April. Typical vegetation includes basin big sagebrush, spiny hopsage, black greasewood, and inland saltgrass (NRCS 2010b).

Stiles-Mcdermott Soil Association Unit (s602)

The Stiles series consists of moderately deep, well-drained soils that formed in lacustrine sediments from mixed rock sources and occur on uplifted lake terraces with slopes ranging

from 0 to 5 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 51º F. Soils are moderately or strongly alkaline throughout, well-drained with slow runoff and slow permeability. Typical vegetation includes big sagebrush, greasewood, spiny hopsage and basin wildrye (NRCS 2010b).

The McDermott series consists of very deep, well-drained soils that formed in lacustrine sediments from mixed rock sources and occur on remnant lake terraces with slopes ranging from 0 to 5 percent. Mean annual precipitation is ± 8 inches and mean annual temperature is ± 51º F. Soils are moderately to strongly alkaline, well-drained with slow runoff and moderately slow permeability. Typical vegetation includes big sagebrush, greasewood, and basin wildrye (NRCS 2010b).

Springmeyer-Mottsville-Leviathan-Haybourne Soil Association Unit (s604

See Springmeyer-Mellor-Jowec-Godecke-Doten write-up for Springmeyer description. See Toll-Mottsville-Kayo and Springmeyer-Orr-Oest-Fleischmann write-ups for Mottsville description.

The Leviathan series consists of very deep, well-drained soils that formed in alluvium derived mainly from granitic rocks and occur on stream terraces and fan remnants with slopes ranging from 0 to 50 percent. Mean annual precipitation is ± 12 inches and mean annual temperature is ± 48º F. Soils are slightly acid or neutral, well-drained with medium to very high surface runoff, moderately slow permeability, and moderately high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, antelope bitterbrush, bottlebrush squirreltail, desert needlegrass, and cheatgrass (NRCS 2010b).

The Haybourne series consists of very deep, well-drained soils that formed in alluvium derived from granitic rocks or from mixed sources and occur on inset fans, alluvial fans, fan remnants, ballenas, lake terraces, fan skirts, and fan aprons with slopes ranging from 0 to 30 percent. Mean annual precipitation is ± 10 inches and mean annual temperature is ± 50º F. Soils are neutral or slightly alkaline, well-drained with very low to medium surface runoff, moderately rapid permeability, and high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, Douglas rabbitbrush, Nevada ephedra, Anderson's peachbrush, bottlebrush squirreltail, desert needlegrass, and Indian ricegrass (NRCS 2010b).

Cleghorn-Chime Soil Association Unit (s605)

The Cleghorn series consists of very deep, well-drained soils that formed in alluvium derived from volcanic rocks and occur on fan remnants with slopes ranging from 0 to 5 percent. Mean annual precipitation is ± 11 inches and mean annual temperature is ± 47º F. Soils are neutral or slightly alkaline, well-drained with high surface runoff, and slow permeability.

Typical vegetation includes Wyoming big sagebrush, Thurber's needlegrass, bottlebrush squirreltail, and Indian ricegrass (NRCS 2010b).

The Chime series are moderately deep, well-drained soils that formed in residuum derived from tuffaceous sandstone and occur on plateaus and rock pediments with slopes ranging from 0 to 15 percent. Mean annual precipitation is ± 9.1 inches and mean annual temperature is ± 46º F. Soils are slightly alkaline, well-drained with high surface runoff, moderately slow permeability, and moderately high saturated hydraulic conductivity. Typical vegetation includes Wyoming big sagebrush, bottlebrush squirreltail, Sandberg's bluegrass, Douglas rabbitbrush, and basin wildrye (NRCS 2010b).

Searles-Petescreek-Fredonyer Soil Association Unit (s606)

The Searles series consists of moderately deep, well-drained soils that formed in colluvium and residuum weathered from rhyolite and basalt and occur on uplands, mountains, and lava plains with slopes ranging from 0 to 80 percent. Mean annual precipitation is ± 11 inches and mean annual temperature is ± 47º F. Soils are slightly acid to slightly alkaline, well-drained with moderately slow permeability, and moderately high saturated hydraulic conductivity. Typical vegetation includes bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass, Wyoming big sagebrush, basin big sagebrush, antelope bitterbrush, and western juniper (NRCS 2010b).

The Petescreek series consists of moderately-deep, well-drained soils that formed in material weathered from andesite tuff or basalt and occur on mountains and hills with slopes ranging of 5 to 50 percent. Mean annual precipitation is ± 14 inches and mean annual temperature is ± 42º F. Soils are slightly acid, well-drained, with medium to rapid runoff, and moderate permeability. Typical vegetation includes mountain big sagebrush, Idaho fescue, bluebunch wheatgrass and bitterbrush (NRCS 2010b).

The Fredonyer series consists of moderately deep, well-drained soils that formed in surface mantles of volcanic ash over residuum and colluvium derived from basalt or andesite and occur on mountains and plateaus with slopes ranging from 2 to 50 percent. Mean annual precipitation is ± 14 inches and mean annual temperature is ± 44º F. Soils are slightly acid or neutral, well-drained, with high surface runoff, and moderate permeability. Typical vegetation includes curlleaf mountain mahogany with an understory of Idaho fescue and mountain big sagebrush (NRCS 2010b).

Toiyabe-Lasco-Chimney-Bonta Soil Association Unit (s611)

The Toiyabe series consists of shallow, excessively-drained soils that formed in colluvium and residuum derived from granitic rock and occurs on mountains with slopes ranging from 2

to 75 percent. Mean annual precipitation is ± 25 inches and mean annual temperature is ± 42º F. Soils are moderately acid to neutral, excessively-drained, with low to high surface runoff, rapid permeability, and high or very high saturated hydraulic conductivity. Typical vegetation includes a forest canopy of Jeffrey pine or Ponderosa pine with an understory of serviceberry, antelope bitterbrush, mountain big sagebrush, snowberry, and grass. Big sagebrush, bitterbrush, and rabbitbrush dominate in burned-over areas, especially on south exposures (NRCS 2010b).

The Lasco series consists of deep, well-drained soils that formed in material weathered from granite and occur on mountain back slopes with slopes ranging from 2 to 50 percent. Mean annual precipitation is ± 35 inches and mean annual temperature is ± 44º F. Soils are slightly acid, well-drained, with slow to rapid runoff, and moderately rapid permeability. Typical vegetation includes Jeffrey pine, Douglas-fir, white fir, Incense-cedar, sugar pine, whitethorn ceanothus, golden chinquapin, and squaw carpet (NRCS 2010b).

The Chimney series consists of very deep, somewhat excessively-drained soils that formed in colluvium derived from granitic rocks and occur on mountains with slopes ranging from 2 to 75 percent. Mean annual precipitation is ± 20 inches and mean annual temperature is ± 50º F. Soils are slightly acid or neutral, somewhat excessively-drained, with very low or low surface runoff, and rapid permeability. Typical vegetation includes a forest canopy of Jeffrey pine and California black oak with an understory of antelope bitterbrush, mountain big sagebrush, and squaw carpet (NRCS 2010b).

The Bonta series consists of moderately deep, well-drained soils that formed in colluvium and residuum derived from granitic rocks and occur on mountains with slopes ranging from 2 to 75 percent. Mean annual precipitation is ± 18 inches and mean annual temperature is ± 46º F. Soils are slightly acid or neutral, well-drained, with high surface runoff, and moderately rapid permeability. Typical vegetation includes a forest canopy of Jeffrey pine, black oak, and western juniper with an understory of curlleaf mountain mahogany, antelope bitterbrush, mountain big sagebrush, mule's ear wyethia, squaw carpet, and perennial grasses (NRCS 2010b).

Trojan-Rock outcrop-Lithic Xerorthents Soil Association Unit (s638)

The Trojan series consists of deep and very deep, well-drained soils that formed in colluvium and residuum derived from volcanic rocks or from schist and argillite and occur on hills and mountains with slopes ranging from 2 to 50 percent. Mean annual precipitation is ± 20 inches and mean annual temperature is ± 45º F. Soils are moderately or slightly acid, well-drained, with medium or high surface runoff, and moderately slow permeability. Typical vegetation includes an open forest canopy of Jeffrey pine and ponderosa pine with an

understory of antelope bitterbrush, curlleaf mountain mahogany, mountain big sagebrush, and scattered western juniper (NRCS 2010b). Rock outcrop and Lithic Xerorthents are not listed in the NRCS database (NRCS 2010b).

Martineck-Lovejoy-Dotta-Calpine Soil Association Unit (s639)

The Martineck series formed in cobbly and stony alluvium mostly derived from basic igneous rock sources and are underlain by indurated to consolidated lake sediments and occur on gently sloping to moderately steep undulating to hilly terraces. Mean annual precipitation of ± 12 to 18 inches. The average January temperature is ± 28º F, and the average July temperature is ± 68º F. Soils are medium acid, well-drained, with slow to rapid runoff, and very slow permeability. Typical vegetation includes low sagebrush, bitterbrush, and perennial grasses (NRCS 2010b).

The Lovejoy soils formed in alluvium from mixed sources that contain some vitric material, are nearly level to undulating and occur on hummocky terraces. Mean annual precipitation is ± 14 to 20 inches. Average January temperature is ± 28º F and average July temperature is ± 69º F. Soils are strongly to medium acid, moderately well-drained, with slow runoff, and very slow permeability. Typical vegetation includes low sagebrush, dryland sedge, and perennial grasses (NRCS 2010b).

The Dotta series consists of very deep, well-drained soils that formed in alluvium weathered from metamorphic and igneous rock sources and occur on alluvial fans and terraces with slopes ranging from 0 to 30 percent. Mean annual precipitation is ± 15 inches and mean annual temperature is ± 50º F. Soils are slightly acid, well-drained, with rapid to slow runoff, and moderate or moderately slow permeability. Typical vegetation includes Idaho fescue, bluebunch wheatgrass, beardless wheatgrass, and big sagebrush (NRCS 2010b).

The Calpine series consists of very deep, well-drained soils that formed in alluvium derived from granitic rocks and occur on alluvial fans, fan remnants, and stream terraces with slopes ranging from 0 to 15 percent. Mean annual precipitation is ± 13 inches and mean annual temperature is ± 50º F. Soils are moderately acid to neutral, well-drained, with very low or low surface runoff, moderately rapid permeability, and high saturated hydraulic conductivity. Typical vegetation includes mountain big sagebrush, antelope bitterbrush, needle and thread, Thurber's needlegrass, and Indian ricegrass (NRCS 2010b).

Trosi-Galeppi Soil Association Unit (s640)

The Trosi soils formed in gravelly, cobbly, and stony alluvium from mixed rock sources and ccur on gently sloping to steep old terraces. Mean annual precipitation is ± 6 to 12 inches. Average January temperature is ± 30º F.; average July temperature is ± 69º F. Soils are

slightly acid, well-drained, with slow to rapid runoff, and very slow permeability. Typical vegetation includes stunted big sagebrush, cheatgrass, and a few perennial grasses (NRCS 2010b).

The Galeppi series consists of very deep, well-drained soils that formed in alluvium derived from mixed igneous rocks and occur on fan remnants and stream terraces with slopes ranging from 2 to 50 percent. Mean annual precipitation is ± 11 inches and mean annual temperature is ± 49º F. Soils are slightly acid to slightly alkaline, well-drained, with medium to very high surface runoff, and moderately slow permeability. Typical vegetation includes Wyoming big sagebrush, antelope bitterbrush, Anderson's peachbrush, Thurber's needlegrass, and bottlebrush squirreltail (NRCS 2010b).

Ramelli-Ormsby-Loyalton-Beckwourth Soil Association Unit (s641)
See Ramelli-Massack-Keddie write-up for Ramelli description.

The Ormsby series consists of very deep, moderately well-drained soils that formed in alluvium derived dominantly from granite and occur on low stream terraces with slopes ranging from 0 to 2 percent. Mean annual precipitation is ± 9 inches and mean annual temperature is ± 49º F. Soils are neutral to strongly alkaline, moderately well-drained, with very low surface runoff, and moderately rapid permeability. Endosaturation is present with an apparent seasonal high water table between 3 and 5 ft from December through May. These soils are susceptible to rare flooding for very brief periods year-round. Typical vegetation includes basin big sagebrush, rubber rabbitbrush, Indian ricegrass, and bottlebrush squirreltail (NRCS 2010).

The Loyalton series consists of very deep, moderately well-drained soils that formed in alluvium derived from mixed igneous rocks and occur on alluvial flats and low stream terraces with slopes ranging from 0 to 2 percent. Mean annual precipitation is ± 14 inches and mean annual temperature is ± 48º F. Soils are strongly alkaline, moderately well-drained, with slow runoff, and very slow permeability. Typical vegetation includes silver sagebrush, rubber rabbitbrush, and inland saltgrass (NRCS 2010b).

The Beckwourth series consists of very deep, somewhat poorly-drained soils that formed in alluvium derived from mixed rocks and occur on flood plains and low stream terraces with slopes ranging from 0 to 2 percent. Mean annual precipitation is ± 13 inches and mean annual temperature is ± 50º F. Soils are moderately acid to neutral, somewhat poorly-drained, with very low or low surface runoff, and moderate permeability. Endosaturation is present with an apparent seasonal high water table within 3 ft of the soil surface between March and May. These soils are susceptible to rare flooding for very brief periods year-

round or occasional flooding for brief periods between January and May. Typical vegetation includes silver sagebrush, dryland sedge, shoestring, and grasses (NRCS 2010b).

3.1.3. Biological Conditions in the BSA

Biological communities are defined by species composition and relative abundance. Natural biological communities in the BSA correlate with Sawyer et al. (2009) and the most current DFG Natural Communities List (September 2010) and are mapped on Figure 2. Wildlife and plant species observed in the BSA are in Appendix C.

3.1.3.1. URBAN AREAS

This area consists mostly of portions of the route in the developed areas of towns and cities, primarily Quincy, Portola, Loyalton, Susanville, and Reno. The landscape is characterized by structures, paved and unpaved surfaces used for transportation, landscaping, and high levels of human use and management. Native vegetation is sometimes present, but is typically confined to relatively small areas, and is likely to experience frequent disturbance by human activities. Wildlife tolerant of human disturbance is also present.

3.1.3.2. MIXED CONIFER FOREST (*PINUS PONDEROSA-CALOCEDRUS DECURRENS* FOREST)

This community is characterized by an open to closed canopy of conifers, primarily ponderosa pine (*Pinus ponderosa*), incense cedar (*Calocedrus decurrens*), and white fir (*Abies concolor*). California black oak (*Quercus kelloggii*) and Douglas fir (*Pseudotsuga menziesii*) are also present at lesser abundance. The shrub layer is generally open. Common shrubs include manzanita (*Arctostaphylos* spp.) and California lilac (*Ceanothus* spp.).

The herb layer is generally very sparse, but smaller, denser areas occur where trees and shrubs are more widely spaced. In the BSA, this community occurs primarily along the SR 70 corridor west of the town of Beckwourth, at the northwestern corner of the Sierra Valley. The mixed conifer forest in the BSA is mostly disturbed relative to the adjacent forest because PSREC maintains the vegetation so that it does not interfere with the poles and overhead lines. Trees and shrubs are routinely cut and removed, so that the largest under the lines are no more than approximately 15 ft tall in most areas.

3.1.3.3. BIG SAGEBRUSH SCRUB (ARTEMISIA TRIDENTATA SHRUBLAND)

This community is characterized by an open canopy of shrubs composed primarily of big sagebrush (*Artemisia tridentata*) and bitter brush (*Purshia tridentata*). Other common shrubs include rabbitbrush (*Chrysothamnus* spp.) and Mormon tea (*Ephedra* sp.). Occasional patches of willow (*Salix* spp.) occur in a small depressions, channels, or roadside ditches.

Trees are almost completely absent. The herb layer is mostly sparse between the shrubs. In the BSA, this community occurs between Reno and Susanville and along the SR 70 corridor from the town of Beckwourth east to Hallelujah Junction.

3.1.3.4. UTAH JUNIPER WOODLAND (JUNIPERUS OSTEOSPERMA WOODLAND)

This community is characterized by a sparse canopy of Utah juniper (*Juniperus osteosperma*). Other trees are mostly absent. The shrub and herb layers are similar to big sagebrush scrub. In the BSA, this community occurs along the US 395 corridor between Hallelujah Junction and the Red Rock Fire Department Lateral Branch.

3.1.3.5. WILLOW THICKET (*SALIX* SPP. SHRUBLAND)

This community is characterized by an open to nearly closed canopy of shrubby willows (*Salix* spp.). It occurs mostly along intermittent or perennial channels. In wetter areas there are also aquatic emergent perennials present including cattail (*Typha* sp.) and *Scirpus* spp.

3.1.3.6. MEADOW

This community is characterized by the near complete cover of herbaceous vegetation and the general absence of trees and shrubs. East of Beckwourth, most meadow areas in the BSA were once big sagebrush scrub, but are now fenced and grazed by livestock.

3.1.3.7. WET MEADOW

This herbaceous community experiences saturated soil conditions well into, and in some cases, throughout the summer. Trees and shrubs are generally lacking, although small patches of willows are present in some areas. Most of the wet meadows in the BSA are grazed by livestock. The wet meadows are in low-lying areas and usually associated with a creek or river. A good example of wet meadow in the BSA is on Figure 2, Sheet 70L, just east of the Quincy substation, and on Sheet 70J, around Long Valley Creek (Feather River Watershed).

3.1.3.8. AGRICULTURE

This community consists of fields that are in agricultural production and primarily include grass or alfalfa hay production, and irrigated and non-irrigated land. The agricultural community does not include areas that are simply grazed by livestock. In the BSA, most agricultural fields are in the Sierra Valley and Honey Lake Valley. The locations of the existing poles in this community are generally along the edge of agricultural fields.

Table 5. Biological Communities and Other Areas. >Revise Based on New PD

Biological Communities	Underground (mi)	Overhead (mi)	Total (mi)
Big Sagebrush Scrub	11.24	87.33	98.57
Mixed Conifer Forest	--	26.64	26.64
Meadow	--	11.61	11.61
Agriculture	--	10.98	10.98
Wet Meadow	--	5.05	5.05
Willow Thicket	--	3.77	3.77
Utah Juniper Woodland	0.33	1.98	2.31
Perennial Water	0.03*	0.63	0.66
Other Areas			
Urban	8.86	14.04	22.90
Total:	**20.46**	**162.03**	**184.49**

Note: Acreages were calculated with AutoCAD® functions.

* The project does not include trenching through perennial waters or willow thickets. In some places the BSA includes bridge attachments that are classified as "underground" in the project description, or horizontal direction drills under features.

3.1.3.9. EXISITING LEVEL OF DISTURBANCE

The BSA is located in existing utility and transportation corridors. Trees and other vegetation have been removed in various segments of the BSA. Portions of the BSA occur in urban areas of Susanville, Quincy, and Reno. Other portions of the BSA traverse agricultural land that is actively farmed and/or grazed by livestock. Much of the BSA is located in or immediately adjacent to transportation corridors including US 395, SR70, various county roads, and the Union Pacific Railroad. The BSA is subject to ongoing disturbance due to maintenance of the line and its location within transportation corridors, agricultural lands, and urban areas.

3.2. Regional Species and Habitats of Concern

Data received from USFWS, USFS, BLM, NNHP, and CNDDB records were used to compile a table of regional species and habitats of concern. This information is summarized in Appendix E. Reconnaissance level field surveys were conducted to determine if suitable habitat for the species is present in the BSA. Species for which there is no habitat in the BSA, or whose range precludes their occurrence in the BSA, are evaluated in Appendix E and are not discussed further.

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Chapter 4. Results: Biological Resources, Discussion of Impacts, and Mitigation

Species and communities of concern identified in Appendix E as having the potential to occur in the BSA are discussed in this chapter. The listing status for special-status species is in Appendix E.

4.1. Aquatic Habitats

4.1.1. Discussion of Rivers

4.1.1.1. SURVEY RESULTS

There are eight river crossings in the BSA: three crossings of the Middle Fork Feather River; four crossings of the Susan River; and one crossing of the Truckee River. The Middle Fork Feather River is ultimately tributary to the Sacramento River. The Truckee River is tributary to Pyramid Lake, a closed depression in the Great Basin. The Susan River is tributary to Honey Lake, a closed depression in the Great Basin.

Middle Fork Feather River, Marble Crossing: Existing utility lines along the Marble lateral branch cross the Middle Fork Feather River (MFFR) near the intersection of SR 70 and County Highway A23 (Beckwourth Calpine Road). There is a narrow band of scrub wetland on the south side of the MFFR at the crossing point. The project will hang new conduit on the existing utility poles. The MFFR is a designated Wild and Scenic River at this crossing point.

Middle Fork Feather River, Portola Crossing: An existing bridge crosses the MFFR at Gulling Street in Portola. There is willow thicket along the MFFR near the bridge. The project will attach conduit to the existing Gulling Street Bridge to cross the MFFR. The MFFR is a designated Wild and Scenic River at this crossing point.

Middle Fork Feather River, Graeagle Crossing: Existing utility lines along the Graeagle lateral branch cross the MFFR next to the Blairsden-Graeagle Bridge. There is a willow thicket along the MFFR at this crossing. The project will hang new conduit on the existing utility poles. The MFFR is a designated Wild and Scenic River at this crossing point.

Susan River, Leavitt Crossing: Existing utility lines cross the Susan River near Leavitt, southeast of the California Correctional Center. There are a few willow trees/shrubs along

the Susan River. A wetland and meandering channel complex occur north of the Susan River. The channel complex continues ± 3,850 ft north to County Highway A27 (Center Road). For the first ± 2,500 ft north of the Susan River, the existing poles are on the boundary of a wetland complex bordering an agricultural field. In this area, the poles can be accessed from the unpaved agricultural roads. For the next ± 1,350 ft, the wetland complex is on both sides of the existing poles and there are no access roads. The project will hang new conduit on the existing utility poles. The poles will be accessed by truck in the segment of the BSA next to the agricultural field. The poles will be accessed by crews on foot in the segment of the BSA with wetland complex on both sides.

Susan River, Johnstonville Crossing: Existing utility lines cross the Susan River along Johnstonville Road, near Johnstonville. There a few willows immediately along the Susan River. The project will hang new conduit on the existing utility poles.

Susan River, East Susanville Crossing: Existing utility lines cross the Susan River along an old railroad grade west of Commercial Road east of Susanville. There is a willow thicket along the Susan River at the crossing. The project will hang new conduit on the existing utility poles.

Susan River, Susanville Substation Crossing: Existing utility lines cross the Susan River southeast of the existing Susanville Substation. There are willow thickets and wetlands along the Susan River at this crossing. The project will hang new conduit on the existing utility poles.

Truckee River: The BSA crosses the Truckee River at Virginia Street in downtown Reno. There is no riparian vegetation or wetland habitat adjacent to the BSA where it crosses the Truckee River. The river is bordered by vertical concrete block and stone walls at the Virginia Street Bridge. The project will either attach conduit to the existing Virginia Street Bridge, or use existing conduit attached to the bridge, to cross the Truckee River.

4.1.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

In addition to the erosion and sedimentation avoidance measure in Chapter 1, all rivers in the BSA, including any adjacent willow thickets and wetlands, shall be avoided by either hanging new conduit on existing utility poles, attaching new conduit to existing bridges, or blowing new fiber in existing conduit. No vehicles or equipment staging shall be allowed in perennial or intermittent waters, wetlands or willow thickets. Construction personnel, on foot, may need to cross part of a wetland or willow thicket if a pole is surrounded by a wetland or willow thicket.

4.1.1.3. PROJECT IMPACTS

With implementation of the avoidance and minimization measures, the project will not impact rivers or adjacent willow thickets or wetlands.

4.1.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.1.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.1.2. Discussion of Perennial Creeks and Canals

4.1.2.1. SURVEY RESULTS

Long Valley Creek, Baxter Creek, Rhodes Creek, Willow Ranch Creek, and nearby creeks on Constantia Road drain to Honey Lake, a closed depression in the Great Basin. The Main Canal and Lake Leavitt Inlet Canal are irrigation canals in the Honey Lake basin. The other creeks discussed below are in the watersheds of either the Middle Fork or North Fork Feather River, which are ultimately tributary to the Sacramento River.

Long Valley Creek, SR 70 Crossing: Existing utility lines cross Long Valley Creek immediately north of SR 70. There is a willow thicket along Long Valley Creek at the crossing. The project will hang new conduit on existing utility poles.

Long Valley Creek, Scott Road Crossing: Existing utility lines cross Long Valley Creek near the north end of Upper Long Valley. The site may be accessed by an unpaved public road (Scott Road) or by a private road that serves a nearby mine. There is a willow thicket along Long Valley Creek at the crossing. The project will hang new conduit on the existing utility poles.

Long Valley Creek, Redrock Lateral Branch Crossing: Existing utility lines along the Redrock lateral branch cross Long Valley Creek immediately west of US 395. There is a willow thicket along Long Valley Creek at the crossing. The project will hang new conduit on the existing utility poles.

Rhodes Creek, Willow Ranch Creek, and nearby creeks on Constantia Road: Existing utility lines along Constantia Road cross Rhodes Creek, Willow Ranch Creek, and several other unnamed creeks, northwest of Constantia. These relatively small creeks drain small watersheds on the steep east slope of the nearby Sierra Nevada, and they begin to dissipate in

the area of the BSA, in the relatively flat areas of Long Valley. There are scattered patches of willows along some of the creeks, but no well-developed riparian corridors.

Long Valley Creek, Garnier Road Crossing: Existing utility lines along the Sierra Army Depot lateral branch cross Long Valley Creek along Garnier Road. Long Valley Creek is normally dry at this crossing location and only flows during large flow events. Long Valley Creek was dry at this crossing during the reconnaissance survey in December 2010 although the three other upstream crossings of Long Valley Creek were all flowing. There is a willow thicket along Long Valley Creek at the crossing. The project will hang new conduit on the existing utility poles.

Baxter Creek: Existing utility lines cross Baxter Creek near Sunnyside Road, near Buntingville. There is a willow thicket along Baxter Creek at the crossing. The project will hang new conduit on the existing utility poles.

Main Canal: The Main Canal is an irrigation canal that begins at Lake Leavitt and serves agricultural fields to the east, between Lake Leavitt and Honey Lake, near Susan River. There is no significant riparian corridor along the Main Canal. The project will hang new conduit on the existing utility poles across the Main Canal.

Brockman Slough: Existing utility lines cross Brockman Slough, near the junction with the Johnstonville Lateral. There is a willow thicket along Brockman Slough near the crossing point.

Lake Leavitt Inlet Canal: The Lake Leavitt Inlet Canal (also known as the A-B Canal) is an irrigation canal that diverts water from the Susan River into Lake Leavitt. The BSA crosses the Lake Leavitt Inlet Canal on Johnstonville Road. There is no significant riparian habitat along the Lake Leavitt Inlet Canal. The project will hang new conduit on the existing utility poles across the Lake Leavitt Inlet Canal.

Little Last Chance Creek, Union Pacific Railroad Tracks Crossing: Existing utility lines cross Little Last Chance Creek in the Sierra Valley along the Union Pacific railroad tracks. There is a willow thicket along Little Last Chance Creek at the crossing. The project will hang new conduit on the existing utility poles.

Little Last Chance Creek, Loyalton Lateral Crossing: Existing utility lines on the Loyalton Lateral cross Little Last Chance Creek along Cow Camp Road. There is a willow thicket along Little Last Chance Creek at the crossing. The project will hang new conduit on the existing utility poles.

Unnamed Creek near Loyalton: Existing utility lines cross an unnamed creek along Sierra Valley Road, near the intersection with Bar One Ranch Road. The project will hang new conduit on the existing utility poles.

North Channel Little Last Chance Creek: Existing utility lines cross North Channel Little Last Chance Creek in the Sierra Valley along the Union Pacific railroad tracks. North Channel Little Last Chance Creek has been artificially straightened at the crossing point. There is a willow thicket along North Channel Little Last Chance Creek at the crossing. The project will hang new conduit on the existing utility poles.

Big Grizzly Creek: Existing utility lines cross Big Grizzly Creek immediately north of SR 70. There is a willow thicket along Big Grizzly Creek at the crossing. The project will hang new conduit on the existing utility poles.

Humbug Creek: Existing utility lines cross Humbug Creek immediately west of Delleker Drive in Delleker. There is a narrow wetland along Humbug Creek at the crossing. There is a small reservoir along Humbug Creek immediately downstream from the crossing point. The project will hang new conduit on the existing utility poles.

Bonta Creek: Existing utility lines cross Bonta Creek near the Feather River Inn. The project will hang new conduit on the existing utility poles.

Long Valley Creek, Middle Fork Feather River Watershed: This crossing is different than the Long Valley Creek in the eastern part of the BSA that drains to Honey Lake. Long Valley Creek (Middle Fork Feather River Watershed) drains to the Middle Fork Feather River. The crossing point is at the confluence of nearby Little Long Valley Creek and Long Valley Creek. Both creeks near the BSA crossing have been impounded into a series of small, artificial ponds. There are areas of wet meadow along both creeks at and near the crossing point. The project will hang new conduit on the existing utility poles.

Estray Creek: Existing utility lines cross Estray Creek immediately east of Greenhorn Ranch Road. There is a riparian corridor of willows and alders along Estray Creek at the crossing point. The project will hang new conduit on the existing utility poles.

Greenhorn Creek, Williams Loop Crossing: Existing utility lines cross Greenhorn Creek immediately east of Squirrel Creek Road. The crossing point is across SR 70 from the Williams Loop of the Union Pacific Railroad. There is a narrow riparian corridor along Greenhorn Creek at the crossing point. The project will hang new conduit on the existing utility poles.

Greenhorn Creek, American Valley Crossing: Existing utility lines cross Greenhorn Creek just south of SR 70, at the far eastern end of American Valley. There is a riparian corridor along Greenhorn Creek at the crossing point. The project will hang new conduit on the existing utility poles.

Thompson Creek: Existing utility lines cross Thompson Creek just south of SR 70, in the Thompson Valley. There is a narrow line of willows along Thompson Creek at the crossing point. The project will hang new conduit on the existing utility poles.

Mill Creek: The BSA crosses Mill Creek at SR 70/89 in East Quincy. Mill Creek is in a double concrete box culvert underneath the highway at the crossing point. The project will install new conduit underground at this location with a horizontal directional drill.

Gansner Creek: The BSA crosses Gansner Creek at Bucks Lake Road on the west side of Quincy. The project will install new conduit underground at this location with a horizontal directional drill.

Spanish Creek: Existing utility lines cross Spanish Creek between Bucks Lake Road and Feather River College, near the western end of the American Valley. There is a willow thicket along Spanish Creek at the crossing point. The project will hang new conduit on the existing utility poles.

4.1.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

In addition to the erosion and sedimentation avoidance measure in Chapter 1, all creeks in the BSA, including any adjacent willow thickets, riparian corridors, and wetlands, shall be avoided by either hanging new conduit on existing utility poles, installing conduit underneath creeks with horizontal directional drills, or blowing new fiber in existing conduit. No vehicles or equipment staging shall be allowed in perennial or intermittent waters, wetlands, willow thickets, or riparian corridors. Construction personnel, on foot, may need to cross narrow portions of wetlands, willow thickets, or riparian corridors, if a pole is surrounded by such a feature.

4.1.2.3. PROJECT IMPACTS

With the implementation of the avoidance measures, the project will not impact creeks or adjacent wetlands, willow thickets, or riparian corridors.

4.1.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.1.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.1.3. Discussion of Intermittent and Ephemeral Creeks

4.1.3.1. SURVEY RESULTS

Ephemeral creeks between Hallelujah Junction and Reno: The ephemeral creeks in this segment of the BSA are above the water table year-round and are generally too dry to support riparian vegetation. There are a few patches of willow thicket, generally where the freeway has disrupted the drainage and created wetter soil conditions. In the California portion of this segment, the creeks drain to Long Valley Creek. In the Nevada portion of this segment, the creeks drain to either closed depression lakes, including White Lake and Silver Lake, or the Truckee River. Ephemeral creeks in this segment of the BSA will either be avoided with a horizontal directional drill or trenched. If trenched, the process will be consistent with U.S. Army Corps of Engineers Nationwide Permit 12.

Intermittent and ephemeral creeks between Hallelujah Junction and Susanville: The creeks in this segment of the BSA all drain to Honey Lake. This segment includes creeks east of Beckwourth Pass. Most of the creeks in this segment originate in and drain the east slope of the Northern Sierra Nevada/Diamond Mts. Some of the creeks contain intermittent flows and are large enough to support narrow riparian corridors and/or adjacent wetlands. The project will hang new conduit on existing utility poles over these creeks and any adjacent riparian corridors or wetlands.

Intermittent and ephemeral creeks between Hallelujah Junction and Quincy: The creeks in this segment of the BSA all drain ultimately to the North Fork or Middle Fork Feather River. This segment includes creeks west of Beckwourth Pass. Some of the creeks contain intermittent flows and are large enough to support narrow riparian corridors and/or adjacent wetlands. The project will hang new conduit on existing utility poles over these creeks and any adjacent riparian corridors or wetlands.

4.1.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

Some of the ephemeral creeks between Hallelujah Junction and Reno will be avoided with horizontal directional drills (HDD) using techniques consistent with the standards of Caltrans (2008) and the Nevada Department of Transportation. Trenching through ephemeral creeks in this segment would occur during the dry season.

In addition to the erosion and sedimentation avoidance measure in Chapter 1, all creeks elsewhere in the BSA, including any adjacent willow thickets, riparian corridors, and

wetlands, shall be avoided by either hanging new conduit on existing utility poles, installing conduit beneath creekbeds with horizontal directional drills, or blowing new fiber in existing conduit. No vehicles or equipment staging shall be allowed in perennial or intermittent waters, wetlands, willow thickets, or riparian corridors. Construction personnel, on foot, may need to cross part of a wetlands, willow thicket, or riparian corridor if a pole is surrounded by such a feature.

4.1.3.3. PROJECT IMPACTS

The project will temporarily impact the bed of some ephemeral creeks between Hallelujah Junction and Reno during trenching, consistent with the conditions of Nationwide Permit 12. The trenching will occur when the creeks are dry and the bed will be returned to pre-construction grade. The temporary impacts to these ephemeral creeks are less than significant.

With implementation of the avoidance measures, the project will not impact creeks, adjacent wetlands, willow thickets, or riparian corridors in the BSA.

4.1.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.1.3.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.1.4. Discussion of Wetlands

4.1.4.1. SURVEY RESULTS

The wet meadow and willow thicket communities in the BSA likely meet the U.S. Army Corps of Engineers 3-parameter test for wetlands. Wet meadows and willow thickets occur mostly in association with a river or creek and are also mentioned above in the discussion of rivers and creeks. They are mapped on Figure 2.

4.1.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

In addition to the erosion and sedimentation avoidance measures in Chapter 1, wetlands in the BSA, including willow thickets, riparian corridors, and wet meadows, shall be avoided by either hanging new conduit on existing utility poles, installing conduit underground with horizontal directional drills, or blowing new fiber in existing conduit. No vehicles or equipment staging shall be allowed in wetlands. Construction personnel may need to cross part of a wetland on foot, if a pole is surrounded by wetland features.

4.1.4.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not impact wetlands in the BSA. The project will not fill wetlands.

4.1.4.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.1.4.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.2. Special-Status Invertebrates

4.2.1. Discussion of California Floater (*Anodonta californiensis*)

A freshwater mussel that occurs in slow-moving rivers, lakes, and sometimes reservoirs, usually with mud or sand substrates. California floater is broadly distributed across North America, but the taxonomic relationships among some of the freshwater western North American mussels is not resolved. Several species of native fish and two nonnative fish may serve as larval hosts (Jepsen et al. 2010).

Range: Historically widespread in the Pacific Drainage from Canada to Mexico, including Plumas, Tahoe, and Eldorado National Forests, and the Lake Tahoe Basin. Extirpated from the Death Valley Basin, Los Angeles Basin, and the Sacramento River Basin in the Central Valley, California. Extant occurrences are known from the Columbia River and Snake River systems (northernmost NV and UT, WY, ID, OR, and WA into Canada); upper reaches of Eel River, California (Humboldt, Trinity, Mendocino, Lake and Glenn counties); Fall and Pit Rivers (Shasta Co., California); Humboldt River drainage, Lahontan Basin in northern Nevada; Bonneville Basin (UT, eastern edge of NV and WY); Great Salt Lake, North Fork Humboldt and Carson Desert basins Nevada; and Donner Lake, Nevada Co., California. Also known from Calaveras, Inyo, Mendocino, and Tuolumne counties, California; Churchill, Elko (possibly extirpated), Lander, and Washoe counties, Nevada; AZ and WY (NatureServe 2011).

Known Records: There are records since 1985 in the Honey Lake Basin, and records of unknown date in the Truckee River drainage. Searches for freshwater mussels since 1985 in the Feather River drainage have not resulted in new records of California floater (Jepsen et al. 2010).

4.2.1.1. SURVEY RESULTS

Some rivers and larger creeks crossed by the BSA may provide habitat for California floater, including the Susan River and Long Valley Creek (Honey Lake Basin). The Truckee River in the BSA is fast-flowing and has a mostly cobble/boulder substrate. The crossing of the Middle Fork Feather River at the Marble Lateral provides potential habitat, but California floater is not currently known from the watershed.

4.2.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures for rivers and creeks in Chapter 1 will also avoid impacts to California floater.

4.2.1.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not impact California floater.

4.2.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.2.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.2.2. Discussion of Carson wandering skipper (CWS; *Pseudocopaeodes eunus obscurus*)

CWS is a small butterfly that inhabits lowland grasslands on alkaline substrates, generally below 5,000 ft. CWS occurrences are often associated with open areas near springs or water. Geothermal activity may also characterize potential habitat. Females lay their eggs in June and July on saltgrass (*Distichlis spicata*), the larval host plant. Adult nectar sources must be present for food during the flight season. Adults likely live 1-2 weeks, possibly longer if abundant nectar sources exist. The larvae most likely hibernate during the winter and emerge as adult butterflies in the late spring/early summer. Larval development may rely on the presence of quality saltgrass cover and more permanent water sources. Dispersal patterns are unknown, but CWS generally do not fly very far (USFWS 2007).

CWS habitat is defined by the overall cover of saltgrass located near a nectar source. Saltgrass is common in the saltbush-greasewood (*Atriplex-Sarcobatus*) vegetation communities of the intermountain west, and is widely distributed in lowland areas of dry pluvial lakes on highly alkaline soils. Available nectar sources that grow in the saltbush-

greasewood community include thelypody (*Thelypodium crispum*), tumble mustard (*Sisymbrium altissimum*), racemose golden-weed (*Pyrrocoma racemosus*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), bird's foot trefoil (*Lotus corniculatus*), slender cleomella (*Cleomella parviflora*), small-flowered cleomella (*Cleomella plocasperma*), heliotrope (*Heliotropium curassavicum*), cinquefoil (*Potentilla* sp.), western sea purslane (*Sesuvium verrucosum*), and alkali weed (*Cressa truxillensis*). A nearby freshwater source that supports alkaline-intolerant nectar sources may be used if no alkaline-tolerant plant species are present (USFWS 2007).

Adult CWS can be distinguished from other *Pseudocopaeodes eunus* subspecies by its browner, less intense orange color on the dorsal surface; and thicker black coloring along the veins, outer margin, and both basal surfaces. CWS has an overall duller appearance with a bright yellow and orange ground color, especially on the ventral surface, with broadly darkened veins. In general, larvae (caterpillars) of all *P. eunus* are usually green or tan with dark heads and black collars (USFWS 2007).

Range: CWS is currently known from four extant populations, two in Washoe Co., Nevada, one in Lassen Co., California, and one along the Carson River south of Carson City, Nevada. A sighting of single skipper was observed in 2004 near Flannigan in Washoe Co., and may or may not indicate a local population. The population once known in Carson City is considered extirpated as of 1998 and can no longer support CWS due to development and habitat changes. There is no designated critical habitat for CWS. The Lassen Co. population occurs around Honey Lake (USFWS 2007).

Known Records: There are no NNHP records for CWS on the Reno, Reno NW, Reno NE, Granite Peak, Seven Lakes Mountain, or Verdi quads in Washoe Co. The two Washoe Co. populations are in Warm Springs Valley and Spanish Springs Valley (USFWS 2007).

The Honey Lake Valley occurrence is the largest of the four known extant populations of CWS in terms of numbers and amount of habitat. CWS was observed at 25 sites near Honey Lake from 1998 to 2005. Of those 25 sites, 17 were found in 2004 and 2005, primarily within the Honey Lake shoreline. Observations in 2004/ 2005 can be combined into seven general areas: North Shore (Honey Lake Ranch), North Shore (Darkin Unit), East Shore (Wendel Hot Springs), East Shore (Amedee Hot Springs), Northern Shore Island, Western Shore Island, and Southern Shore Island (USFWS 2007).

There are 15 records for CWS in CNDDB, all from the Honey Lake population, which occur within the Recovery Plan general areas described above (pers. comm., R. Bittman). All records occur along the margin of Honey Lake. For each of the 15 records, the BSA is at

least 1.6 mi away from the closest CWS record. The nearest record of CWS to the BSA is at the Patton substation and near Buntingville.

Habitat described in the CNDDB records around Honey Lake consists of varied mixtures of saltgrass, saltbush, greasewood, heliotrope, alkali weed, slender cleomella (sparse), tumble mustard, western sea purslane, big sagebrush, milkvetch (*Astragalus douglasii*), bird's foot trefoil, cheat grass (*Bromus tectorum*), chenopod (*Chenopodium* sp. or *Kochia* sp.), barley (*Hordeum jabatum*), poverty sumpweed (*Iva axillaris*), *Puccinellia* sp., locoweed, Russian thistle (*Salsola tragus*), sage (*Salvia* sp.), *Scirpus* sp., and seepweed (*Suaeda* sp.), some with sporadic large patches of salt accumulation. Several occurrences were threatened by tall whitetop (*Lepidium latifolium*) infestation.

4.2.2.1. SURVEY RESULTS

The BSA is composed predominantly of big sagebrush scrub near Honey Lake. It also contains meadow and agricultural areas. Small developed areas including rural residences and associated infrastructure are common. The BSA does not cross the margin of Honey Lake or any area dominated by alkaline vegetation. Saltgrass occurs sporadically in the BSA in the Honey Lake area, generally along disturbed roadsides, but not with high cover or in the context of shorelines or other substantial water source. Substantial patches of saltgrass occur along the margin of White Lake, on the east side of US 395 near the California-Nevada border. The BSA at this location is on the west side of US 395. CWS is not known from White Lake (pers. comm., M. Haworth). The BSA is not located in areas identified as potential CWS habitat on Map: WL-1 of the Eagle Lake Field Office, Proposed Resource Management Plan / Final EIS (BLM 2007).

4.2.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance measures for CWS are proposed.

4.2.2.3. PROJECT IMPACTS

Completion of the Proposed Project adjacent to Honey Lake and White Lake will consist of hanging fiber optic conduit on existing utility poles within the existing utility corridor. Project construction adjacent to White Lake will on the west side the US 395. There are no known occurrences of CWS in the proposed project area, and the project will have no affect on any known occurrences of CWS outside the proposed project area. . There are no known occurrences of CWS in the BSA, and the project will have no affect on any known occurrences of CWS outside the BSA. In a letter dated 8 March 2011 the USFWS Reno office provided written concurrence that the proposed project is not likely to adversely impact CWS. In an email dated 30 March 2011

USFWS Sacramento office concurred with the determination made by the USFWS Reno office. The proposed project will not affect CWS.

4.2.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.2.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.3. Special-Status Fish

4.3.1. Discussion of Cui-ui (*Chasmistes cujus*)

Cui-ui is a long-living, lake sucker endemic to Pyramid Lake and the lower Truckee River in Nevada. Preferred habitat in Pyramid Lake includes the lake bottom in near shore areas at depths less than 75 ft. Cui-ui migrates up the lower Truckee River to spawn between March and June. Spawning occurs over gravel substrates where eggs are broadcast over a large area. Larvae hatch in 1-2 weeks and drift downstream toward Pyramid Lake. Some may enter backwaters and remain for several weeks. In Pyramid Lake, larvae occupy the shallow lake shore and disperse into deeper waters in the summer. Maturity is reached in 6 to 12 years, with females tending to grow faster and live longer than males (USFWS 19 January 2011, USFWS 15 March 2010, USFWS 1992). Critical habitat has not been designated for Cui-ui (UWFWS 1992).

The following criteria must be met for successful Cui-ui reproduction in the Truckee River: sufficient water volume to attract potential spawners in the delta and initiate a run; and adequate flow to maintain spawning, incubation and rearing habitat in the river and allow adult and larvae out-migration (USFWS 1992).

Currently, migration only occurs 6 to 12.5 mi upstream from Pyramid Lake, with most spawning occurring between Marble Bluff and Numana dams. Migrating adults require deep pools and cover, which are generally absent in the lower Truckee River below Marble Bluff Dam and can promote stress during spawning runs (USFWS 15 March 2010, USFWS 1992). Most spawners spend only a few days upstream, but some may remain for up to 16 days. Spawning runs may occur for 4 to 8 weeks, with the majority migrating during a 1 to 2 week period. Fish must pass through the Marble Bluff Fish Facility and above Marble Bluff Dam to reach spawning habitat. Cui-ui can migrate upstream to spawn using one of two routes:

the traditional fish spawning route through the delta at the mouth of the Truckee River; and a fishway that provides passage from Pyramid Lake to the Marble Bluff Fish Facility.

Range: During the Pleistocene, Cui-ui were known throughout the Lahontan basin. As the climate changed, lake levels declined and Cui-ui populations decreased. By the beginning of the 20th century, Cui-ui only inhabited Pyramid and Winnemucca lakes. In spring, they would congregate at the mouth of the Truckee River and were thought to migrate as far as 25 mi upstream to spawn. Recent information suggests historical spawning runs extended 62 mi upstream to Reno. The Winnemucca Lake population was eliminated when the lake dried up in the 1930s (USFWS 1992, USFWS 19 January 2011, USFWS 15 March 2010).

Cui-ui is endemic to Pyramid Lake and the lower Truckee River in Nevada. Currently, migration only occurs 6 to 12.5 mi upstream in the lower Truckee River between March and June, with most spawning occurring between Marble Bluff and Numana dams.

Known Records: There are no CNDDB records for Cui ui. There are no NNHP records for Cui ui in the six quads encompassing the BSA.

4.3.1.1. SURVEY RESULTS

Cui-ui are not known to currently migrate up Truckee River as far as Reno, Nevada. Essential Cui-ui spawning habitat is identified in the Truckee River from Hunter Creek in western Reno to and including Pyramid Lake and its tributaries (USFWS 1992). Essential spawning habitat for Cui-ui occurs where the BSA crosses the Truckee River at Virginia Street in Reno.

4.3.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for rivers and creeks described in Chapter 1 will also avoid impacts to Cui-ui.

4.3.1.3. PROJECT IMPACTS

Completion of the Proposed Project will not result in temporary or permanent impacts to the Truckee River in the BSA. Fiber optic conduit will be placed on the Virginia Street Bridge over the Truckee River. No in-water construction will occur at this crossing. In a letter dated 8 March 2011 the USFWS Reno office provided written concurrence that the proposed project is not likely to adversely impact Cui-ui. In an email dated 30 March 2011 USFWS Sacramento office concurred with the determination made by the USFWS Reno office. The Proposed Project will not affect Cui-ui.

4.3.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.3.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.3.2. Discussion of Hardhead (*Mylopharodon conocephalus*)

Hardhead are large freshwater cyprinid fishes that prefer clear, deep (>32 inches) pools and runs with sand-gravel-boulder substrates and slow velocities. Hardhead are always found in association with Sacramento pikeminnow and usually with Sacramento sucker. They tend to be absent from streams where introduced species predominate and from streams that have been severely altered by human activity (Moyle 2002). Hardhead mature in their third year. In large rivers or reservoirs, they may migrate 19-47 mi or more upstream into tributary streams in April and May to spawn. Hardhead typically spawn in April and May.

Range: Hardhead are widely distributed in low-to mid-elevation streams in the Sacramento-San Joaquin drainage and the Russian River of California, from the Pit River in Modoc Co. south to Kern River, in Kern Co. In the San Joaquin drainage, the species is scattered in tributary streams and absent from Valley reaches of the San Joaquin River. In the Sacramento drainage, hardhead is present in most large tributary streams as well as in the Sacramento River.

Known Records: There are 3 CNDDB records of hardhead in the North Fork Feather River in Plumas Co. One record occurs near the junction with Opapee Creek in Plumas National Forest; 3 adults were observed at this location in 2007. Another record occurs in Rock Creek Reservoir, at the junction with Chips Creek and the North Fork Feather River; 3 adults were observed at this location in 2007. The third record occurs about 0.8 mi southwest of the Rock Creek Powerhouse, between Plumas and Lassen National Forests; 4 adults were observed at this location in 2007.

4.3.2.1. SURVEY RESULTS

The portion of the BSA along the SR 70 corridor west of Beckwourth Pass is in the Feather River drainage, which provides potential habitat for hardhead.

4.3.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for rivers and creeks described in Chapter 1 will also avoid impacts to hardhead.

4.3.2.3. PROJECT IMPACTS

With implementation of the avoidance measures, the Project will not impact hardhead.

4.3.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.3.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.3.3. Discussion of Lahontan cutthroat trout (*Oncorrhynchus clarkii henshawi*)

Lahontan cutthroat trout (LCT) is a non-anadromous salmonid that occurs in lake and stream habitats of the Lahontan Basin (Moyle 2002). LCT require clear, cold water, but can tolerate higher alkalinity and total dissolved solid levels than other salmonids in lake environments (USFWS 30 March 2009), and are more tolerant of prolonged exposure to elevated water temperatures up to 25°C (Moyle 2002). LCT is an obligatory stream spawner, known to travel long distance to find adequate spawning habitat. They prefer streams with a variety of habitats, such as slow, deep water, abundant stream cover (large woody debris, boulders, undercut banks, vegetation, etc.), relatively stable streamflow, and stable temperature regimes (USFWS 30 March 2009).

Spawning occurs April through July and is dependent on stream flow, elevation, and water temperature. Eggs are deposited on gravel in well oxygenated and relatively silt free riffles, pocket water, or pool crests (USFWS 30 March 2009). Recently hatched fry emerge from the gravel and remain in shallow shoreline areas and use small gravel/cobble for cover. Fish may exhibit three different life strategies: out-migration as fry, out-migration as juveniles, or river residency (Moyle 2002). Stream-inhabiting LCT feed primarily on terrestrial and aquatic insects and zooplankton. Lake-inhabiting LCT generally prey upon zooplankton and other fish species (USFWS 30 January 1995).

LCT were down-listed from federally endangered to federally threatened on 16 July 1975 (USFWS 9 September 2008). In 1995, USFWS released its recovery plan for LCT (USFWS 30 January 1995). The Recovery Plan divided LCT into three distinct population segments (DPS): 1) Western Lahontan basin comprised of Truckee, Carson, and Walker river basins; 2) Northwestern Lahontan basin comprised of Quinn River, Black Rock Desert, and Coyote Lake basins; and 3) Eastern Lahontan Basin comprised of the Humboldt River and tributaries. No LCT DPSs, were listed under the Endangered Species Act. Since it is

inappropriate to discuss DPSs that are not listed, populations are often organized and discussed based on watersheds within the three major basins described above.

In 2009, the Truckee River basin had over 40 partial or complete barriers to fish, impeding migration to historic spawning and rearing habitats. Approximately 72.2% of LCT populations are isolated in stream reaches less than 5 mi long. In 2002, a fish passage was installed at Derby Dam to allow fish migration. The Derby Dam was a barrier that most likely contributed to the original extirpation of LCT from Pyramid Lake. Populations that currently reside in Pyramid Lake were transplanted from Independence Lake (USFWS 30 March 2009).

Recreation harvesting of LCT is allowed in some waters, including the Truckee River. Regulations pertaining to the harvest of LCT vary by regulatory agency and include trout number limits, fishing gear restrictions, or catch and release policies. Heavily fished areas are restocked with fish from hatcheries (USFWS 30 March 2009).

Range: Historically, LCT occurred throughout in the Lahontan basin, from northern Nevada, to eastern California, and to southern Oregon. Most of the watersheds that supported LCT were connected through rivers, streams, and lakes, allowing individual movement between populations. This increased genetic diversity and allowed extirpated populations to become reestablished. Populations in Pyramid Lake historically migrated up to 100 mi up the Truckee River into Lake Tahoe and its tributaries (USFWS 30 March 2009).

LCT is currently found in only five lakes within its historic range: Pyramid, Walker, Fallen Leaf, Independence, and Summit lakes, with only Summit and Independence Lake having self-sustaining populations. Independence Lake has the only remaining native population in the Truckee River watershed. Populations that currently reside in the Truckee River were transplanted from fish in Independence Lake (USFWS 30 March 2009). The remaining lake populations are maintained by hatchery stocking programs. LCT is also found within many other lakes and streams outside their historic range, such as Heenan and Red lakes in the Carson River watershed. Current populations in the Truckee River, Sagehen Creek, Hunter Creek, and Dog Creek were established and are maintained by hatchery stocking programs.

Known Records: There are no CNDDB records for LCT in within 10 mi of the BSA. There are no NNHP records for LCT in the six-quad area encompassing the BSA in Nevada.

This subspecies currently occupies the Truckee River (from the CA-NV line east to Wadsworth, Nevada), Hunter Creek, Dog Creek, South Branch Dog Creek, Sagehen Creek, Pole Creek, Upper Independence Creek, and Independence Lake in the Truckee River

Watershed (HUC 16050102; USFWS 2009-5YR). Of these waterbodies, only the Truckee River crosses the BSA. Historically LCT likely occurred in the Honey/ Eagle Lake Basin (HUC 18080003). Currently, there are no LCT populations in the Honey/ Eagle Lake Basin and suitable transplant habitat is not available (USFWS 30 January 1995). There is no current or historical distribution within the East Branch North Fork Feather Watershed (HUC 18020122) or the Middle Fork Feather Watershed (18020123).

4.3.3.1. SURVEY RESULTS

Habitat for LCT in the BSA is restricted to the Truckee River where it crosses the BSA at Virginia Street in Reno.

4.3.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for rivers and creeks described in Chapter 1 will also avoid impacts to LCT.

4.3.3.3. PROJECT IMPACTS

Completion of the Proposed Project will not result in temporary or permanent impacts to the Truckee River in the BSA. Fiber optic conduit will be placed on the Virginia Street Bridge over the Truckee River. No in-water construction will occur at this crossing. In a letter dated 8 March 2011 the USFWS Reno office provided written concurrence that the proposed project is not likely to adversely impact LCT. In an email dated 30 March 2011 USFWS Sacramento office concurred with the determination made by the USFWS Reno office. The Proposed Project will not affect LCT.

4.3.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.3.3.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.4. Special-Status Amphibians

4.4.1. Discussion of Foothill yellow-legged frog (FYLF; *Rana boylii*)

FYLF is a stream dweller that requires shallow, flowing water, preferably in a small to moderate sized stream with some cobble sized substrates (Jennings and Hayes 1994). They occur in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed

chaparral, and wet meadow types. Adults often bask on exposed rock surfaces near streams, diving into the water under submerged rocks or sediments when disturbed (CWHR 2011). Oviposition occurs between March and June following a period of high water flow from winter rainfall and snowmelt. Egg masses are deposited on the downstream side of cobbles and boulders. Tadpoles occur in rocky pools and riffles, and are adapted to a flowing stream environment. Metamorphosis occurs after 15 weeks, between July and September, and reaches adult size in approximately two years. This species is infrequent or absent from habitats that contain introduced aquatic predators, such as various fish and bullfrogs (Jennings and Hayes 1994). During cold weather, FYLF seek cover under rocks in the stream or near the shore. They are rarely found far from water (CWHR 2011).

Range: FYLF was historically distributed in most Pacific drainages from Oregon to Baja California. In California, this species was known historically from most foothill drainages from sea level to 6,365 ft. In California, this species occurs at many locations along the coast, but has scattered records in northern California on the western slope of the Sierra Nevada and extreme southern Cascades (Jennings and Hayes 1994). Isolated populations occur in the Central Valley in San Joaquin Co. (CHWR 2011).

Known Records: There are no NNHP records for FYLF in the six-quad area encompassing the BSA in Nevada. There are three CNDDB records of FYLF within 10 mi of the BSA. All three are south or west of Quincy and are 5.3 to 6.3 mi away. Two records from 1998 and 2008 are in Spanish Creek, upstream of the BSA and upstream of Meadow Valley. The third CNDDB record is from 2008, approximately 6.2 mi west of the BSA in Quincy. Over 50 adults were studied in a telemetry study from 2005 to 2008, just north of the confluence of Spanish Creek and Bean Creek, in Plumas National Forest. FYLF tadpoles and egg masses were also observed at the site. The range of FYLF overlaps with *Rana sierrae* along this creek and the two species are known to hybridize.

4.4.1.1. SURVEY RESULTS

Perennial creeks in the Feather River watershed in the BSA provide potential habitat for FYLF. The BSA crosses Spanish Creek in Quincy.

4.4.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures for waters, wetlands, and riparian areas in Chapter 1 will also avoid impacts to FYLF. The project will hang conduit on existing utility lines crossing Spanish Creek.

4.4.1.3. PROJECT IMPACTS

With implementation of the avoidance measures, the Project will not impact FYLF.

4.4.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.4.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.4.2. Discussion of Sierra Nevada yellow-legged frog (SNYLF; *Rana sierrae*)

In 2003, USFWS listed the Sierra Nevada distinct population segment (DPS) of mountain yellow-legged frog (*Rana muscosa*) as a candidate species. The listing applies to populations in the Sierra Nevada north of the Tehachapi Mts. (USFWS 2003). After it was listed in 2003, Vredenburg et al. (2007) described the populations of mountain yellow-legged frog in the northern Sierra Nevada as a distinct species from the populations of mountain yellow-legged frog in the southern Sierra Nevada. The northern populations were described by Vrendenburg et al. as *R. sierrae* (Sierra Nevada yellow-legged frog, SNYLF). As of 14 April 2010, USFWS has not recognized *R. sierrae* as taxonomically distinct from the Sierra Nevada DPS of *R. muscosa*. The candidate listing applies to the Sierra Nevada DPS of mountain yellow-legged frog, including those described as *R. sierra* in Vrendenburg et al. (USFWS 2010).

SNYLF is associated with perennial streams, lakes, and ponds in montane riparian, lodgepole pine, subalpine conifer, and wet meadow habitats and are rarely found more than 3.3 ft from water (Zeiner et al. 1988; USFWS 2003). SNYLF is absent from the smallest creeks probably because of insufficient water depth for adequate refuge and overwintering. Although SNYLF occur in low numbers along a variety of shorelines, it appears to prefer gently sloping open stream and lake margins that border relatively shallow water edges (typically 2-3 inches in depth). Such shorelines are probably essential for oviposition and important for thermoregulation of larvae and post-metamorphs and for refuge from fish predation (Jennings and Hayes 1994).

Reproduction occurs when lakes and streams are free of ice. At higher elevations, breeding and egg-laying usually occur from June to August, depending on local conditions. Eggs are usually laid in shallow water attached to submerged gravel or rocks. Tadpoles may require up to two over-wintering periods to complete metamorphosis. During winter, adults are thought to hibernate beneath ice-covered streams, lakes, and ponds (Zeiner et al. 1988).

Adults and tadpoles are commonly preyed upon by garter snakes and introduced trout (Zeiner et al. 1988). SNYLF rarely co-occur with introduced predatory fish and tend to be more successful where predatory fishes are absent (Jennings and Hayes 1994).

Range: A single CNDDB record for SNYLF was found near Quincy at ± 3,700 ft. Typical home ranges are probably less than 33 ft in the longest dimension. Occasional movements up to 165 ft may be associated with habitat deterioration, especially drying (Zeiner et al. 1988).

SNYLF once ranged from the Diamond Mts. in the southern Cascades in Plumas Co., California, south through the Sierra Nevada to Inyo Co. In the northwestern region of the Sierra Nevada, several populations occur just north of the Feather River. West of the Sierra Nevada crest, the southern part of the SNYLF range is bordered by ridges that divide the Middle and South Fork of the Kings River, ranging from Mather Pass to the Monarch Divide. East of the Sierra Nevada crest, SNYLF occur in the Glass Mts. just south of Mono Lake and along the east slope of the Sierra Nevada south to the type locality at Matlock Lake (Vrendenberg et al. 2007). SNYLF is confined to California except for historic populations on Mt. Rose near Lake Tahoe (possibly Edgewood Creek) in western Nevada.

Known Records: There are 17 CNDDB records of SNYLF within 10 mi of the BSA. Southwest of Janesville, California, records occur in meadows and tributaries upstream of Antelope Lake. South of Blairsden, California, one record occurs from a large pond; southwest of Blairsden, several records occur around Goose and Haven Lake. West of Quincy, California several records occur in Bean Creek. The closest CNDDB record for SNYLF is located approximately 4.5 mi west of the PSA on the Meadow Valley quad, west of Quincy. Three adults, 14 juveniles, and 1 larva were observed on 29 September 2005 in willow riparian habitat in Spanish Creek at an elevation of ± 3,700. In Nevada, there are no NNHP records of SNYLF on the Reno NW, Reno NE, Verdi, Reno, Seven Lakes Mountain, and Granite Peaks quads.

4.4.2.1. SURVEY RESULTS

SNYLF was not observed during general biological surveys in the BSA. There are no known records of SNYLF in the BSA. SNYLF does not occur in sagebrush scrub habitats. The portion of the BSA between Reno and Susanville, and along SR 70 west to approximately Big Grizzly Creek (northwest Sierra Valley), crosses sagebrush scrub and does not provide habitat for SNYLF.

West of Big Grizzly Creek, the landscape in the BSA is dominated by mixed coniferous forest. Creeks and ponds with summer inundation provide potential habitat for SNYLF. Waterbodies with predatory fish are unlikely to provide suitable habitat for SNYLF. It is unknown which waterbodies in the BSA contain predatory fish.

4.4.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures for waters, wetlands, and riparian areas in Chapter 1 will also avoid impacts to SNYLF.

4.4.2.3. PROJECT IMPACTS

There are no known occurrences of SNYLF in the BSA. The project will hang conduit on existing utility poles over aquatic habitats that could contain unknown occurrences of SNYLF. With implementation of the avoidance measures, the project will not affect SNYLF.

4.4.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.4.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.4.3. Discussion of Northern leopard frog (NLF; *Lithobates* [=*Rana*] *pipiens*)

NLF is a highly aquatic species that occurs in or near quiet, permanent, and semi-permanent water in a variety of habitats (CWHR 2010), including freshwater and brackish marshes (NDOW 2003). This species requires a mosaic of habitats for overwintering, breeding, and upland post-breeding sites, as well as habitat linkages to these sites. Dense, relatively tall, grass- or forb-dominated habitat with a moist substrate for foraging during the active season, must occur in the vicinity of the aquatic habitat. Overwintering occurs in small excavated mud bottomed pits of deeper waters that are well oxygenated and do not freeze to the bottom (Jennings and Hayes 1994). Tadpoles are generalist herbivores, occasionally feeding on animal matter. Adults and subadults are generalists who feed on insects, spiders, mollusks, and crustaceans (USFWS 1 July 2009).

Breeding occurs in slow moving or still waters of streams and rivers, wetlands, permanent or temporary pools, beaver ponds, and human constructed habitats. Emergent vegetation, such as sedges and rushes, and lack of predators are important for breeding and tadpole habitats. Approximately two to three days after the onset of male chorusing, females lay eggs in shallow breeding ponds. Eggs are usually attached to vegetation just below the water surface, and can contain several hundred to several thousand eggs (USFWS 1 July 2009). In California, breeding and egg-laying occur from December to June, depending on local conditions; eggs normally hatch in three weeks, and tadpoles metamorphose in two to four months (CWHR 2011).

Frogs can move significant distances from natal ponds, but show a high degree of site fidelity as adults (Jennings and Hayes 1994). Recently metamorphosed frogs will move up and down drainages to dispense from breeding areas, and sub adults usually migrate to feeding sites along larger and more permanent bodies of water (USFWS 1 July 2009).

Range: NLF is widely distributed in North America from sea level to 7,000 ft (Jennings and Hayes 1994; CWHR 2011). NLF is possibly extirpated from almost 100 percent of its range in California (USFWS 10 November 2010). Occurrences in California were uncommon and localized, with many origins uncertain and possibly introduced (CWHR 2011). Native occurrences in northern California include Modoc and Lassen counties (Jennings and Hayes 1994; CWHR 2011). Frogs in the vicinity of Lake Tahoe have been treated as native, but historical evidence indicates that at least some of these are introduced populations. Sightings from the 1990s found NLF in Siskiyou and Inyo counties (Jennings and Hayes 1994). DFG is concerned only about native populations of this species (DFG 2009a).

In Nevada, NLF is known only from isolated populations in the eastern and extreme western part of the state (NDOW 2003), and is considered to be declining, rare, or locally extinct from historical locations (USFWS 10 November 2010).

A 2004 mitochondrial DNA study found that the northern leopard frog contains two discrete populations between its eastern and western range, divided by the Mississippi River and Great Lakes region (USFWS 10 November 2010). USFWS is currently reviewing information to determine whether the western populations warrant federal protection under the Endangered Species Act (USFWS 28 October 2009). As of November 2010, the review has not been completed (USFWS 10 November 2010).

Known Records: There are no CNDDB records for NLF within 10 mi of the BSA. There is one NNHP record for NLF in the six-quad area encompassing the BSA in Nevada. This record is from 1936 and is located approximately 7.6 mi southwest of the BSA at the nearest point. The record is on the west side of the Truckee River approximately 0.5 mi west of Verdi, Nevada.

4.4.3.1. SURVEY RESULTS

Habitat for NLF occurs wherever the BSA crosses permanent or semi-permanent water.

4.4.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures for waters, wetlands, and riparian areas in Chapter 1 will also avoid impacts to NLF.

4.4.3.3. PROJECT IMPACTS

With implementation of the avoidance measures, the Project will not affect NLF.

4.4.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.4.3.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.5. Special-Status Reptiles

4.5.1. Discussion of Western Pond Turtle (WPT; *Actinemys* [=*Emys*] *marmorata*)

WPT is associated with permanent or nearly permanent water in a wide variety of habitats, such as permanent ponds, reservoirs, lakes, rivers, streams, irrigation ditches, permanent and ephemeral shallow wetlands, permanent pools along intermittent streams, abandoned gravel pits, stock ponds, and sewage treatment lagoons (BLM 2006; CWHR 2011). Pools are the preferred habitat when found in streams. The presence of adequate emergent basking sites, emergent vegetation, and suitable refugia is preferred (BLM 2006). Basking sites include partially submerged logs, rocks, mats of floating vegetation, or open mud banks. In colder areas, hibernation occurs underwater in bottom mud (CWHR 2011). WPT are omnivorous and are known to feed on aquatic plant material, small insects, aquatic invertebrates, fish, frogs, snakes, and carrion (BLM 2006; CWHR 2011). Home range varies from 2.42 ac in males and 0.62 ac in females, with daily movements ranging from 92 to 286 ft (BLM 2006).

Courtship and mating of WPT have been observed most of the year except December through January. Nesting occurs from late April through August (BLM 2006). Two distinct habitats may be used for oviposition; 1) along large slow-moving streams, nests are constructed in sandy banks; 2) and along foothill streams, females may climb hillsides to find a suitable nest site (CWHR 2011). Typically, nests have been observed in open, grassy areas with a southern exposure (BLM 2006). Females may travel up to 1.2 mi to find suitable nesting habitat. WWPT nests are usually 4 in deep, and have been observed in soil types from sandy to very hard. Three to 13 eggs are laid from March to August, depending on local conditions and female body size (CWHR 2011, BLM 2006). Egg incubation varies with latitude, and can range from 80 to 126 days. In southern California, western pond turtles are known to produce up to two clutches per year. In northern California, hatchlings remain in the nest through the winter (BLM 2006). Sexual maturity is attained at six or seven (BLM 2006) to about eight years (CWHR 2011) of age.

Two subspecies of WPT have been recognized (northwestern pond turtle, *Actinemys m. marmorata* and southwestern pond turtle, *A. m. pallida*), but the validity of these distinctions

have been questioned. A study in 2005 found four geographically distinct clades. The northern clade was congruent with the distribution of northwestern pond turtle, but no clade was congruent for distribution of southwestern pond turtle. The 2005 study concluded that the current subspecies split is not warranted (NatureServe 2011). For the purposes of this document, WPT and northwestern pond turtle are considered the same species.

Range: WPT ranges from southern Washington south to Baja California west of the Sierra-Cascade crest, with an isolated population in the Carson River near Carson City, Nevada. WPT occurrences have also been found in the Truckee and Humboldt rivers, and may represent introductions (CWHR 2011; NatureServe 2011). Although its elevation ranges from sea level to 6,717 ft, the species is uncommon above 5,015 ft (BLM 2006; CWHR 2011). WPT is absent from desert regions except along the Mojave River in its tributaries in the Mojave Desert (CWHR 2011). Currently, extensive populations of WPT are only found in northern California and southern OR (BLM 2006).

Known Records: There are no CNDDB records for WPT within 10 mi of the BSA. There are three NNHP records for WPT in the six-quad area encompassing the BSA in Nevada. All three records are in the Truckee River between Reno and Sparks, and are considered historical records (1940 and 1941).

4.5.1.1. SURVEY RESULTS

Habitat for WPT occurs where the BSA crosses any permanent or nearly permanent water.

4.5.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures for waters, wetlands, and riparian areas in Chapter 1 will also avoid impacts to WPT.

4.5.1.3. PROJECT IMPACTS

With implementation of the avoidance measures, the Project will not affect WPT.

4.5.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.5.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.5.2. Discussion of Northern sagebrush lizard (*Sceloporus graciosus graciosus*)

Sagebrush lizard (*Sceloporus graciosus*) is common in most habitats where it occurs and is widely distributed in montane chaparral, hardwood and conifer habitats, eastside pine and juniper habitats, and Great Basin shrub habitats (CWHR 2011). It mainly occurs in sagebrush, but also manzanita and ceanothus shrubland, pinyon-juniper woodland, pine and fir forests, and along river bottoms in coastal redwood forests. Sagebrush lizard can be found near bushes, brush heaps, logs or rocks (Stebbins 2003).

Sagebrush lizard feeds on a wide variety of insects and other arthropods. When disturbed, they take cover in dense, low growing bushes or shrubs, or hide in mammal burrows, rock crevices, and under surface objects. Mammal burrows and rock crevices may also be used as hibernation sites during cold weather. Warm season activity occurs between March and October, depending on annual variability. Basking occurs on the ground, on low branches of bushes, or on low boulders (CWHR 2011).

Reproduction occurs from May through July, with egg laying occurring in June or July. Females lay between two and seven eggs, depending on the size of the female. Females dig a nest in loose soil, laying eggs a few centimeters deep. Nests are often found near the base of shrubs. Eggs hatch from August through September (CWHR 2011).

Range: Sagebrush lizard (*S. graciosus*) is widely distributed in the western U.S. from 3,000 to 10,400 ft, including California and Nevada (CWHR 2011, Stebbins 2003). There are three subspecies, all occurring in California. *S. g. graciosus* has the largest range, occurring in all states within the species distribution; *S. g. graciosus* occurs east of the Sierra-Cascade range in the Great Basin deserts and the northeastern corner of California, and throughout the entire state of Nevada except the southernmost tip (Stebbins 2003).

Known Records: There are no NNHP records for sagebrush lizard in the six-quad area encompassing the BSA in Nevada. There are no CNDDB records for sagebrush lizard within 10 mi of the BSA.

4.5.2.1. SURVEY RESULTS

The BSA east of Beckwourth provides potential habitat for the subspecies *S. g. graciosus*.

4.5.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance or minimization efforts are proposed.

4.5.2.3. PROJECT IMPACTS

Northern sagebrush lizard is not a special-status species in Nevada. Northern sagebrush lizard is considered sensitive by the Eagle Lake Field Office of BLM in California. The project could result in the sporadic loss of Northern sagebrush lizard individuals, but would have a less than significant impact on the species.

4.5.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.5.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6. Special-Status Birds

4.6.1. Discussion of Migratory Birds and Birds of Prey

Fish and Game Code 3503.5 protects all birds in the orders Falconiformes and Strigiformes (collectively known as birds of prey). Birds of prey include raptors, falcons, and owls. Many birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any bird listed in 50 CFR Part 10 including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The MBTA applies to construction activities and construction-related disturbance.

4.6.1.1. SURVEY RESULTS

Birds of prey and other birds protected under the MBTA were observed during the reconnaissance level field surveys in December 2010 (Appendix C). Foraging and nesting habitat occurs in and adjacent to the BSA for birds of prey and migratory birds. Nesting habitat for swallows occurs under various bridges in the BSA.

4.6.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures listed in Chapter 1 will be implemented.

4.6.1.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not affect birds of prey or migratory birds.

4.6.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is required for birds of prey and migratory birds.

4.6.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.2. Discussion of Northern Goshawk (*Accipiter gentilis*)

Northern goshawks prefer middle and higher elevations, and mature, dense conifer forests and deciduous habitats. This species usually nests on north slopes, near water, in the densest parts of stands, but close to openings. Northern goshawks use old nests and maintain alternate sites (CWHR 2011). In Nevada, a majority of the nests are found in aspen and nearly all are found near water (NDOW 2010). Typically, northern goshawks nest in mature or old-growth forests and generally select large tracts of forest over small tracts. Western birds also nest in deciduous forests dominated by aspen, paper birch, or willow. Nests are generally constructed in the largest trees of dense, old, or mature stands with high canopy closure and sparse groundcover, near the bottom of moderate slopes, and near water or dry openings (NatureServe 2011). Breeding begins in April in southern California and by mid-June in the north (CWHR 2011).

Northern goshawks hunt in wooded areas, using snags and dead-topped trees for observation and prey-plucking perches. After the breeding season, some northern goshawks move down-slope, as far as valley foothill hardwood habitat in the Sierra Nevada, likely due to food availability. Migration into lowlands occurs irregularly (CWHR 2011).

Range: Northern goshawks breed in the North Coast Ranges through the Sierra Nevada, Klamath, Cascade, and Warner Mts., on Mt. Pinos, and in the San Jacinto, San Bernardino, and White Mts. Some northern goshawks remain yearlong in breeding areas as an uncommon resident. This species is casual in winter along the north coast, throughout foothills, and northern deserts, where they may be found in pinyon-juniper and low elevation riparian habitats (CWHR 2011). Northern goshawks are a year-round resident in Nevada (NDOW 2010).

Known Records: There are 21 CNDDB records for northern goshawks within 10 mi of the BSA. There are no NNHP records for northern goshawks in the six-quad area encompassing the BSA in Nevada. The closest CNDDB record to the southern BSA segment is located approximately 0.6 mi north of the BSA, approximately 4.2 mi east of East Quincy at Massack Creek. An active nest was observed at this site in 1981; this site was inactive in

1982. The closest CNDDB record to the northern BSA segment is located approximately 3.6 mi north of the BSA, north of Susanville.

As part of the Sierra Nevada Forest Plan Amendment (SNFPA), protected activity centers (PACs) for northern goshawks are designated with the intent of directing management to specifically sustain viable populations (USFS January 2004). The BSA is not located in a northern goshawk PAC. There are seven PACs located within one mile of the BSA. The closest PAC is located approximately 0.2 mi west of the BSA, approximately 3.5 mi northwest of Blairsden. SR 70 is located between the PAC and the BSA. The CNDDB record located east of East Quincy, referenced above, occurs within a PAC.

4.6.2.1. SURVEY RESULTS

Field surveys for northern goshawks were not conducted in the BSA. No northern goshawks were observed in the BSA during the reconnaissance surveys conducted in December 2010. Habitat for northern goshawks occurs in the mixed conifer forest in and adjacent to the BSA, west of Beckwourth along the southern BSA segment.

4.6.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

The SNFPA (USFS January 2004) specifies a limited operating period (LOP) within 0.25 mi of a northern goshawk territory or active nest site between 15 February and 15 September. The PNF wildlife biologist stated that the LOP period would not be necessary if project activities in the area could be implemented within a day or two with little to no increase above existing noise levels as well as being implemented as close to or after 31 August as possible (pers. comm., Nickerson 2010). SR 70 occurs between the BSA and the PAC that occurs 0.2 mi from the BSA. The BSA will either be accessed on existing roads or on foot. Noise levels from project construction will not exceed noise levels generated by the highway. There are no other northern goshawk PACs or nest sites within 0.25 mi of the BSA. The preconstruction survey for birds of prey listed in Chapter 1 will identify any new northern goshawk nests in the vicinity of the BSA.

Between 15 February and 15 September, work within 0.25 mi of northern goshawk nests or PACs will be limited to two days. If more than two days are needed to complete the work, PSREC will coordinate with the appropriate agency, e.g., BLM wildlife biologist if the nest is on BLM land, USFS wildlife biologist if the nest is on USFS land, or DFG environmental scientist if the nest is on state or private land, to determine if construction activities should be restricted near active nests for a specific distance and/or period of time.

4.6.2.3. PROJECT IMPACTS

If no project activities are conducted during the limited operating period (LOP), within a 0.25 mi of a northern goshawk territory or active nest site, the project will not affect the northern goshawk. If project activities are conducted, for approximately one or two days (short duration), within a 0.25 mi of a northern goshawk territory or active nest site during the LOP, the project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the northern goshawk (pers. comm., Nickerson 2011). With implementation of the avoidance measures, the project will not impact northern goshawk.

4.6.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.3. Discussion of Tricolored blackbird (*Agelaius tricolor*)

Tricolored blackbirds form the largest breeding colonies in North America (Shuford and Gardali 2008), supporting a minimum of 50 pairs (CWHR 2011). This species requires open access to water, a protected nesting substrate (such as water or thorny vegetation), and suitable insect foraging areas nearby. Historically, most breeding colonies occurred in freshwater marshes dominated by cattails or tules, occasionally nettles, thistles and willows. Nests were built in cattails, sometimes in willows and other riparian trees. In the 1970s, an increasing number of colonies were found in Himalayan blackberries and thistles in silage and grain fields, often near dairies, due to a loss of natural habitat (Shuford and Gardali 2008).

Winter foraging occurs in large flocks with other blackbirds in grasslands, vernal pools, and other seasonal wetlands, riparian scrub, open marsh borders, and artificial habitats, such as agricultural fields with low growing vegetation, and at dairies and cattle feeding lots. Pure tricolored blackbird flocks separate out in February to search for suitable nesting habitat. Breeding occurs March through August (Shuford and Gardali 2008). Two to six eggs are incubated for about 11 days and the young leave the nest in approximately 13 days. Sexual maturity probably occurs within the first year (CWHR 2011). Individuals may move north after their first nesting efforts in March and April (Shuford and Gardali 2008). In winter, tricolored blackbirds move south, becoming more widespread throughout their range (CWHR 2011). Nesting colonies are of concern to DFG (2009a).

Range: The main portion of their breeding range occurs in the Central Valley of California. Distribution within California includes the Sacramento and San Joaquin valleys, foothills of the Sierra Nevada south to Kern Co., coastal slopes from Sonoma Co. south to Mexico, and sporadically in the Modoc Plateau (Shuford and Gardali 2008). Nevada has one consistent migrating breeding colony in a privately-owned marsh in Douglas Co. Periodically, tricolored blackbird colonies are reported in other nearby marshes in Carson Valley (GGBO 2010).

Known Records: There is a geographically imprecise record from 1972 for tricolored blackbird in Reno. CNDDB Occurrence 272 is in a wetland between the Susan River and Center Road (see Chapter 4.1), crossed by the BSA. Tricolored blackbirds were observed at the site in the 1980's, including nesting in 1983. Nests were observed in 2001, but could have been red-winged blackbird nests. There are three other CNDDB records of tricolored blackbirds in cattail marshes near Susan River between Susanville and Honey Lake.

4.6.3.1. SURVEY RESULTS

Some larger marshes and willow thickets in the BSA could provide nesting habitat for tricolored blackbird, particularly the wetland complex between the Susan River and Center Road.

4.6.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.3.3. PROJECT IMPACTS

With implementation of avoidance measures, the project will not impact tricolored blackbird.

4.6.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.3.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.4. Discussion of Golden Eagle (*Aquila chrysaetos*)

Golden eagles are generally found in open country of prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions (NatureServe 2011). Golden eagles need open terrain for hunting such as grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats. Golden eagles use secluded cliffs

with overhanging ledges and large trees for cover. Golden eagles nest on cliffs of all heights and in large trees in rugged, open areas with canyons and escarpments. Alternative nest sites are maintained and old nests are reused. Golden eagles breed from late January through August with a peak from March through July (CWHR 2011). Nesting and nonbreeding/wintering sites are of concern to DFG (2009a).

Range: Golden eagles are an uncommon permanent resident and migrant throughout California, except the center of the Central Valley. This species is perhaps more common in southern California than in the north. Golden eagles range from sea level to 11,500 ft (CWHR 2011). Golden eagles are a permanent resident in Nevada (NatureServe 2011).

Known Records: There are 3 CNDDB records for golden eagles within 10 mi of the BSA. There are no NNHP records for golden eagles in the six-quad area encompassing the BSA in Nevada. The closest CNDDB record is located approximately 4.9 mi northeast of the BSA, approximately 5.9 mi northeast of Leavitt. An active nest was observed on a cliff at this site in 1979.

The Plumas National Forest (PNF) maintains records of golden eagle eyries (nests). There is a golden eagle eyrie on Bonta Ridge. The eyrie is approximately 0.4 mi northeast of the BSA, and approximately 3.1 mi north of Blairsden. A pair of golden eagles was observed at this location in and around the eyrie on 30 April 1979. The BSA, in the vicinity of the eyrie, is about 0.1 mi away from SR 70.

4.6.4.1. SURVEY RESULTS

Habitat for golden eagles occurs primarily in the big sagebrush scrub and Utah juniper woodland in and adjacent to the BSA, between Reno and Susanville and along the SR 70 corridor between the town of Beckwourth and Hallelujah Junction. Additional habitat is present in the coniferous forests adjacent to the BSA, where there are canyons and escarpments. During reconnaissance surveys conducted by Sycamore Environmental biologists in December 2010, several golden eagles were observed foraging in big sagebrush scrub habitat in and adjacent to the BSA in California.

4.6.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

The PNF wildlife biologist stated that an LOP would be required for construction activities between 1 February and 31 August in the vicinity of active golden eagle nests. The LOP period, however, would not be necessary if project activities in the area could be implemented within one or two day window with little to no increase above existing noise levels and if they were implemented as close to or after 31 August as possible (pers. comm.,

Nickerson 2010). The BSA in the area of the golden eagle nest occurs approximately 0.1 mi from SR 70. The BSA will either be accessed on existing roads or on foot. Noise levels from project construction will not exceed noise levels generated by the highway. There are no other documented golden eagle nest sites within 0.5 mi of the BSA. The preconstruction survey for birds of prey listed in Chapter 1 will identify any new golden eagle nests in the vicinity of the BSA.

Between 1 February and 31 August, project construction within 0.5 mi of golden eagle nests will be limited to two days of work. If more than two days are needed to complete the work, PSREC will coordinate with the appropriate agency, e.g., BLM wildlife biologist if the nest is on BLM land, USFS wildlife biologist if the nest is on USFS land, or DFG environmental scientist if the nest is on state or private land, to determine if construction activities should be restricted near active nests for a specific distance and/or period of time.

4.6.4.3. PROJECT IMPACTS

If no project activities are conducted during the limited operating period (LOP), within 0.5 mi of an active golden eagle nest, the project will not affect the golden eagle. If project activities are conducted, for approximately one or two days (short duration), within 0.5 mi of an active golden eagle nest site during the LOP, the project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the golden eagle (pers. comm., Nickerson 2011). The project will not impact golden eagle with implementation of the avoidance measure.

4.6.4.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.4.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.5. Discussion of Short-Eared Owl (*Asio flammeus*)

Usually found in open areas with few trees. Suitable habitats include salt and freshwater marshes, irrigated alfalfa or grain fields, ungrazed grasslands, prairies, dunes, meadows (Shuford and Gardali 2008). This species requires dense vegetation, such as tall grasses, brush, ditches, and wetlands for resting and roosting cover (Zeiner et al. 1990a). Habitat components generally include large areas with low vegetation, dry upland areas for nesting, and sufficient suitable prey base. Often approximately 99% of the diet of short-eared owl is

composed of small mammals (Shuford and Gardali 2008). Nearby water is a requirement for nesting habitat (NatureServe 2011). Nesting sites are of concern to DFG (2009a).

Range: Short-eared owls breed across much of northern North America. Many North American populations are migratory and winter in northern Mexico and Florida. In California this species is a year round resident in certain parts of the State, namely the Great Basin and locally in the Sacramento-San Joaquin River Delta (Shuford and Gardali 2008). In California the breeding range of this species retracts dramatically during years with drought conditions and during prey reductions. Short-eared owl is a nonbreeding resident throughout much of Nevada and a permanent resident in northwestern Nevada (NatureServe 2011).

Known Records: There are no CNDDB records for short-eared owl within 10 mi of the BSA. There are no NNHP records for short-eared owl on the six-quad area encompassing the BSA in Nevada. The closest CNDDB record is located approximately 107 mi north of the BSA, north of Susanville. Two nests were observed on open ground near the Peninsula Highlands, approximately 2 mi northeast of the Lava Beds National Monument.

4.6.5.1. SURVEY RESULTS

In the BSA habitat for short-eared owl occurs in the meadow, wet meadow, and agricultural habitat in the BSA.

4.6.5.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for short-eared owl.

4.6.5.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not impact short-eared owl.

4.6.5.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.5.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.6. Discussion of Long-Eared Owl (*Asio otus*)

Long-eared owls require riparian habitat, but also use live oak thickets or dense stands of trees. Riparian or other thickets with small, densely canopied trees are required for roosting and nesting. Long-eared owls use old crow, magpie, hawk, heron, and squirrel nests in a variety of trees with dense canopies. Nests are usually located 10 to 50 ft above the ground,

and rarely on the ground or in a tree or snag cavity. This species breeds from valley foothill hardwood up to ponderosa pine habitats (CWHR 2011). Long-eared owls commonly nest in the same sites in successive years (NatureServe 2011). This species breeds from February through July in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, or shrublands. Key habitat components are some dense cover for nesting and roosting, suitable nest platforms, and open foraging areas (Shuford and Gardali 2008). Long-eared owls are nocturnal, usually hunting in open areas and occasionally in woodlands and forests (CWHR 2011). Nesting sites are of concern to DFG (January 2009a).

Range: In North America, long-eared owls breed across central Canada and south interruptedly through northern Baja California in the west and Virginia in the east (Shuford and Gardali 2008). Long eared owls are an uncommon yearlong resident throughout the state except the Central Valley and southern California deserts where it is an uncommon winter visitor (CWHR 2011). Elevation range of long-eared owls is from sea level to 7,000 ft, but a record has been noted at 10,500 ft in the White Mts. in Mono Co. Northeastern California is perhaps the center of abundance for this species in California, including nesting sites in the Honey Lake Valley (Shuford and Gardali 2008). Long-eared owls are a permanent resident in Nevada (NatureServe 2011).

Known Records: There are four CNDDB records for long-eared owls within 10 mi of the BSA. There are no NNHP records for long-eared owls in the six-quad area encompassing the BSA in Nevada. The closest CNDDB record is located in Herlong at the Sierra Army Depot and encompasses the BSA. A second CNDDB record occurs at the Sierra Army Depot approximately 0.25 mi east of the BSA. Both records are from May 1979. A long-eared owl was observed in an abandoned magpie nest in a clump of willows and an adult female with two young were observed nesting in the rafters of a sheet-metal shed. An additional CNDDB record occurs 0.4 mi northwest of the BSA approximately 1.7 mi south of the junction with the Red Rock Lateral. One adult and one juvenile were observed on 6 June 1998 in an apparent old magpie nest in a juniper.

4.6.6.1. SURVEY RESULTS

No long-eared owls were observed in the BSA during the reconnaissance surveys conducted in December 2010. Habitat for long-eared owls occurs in the in the Utah juniper woodland and the dense willow thickets and riparian habitats with trees large enough to support a nest.

4.6.6.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for long-eared owl.

4.6.6.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not impact long-eared owl.

4.6.6.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.6.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.7. Discussion of Burrowing Owl (*Athene cunicularia*)

Burrowing owls are a yearlong resident of open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats. They usually nest in old burrows of ground squirrels or other small mammals. They may dig their own burrows in soft soil. Pipes, culverts, and nest boxes may be used where burrows are scarce (CWHR 2011). Suitable burrowing owl habitat can also include areas with trees and shrubs if the canopy cover is less than 30 percent (DFG 1995). Burrowing owls feed on insects, small mammals, reptiles, birds, and carrion. They hunt day or night, often from a perch. Burrowing owls breed from March through May, with the peak from April through May (CWHR 2011). DFG is concerned about occupied burrow sites and winter observations with or without a burrow in San Francisco, Ventura, Sonoma, Marin, Napa, and Santa Cruz counties (DFG January 2011).

Range: Burrowing owls occur in the Central Valley, desert, and coastal ranges. This species was formerly common in appropriate habitats throughout the state, excluding the humid northwest coastal forests and high mountains. Their numbers have markedly reduced in recent decades. They are present on the larger offshore islands and are found up to 5,300 ft in Lassen Co. (Zeiner et al. 1990a).

Known Records: During surveys conducted in 2007 and 2010 active nest, inactive burrows, and individual burrowing owls were observed in the vicinity of Turtle Mountain approximately 4 mi east of the project area (USDA 2010a). There are no CNDDB records for burrowing owls within 10 mi of the BSA. There are no NNHP records for burrowing owls in the six-quad area encompassing the BSA in Nevada. The closest CNDDB record is located approximately 13.5 mi east of the BSA, east of Susanville. Two adults were observed at a burrow on 16 April 1998 at the east edge of Honey Lake Valley. Habitat at this location consists of mixed scrub surrounded by very rocky areas.

4.6.7.1. SURVEY RESULTS

Habitat for burrowing owls occurs in big sagebrush scrub, Utah juniper woodland, and meadows between Reno and Susanville along US 395 and along SR 70 between Hallelujah Junction and Beckwourth. Potential habitat could also occur along these segments in agricultural and urban areas where burrows and suitable foraging habitat are present.

4.6.7.2. AVOIDANCE AND MINIMIZATION EFFORTS

Prior to construction during the breeding season (1 February through 31 August), the applicant shall retain a qualified biologist to conduct preconstruction surveys in accordance with DFG burrowing owl mitigation guidelines (17 October 1995) of all potential burrowing owl habitat within 500 ft of the BSA. Habitat located on privately owned land shall be surveyed visually from the BSA. The presence of individual burrowing owl, sign of burrowing owl (i.e., fecal whitewash at the entrance to burrows, feathers, etc.), and all burrows that are in use by burrowing owls will be recorded. Preconstruction surveys shall be conducted two weeks prior to construction. If active burrowing owl nests are found, PSREC will erect ESA buffers 160 ft from the occupied burrow in accordance with the burrowing owl mitigation guidelines (DFG 1995). If active burrowing owl nests are found in or within 500 ft of the BSA after preconstruction surveys are completed and construction begins, construction will temporarily stop in the vicinity of the burrow until a qualified biologist has erected appropriate ESA buffers. If buffers are not feasible, DFG will be contacted for further instructions.

4.6.7.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not impact burrowing owls.

4.6.7.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.7.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.8. Discussion of Ferruginous Hawk (*Buteo regalis*)

Ferruginous hawks are migratory, generally arriving in California in September and departing by mid-April. Ferruginous hawks do not breed in California. They are a nonbreeding resident in southwestern Nevada (NatureServe 2011). Ferruginous hawks frequent open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. This species roosts in open areas, usually in a lone tree or

utility pole (CWHR 2011). Ferruginous hawks generally avoid areas of intensive agriculture or human activity. Nonbreeding/ wintering sites are of concern to DFG (2009a).

Ferruginous hawks nest in foothills or prairies on low cliffs, buttes, cut banks, shrubs, or trees. Nest trees are often isolated or in a transition zone to adjacent communities (CWHR 2011).

Range: Ferruginous hawks are an uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges. This species is a fairly common winter resident in grasslands and agricultural areas of southwestern California. Ferruginous hawks are casual in northeast California during summer. This species breeds from Oregon into Canada (CWHR 2011).

Known Records: There are no CNDDB records for ferruginous hawks within 10 mi of the BSA. There are no NNHP records for ferruginous hawks in the six-quad area encompassing the BSA in Nevada. The closest CNDDB record is located approximately 95 mi southwest of the BSA in Sacramento Co. No other records occur farther north.

4.6.8.1. SURVEY RESULTS

Ferruginous hawks were not observed during the reconnaissance surveys conducted in December 2010. Habitat for ferruginous hawks occurs in big sagebrush scrub and Utah juniper woodland in and adjacent to the BSA between Reno and Susanville and along the SR 70 corridor from the town of Beckwourth east to Hallelujah Junction.

4.6.8.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance and minimization measures are proposed.

4.6.8.3. PROJECT IMPACTS

The Project will have no impact on ferruginous hawk.

4.6.8.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.8.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.9. Discussion of Swainson's Hawk (*Buteo swainsoni*)

Throughout their range, Swainson's hawks nest almost exclusively in trees. They often return to nests used the previous year. In the Great Basin, Swainson's hawks usually nest in junipers not near riparian zones. There are a few nest records on cliffs, coulees, structures, and the ground, but these sites are rarely used (BLM 2006). Swainson's hawks breed from late March to late August, with peak activity late May through July (CWHR 2011). Nesting sites are of concern to DFG (2009a).

Swainson's hawk forage in grasslands or suitable grain or alfalfa fields, or livestock pastures adjacent to nesting areas. They feed on mice, gophers, ground squirrels, rabbits, large arthropods, amphibians, reptiles, birds, and rarely, fish. Swainson's hawk may be preyed upon by golden eagles (CWHR 2011).

Range: Swainson's hawks breed regularly from southwestern Canada to northern Mexico (BLM 2006). In California, Swainson's hawk is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen Co., and Mojave Desert (CWHR 2011). Swainson's hawk is a breeding resident in Nevada (NatureServe 2011). Nearly all Swainson's hawks spend the winter in South America (BLM 2006).

Known Records: There are 6 CNDDB records for Swainson's hawk within 10 mi the BSA. There are no NNHP records for Swainson's hawk in the six-quad area encompassing the BSA in Nevada. Two records intersect the BSA. One record intersects the BSA along the spur on the Herlong Quad. This record is of a failed nest from 1977, 1978, and 1980. One record intersects the BSA on the McKesick Peak Quad, just northwest of the junction for the Herlong Spur. This record is of an active nest from 1977-1981 and 1983. The nest was inactive in 1982 and a pair nested in 1985 with unknown results. The nest tree is a cottonwood located approximately 100 yards off the west side of US 395 in Honey Lake Valley. The third closest CNDDB record for Swainson's hawk occurs 0.5 mi east of the BSA on the Beckwourth Pass Quad, approximately 0.7 mi SSE of Hallelujah Junction. Two adults were observed nesting in May 1998 in habitat consisting of sage scrub, perennial grassland, and juniper woodland.

4.6.9.1. SURVEY RESULTS

Habitat for Swainson's hawk occurs in the trees in the juniper woodland, sagebrush scrub, agriculture, and riparian areas of the BSA. There is no habitat for Swainson's hawk along the SR 70 corridor of the BSA west of Beckwourth.

4.6.9.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures are described in Chapter 1. The preconstruction survey for nesting Swainson's hawk will cover potential habitat within 0.25 mi of the BSA. Surveys will be conducted from the BSA and publicly accessible areas.

4.6.9.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not affect Swainson's hawk.

4.6.9.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.9.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.10. Discussion of Greater sage-grouse (GSG; *Centrocercus urophasianus*)

Greater sage-grouse (GSG) is a large, ground-dwelling bird endemic to sagebrush (*Artemisia* spp.) ecosystems of western North America. It occurs from 4,000 to over 9,000 ft and is only found where there are relatively large expanses, e.g., over 385 mi^2 of sagebrush-dominated shrub steppe habitat. Sagebrush is important for food and cover during both winter and summer seasons. The annual diet of GSG is composed of sagebrush, grasses, forbs, and insects. Common predators of greater sage-grouse include corvids (e.g., common ravens, crows, black-billed magpies, and western scrub jays), raptors, and red foxes. Nine of eleven states with GSG (including CA and NV) have GSG hunting seasons (Knick and Connelly 2011, USFWS 5 March 2010).

GSG breed in open areas in sagebrush habitat known as leks. Leks occur where there is a high cover of sagebrush both locally (within 2 mi) and regionally (within 7 mi). Leks vary in size from approximately 1 ac to more than 100 ac, and are typically re-used annually (Becker et al. 2009). Very few leks are located within 3.1 mi of developed land or in vegetation with greater than 8% exotic plant cover (Knick and Connelly 2011).

GSG begin breeding in ± mid-March, when the males start to congregate on the leks. Breeding may last up to 3 months (until early June). After mating, females nest in the general vicinity of the leks. Almost all nesting occurs within 4 mi of leks, but nests have been reported up to 12 mi away. Females generally lay 7 to 10 eggs and rear only one brood per season. They may re-nest through early July if a nest is destroyed. Incubation lasts 3-4

weeks and chicks typically leave the nest soon after hatching (McAdoo and Back 2001, Becker et al. 2009).

Throughout their range, GSG populations can be either migratory or non-migratory, depending on site-specific conditions. In areas where elevation varies, the non-migratory or "resident" birds typically move up in elevation from spring through fall in response to snow melt and subsequent vegetation growth (McAdoo and Back 2001).

The entire BSA is located in the Northern Great Basin Sage-Grouse Management Zone (Zone V), with the possible exception of the far western portion near Quincy, California (Connelly et al. 2004; Stiver et al. 2006).

Range: GSG historically occurred in parts of 12 states in the U.S. and three Canadian provinces. GSG have been extirpated in Nebraska and British Columbia and have declined throughout much of their former range. GSG currently occupy approximately 258,700 mi^2 or 56% of their historical distribution. In California, GSG are known to occur in the northeast portion of the state and in and around the Mono Basin. In the vicinity of the project area GSG are known from eastern Lassen County north of Honey Lake and east on Eagle Lake (Shuford and Gardali 2008). The *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California* (BLM 2004) states that in California, the highest concentrations of sage-grouse inhabit the Buffalo/Skedaddle population management unit (PMU) area in Lassen County (extending into Washoe County NV.) and the Bodie Hills (in Alpine County) and South Mono PMU's (in Mono County). The Buffalo/Skedaddle PMU is located north and east of the project area. The Honey Lake Valley area south to Hallelujah Junction was historically occupied by GSG but has not been occupied since 1995 (Shuford and Gardali 2008). In Nevada, GSG occur in the central and northern portions of the state (Knick and Connelly 2011).

The home range of GSG is typically about 232 mi^2, to as much as 1,040 mi^2. Migrations up to 50 mi between separate seasonal ranges have been documented (Knick and Connelly 2011).

Known Records: A map of the *Buffalo / Skedaddle PMU* indicates that the closest active lek is approximately 9 mi north of the project area (NDOW 2011a). A map of the Virginia/Pah Rah PMU indicates that a historic lek site is located approximately 4.5 mi southeast of the southern terminus of the Red Rock Fire Department Lateral (NDOW 2011b). There are no CNDDB records for GSG in Lassen, Plumas, and Sierra counties. The closest CNDDB record for GSG is approximately 57.7 mi north of the Leavitt portion of the BSA at Little Juniper Reservoir in Modoc Co. An unknown number of greater sage-grouse were observed at a potential leking site in 1994. There are no NNHP records for greater sage grouse in the six-quad area encompassing the BSA in Nevada.

4.6.10.1. SURVEY RESULTS

No GSG were observed during reconnaissance level biological surveys in the BSA. Although the BSA occurs in Management Zone V (Knick and Connelly 2011), recent distribution maps (Doherty et al. 2010) show that within the BSA, only three project areas potentially occur in or adjacent to the current range of GSG: 1) the Red Rock Fire Department Lateral; 2) an area along US 395 just north of Reno; and 3) areas in the vicinity of Susanville, California.

Red Rock Fire Department Lateral Branch: The Red Rock Fire Department Lateral originates in California, south of the intersection of Red Rock Road and US-395, and terminates approximately 4 mi to the southeast in Nevada at the Red Rock Fire Department (Figures 1 and 2). The Red Rock Lateral follows an existing PSREC utility line over a ridge at the northern end of Peterson Mountain and descends into Red Rock Valley, Nevada, where it traverses Red Rock Road (a paved road) and terminates at the Red Rock Volunteer Fire Department Station. Much of the lateral is adjacent to dirt roads used to access the exiting PSREC utility line. Habitat along the exiting PSREC utility line consists of big sagebrush scrub. The highest elevation along the lateral is approximately 5,000 ft. There are residences and grazed lands in Red Rock Valley along the eastern portion of the Red Rock Lateral.

The Red Rock Fire Department Lateral does not provide suitable leking habitat for GSG. In a study of 310 leking sites in GSG Management Zone V, leking sites did not occur near developed, or disturbed areas (e.g., roads, highways, power lines) (Knick and Connelly 2011). The Red Rock Fire Department Lateral Branch follows existing utility poles, is consistently adjacent or within 200 ft of a dirt road, and is consistently within approximately 0.5 mi of paved roads or residential and agricultural land uses.

The Red Rock Fire Department Lateral contains marginal foraging and nesting habitat for GSG only along the segment between US 395 and residential development in Red Rock Valley, Nevada (approximately 1.5 mi of the lateral). Along this section, existing utility poles provide perch sites for avian predators of greater sage-grouse such as corvids. Existing dirt and paved roads in and adjacent to the BSA likely deter foraging and nesting GSG from using potential habitat in the BSA. GSG are known to avoid transmission lines both during the breeding season and in general (Braun 1998; Knick and Connelly 2011). The Honey Lake Valley area south to Hallelujah Junction was historically occupied by GSG but has not been occupied since 1995 (Shuford and Gardali 2008).

US 395 ROW from Hallelujah Junction to the California/ NV Border: The segment of the BSA in the US 395 ROW (the west side) between Hallelujah Junction and the California/ Nevada border may pass through the far western edge of the mapped distribution of greater sage-grouse as mapped by Doherty et al. (2010). Vegetation in this portion of the BSA

consists primarily of disturbed sagebrush scrub and ruderal species in the US 395 ROW. US 395 is a high-volume, 4-lane freeway with wide shoulders. The elevation of this stretch of highway ranges from 4,950 to 5,150 ft. Given the existing level of disturbance and close proximity to US 395, this segment of the BSA does not provide suitable leking, foraging, or nesting habitat for GSG.

Susanville: The BSA approaches Susanville from the east along County Highway 27A and an abandoned railroad at an elevation of 4,100 ft. Although the BSA is not within the known range of GSG around Susanville, the BSA is located fairly close to the known range (Doherty et al. 2011). Habitat in this section of the BSA consists mostly of highly-disturbed ruderal vegetation with high proportions of exotic plant cover and relatively little sagebrush. There are large buildings, numerous roads, agricultural land uses, and other factors present which preclude the use of habitat in the BSA near Susanville by GSG.

4.6.10.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures listed in Chapter 1 will be implemented.

4.6.10.3. PROJECT IMPACTS

The BSA does not contain potential GSG leking sites. The BSA contains potential GSG foraging and nesting habitat only along approximately 1.5 mi of the Red Rock Fire Department Lateral. Completion of the Proposed Project along the Red Rock Fire Department Lateral will consist of hanging fiber optic conduit on existing utility poles within the PSREC ROW. No vegetation removal is anticipated. With implementation of the proposed avoidance measures, the Project will not affect GSG.

4.6.10.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.10.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.11. Discussion of Black tern (*Chlidonias niger*)

Black terns are migrants and summer residents in California and Nevada from April through October (Shuford and Gardali 2008; GGBO 2010). Spring migration begins in April and May, and fall migration to wintering grounds occurs by September or October. Stragglers may be found year-round. Black terns are restricted to freshwater wetlands during the breeding season, but they are common on bays, salt ponds, river mouths, and pelagic waters during migration (CWHR 2011).

Semi-colonial nesting occurs in protected areas of marshes (Shuford and Gardali 2008), as well as lakes, ponds, moist grasslands, and agricultural fields from May through August (CWHR 2011). Marshes typically consist of spikerush (*Eleocharis* spp.) or *Juncus* ssp. In the Central Valley, nesting also occurs in rice fields and flooded agricultural fields. Nests are built on floating substrates anchored to emergent vegetation or beds of submerged rooted aquatic vegetation (Shuford and Gardali 2008). Abandoned muskrat houses, coot and grebe nests, or dikes in rice fields may also be used (CWHR 2011). Two to four eggs are incubated for 20 to 22 days. Young stay in the nest for two weeks, begin flying at three weeks, and leave the nest at four weeks (CWHR 2011). Nesting colonies are of concern to DFG (2009a).

Range: A black tern breeding colony in Nevada was located at the Ruby Lake NWR in eastern Nevada, but no breeding has occurred there since 2006. Other records in Nevada, which have low or variable numbers, include the Lahontan Valley, Humboldt Sink, Mason Valley WMA, Body Humboldt Valley IBA, Quinn River, and Pahranagat NWR. Migration stopover sites in Nevada include Kirch WMA and Key Pittman WMA in the southern part of the state (GGBO 2010).

Black tern is a common breeder in the Modoc Plateau region and mountain valleys of northeastern California up to 6,560 ft, including Tule Lake and Alturas Meadow in Modoc Co. and Grasshopper Meadows/ Lake and Eagle Lake in Lassen. The southern range in northeastern California historically extended to Lake Tahoe in El Dorado Co., but this species is currently extirpated from the area. The current southernmost range includes the Sierra Nevada at Sierra Valley in Plumas and Sierra counties, and Kyburz Flat in Sierra Co. (Shuford and Gardali 2008).

The range of the black tern has been greatly reduced in the Central Valley of California despite the availability of breeding habitat in rice fields. Breeding areas are currently extirpated from the Sacramento-San Joaquin River Delta. Black tern is almost extirpated from the San Joaquin Valley, where regular breeding only occurs in two small areas of rice fields in Merced and Fresno counties; and in the Tulare Basin, where it nests irregularly during very wet years in ephemeral habitats (Shuford and Gardali 2008).

Black tern widen their distribution in California during migration, with large numbers found at Tule Lake NWR in Siskiyou and Modoc counties; and outside their breeding range in the Salton Sea in Riverside and Imperial counties (Shuford and Gardali 2008). This species winters in South America (CWHR 2011). The current known breeding range extends to eastern Sierra Co., the southeast and northeast corner of Plumas Co., and most of Lassen Co.

Known Records: There are no NNHP records for black tern in the six-quad area encompassing the BSA in Nevada. There are no CNDDB records for black tern within 10 mi of the BSA.

4.6.11.1. SURVEY RESULTS

Some larger marshes in the BSA could provide potential nesting habitat for black tern, particularly the wetland complex between the Susan River and Center Road.

4.6.11.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.11.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not impact black tern.

4.6.11.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.11.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.12. Discussion of Northern Harrier (*Circus cyaneus*)

Northern harriers breed and forage in a variety of open (treeless) habitats that provide adequate vegetative cover, an abundance of suitable prey, and scattered hunting, plucking, and lookout perches such as shrubs and fence posts. In California, such habitats include freshwater marshes, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, annual and perennial grasslands, vernal pool complexes, weed fields, ungrazed or lightly grazed pastures, low-growing crop fields, sagebrush flats, and desert sinks (Shuford and Gardali 2008). Northern harriers feed mostly on voles and other small mammals, birds, frogs, small reptiles, crustaceans, insects, and rarely on fish.

Northern harriers nest on the ground, mostly in emergent wetland or along rivers or lakes (CWHR 2011), and generally within patches of dense vegetation in undisturbed areas (Shuford and Gardali 2008). Nests are large mounds of sticks on wet areas or a smaller cup of grasses on dry sites. Breeding occurs from April to September with peak activity June through July. Single clutches are produced annually. The nestling period lasts about 53 days (CWHR 2011).

Range: Northern harrier occurs from annual grassland up to lodgepole pine and alpine meadow habitats, as high as 10,000 ft. It breeds from sea level to 5,700 ft in the Central Valley and Sierra Nevada, and up to 3,600 ft in northeast California. Northern harrier is a

permanent resident of the northeastern plateau and coastal areas and a less common resident of the Central Valley (CWHR 2011).

Known Records: There are no CNDDB or NNHP records for northern harrier within 10 mi of the BSA. There are no CNDDB records for northern harrier in Sierra, Plumas, or Lassen counties.

4.6.12.1. SURVEY RESULTS

Northern harriers were observed in Sierra, Plumas, and Lassen counties during the December 2010 reconnaissance surveys. They were observed either foraging in or perched near open, wet meadow habitat in the BSA. The BSA provides foraging habitat for northern harrier except in developed areas and in areas dominated by conifer forest. Potential nesting habitat for northern harrier occurs in low growing vegetation adjacent to wetlands and waters in the BSA. Willow thickets in the BSA are too dense to provide suitable nesting habitat.

4.6.12.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.12.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not impact northern harriers.

4.6.12.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.12.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.13. Discussion of Yellow Warbler (*Dendroica petechia brewsteri*)

Yellow warblers breed in riparian woodlands, montane chaparral, and in open ponderosa pine and mixed conifer habitats with substantial amounts of brush. In summer, yellow warblers are usually found in deciduous, open-canopy, riparian habitats dominated by cottonwoods, willows, alders, and/or other small trees and shrubs (CWHR 2011). In northern California, the extent of willow (*Salix* spp.) and Oregon ash (*Fraxinus latifolia*) cover are important predictors of yellow warbler abundance (Shuford and Gardali 2008). On the west slope of the Sierra Nevada, yellow warblers breed from foothill woodlands up to the mixed-conifer zone. At some sites in the north, they may be as abundant in montane chaparral as in riparian habitat. Yellow warbler territory often includes tall trees for singing and foraging. They

generally feed on insects and spiders in the canopy of deciduous trees and shrubs (CWHR 2011).

Yellow warblers are migratory and usually arrive in California in April and leave by October. Small numbers are known to overwinter in southern California lowlands. Breeding occurs from mid-April into early August with peak activity in June. Eggs are incubated by the female for 11 days and young require 9-12 days to fledge. Yellow warblers build open cup nests placed 2-16 ft above ground in a deciduous sapling or shrub. Predators include small mammals, accipiters, corvids, and snakes. Brood parasitism by brown-headed cowbirds is common (CWHR 2011).

Range: Yellow warblers are an uncommon to common summer resident in northern California and locally common in southern California. Upper elevation limits of breeding on the western and eastern flanks of the Sierra Nevada are 7,000 and 8,500 ft, respectively (Shuford & Gardali 2008).

Known Records: There are no CNDDB or NNHP records for yellow warbler within 10 mi of the BSA. There are no CNDDB records for yellow warbler in Sierra, Plumas, or Lassen counties. One singing male was recorded in Long Valley Creek approximately 150 ft northwest of Garnier Road Bridge during surveys for another project in 2007 (USDA November 2010). Yellow warblers are known from along the Susan River in Lassen Co. (Shuford & Gardali 2008).

4.6.13.1. SURVEY RESULTS

Potential foraging habitat for yellow warbler occurs in most of the BSA, but generally not in open areas dominated by low-growing shrubs, grasses or forbs (such as agricultural fields and sagebrush scrub). Suitable nesting habitat occurs sporadically throughout the BSA around perennial or near-perennial waters that support large stands of deciduous riparian species (including all areas mapped as willow thicket). This species is also known to occasionally nest in deciduous mountain shrubs away from water (Shuford and Gardali 2008).

4.6.13.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.13.3. PROJECT IMPACTS

With implementation of avoidance measures, the project will not impact yellow warbler.

4.6.13.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.13.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.14. Discussion of Willow Flycatcher (*Empidonax traillii*)

Five subspecies of willow flycatcher are currently recognized. The BSA occurs within the range of the California endangered *Empidonax t. brewsteri* and California endangered *E. t. adastaus*. The BSA does not occur within the range of the federal-endangered *E. t. extimus* (USGS 2011).

Willow flycatchers are a rare to locally uncommon, summer resident in wet meadow and montane riparian habitats from 2,000 to 8,200 ft in the Sierra Nevada and Cascade Range. They are a common spring (mid-May to early June) and fall (mid-August to early September) migrant at lower elevations, primarily in riparian habitats throughout California, exclusive of the North Coast. Willow flycatchers most often occur in broad, open river valleys or large mountain meadows with a lush growth of shrubby willows. The species is most numerous where extensive thickets of low, dense willows occur on the edge of wet meadows, ponds, or backwaters. Dense willow thickets are required for nesting and roosting. Low, exposed branches are used for singing posts and hunting perches. Nests are placed in an upright fork of willow or other shrub, usually near a slow moving stream, standing water, or seep (Zeiner et al. 1990a).

Range: *Empidonax t. brewsteri* breeds in California from Tulare Co. north along the western side of the Sierra Nevada and Cascades, extending to the coast in northern California. Populations at high elevations just east of the Sierra Nevada crest, but south of Modoc Co. are also assumed to be *E. t. brewsteri*. *Empidonax t. adastus* breeds in California east of the Sierra/Cascade axis from the Oregon border into Modoc Co. and possibly into northern Inyo Co. (Craig and Williams 1998). The breeding range of *E. t. adastus* extends to Colorado, west of the plains, and through the intermountain and Great Basin states (USGS 2011).

Known Records: There are ten CNDDB records for willow flycatcher in the 26-quad area encompassing the BSA in California. There are no NNHP records for willow flycatcher in the six-quad area encompassing the BSA in Nevada. The two closest CNDDB records of willow flycatcher are located 0.2 mi south of the BSA on the Portola Quad. One of these records is of an unknown number of individuals detected in 1982, 1986, and 1988 at Rocky Point, near the Middle Fork Feather River. None were detected at this location in 1990. The riverbed at this location is characterized as broad with steep cliffs. The other record is of one territorial male heard in August 1990 along the Middle Fork Feather River in Humbug Valley. Habitat consisted of abundant willow cover with a dense string of willows about 100 ft wide, near a horse pasture. A meadow occurred on upland near the river.

The Plumas National Forest (PNF) maintains records of willow flycatcher occurrences and habitat. The BSA crosses through one willow flycatcher site considered occupied, at the Gulling Street Bridge in downtown Portola. The BSA crosses through eight habitat areas considered emphasis areas by the PNF and two areas considered small pockets of habitat. The PNF has records of willow flycatcher occurrences at seven other locations in the vicinity of the BSA. These occurrences are located along the Middle Fork Feather River, an unnamed drainage canal, Smith Creek, and Williams Lake. These occurrences are located between 0.08 and 1.0 mi from the BSA.

4.6.14.1. SURVEY RESULTS

Field surveys for willow flycatcher were not conducted in the BSA. Habitat for willow flycatcher in the BSA west of Beckwourth was mapped by PNF. Habitat for willow flycatcher in the remainder of the BSA was assessed and mapped by Sycamore Environmental during the reconnaissance surveys in December 2010.

4.6.14.2. AVOIDANCE AND MINIMIZATION EFFORTS

Willow flycatcher habitat in the BSA is included in willow flycatcher avoidance areas shown on Figure 2. In order for construction to occur during the willow flycatcher breeding season (June 1 through August 15; USFS 2004), protocol surveys shall be conducted the same year construction will occur and must conclude absence of nesting/ territorial willow flycatcher. The surveys will be conducted in accordance with *A Willow Flycatcher Survey Protocol for California* (Bombay et al. 2003). If protocol surveys are not conducted, no work shall occur between 1 June and 15 August in the willow flycatcher avoidance areas mapped on Figure 2.

4.6.14.3. PROJECT IMPACTS

The project will attach new conduit to the Gulling Street Bridge in downtown Portola. The project will hang new conduit on existing utility poles at the other areas in the BSA with potential willow flycatcher habitat. Implementation of the avoidance measure will result in work occurring when willow flycatchers are either absent or after young have fledged. With implementation of the avoidance measures, the Project will not affect willow flycatcher.

4.6.14.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.14.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.15. Discussion of American Peregrine Falcon (*Falco peregrinus anatum*)

Peregrine falcons breed mostly in woodland, forest, and coastal habitats near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes, and mounds. Peregrine falcons will nest on human-made structures and occasionally use tree or snag cavities or old nests of other raptors. Peregrine falcons require protected cliffs and ledges for cover. Riparian areas and coastal and inland wetlands are important habitats yearlong, especially in nonbreeding seasons (Zeiner et al. 1990a). Peregrine falcons live mostly along mountain ranges, river valleys and coastlines. Eggs are laid in a depression on a cliff.

Range: Peregrine falcons are found in all continents of the world except Antarctica (NDOW 2010). In California, peregrine falcons are very uncommon breeding residents and uncommon migrants. Active nesting sites are known along the coast north of Santa Barbara, in the Sierra Nevada, and in other mountains of northern California. In winter, peregrine falcons are found inland throughout the Central Valley, and occasionally on the Channel Islands. Migrants occur along the coast and in the western Sierra Nevada in spring and fall (Zeiner et al. 1990a). There are currently estimated to be 20 nesting pairs in Nevada (NDOW 2010).

Known Records: There are no CNDDB records for peregrine falcon within 10 mi of the BSA. There are no NNHP records for peregrine falcon in the six-quad area encompassing the BSA in Nevada. The Plumas National Forest (PNF) maintains records of peregrine falcon occurrences. One peregrine falcon eyrie occurs approximately 0.4 mi northeast of the BSA on Bonta Ridge, approximately 3 mi north of Blairsden. A nest and adult were observed at this location in 2002. The BSA at this location occurs approximately 0.1 mi east of and parallel to SR 70.

4.6.15.1. SURVEY RESULTS

Field surveys for peregrine falcons were not conducted in the BSA. No peregrine falcons were observed in the BSA during the reconnaissance surveys conducted in December 2010. Bonta Ridge provides nesting habitat for peregrine falcon. The nest at Bonta Ridge could be active in the future.

4.6.15.2. AVOIDANCE AND MINIMIZATION EFFORTS

The Herger-Feinstein Quincy Library Group Forest Recovery Act – Final EIS (1999) specifies a limited operating period (LOP) within designated peregrine falcon territories between 1 February and 31 August. The PNF wildlife biologist stated that the LOP period would not be necessary if project activities in the area could be implemented within a day or two with little to no increase above existing noise levels as well as being implemented as

close to or after 31 August as possible (pers. comm., Nickerson 2010). The BSA in the area of the peregrine falcon eyrie occurs approximately 0.1 mi from SR 70. The BSA will either be accessed on existing roads or on foot. Noise levels from project construction will not exceed noise levels generated by the highway. There are no other document peregrine falcon eyries within 10 mi of the BSA. The preconstruction survey for birds of prey listed in Chapter 1 will identify any new peregrine falcon nests in the vicinity of the BSA.

Between 1 February and 31 August, no work within 0.5 mi of the documented eyrie at Bonta Ridge or any other peregrine falcon eyrie identified during preconstruction surveys will occur. If it becomes necessary to conduct work within 0.5 mi of a peregrine falcon eyrie, PSREC will coordinate with DFG and the appropriate agency (e.g., BLM wildlife biologist if the nest is on BLM land; USFS wildlife biologist if the nest is on USFS land), to determine if construction activities should be restricted for a specific distance and/or period of time.

4.6.15.3. PROJECT IMPACTS

If no project activities are conducted during the limited operating period (LOP), within 0.5 mi of an active peregrine falcon eyrie, the project will not affect the peregrine falcon. If project activities are conducted, for approximately one or two days (short duration), within 0.5 mi of an active peregrine falcon eyrie during the LOP, the project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the peregrine falcon (pers. comm., Nickerson 2011). The project will not impact peregrine falcon with implementation of the avoidance measure.

4.6.15.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.15.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.16. Discussion of Greater Sandhill Crane (*Grus canadensis tabida*)

In summer, greater sandhill cranes occur in and near wet meadow, shallow lacustrine, and fresh emergent wetland habitats. In winter, it is found primarily in grassland, moist croplands with rice or corn stubble, and open emergent wetlands of the Sacramento and San Joaquin valleys from Tehama Co. south to Kings Co., California. It prefers relatively treeless plains where predators can be seen. Sandhill cranes roost at night in flocks standing in moist fields or shallow water, and sometimes in expansive dry grasslands, island sites, and wide sandbars (CWHR 2011).

Greater sandhill cranes are solitary nesters that nest in remote portions of extensive wetlands, or sometimes in shortgrass prairies. On dry sites, nests are scooped-out depressions lined with grasses. More commonly, nests are large mounds of wetland plants, in shallow water. Natural hummocks or muskrat houses are often used. Ideal sites are on small islands screened by tall tules, cattails, or shrubs. Sandhill cranes avoid saline waters (CWHR 2011). In Nevada, preferred breeding and roosting habitats are large river valley floodplains and interior basins (NDOW 2010). Courtship begins in April with elaborate dancing behaviors that often include 50-80 individuals. Peak breeding occurs from May until July, and nesting is completed by late August (CWHR 2011).

Range: The greater sandhill crane is found in North America, Cuba, and eastern Siberia (NDOW 2010). In California, it was historically a fairly common breeder on the northeastern plateau, but is now greatly reduced in numbers and breeds only in Siskiyou, Modoc, and Lassen counties, and the Sierra Valley in Plumas and Sierra counties (CWHR 2011). The Nevada population breeds in Elko Co., migrates south through eastern Nevada, and winters in Arizona and California along the lower Colorado River (NDOW 2010).

Known Records: There are 46 CNDDB records for greater sandhill crane within 10 mi of the BSA. There are no NNHP records for greater sandhill crane in the six-quad area encompassing the BSA in Nevada. There are nine CNDDB records adjacent to the BSA.

Three of the records near the BSA are near Quincy. Occurrence 46 is foraging adults in an irrigated meadow/pasture northeast of the high school from April and May 1994. When cattle grazing increased and the field dried for cutting, the cranes disappeared. The BSA is on the south side of the high school. Occurrence 47 is two foraging adults observed in 1994 and one pair observed many times over three years at Ramelli Pond and a non-irrigated pasture near the intersection of SR 70 and La Porte Road. Occurrence 380 is one pair observed in 2000 on the opposite side of a hill from the BSA, approximately 2,000 ft away.

Four of the records near the BSA occur in the Sierra Valley south of Beckwourth. They are approximately 0.2 mi from the BSA, at the nearest point along the Marble Lateral. These four records and others in the Sierra Valley are clustered around the Sierra Valley Channels of the Middle Fork Feather River. Ten pairs were seen in the Sierra Valley Channels between April and May 2000 and 11 pairs were seen in 1988. In 1988, three of the pairs were known to be nesting. The habitat is mostly open meadow with interspersion of cattail and some water in the deeper channels.

Two of the records near the BSA are northwest of Honey Lake. Occurrence 403 is approximately 1,000 ft from the BSA near Buntingville. The record is of one pair observed twice in 2000. Occurrence 347 is of one pair was reported to be nesting approximately 0.25 mi north of the BSA, just east of Susanville.

4.6.16.1. SURVEY RESULTS

No greater sandhill cranes were observed in the BSA during the reconnaissance surveys conducted in December 2010. Habitat for greater sandhill crane occurs in the wet meadow habitats and irrigated agricultural fields in the BSA.

4.6.16.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.16.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will have no affect on greater sandhill crane.

4.6.16.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.16.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.17. Discussion of Yellow-breasted chat (*Icteria virens*)

Yellow-breasted chat occurs as a migrant and summer resident in California, from March through September. This species occupies early successional riparian habitats with a well-developed shrub layer and an open canopy. Breeding occurs from April through August. Nests are built in the narrow border of streams, creeks, sloughs, and rivers within blackberry, wild grape, willow, and other native or non-native plants that form dense thickets. Taller trees, such as cottonwoods and alder, are used for song perches (Shuford and Gardali 2008). Three to six young hatch after 11 to 15 days, and fledge in eight to eleven days (CWHR 2011). Territories are often defended, but loose colonies also form with mating pairs (Shuford and Gardali 2008). Nesting sites are of concern to DFG (2009a).

Range: Two subspecies occur in North America: *Icteria virens auricollis* nests in the west, and *I. v. virens* nests in the east. *Icteria v. auricollis* breeds from Canada to Baja California, and winters from Baja California and Texas south into Mexico and Guatemala. The largest populations are found in the Klamath region of California and Oregon, southern Nevada, and elsewhere. Their range is broader during migration, though also more secretive. This species has been extirpated from much of the Central Valley, especially the San Joaquin Valley, and from parts of the central and south coast. Regular nesting occurs along low and mid-elevation streams in the Sierra Nevada, including Spanish Creek in Quincy and Indian Creek in Indian Valley, Plumas Co., and in the Lassen area of the Cascades on Battle, Dye, Deer and Mill Creeks and tributaries (Shuford and Gardali 2008).

Known Records: There are no CNDDB records for yellow-breasted chat within 10 mi of the BSA. There are no NNHP records for yellow-breasted chat in the six-quad area encompassing the BSA in Nevada.

4.6.17.1. SURVEY RESULTS

Willow thickets and riparian areas in the BSA provide potential habitat for yellow-breasted chat.

4.6.17.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.17.3. PROJECT IMPACTS

With implementation of the avoidance measures, the project will not impact yellow-breasted chat.

4.6.17.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.17.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.18. Discussion of Loggerhead shrike (*Lanius ludovicianus*)

Loggerhead shrike is present year-round in most of its range in California. Habitats consists of sagebrush steppe in northeastern California; shrub steppe along the east side of the Cascades and Sierra Nevada, and less frequently in western juniper woodlands; chaparral, oak woodland, or oak savannah in coastal slope and Coast Ranges; riparian edges and desert scrub in the Central Valley; desert scrub and sparse riparian woodland in the southeastern deserts; and occasionally in rural and agricultural hedgerows. Tall shrubs and trees are required for perches. Fences and power lines are also used. Sharp, thorny, or multi-stemmed plants or barbed wire fences are used for impaling prey for manipulation or storage (Shuford and Gardali 2008).

Loggerhead shrike breeds mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground (Shuford and Gardali 2008). Nests are placed on a stable branch in a densely foliaged shrub or tree. Eggs are laid from March through May, with young independent in July or August (CWHR 2011). Nesting sites are of concern to DFG (2009a).

Range: Loggerhead shrikes breed and winter in Canada, U.S., and Mexico. The current range includes most of California from below sea level to 7,500 ft, except for the forested

coastal slope, Klamath and Siskiyou mountains, Sierra Nevada and southern Cascades, and high elevations of the Transverse Ranges. Breeding populations are largest in the Central Valley and southeastern deserts. Wintering populations are highest in the San Joaquin Valley, south-central and south coasts, and southeastern deserts. Loggerhead shrike is abundant in the Honey Lake Basin of Lassen Co., but rare in the Sierra Valley of Plumas and Sierra counties (Shuford and Gardali 2008).

Known Records: There are no CNDDB records for loggerhead shrike within 10 mi of the BSA. There are no NNHP records for loggerhead shrike in the six-quad area encompassing the BSA in Nevada.

4.6.18.1. SURVEY RESULTS

A loggerhead shrike was observed in Sierra Co. along US 395 in big sagebrush scrub during the reconnaissance survey. Habitat for loggerhead shrike in and adjacent to the BSA occurs in sagebrush steppe, juniper woodland, riparian vegetation, and rural and agricultural hedgerows.

4.6.18.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.18.3. PROJECT IMPACTS

With implementation of the avoidance measure, the project will not impact loggerhead shrike.

4.6.18.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.18.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.19. Discussion of Mountain quail (*Oreortyx pictus*)

Mountain quail is typically a year-round resident found on steep slopes in a variety of mountainous habitats. Habitats include open and brushy stands of conifer and deciduous forests and woodlands, chaparral (CWHR 2011); desert scrub and dense riparian stands (NDOW 25 Jan 2011); and high elevation grasslands, brush and open country (NDOW 2010). Brushy vegetation interspersed with grasses and forbs is needed for cover and foraging (CWHR 2011). Nests consist of a shallow depression on the ground (NDOW 2010) in vegetation at the base of a tree, in rocks, or near a shrub, log or stump (CWHR 2011). Seasonal migrations may occur up or downslope. To avoid snowfall, mountain quail

migrates downslope in the winter and upslope in the summer. Breeding occurs from March through August, with an average of 10 eggs incubated for 25 days. Young are able to leave the nest and forage with the parents soon after hatching (CWHR 2011).

Range: Mountain quail is found in montane habitats of western North America, including northern California, Coast Ranges, Sierra Nevada, Transverse Range, and Peninsular Ranges of California (NDOW 25 Jan 2011) up to 10,000 ft (NDOW 2010). Desert populations are also found the mountains of eastern California. This species is also found in northern and western Nevada, from the Carson, Toiyabe, Desatoya, Clan, Alpine, Stillwater, and Santa Rosa ranges east to Elko Co. and south to Goldfield in Esmeralda Co. (NDOW Jan 2011).

Known Records: There are no CNDDB records for mountain quail within 10 mi of the BSA. There are no NNHP records for mountain quail in the six-quad area encompassing the BSA in Nevada.

4.6.19.1. SURVEY RESULTS

Mountain quail were not observed during reconnaissance surveys in December 2010. The BSA provides potential habitat for mountain quail.

4.6.19.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.19.3. PROJECT IMPACTS

The project will not impact mountain quail with implementation of the avoidance measure.

4.6.19.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.19.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.20. Discussion of Vesper Sparrow (*Pooecetes gramineus*)

Vesper sparrow is mainly found in grasslands in California, including stubble fields, meadows, semidesert scrub, open brushlands, croplands, weedy agricultural fields, and alfalfa. Open ground with little vegetation or grown to short grass and low annuals is preferred, with scattered shrub and patches of tall herbs for cover. Population reductions may be due to loss of grassland in California. This species is also a common summer resident east of the Cascade-Sierra Nevada crest and into Nevada, and is often found in sparse or open stands of sagebrush, low sagebrush and similar open shrub habitats (Shuford and Gardali 2008; CWHR 2011).

Vesper sparrow is a solitary breeder that nests from April through August, depending on latitude and elevation. Nests are built on the ground in a small depression, concealed under a shrub or at the base of grasses or forbs; or at the base of a shrub or in the center of a tuft of perennial grass. Three to six eggs are incubated for 11 to 13 days. The young leave the nest in 9 to 13 days, but are unable to fly until 20 to 22 days (CWHR 2011; NDOW 26 Jan 2011).

Range: Vesper sparrow breeding range extends from Canada south to northern and central California and east to Tennessee and North Carolina. This species winter range extends from central California south to Mexico and Florida, and east to Pennsylvania and Connecticut. The subspecies Oregon vesper sparrow (*P. g. affinis*) is mainly restricted to California in the winter, but overlaps with the range of the subspecies Great Basin sparrow (*P. g. confinis*) in the deserts and coastal areas north to Santa Barbara Co. and occasionally in the San Joaquin Valley and coastal valleys north to Fresno and San Benito Co. Oregon vesper sparrow is found in the lower valleys and plains west of the Sierra Nevada from San Francisco Bay area through the San Joaquin Valley to coastal southern California (Shuford and Gardali 2008). DFG is concerned with Oregon vesper sparrow (DFG 2009a).

Vesper sparrow is a breeding resident throughout central (NatureServe 2011) and northern Nevada. This species nests from 5,000 to 9,000 ft (NDOW 26 Jan 2011).

Known Records: There are no CNDDB records for vesper sparrow within 10 mi of the BSA. There are no NNHP records for vesper sparrow in the six-quad area encompassing the BSA in Nevada.

4.6.20.1. SURVEY RESULTS

Field surveys for vesper sparrow were not conducted in the BSA. Vesper sparrow was not observed during the reconnaissance surveys in December 2010. Habitat for vesper sparrow in and adjacent to the BSA occurs in meadow and sagebrush habitats.

4.6.20.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures in Chapter 1 will be implemented for nesting birds.

4.6.20.3. PROJECT IMPACTS

The project will not impact vesper sparrow with implementation of the avoidance measure.

4.6.20.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.20.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.21. Discussion of Bank Swallow (*Riparia riparia*)

Bank swallows arrive in California from South America in early March and peak in numbers by early May. Colonies are vacant by late July or early August as colonies are abandoned and migration begins. Migrants are observed usually through early or mid-September (CWHR 2011).

In summer, bank swallows are restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soil, into which they dig nesting holes. Bank swallows dig horizontal nesting tunnels and burrows, with a small chamber at the end with the nest. Bank swallows are colonial breeders with 10 to 1,500 nesting pairs in CA, although most colonies have 100 to 200 nesting pairs. This species almost always nests near water. Bank swallows feed primarily over grassland, shrubland, savannah, and open riparian areas during the breeding season (CWHR 2011). Nesting sites are of concern to DFG (2009a).

Range: The range of bank swallows extends across North America, Europe, and Asia. The breeding range of bank swallows includes central California and western Nevada (BLM 2006). Bank swallows occur as a breeding resident in northern Nevada and as a migrant in southern Nevada (NatureServe 2011). Approximately 75% of the breeding population in California occurs along the banks of the Sacramento and Feather rivers in the northern Central Valley. Other colonies are known from the central coast from Monterey to San Mateo counties, and in northeastern California in Shasta, Siskiyou, Lassen, Plumas, and Modoc counties. In California, bank swallows occur as migrants during the spring and fall in suitable habitats in the interior and are less commonly on the coast. Bank swallows occur only casually in southern California in winter (CWHR 2011).

Known Records: There are 5 CNDDB records for bank swallows within 10 mi of the BSA. There are no NNHP records for bank swallow in the six-quad area encompassing the BSA in Nevada. The closest CNDDB record of bank swallow is located approximately 0.2 mi east of the BSA on Long Valley Creek. Approximately 100 burrows and 50 birds were observed during an aerial survey in the summer of 1987, with approximately 50% active. Approximately 300 adults were observed at this location during a site visit on 22 June 2000.

The next closest CNDDB record is located approximately 0.6 mi northwest of the BSA on Baxter Creek. Approximately 163 burrows were observed along the right bank during an

aerial survey in the summer of 1987. Approximately 15 birds were observed, but there was low occupancy. There is another occurrence farther upstream of the BSA along Baxter Creek.

There is a CNDDB occurrence of bank swallow approximately 1.8 mi upstream of the BSA at the Susan River, Leavitt crossing.

4.6.21.1. SURVEY RESULTS

Field surveys for bank swallows were not conducted in the BSA. Habitat for bank swallow in and adjacent to the BSA occurs wherever there are steep, eroded banks along creeks and rivers that retain water through August. In the BSA, habitat for bank swallow occurs primarily at or near the crossings of the Susan River, Baxter Creek, and Long Valley Creek (Honey Lake watershed).

4.6.21.2. AVOIDANCE AND MINIMIZATION EFFORTS

Between 15 February and 31 August, wherever the BSA comes within 250 ft or crosses a creek with steep, eroded banks, a survey will be conducted by a qualified biologist for nesting bank swallows no more than two weeks prior to construction. If no nesting bank swallows are found, construction may commence. If active bank swallow nests are found, biologist shall flag a minimum 250-ft Environmentally Sensitive Area (ESA) around the active nests. No work will occur in the ESA until the nests are no longer active and the bank swallows have left the area.

4.6.21.3. PROJECT IMPACTS

The project will have no affect on bank swallow with implementation of the avoidance measure.

4.6.21.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.21.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.22. Discussion of California Spotted Owl (*Strix occidentalis occidentalis*)

California spotted owls breed and roost in forests and woodlands with large old trees and snags, dense canopies (≥70% canopy closure), multiple canopy layers, and downed woody

debris. Large, old trees are the key component; they provide nest sites and cover from inclement weather and add structure to the forest canopy and woody debris to the forest floor. Spotted owls do not build their own nests, but instead depend on finding suitable, naturally occurring sites in trees. In Sierra Nevada conifer forests, nests are often in tree cavities or on broken-topped trees or snags. Less often, they are on abandoned raptor or common raven nests, squirrel nests, dwarf mistletoe brooms, or debris accumulations in trees. Nest trees in conifer forests are typically large, with a mean dbh of 46.7 in (Shuford and Gardali 2008). The California spotted owl breeding season is considered to be 1 March through 31 August (USFS January 2004). This owl exhibits a high level of nest site fidelity (NatureServe 2011).

In the Sierra Nevada, California spotted owl predominantly uses Sierran mixed-conifer forest, white fir, montane hardwood-conifer, and montane hardwood forests at mid-elevations. To a lesser extent, it inhabits California red fir forests at high elevations and ponderosa pine forest, blue oak – gray pine woodlands, and valley foothill riparian forests at low elevations. A study in the Lassen National Forest found that site occupancy was positively associated with the amount of nest area (500 ac circle around the nest) dominated by large trees (greater than 24 inches dbh) and high canopy cover, and negatively associated with an area dominated by medium-sized trees (12 to 24 inches dbh) with high canopy cover (Shuford and Gardali 2008).

Foraging habitats are similar to breeding and roosting habitats, but also include more open stands with canopy closures typically less than 40%. Downed woody debris in higher-elevation forests of the Sierra Nevada is strongly associated with under-ground fungi, which are an important food for spotted owl prey species (Shuford and Gardali 2008).

Range: The California spotted owl is a year-round resident in most of its range. California spotted owl occurs from the southern Cascade Range of northern California south along the west slope of the Sierra Nevada and in mountains of central and southern California nearly to the Mexican border. As a breeder in the Sierra Nevada, this species occurs at elevations ranging from about 1,000 ft in Fresno Co. to 7,923 ft in Tulare Co. (Shuford and Gardali 2008). There are a few documented cases of California spotted owl on the east side of the Sierra Nevada and in the Carson Range in Nevada (GBBO 2010).

Known Records: There are 133 CNDDB records for California spotted owl within 10 mi of the BSA. The closest CNDDB record is located 0.35 mi northeast of the BSA approximately 3.5 mi northwest of Blairsden. California spotted owl was observed at this location in August 1987 and confirmed breeding in 1991. There is one NNHP record for California spotted owl in the six-quad area encompassing the BSA in Nevada. The record is located

approximately 1.8 mi northeast of the BSA. A California spotted owl was collected from atop the Nancy Gomes School in Cold Springs Valley near Bordertown, Nevada in December 1983.

As part of the Sierra Nevada Forest Plan Amendment (SNFPA), protected activity centers (PACs) for California spotted owls are designated with the intent of directing management to specifically sustain viable populations. Home range core areas are delineated around each territorial spotted owl activity center detected after 1986 (USFS January 2004). There are 6 PACs within 1.0 mile of the BSA. The BSA crosses through the western edge of a PAC located approximately 3.5 mi northwest of Blairsden. The CNDDB record referenced above corresponds to this PAC. The BSA occurs approximately 0.05 to 0.08 mi northeast of and parallel to SR 70 at this location. The PAC is mapped to the edge of SR 70. A home range core area is delineated around this PAC and includes the southwestern side of SR 70. There are no other PACs within 0.25 mi of the BSA. The BSA crosses through the outer boundaries of two other mapped home range core areas.

4.6.22.1. SURVEY RESULTS

Field surveys for California spotted owls were not conducted in the BSA. No California spotted owls were observed in the BSA during the reconnaissance surveys conducted in December 2010. Habitat for California spotted owl occurs in the mixed conifer forest in and adjacent to the BSA, west of Beckwourth along the SR 70 corridor.

4.6.22.2. AVOIDANCE AND MINIMIZATION EFFORTS

The SNFPA specifies a limited operating period (LOP) within 0.25 mile of a California spotted owl protected activity center boundary or active nest site between 1 March and 15 August unless surveys confirm that California spotted owls are not nesting (USFS January 2004; pers. comm., Nickerson 2010). The PNF wildlife biologist stated that the LOP period would not be necessary if project activities in the area could be implemented within a day or two with little to no increase above existing noise levels as well as being implemented as close to or after 31 August as possible (pers. comm., Nickerson 2010). The SNFPA specifies that the LOP for California spotted owl may be waived for projects of limited scope and duration or when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation determines that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be reduced (USFS January 2004).

There is one PAC located within 0.25 mi of the BSA, which is mapped to the edge of SR 70. The CNDDB record of the nesting California spotted owl in this PAC is located 0.35 mi northeast of the BSA. The BSA occurs approximately 0.05 to 0.08 mi northeast of and parallel to SR 70 at this location. The BSA will either be accessed on existing roads or on foot. Noise levels from project construction will not exceed noise levels generated by the highway.

Between 1 March and 15 August, work within 0.25 mi of the California spotted owl PAC will be limited to two days of work. If more than two days are needed to complete the work, PSREC will coordinate with DFG and the USFS wildlife biologist to determine if construction activities should be restricted near the PAC.

4.6.22.3. PROJECT IMPACTS

If no project activities are conducted during the limited operating period (LOP), within 0.25 mi of the California spotted owl PAC, the project will not affect the California spotted owl. If project activities are conducted, for approximately one or two days (short duration), within 0.25 mi of the California spotted owl PAC during the LOP, the project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the California spotted owl (pers. comm., Nickerson 2011). The project will not impact California spotted owl with implementation of the avoidance measure.

4.6.22.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.22.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.6.23. Discussion of Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)

Yellow-headed blackbirds breed almost exclusively in marshes with tall emergent vegetation, such as tules (*Scirpus* spp.) or cattails (*Typha* spp.), and sometimes willow (*Salix* spp.) and tamarix (*Tamarix gallica*), generally in open areas and edges over relatively deep water. They nest in low vegetation such as spikerush (*Eleocharis* spp.) in the Sierra Valley (Shuford and Gardali 2008). Nests are always located over water (CWHR 2011). Preferred water depths are from 2 to 4 ft. Yellow-headed blackbirds will often abandon an unfinished nest if water recedes and the nest becomes located over dry land. Because of the need for deeper

water, breeding marshes often are on the edges of water bodies such as lakes, reservoirs, or larger ponds (Shuford and Gardali 2008).

Yellow-headed blackbirds forage in emergent wetland and moist, open areas, especially cropland and muddy shores of lacustrine habitats (CWHR 2011). Non-breeding habitat in migration and winter is in open cultivated lands, pastures and fields (NatureServe 2011).

Range: Yellow-headed blackbirds breed widely and abundantly across western Canada and the U.S., but are patchily distributed in the southwestern portion of their breeding range. The greatest breeding densities are in regions with large and productive marshes, particularly in the eastern Prairies and Great Plains. In California, yellow-headed blackbirds occur primarily as migrants and summer residents from April to early October, with breeding from mid-April to late July (Shuford and Gardali 2008). This species breeds up to 6,600 ft in the San Bernardino Mts. (CWHR 2010). Small numbers of yellow-headed blackbirds winter in California, mainly in the southern Central Valley and the Imperial and Colorado River valleys. In the range of the BSA, breeding adults are known from Susanville and Honey Lake in Lassen Co. and Sierra Valley in Sierra and Plumas counties. In the range of the BSA, this species also historically occurred at Red Rock P.O., Lassen Co., and Portola, Plumas Co. (Shuford and Gardali 2008).

Known Records: There are no CNDDB records for yellow-headed blackbirds within 10 mi of the BSA. There are no NNHP records for yellow-headed blackbird in the six-quad area encompassing the BSA in Nevada. The closest CNDDB record of yellow-headed blackbird is located approximately 11 mi northwest of the BSA at Eagle Lake. Collections of yellow-headed blackbird were taken from Eagle Lake and from Eagle Lake near Troxel in May 1923.

4.6.23.1. SURVEY RESULTS

Field surveys for yellow-headed blackbirds were not conducted in the BSA. Yellow-headed blackbirds were not observed during the reconnaissance surveys in December 2010. Habitat for yellow-headed blackbird in and adjacent to the BSA occurs in the dense willow thickets and emergent marshes along segments of the creeks and rivers which remain inundated through July.

4.6.23.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures for waters, wetlands, and riparian areas, and the avoidance measures for nesting birds in Chapter 1, will avoid impacts to yellow-headed blackbird.

4.6.23.3. PROJECT IMPACTS

The project will have no affect on yellow-headed blackbird with implementation of the avoidance measures.

4.6.23.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.6.23.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7. Special-Status Mammals

4.7.1. Discussion of Pallid bat (*Antrozous pallidus*)

Pallid bat is a large, light-colored bat with prominent ears that inhabits rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forests, often in xeric ecosystems. Foraging occurs over open shrub-steppe grasslands, oak savannah grasslands, open ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, vineyards (WBWG 2005), springs and edge habitats (Bradley et al. 2006).

Agricultural areas in Nevada have been observed to contain concentrated foraging activity by a variety of bats, including pallid bat (Bradley et al. 2006). Winter habitats are poorly known, but pallid bats do not migrate long distances between summer and winter sites. Overwintering sites in coastal California are located in protected structures that have a relatively cool, stable temperature. Elsewhere, pallid bats have been found hibernating alone or in small groups wedged deeply into narrow fissures in mines, caves, and buildings (WBWG 2005).

Pallid bat may roost alone, in small groups, or gregariously. Day and night roosts are similar, consisting of crevices in rocky outcrops and cliffs, caves, mines, trees (basal hollows of coast redwoods and giant sequoias, bole cavities of oaks, exfoliating ponderosa pine and Valley oak bark, deciduous trees in riparian areas, and fruit trees in orchards), and various human structures such as bridges (especially wooden and concrete girder designs), barns, porches, bat boxes, and occupied as well as vacant buildings (WBWG 2005). In Nevada, pallid bats are known to roost in pinyon-juniper forests (Bradley et al. 2006). Roosts are warm and high above the ground where they are inaccessible to terrestrial predators. Generally, their roosts have unobstructed entrances/exits. However, the species has been found roosting on or near the ground under burlap sacks, stone piles, rags, and baseboards. Roosting sites are often

reused, but are switched on a daily and seasonal basis (WBWG 2005). Pallid bat is very sensitive to roosting site disturbance (CWHR 2011), which has caused a decline in pallid bat populations in California (Bradley et al. 2006). Few roost sites have been identified in Nevada (Bradley et al. 2006).

Female and young pallid bats roost in maternity colonies separate from adult and yearling males. Mating occurs from October to February, with one to two (sometimes three) pups born from late April to July. Young are weaned in August, and maternity colonies disperse between August and October. Exact dates vary across latitudes and between years. Typically, bats found at higher latitudes in cooler climates give birth later in the season. Sexual maturity can be reached in one year for both males and females (WBWG 2005).

Passive acoustic cues, occasionally echolocation, are usually used to locate prey. This species has an extensive collection of social communication calls, some of which can be heard by humans. Pallid bats are opportunistic generalists that eat a variety of insects captured on the ground and on the wing. Rarely, they will capture geckos, lizards, skinks, and small rodents. Diet and foraging style tend to vary within and between populations (WBWG 2005). Pallid bat is known to roost with other bats, typically *Myotis* spp. and Brazilian free-tailed bat (*Tadarida brasiliensis*; CWHR 2011).

Range: Pallid bat is found throughout western North America from sea level to 7,000 ft, including all of California and Nevada (CWHR 2011, WBWG 2005). This species is commonly found in xeric ecosystems, including the Great Basin, Mojave, and Sonoran Deserts (WBWG 2005). Pallid bat is considered a yearlong resident in most of its range (CWHR 2011), and widely distributed throughout Nevada (Bradley et al. 2006). The elevation range for this species, based on known records in Nevada, is from 1,378 to 8,465 ft, although it has been found up to 10,171 ft. The largest maternity roost for this species in Nevada occurs in Pershing Co. (Bradley et al. 2006). Populations and habitat of this species have been assessed as moderate risk in the Nevada Bat Conservation Plan (Bradley et al. 2006).

Known Records: There are no NNHP records for pallid bat in the six-quad area encompassing the BSA in Nevada. There are six CNDDB records for pallid bat within 10 mi of the BSA. One geographically imprecise 1920 record is from the "Feather River Experiment Station" approximately 3.85 mi northwest of Blairsden. Another CNDDB record is from 2007 of eight adult males and four adult females (two lactating, two post-lactating), and is approximately 0.44 mi north of the BSA at the SR 70/89 bridge over Spanish Creek in Quincy. Three records are from 1999: one approximately 1.4 mi southeast of the BSA

Graeagle Substation Lateral; one approximately 3.2 mi southwest of the BSA City of Loyalton Lateral; and one approximately 5.2 mi southwest of the BSA Marble Substation Lateral. The remaining record is from 2002 west of Susanville, approximately 6.3 mi west of the BSA.

4.7.1.1. SURVEY RESULTS

Field surveys for pallid bat or roosting sites were not conducted in the BSA. Vegetation in the mixed coniferous forest of the BSA is managed and kept clear of large trees that could interfere with the utility lines. Some large trees in the mixed coniferous forest along the edge of the BSA provide potential roosting habitat for pallid bat. Bridges or large culverts in or near the BSA could also provide potential roosting habitat for pallid bat.

4.7.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for bats are described in Chapter 1.

4.7.1.3. PROJECT IMPACTS

The Project will not impact pallid bat with implementation of the avoidance measures.

4.7.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.2. Discussion of Sierra Nevada mountain beaver (SNMB; *Aplodontia rufa californica*)

SNMB are found in dense riparian-deciduous and open, brushy stages of most forest types. In the Sierra Nevada, this species is typically found in montane riparian habitat or nearby open and intermediate-canopy coverage with dense understory where they inhabit a cool, moist microenvironment (CWHR 2011). This species creates extensive, shallow burrows and tunnel systems (NDOW 2011) in deep, friable soil (CWHR 2011). They are active throughout the year, usually at night. They feed on herbaceous plants, trees, and shrubs (NDOW 2011), including thimbleberry, salmonberry, blackberry, dogwood, salal, ferns, lupines, willows, deciduous trees and conifers, grasses and forbs (CWHR 2011). Vegetation is stored near the burrow entrance or in an underground chamber (CWHR 2011).

SNMB is solitary except during breeding season and while females are raising young (NDOW 2011). Breeding occurs from December through March, with two to three young born in February to June (CWHR 2011). Young are weaned in six to eight weeks, and females can become sexually mature in two years (NDOW 2011). SNMB burrows are approximately 6 inches in diameter, with several openings occurring in a small area. Often, clipped vegetation is seen near the burrow system. There may also be "haystacks" of drying vegetation near the burrows (Zeiner et al 1990b).

Range: SNMB occur in west central Nevada, northern California, Oregon, Washington, and British Columbia (NDOW 2011). In California, this species occurs through the Cascade, Klamath, and Sierra Nevada Ranges in California (CWHR 2011).

Known Records: There are no NNHP records for SNMB in the 6-quad area encompassing the BSA in Nevada. There are no CNDDB records for SNMB within 10 mi of the BSA. This closest CNDDB record is from 1985 and is located 12.9 mi southwest of BSA in Nevada Co. Two populations were found at 6,000 ft in a creek tributary to the Truckee River.

4.7.2.1. SURVEY RESULTS

Field surveys for SNMB or burrow sites were not conducted in the BSA. Habitat for SNMB may occur in forested habitats where the BSA crosses permanent or semi-permanent water with deep, friable soil.

4.7.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measure listed in Chapter 1 for burrowing animals will be implemented.

4.7.2.3. PROJECT IMPACTS

The Project will not affect SNMB with implementation of the avoidance measures.

4.7.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.3. Discussion of Pygmy Rabbit (*Brachylagus idahoensis*)

Pygmy rabbit is typically found in sagebrush, bitterbrush, and pinyon-juniper habitats (CWHR 2011). Sagebrush is an important source of food and cover (NDOW 2010; USFWS

19 January 2011). Pygmy rabbit digs burrows in relatively deep, loose soils located on gentle slopes or on flats containing mounds (USFWS 19 January 2011). During winter, pygmy rabbit makes a network of trails under snow at the bases of shrubs. Mating occurs from late February to early May. After a 27- to 30-day gestation period, the young are born from March to early August (in up to 3 litters per year). Predators include weasels, coyotes, foxes, owls, and hawks (CWHR 2011). DFG allows hunting of pygmy rabbits. The bag limit is five per day, or ten in possession.

Range: They occur throughout most of the Great Basin and some of the adjacent intermountain areas of the western U.S. In California, the pygmy rabbit is an uncommon and local resident in Great Basin habitats of Modoc, Lassen, and Mono counties (CWHR 2011).

Known Records: There are no CNDDB records for pygmy rabbit within 10 mi of the BSA. There are no NNHP records for pygmy rabbit in the 6-quad area encompassing the BSA in Nevada. There are 2 CNDDB records of pygmy rabbit in Lassen, Plumas, and Sierra counties. Both records occur near Ravendale, California, in Lassen Co. The first record is based on a specimen collected in July 1928, approximately 3 mi south of Ravendale, centered on the Ravendale quad. The second record is based on two specimens collected in January 1926 approximately 7 mi east of Ravendale, centered on Observation Peak quad. These records are over 25 mi northeast of the nearest portion of the BSA (near Susanville).

4.7.3.1. SURVEY RESULTS

Field surveys for pygmy rabbit were not conducted in the BSA. The portion of the BSA in the Great Basin (generally east or north of Beckwourth Pass), contains potential habitat for pygmy rabbit.

4.7.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

An avoidance measure for burrowing animals is described in Chapter 1.

4.7.3.3. PROJECT IMPACTS

The Project will not impact pygmy rabbit with implementation of the avoidance measures.

4.7.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.3.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.4. Discussion of Townsend's big-eared bat (*Corynorhinus townsendii*), including Western big-eared bat (*Corynorhinus townsendii pallescens*)

There are five subspecies of *Corynorhinus townsendii*. Based on morphological variation described by Handley in 1959, California contains the subspecies *C. t. pallescens*, which occurs in the eastern portion of California and *C. t. townsendii*, which occurs in the western portion of California. More recent DNA analysis published by Piaggio and Perkins in 2005 suggested a different range for these subspecies, with only *C. t. townsendii* occurring in California and *C. t. pallescens* occurring further east (WBWG 2005).

Townsend's big-eared bat has large "rabbit-like" ears and is found in a wide variety of habitats including coniferous forests, mixed mesic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitats (WBWG 2005). This species prefers mesic areas (CWHR 2011) and forages along habitat edges of streams, as well as adjacent to and within a variety of wooded habitats (WBWG 2005). In Nevada, big-eared bats forage extensively in pinyon juniper habitat (Bradley et al. 2006). Big-eared bat populations are centered in areas dominated by exposed, cavity or cave forming rocks and/or historic mining districts. These bats have been reported to use buildings, bridges, rock crevices, and hollow trees as roost sites. Roost site use varies within seasons and among years; however, there is high roost fidelity in areas where roost availability is low, such as the California coast (WBWG 2005). Townsend's big-eared bat is sensitive to human disturbance of roosting sites (Bradley et al. 2006).

Mating occurs from November through February. Females are inseminated before hibernation begins with ovulation occurring in the spring. Maternity colonies form in March and June depending on local climate and contain a few to several hundred individuals. Maternity roosts are located in the warm areas of caves, tunnels, mines, and buildings. Males tend to remain solitary during the maternity period. A single pup is born between May and July, is weaned in six weeks, and is able to fly two and a half to three weeks after birth. Males tend to disperse from natal ranges while females remain philopatric. Maternity groups begin to break up in August. Females reach sexual maturity in their first autumn and males in their first or second autumn (WBWG 2005; CWHR 2011).

Townsend big-eared bats can have large home ranges, and can foraging up to 0.93 mi in a single evening. Little is known about seasonal movements, although local migration might occur along a longitudinal gradient. Winter hibernating colonies consist of both males and females, and can range from one to several hundred bats, occasionally several thousand (WBWG 2005). Hibernation occurs from October to April at sites that are cold, but not

below freezing. The primary source of food for big-eared bats is small moths; they also feed on beetles and a variety of soft-bodied insects. Prey is taken by echolocation or by gleaning from foliage. Big-eared bat is known to forage with other species. This species is extremely sensitive to disturbance of roosting sites (Bradley et al. 2006; CWHR 2011).

Range: Townsend's big eared bat occurs in the western U.S., British Columbia, and Mexico with isolated populations in the central and eastern U.S., from sea level to 10,827 ft. Distribution is strongly correlated with availability of caves and cave-like roosting habitat, including abandoned mines (WBWG 2005; Bradley et al. 2006). In California, they are found in all but subalpine and alpine habitats (CWHR 2011).

In Nevada, Townsend's big-eared bat is a year-round resident widely distributed throughout the state (Bradley et al. 2006; NDOW 2010). Their elevation range, based on records in Nevada, is from 690 to 11,483 ft. The largest bat hibernation roost for this species in Nevada occurs in White Pine Co. Populations and habitat of this species have been assessed as high risk in the Nevada Bat Conservation Plan (Bradley et al. 2006).

Known Records: There are NNHP records for Townsend's big-eared bat in the six-quad area encompassing the BSA in Nevada, but the locations are suppressed. There are three CNDDB records for Townsend's big-eared bat in the 26-quad area encompassing the BSA in California. The closest CNDDB record is from 2007 of one lactating adult female approximately 0.44 mi north of the BSA at the SR 70/89 bridge over Spanish Creek in Quincy.

4.7.4.1. SURVEY RESULTS

Field surveys for Townsend's big-eared bat or potential roosting sites were not conducted in the BSA. Vegetation in the mixed coniferous forest of the BSA is managed and kept cleared of large trees that could interfere with utility lines. Some large trees in the mixed coniferous forest along the edge of the BSA provide potential roosting habitat. Bridges or large culverts in or near the BSA could also provide potential roosting habitat.

4.7.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for bats are described in Chapter 1.

4.7.4.3. PROJECT IMPACTS

The Project will not impact Townsend's big-eared bat with implementation of the avoidance measures.

4.7.4.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.4.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.5. Discussion of Big brown bat (*Eptesicus fuscus*)

Big brown bat is a colonial species that occurs in a wide range of habitats from desert scrub and moist coastal forests to high elevation conifer forests (WBWG 2005), including pinyon-juniper, blackbrush, creosote, sagebrush and agricultural areas (Bradley et al. 2006). This species is also quite common in urban environments and has a tendency to roost in buildings, mines, and bridges (WBWG 2005). Big brown bat is uncommon in hot desert habitats and is absent from the alpine meadows (CWHR 2011). Natural roosts include caves, crevices in cliff faces, trees (particularly large diameter snags), and holes in giant saguaro cactus. Foraging occurs nearby in tree canopies, over meadows, or along water courses. This species is primarily a beetle specialist. Big brown bat is an important predator of agricultural pests, such as the spotted cucumber beetle (*Diabrotica* sp.; WBWG 2005).

Females roost separately in maternity colonies in the spring and summer, and join the males to hibernate during the winter. Maternity colonies can contain from twelve to several hundred individuals. Hibernation colonies in the west have relatively small numbers. Mating occurs in the autumn with one pup (occasionally two in the east) born in early summer. Young are able to fly in three to four weeks. Winter hibernation occurs in the northern portion of the range in caves, mines and buildings. Migration may occur along an elevational gradient, but generally this species is sedentary and does not migrate long distances (WBWG 2005).

Range: Big brown bat has a broad distribution from Alaska to northern South America, occurring in all western States and Provinces (WBWG 2005). This species is found throughout California (CWHR 2011). It is a year round resident from 985 to 9,850 ft in Nevada (Bradley et al. 2006).

Known Records: There are no CNDDB records for big brown bat in the 26-quad area encompassing the BSA in California. There are no NNHP records for big brown bat in the six-quad area encompassing the BSA in Nevada.

4.7.5.1. SURVEY RESULTS

Field surveys for big brown bat or potential roosting sites were not conducted in the BSA. Big brown bat is not a special-status species in California. It is considered a sensitive species by the BLM in Nevada. Bridges or large culverts in or near the BSA could provide potential roosting habitat for big brown bat.

4.7.5.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for bats are described in Chapter 1.

4.7.5.3. PROJECT IMPACTS

The Project will not affect big brown bat with implementation of the avoidance measure.

4.7.5.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.5.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.6. Discussion of Spotted bat (*Euderma maculatum*)

Spotted bat has large ears, and is so named because of three white spots on its back (WBWG 2005). This species forages in a variety of vegetation types including desert-scrub, pinyon-juniper woodland, ponderosa pine, mixed conifer forest, subalpine meadows, canyon bottoms, rims of cliffs, riparian areas, fields, grasslands, and open pasture (WBWG 2005; CWHR 2011). Agricultural areas in Nevada have been observed to contain concentrated foraging activity by several species of bats, including spotted bats (Bradley et al. 2006). Spotted bat is usually found near a permanent water source (NDOW 2010), including mesquite bosque habitat along wash systems in the southern Nevada, cottonwood riparian, sycamore riparian, and cottonwood-willow riparian forests (Bradley et al. 2006). Both males and females are capable of long distance and rapid flight, which allows for a large foraging range. Spotted bats forage alone and prey primarily on moths (WBWG 2005). Echolocation is used to find prey in flight (CHWR 2011).

Spotted bats always occur near substantial cliff features such as granite, basalt, limestone, sandstone, and other sedimentary rock, predominately in small crevices in suitable cliff faces (Pierson and Rainey 1998; CWHR 2011). Roosting sites include caves (WBWG 2005) and occasionally mines and buildings (NDOW 2010). Spotted bats showed high roost fidelity in British Columbia and Arizona. This species is usually solitary, but occasionally roosts or

hibernates in small groups. Spotted bats may also migrate in parts of their range, moving from higher to lower elevations in winter. This species is considered locally rare or uncommon. Its solitary lifestyle and remote habitat makes them difficult to detect (WBWG 2005; CWHR 2011).

Spotted bats breed in late summer or autumn, and females give birth to a single pup in May or June (WBWG 2005; CWHR 2011), sometimes July (NDOW 2010). Rock crevices are probably used for reproduction (CWHR 2011).

Range: Spotted bat occurs throughout western North America from sea level to 8,858 ft (WBWG 2005). Spotted bats are known from western California from below sea level to 10,000 ft (CWHR 2011).

Spotted bats occur in all counties in Nevada (NNHP 2004; NDOW 2010) and is correlated with the availability of cliff roosting habitat near or adjacent to riparian areas (NDOW 2010). This species is a year-round resident of Nevada at elevations from 1,772 to 6,988 ft. Populations and habitat of this species have been assessed as moderate risk in the Nevada Bat Conservation Plan (Bradley et al. 2006).

Known Records: There are three NNHP records for spotted bat in the six-quad area encompassing the BSA in Nevada. All three records occur within 0.1 and 1.5 mi from the BSA in the City of Reno.

There are two CNDDB records for spotted bat in the 26-quad area encompassing the BSA in California. The closest CNDDB record is from 1997 near Loyalton, approximately 3.1 mi southwest of the BSA. Two foraging bats were detected in July along a small stream in the Antelope Valley Fish and Wildlife Area. The surrounding habitat was a riparian corridor through ponderosa pine woodland. The other record is from 1999 and is about 5.2 mi southwest of the Marble Substation. Two foraging bats were detected in July and one was detected in September at Knuthson Meadow in Carman Valley, Tahoe National Forest. The surrounding habitat consisted of a meadow with willows through a ponderosa pine forest.

4.7.6.1. SURVEY RESULTS

Field surveys for spotted bat or roosting sites were not conducted in the BSA. Bridges or large culverts in or near the BSA could provide potential roosting habitat for spotted bat.

4.7.6.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for bats are described in Chapter 1.

4.7.6.3. PROJECT IMPACTS

The Project will not impact spotted bat with implementation of the avoidance measures.

4.7.6.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.6.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.7. Discussion of California Wolverine (*Gulo gulo)*

Wolverine is a scarce resident of the North Coast mountains and Sierra Nevada, from Del Norte and Trinity counties, east through Siskiyou and Shasta counties, and south through Tulare Co. A few possible sightings have been recorded in the North Coast mountains as far south as Lake Co. In the northern Sierra Nevada, wolverine have been found in mixed conifer, red fir, and lodgepole pine habitats, and likely use subalpine conifer, alpine dwarf-shrub, wet meadow, and montane riparian habitats from 4,300 to 7,300 ft (CWHR 2011). Wolverines require deep persistent snow more than specific vegetation or geological aspects (USFWS 14 December 2010). Wolverines occur in areas of low human disturbance and use caves, hollows in cliffs, logs, rock outcrops, and burrows for cover, preferably in denser forest stages (CWHR 2011).

Mating occurs in late spring/ early fall. Females undergo delayed implantation until the following winter/spring. Young are born from mid-February through March. Birthing (natal) dens are excavated in the snow by female wolverines. Persistent stable snow greater than five feet deep is a requirement for natal birthing to provide security from predators and a buffer against cold winter temperatures. Females may move young to a secondary (maternal) den in May, a decision possibly made based on accumulation of water in dens (snow melt), maturation of offspring, surrounding disturbances, and geographic location (USFWS 14 December 2010). Young are weaned in approximately seven to nine weeks and sexually mature in their second or third year.

Wolverines have large home ranges and frequently travel long distances (CWHR 2011). Wolverines tend to occur in low densities of about one individual per 25 to 130 mi^2, suggesting that historical populations densities were also low. Studies conducted in Glacier National Park, Idaho and the Greater Yellowstone Ecosystem show the yearly range of wolverines vary from 193 to 588 mi^2 for males, and 55 to 329 mi^2 for females. Home ranges

in Alaska ranged from 38.5 to 348 mi^2 (USFWS 14 December 2010). Studies in Montana show that wolverines can have daily movements of up to 19.4 mi (CWHR 2011).

Wolverines are opportunistic feeders and consume a wide variety of foods based on availability, including carrion, small animal and bird prey, fruits, berries, and insects (USFWS 14 December 2010). Hunting occurs in more open areas, while dense cover is used for resting and reproduction (CWHR 2011).

Range: Wolverines have a holartic distribution in Europe, Asia, and North America under a single species, *Gulo gulo*. Old and new world wolverines are divided into separate subspecies. The North American wolverine (*G. g. luscus*) that occurs in the contiguous U.S. was determined to be a DPS in 2010 by USFWS, and is currently listed as a federal candidate species. The current range of this DPS includes portions of WA, ID, MT, WY, CO, UT, OR and California. There is no census of the wolverine population in the contiguous U.S., so current population trends are unknown. The best predictor of wolverines is deep, persistent, and reliable spring snow cover. Reasonable estimates of the wolverine population in the contiguous U.S. are approximately 250 to 300 individuals, a large number of which occur in the northern Rocky Mts., some from the North Cascades, and one each in the Sierra Nevada and southern Rocky Mts. (USFWS 14 December 2010).

Habitat distribution in California is poorly known for the North Coast and northern Sierra Nevada. In the northern Sierra Nevada, the elevation range of California wolverine is from 4,300 to 7,300 ft. Due to its low population densities even in preferred habitat, wolverine was probably never common in California (CWHR 2011). Wolverines were most likely extirpated from the Sierra Nevada in the first half of the 1900s during widespread systematic predator control programs (USFWS 14 December 2010).

In 2008, a male wolverine was discovered in the Sierra Nevada range of California, the first verified record since 1922. Genetic analysis determined that this individual likely dispersed from the northern Rocky Mts., and was not a descendent of the Sierra Nevada population. There is no evidence that females have also migrated to the Sierra Nevada. Based on this evidence, USFWS concluded that the Sierra Nevada is within the current range of this species, but reestablishment of a population in the Sierra Nevada has not yet occurred (USFWS 14 December 2010).

Known Records: There no NNHP records for wolverine in the six-quad area encompassing the BSA in Nevada. There are two CNDDB records for wolverine within 10 mi of the BSA. The closest CNDDB record is from 1974, and is approximately 4.6 mi west of the proposed route in Quincy. One individual was observed in Plumas National Forest at Schneider Creek

in Meadow Valley. This sighting has not been verified. Another CNDDB record is from 1989, and is approximately 8.7 mi southwest of the proposed route in Graeagle. This record is an unconfirmed sighting of a wolverine crossing Route 09, a road in the Tahoe National Forest, 2.5 mi north of Yuba Sutter Camp.

The first confirmed wolverine sighting in California since 1922 was inadvertently photographed during a marten study in the Tahoe National Forest in February 2008 (DFG 2008). The wolverine was detected near Blatchley Canyon, about 2.2 mi south-southeast of Treasure Mountain, in a mid to upper elevation mixed conifer forest with an overstory of Jeffrey pines (*Pinus jeffreyi*), lodgepole pine (*P. contorta*), white fir (*Abies concolor*), and red fir (*A. magnifica*). Genetic samples were used to determine that the individual was a male with a probable origin in the western Rocky Mts.. This sighting is approximately 11.6 mi south of the proposed route in Loyalton.

4.7.7.1. SURVEY RESULTS

Field surveys for wolverines were not conducted in the BSA. The areas anticipated to be affected by the project have been disturbed by past construction and ROW maintenance activities. USFWS (14 December 2010) concluded that athough the Sierra Nevada is within the wolverine's current range, females have yet to migrate to this area and the reestablishment of a Sierra Nevada population has not yet occurred. It is unlikely that wolverines would den in the BSA.

4.7.7.2. AVOIDANCE AND MINIMIZATION EFFORTS

Completion of the Proposed Project in segment of the BSA that traverse mixed coniferous forest will consist of hanging fiber optic conduit on existing utility poles within the PSREC ROW. The PSREC ROW that traverse mixed coniferous forest is subject to vegetation clearing and management. It is unlikely that wolverines would den in the BSA because of the presence of ongoing traffic and maintenance activities.

4.7.7.3. PROJECT IMPACTS

The Project will not affect California wolverine.

4.7.7.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.7.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.8. Discussion of Sierra Nevada Snowshoe Hare (*Lepus americanus tahoensis*)

Sierra Nevada snowshoe hare habitat includes early-seral stages of mixed conifer, subalpine conifer, red fir, Jeffrey pine, lodgepole pine, and aspen stands/ forests, primarily along edges, and especially near meadows. In California, Sierra Nevada snowshoe hare is primarily found in montane riparian habitats with thickets of alders and willows, and in stands of young conifers interspersed with chaparral. Dense cover is preferred, either in understory thickets of montane riparian habitats, or in shrubby understories of young conifer habitats (CWHR 2011). Snowshoe hare is active year-round. They generally avoid open spaces and mature closed canopy conifer forests. They feed on green succulent plants, grasses, sedges, ferns, and forbs in summer, and on bark and twigs of conifers, evergreen shrubs, and deciduous trees such as aspen, alder and willow in winter (Bolster 1998). Snowshoe hares nest in shallow bowl-like depressions under shrubs, logs, or in slash. Snowshoe hares breed from mid-February to June or July. The gestation period is 35-37 days. Snowshoe hares are polyestrous, with 2-3 litters per year. Predators include bobcats, minks, weasels, foxes, coyotes, great horned owls, and domestic dogs and cats (CWHR 2011).

The California Department of Fish and Game issues hunting permits for Sierra Nevada snowshoe hares. The bag limit is five per day, or ten in possession (DFG 26 January 2011).

Range: Snowshoe hares are found in the northern and central Sierra Nevada from approximately Mt. Lassen in southeastern Shasta Co., south through Yosemite National Park to Mono and Mariposa counties, from 4,800 to 8,000 ft. In Nevada, known from near Lake Tahoe (Bolster 1998) and elsewhere in Douglas and Washoe counties (NatureServe 2011).

Known Records: There are three CNDDB records for Sierra Nevada snowshoe hare in Plumas, Sierra, and Lassen counties. One record is at Sagehen Creek Field Station; specimens were collected from this location in 1954 and 1969. Another record is located on the east side of Yuba Pass; one female specimen was collected from this location in 1929. The third record is located about 1.8 mi northeast of Badenaugh Canyon Rd at Smithneck Rd, and about 1.6 mi west-southwest of Babbitt Peak Outlook, in the Tahoe National Forest; one individual was observed at this location in August 2009 during small mammal trapping. The Sardine Peak quad occurrence is located approximately 7.5 mi southeast of the BSA in Loyalton, California, and approximately 8.5 mi southwest of the BSA near along US 395 near Silver Lake in Nevada.

4.7.8.1. SURVEY RESULTS

Field surveys for Sierra Nevada snowshoe hare were not conducted in the BSA. The BSA provides suitable habitat for this species only west of Beckwourth along the SR 70 corridor. That portion of the BSA is mostly below 4,800 ft. Much of the BSA above 4,800 ft is near development or rural residences near Portola.

4.7.8.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance or minimization measures are proposed for Sierra Nevada snowshoe hare.

4.7.8.3. PROJECT IMPACTS

Sierra Nevada snowshoe hare is unlikely to be present in the BSA during construction. The project will have a less than significant impact on Sierra Nevada snowshoe hare.

4.7.8.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.8.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.9. Discussion of Western white-tailed jackrabbit (*Lepus townsendii townsendii*)

In California, western white-tailed jackrabbit is an uncommon to rare resident generally found at or above the timberline. Habitat includes sagebrush, subalpine conifer forest, juniper woodland, alpine dwarf shrubland, perennial grassland, wet meadow, and early successional stages of various conifer forests (Bolster 1998; CWHR 2011). In the Sierra Nevada, this subspecies migrates to higher areas in the summer and to lower regions in the winter, particularly sagebrush-covered eastern slopes. Open areas with scattered shrubs are preferred. Breeding occurs from February to July. The gestation period is 30-42 days. Females may only produce one litter per year in California. Young forage independently at 3-4 weeks or sooner (CWHR 2011). Predators include coyotes, bobcats, and raptors.

The California Department of Fish and Game issues hunting permits for western white-tailed jackrabbit. The bag limit on western white-tailed jackrabbit is five per day, or ten in possession (DFG 26 January 2011).

Range: Western white-tailed jackrabbits are an uncommon to rare year-round resident of the crest and upper eastern slope of the Sierra Nevada, primarily from the Oregon border south to

Tulare and Inyo counties. Western white-tailed jackrabbit may be absent from previous portions of its range, such as Lassen Co., where records are over 20 years old (CWHR 2011).

Known Records: There no NNHP records for white tailed jackrabbit in the six-quad area encompassing the BSA in Nevada. There is one CNDDB record for western white-tailed jackrabbit in Plumas, Lassen, and Sierra counties. This record is from 1914 and is mapped by CNDDB along the route near the intersection of US 395 and Red Rock Road. Three male specimens were collected from this location in February 1914.

4.7.9.1. SURVEY RESULTS

Field surveys for western white-tailed jackrabbit were not conducted in the BSA. The BSA east of Beckwourth provides potential habitat for this species.

4.7.9.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance or minimization measures are proposed for white-tailed jackrabbit.

4.7.9.3. PROJECT IMPACTS

The Project will not impact western white-tailed jackrabbit.

4.7.9.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.9.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.10. Discussion of American Marten (*Martes americana*)

Martens are found in mature coniferous and mixed species forest with dense overstory and sufficient understory for hiding and denning (Snyder 1991). Important habitats include red fir, lodgepole pine, subalpine conifer, mixed conifer, Jeffrey pine, and eastside pine. Habitat with limited human use is important (CWHR 2011). Cover requirements for American martens include forests with 40 to 60 percent canopy closure. They will avoid areas that are so dense that herbaceous cover is suppressed. Martens usually den in rotten logs, but also rock slides and slash piles (Snyder 1991). Martens use cavities in large trees, snags, stumps, logs, burrows, caves, and crevices in rocky areas for denning cover. Young are born in March and April, some as late as June, and stay with the female until autumn (CWHR 2011).

Martens tend to travel along ridgetops and rarely move across large areas devoid of canopy cover. Martens have large home ranges. The home range of martens in a Montana study

ranged from an average of 589 ac for males and an average of 173 ac for females. Home ranges often coincide with topographical features or vegetation features, such as timber stands, ridges, streams, meadows, or burns (CWHR 2011).

Small clearings, meadows, and riparian areas provide foraging habitats, particularly during snow-free periods (CWHR 2011). Mesic sites that have dense, succulent understory vegetation are ideal because they support larger populations of prey species. Martens may hunt for prey in bordering open meadows if hiding cover is present (Snyder 1991). Martens are primarily nocturnal and crepuscular. They remain active year-long (CWHR 2011).

Range: There are five recognized subspecies of martens; the Sierra marten (*Martes americana sierrae*) occurs from Trinity and Siskiyou counties east to Mt. Shasta and south through the Sierra Nevada to Tulare Co. (Kucera et al. 1996).

Known Records: There no NNHP records for American marten in the six-quad area encompassing the BSA in Nevada. There are 30 CNDDB records for American marten in Plumas, Sierra, and Lassen counties. Five of these records occur within 10 mi of the BSA. Four of these CNDDB records are located close to each other, approximately 5.5 mi south of the Graeagle Substation lateral portion of the BSA. One record is a male collected in 1941 near Gold Lake, 15 mi west of Sierra Valley. The other records are from the Tahoe National Forest Sightings Database and consist of an individual observed in July 1990, two adults observed in August 1988, and numerous sightings from 1982 to 1990 at a location described as encompassing Church Meadow, Freeman Meadow, and Howard Creek Meadow in Plumas and Tahoe National forests. The fifth CNDDB record is located approximately 9.7 mi southwest of Loyalton.

4.7.10.1. SURVEY RESULTS

Field surveys for American marten were not conducted in the BSA. The BSA provides marginal foraging habitat for American marten in areas of coniferous forest west of Beckwourth. East of Beckwourth, the BSA does not contain conifer forests and the BSA is dominated by sagebrush vegetation alliances. Areas in the BSA east of Beckwourth (including all areas from Susanville, California, to Reno, Nevada) do not provide suitable habitat for American marten.

Areas of the BSA where the line will be hung from existing poles do not provide potential marten denning sites (i.e., there is no canopy cover along existing utility lines). The BSA does not provide suitable marten denning habitat.

4.7.10.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance and minimization measures are proposed for American marten.

4.7.10.3. PROJECT IMPACTS

The Project will not impact American marten.

4.7.10.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.10.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.11. Discussion of Pacific fisher (*Martes pennanti pacifica*)

The west coast distinct population segment (DPS) of fisher was listed as a candidate species in 2004 (USFWS 2004). Some researchers have recognized three subspecies of fishers, including *Martes pennanti pacifica* in the western region of North America. The USFWS does not recognize this distinction (USFWS 7 November 2007).

Pacific fishers occur in large areas of contiguous intermediate to large-tree stages of interior coniferous forests and deciduous-riparian habitats. Fishers use cavities in large trees, snags, logs, rock areas, or shelters provided by slash or brush piles for cover. Dense mature stands of trees also provide cover, especially in winter (Zeiner et al. 1990b). Snags and coarse woody debris located in riparian areas provide important areas for rest. Fishers typically avoid areas with little forest cover or significant human disturbance (USFWS 2004).

Fishers den in a variety of protected cavities including brush piles, hollow logs, trees, snags, and under upturned trees (Zeiner et al. 1990b). Most dens are found in live trees and are typically not re-used. Den trees must be large enough for cavities that can be used for natal and maternal dens. Natal dens are typically found in tree cavities 20 ft above the ground (Lewis and Stinson 1998), while maternal dens are generally in cavities closer to the ground so that kits avoid injury in the event of a fall (USFWS 2004). Young are born February through May and stay with the female until late autumn (Zeiner et al. 1990b). During the denning season, fishers generally move their kits between dens; they may remain at a den from a few days to a few weeks (pers. comm., Callas 2011).

Fishers are omnivorous and prey on rabbits, hares, rodents, and birds, but will also feed on fruits, fungus, and carrion (Zeiner et al. 1990b). Fishers hunt exclusively in forested habitats and generally avoid openings (USFWS 2004).

Range: Uncommon permanent resident of the Sierra Nevada, Cascades, and Klamath Mts.; also found in a few areas in the North Coast ranges (Zeiner et al. 1990b). In eastern California, the fisher historically ranged throughout the Sierra Nevada, from Greenhorn Mountain in northern Kern Co. northward to the southern Cascades at Mount Shasta. In western California, it ranged from the Klamath Mts. and north Coast Range near the Oregon border southward to Lake and Marin counties (USFWS 2004). In recent decades, the scarcity of detections in WA, OR, and the northern Sierra Nevada indicates that fisher may be extirpated or reduced to very low numbers in much of this area (USFWS 2004).

Surveys conducted between 1989 and 1994 did not detect fishers in their former range in central and northern Sierra Nevada, between northeastern Shasta Co. south to Yosemite National Park. The remaining fisher populations are divided into two remnant populations separated by approximately 260 mi, almost four times the species' maximum dispersal distance (Zielinski et al. 1995; USFWS 2004). One population is located in northwestern California and the other in the southern Sierra Nevada (Zielinski et al. 1995). Since 1990, there have been no detections outside these areas except for one in 1995 in Mendocino Co. and one in 1995 in Plumas Co. (USFWS 2004).

DFG, in cooperation with USFWS and Sierra Pacific Industries (SPI), prepared a translocation plan for the reintroduction of fishers in the northern Sierra Nevada (Callas & Figura 2008). In the winter of 2009 and2010, the first 15 fishers were released in SPI's Stirling Management Unit. DFG intends to introduce 25 fishers into the Stirling Management Area during the next two years (DFG 2011).

Geographic information on the dispersal of the released fishers in the Stirling Management Area was reviewed (DFG 2011) and R. Callas (pers. comm., 2011) was contacted to discuss the distance of the released fishers to the BSA and potential for impact due to Project construction. The release area in Stirling is approximately 29.5 mi west of Quincy. Some of the fishers have moved substantially to the northeast, towards Lake Almanor, and the nearest recorded occurrence is approximately 9.8 mi northwest of Quincy.

Known Records: Although there have been occasional, unverified sightings of fishers between Mt. Shasta and Yosemite, a considerable number of surveys in this region, using methods that readily detect fisher when they are present, have failed to detect them (Zielinski et al. 1995). Sighting data needs to be treated cautiously because it is impossible to verify; fishers can be easily mistaken for a number of other carnivores, especially American martens, even by experienced observers (Zielinski et al. 1995).

There no NNHP records for Pacific fisher in the six-quad area encompassing the BSA in Nevada. There are four CNDDB records for Pacific fisher within 10 mi of the BSA. The closest record is approximately 3.4 mi southwest of the BSA on the Johnsville quad. One fisher was observed in June 1983 near the headwaters of Squirrel Creek near Squirrel Creek Mine, approximately 4.8 mi south of the town of Sloat. The next closest record is approximately 6.5 mi southwest of the BSA on the Diamond Mountain quad. One fisher was observed running through an old-growth mixed coniferous forest in September 1986 near Gold Run Creek, approximately 7.2 mi SSW of Susanville.

4.7.11.1. SURVEY RESULTS

Field surveys for fishers were not conducted in the BSA.

4.7.11.2. AVOIDANCE AND MINIMIZATION EFFORTS

Between 1 February to 31 July, two weeks prior to work in the forested areas of the BSA (from Quincy east to Big Grizzly Creek), the project shall contact DFG staff involved with the fisher reintroduction to ascertain if there are any denning female fishers within 0.5 mi of construction (Richard Callas: 530-340-5977, or Pete Figura: 530-225-3224). Radio or GPS-enabled collars on the released fishers allow their location and movement to be tracked (pers. comm. R. Callas). If there are denning female fishers within 0.5 mi, no construction shall occur within 0.5 mi of the den until the den has been vacated. DFG shall continue to be contacted every two weeks during construction from 1 February to 31 July in the forested areas to check for denning fishers.

4.7.11.3. PROJECT IMPACTS

Pacific fisher was previously extirpated or reduced to very low numbers in the central and northern Sierra Nevada and the reintroduced fishers have not dispersed into the area of the BSA. The project will have no affect on lone fishers. The project will not affect fishers outside the breeding season. With the avoidance measure above, the project, will also have no affect on denning fishers.

4.7.11.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.11.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.12. Discussion of Western Small-Footed Myotis (*Myotis ciliolabrum*), Long-Eared Myotis (*Myotis evotis*), Fringed Myotis (*Myotis thysanodes*), and Yuma Myotis (*Myotis yumanensis*)

Western small-footed myotis is found in deserts, chaparral, riparian zones, and western coniferous forest, and is especially common above pinyon-juniper forest. This species roosts in cliff and rock crevices, buildings, concrete overpasses, caves, and mines (WBWG 2005).

Long-eared myotis is usually associated with coniferous forests, but also occurs in semiarid shrublands, sage, chaparral, and agricultural areas. This species roosts under exfoliating tree bark and in hollow trees, caves, mines, cliff crevices, sinkholes, rocky outcrops on the ground, and occasionally in buildings and under bridges (WBWG 2005).

Fringed myotis is found in a wide variety of habitats including desert scrub, mesic coniferous forests, grasslands, sage-grass steppe, oak woodlands and forests such as oak, pinyon-juniper, and ponderosa pine. Roosting occurs in crevices in buildings, underground mines, rocks, cliff faces, and bridges, as well as large decaying trees and snags. Structural characteristics of trees, such as height and decay stage, may play a greater role in tree selection than tree species. Maternity roosts occur in caves, mines, buildings (WBWG 2005).

Yuma myotis is usually associated with permanent sources of water, especially rivers and streams, but also occurs around small pools in the arid West. This species uses a variety of other habitats, such as riparian, arid scrublands, deserts, and forests. Roosting occurs in bridges, buildings, cliff crevices, caves, mines and trees (WBWG 2005).

Range: These four species are distributed across western North America. Fringed myotis distribution has a more patchy distribution (WBWG 2005).

Known Records:

There are no NNHP records for western small-footed myotis in the six-quad area encompassing the BSA in Nevada. There are no CNDDB records for western small-footed myotis within 10 mi of the BSA.

There are no NNHP records for long-eared myotis in the six-quad area encompassing the BSA in Nevada. There are four CNDDB records for long-eared myotis within 10 mi of the BSA. The closest CNDDB record is from 2002, approximately 3.4 mi southwest of the BSA in the Plumas Eureka State Park.

There are no NNHP records for fringed myotis in the six-quad area encompassing the BSA in Nevada. There are four CNDDB records for fringed myotis within 10 mi of the BSA. The closest CNDDB record is from 2007 approximately 0.44 mi north of the BSA at the SR 70/89 bridge over Spanish Creek in Quincy.

There are NNHP records for Yuma myotis in the six-quad area encompassing the BSA in Nevada, but the locations are suppressed. There are four CNDDB records for Yuma myotis within 10 mi of the BSA. The closest record is an unconfirmed species, with unclear location information, from 1996 near the BSA between Beckwourth and Portola. The surrounding habitat was a riparian meadow with willows in a ponderosa forest. The closest confirmed record is from 2002, approximately 8.5 mi northwest of Susanville. Two individuals were mist netted in June in the Papoose Meadows of the Lassen National Forest.

4.7.12.1. SURVEY RESULTS

Field surveys for myotis bats or roosting sites were not conducted in the BSA. Vegetation in the mixed coniferous forest of the BSA is managed and kept clear of large trees that could interfere with the utility lines. Some large trees in the mixed coniferous forest along the edge of the BSA provide potential roosting habitat for myotis bats. Bridges or large culverts in or near the BSA could provide potential roosting habitat.

4.7.12.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for bats are described in in Chapter 1.

4.7.12.3. PROJECT IMPACTS

The Project will not impact myotis with implementation of the avoidance measures.

4.7.12.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.12.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.13. Discussion of Western pipistrelle bat (*Pipistrellus hesperus*)

Western pipistrelle is the smallest North American bat. It mainly occurs in arid, desert landscapes, and is highly associated with significant rock features, such as rocky canyons and outcrops (WBWG 2005), and granite boulders (Bradley et al. 2006). It is abundant in deserts containing blackbrush, creosote, sagebrush; and arid grasslands and woodlands (Bradley et

al. 2006; CWHR 2011); common in arid brushlands, grasslands and woodlands; and uncommon in lower elevation mixed conifer forests (WBWG 2005; CWHR 2011). Pipistrelle bats forage over water, in riparian and agricultural areas, rocky canyons, and along cliff faces (Bradley et al. 2006; CWHR 2011). This species feeds on a variety of prey, mainly consisting of small swarming insects (WBWG 2005) and soft-bodied insects (CWHR 2011). Females may roost alone or in small groups of less than 20 individuals. Twins are born in May through June, and young are able to fly within a month (WBWG 2005).

Pipistrelle bat most commonly roosts and hibernates in small rock crevices, in mines and caves, and occasionally on buildings, bridges and vegetation (WBWG 2005; Bradley et al. 2006; CWHR 2011). This species is sensitive to roost site disturbance (CWHR 2011). Destruction of rocky areas is their primary threat (WBWG 2005).

Range: Pipistrelle bat is distributed in the lowlands of the southwestern U.S. from southern Washington south into Mexico, usually below 6,562 ft (WBWG 2005). In California, pipistrelle bat is a year-long resident found in the Central Valley, foothills, and Coast Ranges from Tehama Co. to Mexico; in the deserts from Alpine Co. to Mexico; and in extreme eastern Modoc Co. Scattered populations are also known from Siskiyou, Lassen, and Trinity counties (CWHR 2011). This species is found throughout most of Nevada, primarily in the southern and western portions of the state, from 690 to 5,900 ft, and occasionally up to 8,370 ft (Bradley et al. 2006).

Known Records: There are no CNDDB records for pipistrelle bats within 10 mi of the BSA. Based on the distribution map for pipistrelle bats in California (CHWR 2011), this species is not found in Sierra or Plumas counties, and is known only from two small areas in Lassen Co. Lassen Co. locations occur in the northeast portion of the county, on the northeast side of Honey Lake and surrounding Eagle Lake. These three locations are outside the BSA in California.

There are no NNHP records for pipistrelle bats in the six-quad area encompassing the BSA in Nevada. Based on the records map for the pipistrelle bat in Nevada (Bradley et al. 2006), a sighting occurred in southern Washoe Co. near the border of Storey Co., west of the BSA in Reno.

4.7.13.1. SURVEY RESULTS

Field surveys for pipistrelle bat or roosting sites were not conducted in the BSA. Rocky landscapes in the mixed coniferous forest along the edge of the BSA provide potential roosting habitat. This species is uncommon in mixed conifer forests and in Lassen Co. and

occurrence near the BSA in California is unlikely. Bridges in or near the BSA could also provide potential roosting habitat.

4.7.13.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for bats are described in Chapter 1.

4.7.13.3. PROJECT IMPACTS

The Project will not impact pipistrelle bat with implementation of the avoidance measures.

4.7.13.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.13.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.14. Discussion of American badger (*Taxidea taxus*)

American badgers are carnivorous mammals that occur in remote or rural areas (NDOW 2011). Badgers inhabit drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Burrows are dug in areas with dry, often sandy, soils with sparse overstory cover. The burrows are often reused; a new den may be dug each night. American badgers feed mostly on small rodents, but also reptiles, insects, earthworms, eggs, birds, and carrion depending on availability of prey (CWHR 2011).

Mating occurs in summer and early fall, with delayed implantation. Two to five young are born in burrows in March and April. Some females are able to breed in their first year, but males do not sexually mature until their second year. Home ranges documented outside California and Nevada varied between 338 ac and 1549 ac. Family members may share the same territory as females, but males are generally solitary except during the breeding season. This species is tolerant of human activities, but is threatened by indiscriminate predator trapping and poisoning (CWHR 2011).

Range: American badger is found throughout North America (NDOW 2011). This species is found throughout California except in the northern North Coast area (CWHR 2011).

Known Records: There are no NNHP records for American badger in the 6-quad area encompassing the BSA in Nevada. There are sixteen CNDDB records for American badger in the 26-quad area encompassing the BSA in California, eleven of which are within 10 mi of the BSA. One record is located in the BSA in Quincy; five are located south of the BSA

within or between the Marble Substation Lateral and the City of Loyalton Lateral; one is located east of the Sierra Nevada Army Depot Lateral; and four are located within and surrounding the BSA in Susanville. The Marble and Loyalton records are from between 1976 and 1996, with badger sightings crossing roads; with young near burrow; and in pasture and agricultural land, grazed sagebrush, pine, and mixed conifer habitat. One Susanville record is from 1997 near a meadow in Lassen National Forest.

4.7.14.1. SURVEY RESULTS

Field surveys for American badgers or burrow sites were not conducted in the BSA. Burrowing habitat for American badgers occurs in areas of the BSA with deep, friable soil.

4.7.14.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures listed in Chapter 1 for burrowing animals will be implemented.

4.7.14.3. PROJECT IMPACTS

The Project will not affect American badger with implementation of the avoidance measure.

4.7.14.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.14.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.7.15. Discussion of Sierra Nevada red fox (SNRF; *Vulpes vulpes necator*)

Two species of red fox occur in California: the non-native lowland or valley foxes, which occur in the Central Valley and coastal regions, and the native SNRF restricted to the Sierra Nevada and Cascade mountain ranges. SNRF occurs at high elevations and subalpine habitats near treeline above 5,000 ft, more often above 7,000 ft, and occasionally to 4,000 ft. Habitat consists of red fir and lodgepole pine forests, and alpine fell-fields of the subalpine zone. SNRF are opportunistic predators and scavengers that eat a variety of food depending on seasonally availability, mainly small and medium mammals, but also birds, insects, fruit, carrion, and garbage. Information on distribution, population size or demographic trends are largely unknown (Perrine et al. 2006)

Matting generally occurs in the winter in mid-February. Usually two to three, and up to nine young are born in early April after a 52-54 day gestation period. Reproductive output is

strongly correlated with food availability. Denning occurs in natural cavities in boulder piles and talus slopes, usually located in whitebark pine and mountain hemlock subalpine forests below the treeline. Although other species of red foxes typically use earthen dens, no accounts are known in California of SNRF using earthen burrows (Perrine et al. 2010). Pups are weaned at eight to ten weeks, and emerge from the den by the twelfth week. Dispersal of the pups is in early fall when fully grown. Although SNRF are sexually mature in their first winter, their success rate is typically lower than more mature foxes.

Prior to sightings in 2010, the only known native extant population of SNRF was near Lassen Peak. Between 1940 and 1959, only 135 SNRF pelts were taken throughout the state, suggesting that population numbers were never high.

SNRF sightings were confirmed in 2010 approximately 150-200 mi south of the known population near Lassen Peak. A female was photographed in 2010 in the Humboldt-Toiyabe National Forest. Two red foxes were photographed in the Stanislaus National Forest, approximately 2-4 mi from the first sighting (USFS December 2010). Genetic analysis of the individuals were compared to historic pelts and museum specimens collected from the area. The analysis determined that the individuals were related to historic populations in the area and distinct from the Lassen Peak population (USFS September 2010). This implies that a genetically unique population of SNRF has persisted in the southern Sierra Nevada, rather than a single individual (USFS December 2010).

Range: The historical distribution of SNRF was in high elevations of the Sierra Nevada from Tulare Co. to Sierra Co., and around Mt. Lassen and Mt. Shasta. Studies on the Lassen Peak population have shown that SNRF distribution changes seasonally, with summer movements to higher elevations usually over 6,000 ft. The largest currently known population occurs around Lassen Peak. Sightings have also confirmed that populations exist in the southern Sierra Nevada in or near Stanislaus, Toiyabe, Sequoia, and Inyo National forests, and Yosemite and Sequoia National parks.

Known Records: There are 6 CNDDB records of Sierra Nevada red fox within 10 mi of the BSA. The closest CNDDB record is from 1990 and is approximately 3.5 mi west of the BSA in the foothills of the Diamond Mts. One adult was observed at 4,260 ft in June. The habitat consisted of montane meadow surrounded by conifer forest. There are no NNHP records for SNRF in the six-quad area encompassing the BSA in Nevada.

4.7.15.1. SURVEY RESULTS

Field surveys for individual SNRF or burrow sites were not conducted in the BSA. There are no subalpine or alpine habitats in the BSA. Suitable subalpine habitat for SNRF is not

present in the BSA. Most areas of the BSA are substantially below 5,000 ft. The BSA does not include suitable talus or boulder field denning habitat. Known populations occur near Lassen Peak and in the southern Sierra Nevada, both well outside the BSA. No work will be occurring in the BSA between 15 November and 15 April per the Lahontan RWQCB construction general permit.

4.7.15.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance measures are proposed for SNRF.

4.7.15.3. PROJECT IMPACTS

The Project will not affect SNRF.

4.7.15.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.7.15.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.8. Special-Status Lichens and Mosses

4.8.1. Discussion of Veined Water Lichen (*Hydrothyria venosa*)

This species is a foliose water lichen found from 1,150 to 7,000 ft in clear, cold water. In California it occurs in streams that are fed by cold water springs. The water is clear, and peak flows are not of the intensity that would lead to scouring. The streams have a rich aquatic bryophyte flora, and are rarely more than 8 inches in depth. It is thought that increased sedimentation would significantly impact occurrences (USFS 2006, 4 September 2008).

Known Records: There are no CNDDB records within 10 mi of the BSA.

4.8.1.1. SURVEY RESULTS

Some of the smaller perennial creeks in the BSA provide potential habitat for veined water lichen.

4.8.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The avoidance measures for rivers and creeks in Chapter 4 will also avoid impacts to veined water lichen.

4.8.1.3. PROJECT IMPACTS

The project will not impact veined water lichen with implementation of the avoidance measures.

4.8.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.8.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.8.2. Discussion of Three-ranked Hump Moss (*Meesia triquetra*) and Broad-nerved Hump Moss (*Meesia uliginosa)*

Both of these mosses are found on wet soil in bogs, fens, meadows, and seeps in subalpine coniferous forest and upper montane coniferous forest from 4,200 to above 9,000 ft. The sporophyte of broad-nerved hump moss is evident in October (CNPS 2010). Three-ranked hump moss grows in saturated conditions and is usually associated with *Sphagnum* spp., a moss restricted to perennially saturated sites in CA. Broad-nerved hump moss is mostly found in lodgepole pine forests (Malcolm et al. 2009).

Range: Both mosses are known from the Sierra Nevada and elsewhere in CA, OR, and NV. Three-ranked hump moss is also known from WA.

Known Records: The nearest CNDDB record of three-ranked hump moss is approximately 9 mi west of the BSA, west of Quincy, in a fen. The nearest CNDDB record of Broad-nerved hump moss is approximately 6.7 mi north of the BSA, north of Portola, in a marshy meadow.

4.8.2.1. SURVEY RESULTS

Perennially wet meadows in some areas of the BSA west of Beckwourth provide potential habitat for three-ranked hump moss and broad-nerved hump moss. The wet meadows in the BSA are used for livestock grazing, which may reduce the suitability of potential habitat for these mosses (CNPS 2010).

4.8.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

A focused survey for three-ranked hump moss and broad-nerved hump moss shall be conducted in potential habitat along with the pre-construction botanical survey described in Chapter 1. If found, the same ESA conditions described in Chapter 1 for plants will be implemented for special-status mosses.

4.8.2.3. PROJECT IMPACTS

The project will not impact three-ranked hump moss or broad-nerved hump moss with implementation of the avoidance measures.

4.8.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.8.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.8.3. Discussion of Cylindrical Trichodon (*Trichodon cylindricus*)

Moss found on sandy, exposed soil and road or trail banks in broadleaved upland forest, meadows and seeps, and upper montane coniferous forest from 100 to 6,600 ft. In CA, known from Humboldt, Lake, Mendocino, Plumas, Shasta, Sierra, Siskiyou, and Tulare counties (Norris and Shevock 2004b; CNPS 2010).

Range: In CA, known from Humboldt, Lake, Mendocino, Plumas, Shasta, Sierra, Siskiyou, and Tulare counties. Known also from OR and ID.

Known Records: There are five records of cylindrical trichodon within 10 mi of the BSA.

4.8.3.1. SURVEY RESULTS

Areas of relatively bare or disturbed soil in the BSA west of Beckwourth along the SR 70 corridor provide potential habitat for cylindrical trichodon.

4.8.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

A focused survey for cylindrical trichodon shall be conducted in potential habitat along with the pre-construction botanical survey described in Chapter 1. If found, the same ESA conditions described in Chapter 1 for plants also apply to special-status mosses.

4.8.3.3. PROJECT IMPACTS

The project will not impact cylindrical trichodon with implementation of the avoidance measures.

4.8.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.8.3.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.9. Special-Status Vascular Plants

The potential for special-status plant species to occur in the BSA is evaluated in Appendix E. One federal Candidate plant species, one California State-Endangered species, and 103 other special-status species, i.e., not Federal- or State-listed, were identified as having the potential

to occur in the BSA. Appendix F summarizes the evident and identifiable period of special-status species that could potentially occur in the BSA. Special-status species known to occur in or near the BSA are identified.

A reconnaissance level biological survey was completed, but was outside the evident and identifiable period for most species. Prior to construction, a botanical survey consistent with DFG (2009) guidelines shall be conducted (see Chapter 1.).

4.9.1. Discussion of Webber's Ivesia (*Ivesia webberi*)

Webber's ivesia is a perennial, taprooted, low-growing herb that generally grows in pinyon and juniper woodland, lower montane coniferous forest, and substrates derived from volcanic ash in Great Basin scrub, from 3,200 to 6,900 ft (CNPS 2010). A report prepared by Witham (2000) for the NNHP and USFWS describes Webber's ivesia as occurring in areas of unique soils and hydrology with relatively open plant associations. Witham further describes suitable Webber's ivesia microhabitat as being restricted to shallow, clayey soils with a rocky pavement-like surface of weathered andesitic rock between elevations of 4,480 and 5,950 ft. Soils of sites that support Webber's ivesia are slightly wetter than surrounding areas due to clay content, shallow perched water tables, and level to slightly concave/convex topography. The species does not occur in areas of extended saturation or inundation (Witham 2000). A recent treatment of the genus for the second edition The Jepson Manual briefly describes the habitat as "rocky clay in sagebrush flats" from 4,920 to 6,232 ft (Ertter In press). The blooming period is May through July (CNPS 2010).

Range: Webber's ivesia is known from the Upper Long Valley, the southern boundary of Long Valley, the western boundary of the Reno-Sparks Valley, Dog Valley, the eastern boundary of the Sierra Valley, and the Pine Nut Mts. (Witham 2000).

Known Records: There are two CNNDB occurrences (#2 and #10) of Webber's ivesia located near the BSA. Occurrence #2 is a geographically imprecise record based on an 1886 collection described as occurring in the American Valley, near Quincy. CNNDB notes for this occurrence state that the site could not be found during a search in 1990, and that the most suitable habitat in the area was disturbed or eliminated. Occurrence #10 is a geographically precise record from 1996 located about 1,150 to 1,300 ft east of US 395, about 1.0 mi north of the Sierra Co. line. The BSA near occurrence #10 is on the west side of US 395. Occurrence #10 is located approximately 1,500 ft east of and outside the BSA. There are five other CNNDB records within approximately 3 mi of the BSA, mostly in the Upper Long Valley.

There are six NNHP records near the Nevada segments of the BSA. The six records are located approximately 0.9 to 1.8 mi southwest of US 395 between the California/ Nevada Stateline and Reno. None of the six NNHP records occur in the BSA. These records are discussed in Witham (2000). The Witham report also describes several sites that were searched for Webber's ivesia immediately adjacent to the BSA along US 395. Webber's ivesia was not found at these sites and they were designated Unoccupied Sites 7, 9, and 10. Witham also noted one area of potentially suitable habitat adjacent to US 395 that could not be accessed, that was designated Potential Site 1.

4.9.1.1. SURVEY RESULTS

A reconnaissance level survey was conducted in December 2010 at a time when Webber's ivesia would not have been evident and identifiable. Big sagebrush scrub and juniper woodland in the BSA along US 395 between Reno and Constantia, along SR 70 between Hallelujah Junction and Cow Camp Road, along the Red Rock Fire Department Lateral Branch, and along the City of Loyalton Lateral Branch provide potential habitat for Webber's ivesia. Within this area there may exist smaller areas that provide the necessary soil and hydrology microhabitat requirements for Webber's ivesia. CNDDB occurrence #10 occurs on Galeppi series soil that typically contains sandy clay loam below 10 inches. There are substantial areas of Galeppi soils in the BSA, as well other soils with a clay loam or clay subsoil, that provide potential habitat for Webber's ivesia.

4.9.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Prior to construction, a botanical survey for Webber's ivesia shall be conducted in potential habitat in the BSA, during the evident and identifiable period, by a qualified botanist. If Webber's ivesia is found, an ESA will be established, with temporary fencing, around the occurrence prior to construction in that part of the BSA. The ESA shall remain in place until the completion of construction in that part of the BSA. No vehicles or equipment staging shall be allowed in the ESA. Construction personnel, on foot, may need to cross part of an ESA if a pole is surrounded by Webber's ivesia. In that instance, the botanist shall be present when the ESA is entered and shall assist construction personnel in gaining pole access without harming Webber's ivesia. If the ESA is in a segment of the BSA where the line will be installed underground, the trench alignment will be moved to avoid the ESA, or the ESA will be avoided with an underground horizontal directional bore.

4.9.1.3. PROJECT IMPACTS

There are no known occurrences of Webber's ivesia in the BSA, and the project will have no affect on any known occurrences of Webber's ivesia outside the BSA. The project will not

affect Webber's ivesia with implementation of the avoidance measures listed above and in Chapter 1.

4.9.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.9.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.9.1.6. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.9.2. Discussion of Boggs Lake Hedge Hyssop (*Gratiola heterosepala*)

Boggs Lake hedge hyssop is State-endangered in California. Boggs Lake hedge hyssop is an annual herb found along lake margins and in vernal pools, usually on clay substrates, from 30 to 7,800 ft. It blooms April through August (USFWS 15 December 2005; CNPS 2010). Seeds germinate in response to autumn/winter precipitation and are at or near flower by the time water recedes. USFWS (15 December 2005) reports the highest confirmed elevation record as 5,340 ft. Boggs Lake hedge hyssop may occur in artificial habitats such as borrow pits and stockponds (USFWS 15 December 2005).

Range: Boggs Lake hedge hyssop is known from the Lake-Napa, Modoc Plateau, southeastern Sacramento Valley, northeastern Sacramento Valley, northwestern Sacramento Valley, Solano-Colusa, and southern Sierra Foothills vernal pool regions in California, and from one occurrence in Lake Co., Oregon. It is not known from Nevada.

Known Records: There are no records of Boggs Lake hedge hyssop near the BSA. The occurrences in California are concentrated on the Modoc Plateau (USFWS 15 December 2005). The single known record from Lassen Co. is on the Modoc Plateau at Snowstorm Reservoir, approximately 17.9 mi north of the nearest part of the BSA. The plants were recorded growing in wet mud at the edge of the reservoir in 2000. There are no known records in Plumas or Sierra, counties, California or Washoe Co. Nevada (USFWS 15 December 2005; CCH 2010; CNPS 2010; SEINet 2010). Boggs Lake hedge hyssop has not been reported from Honey Lake Valley, Long Valley, or Sierra Valley.

4.9.2.1. SURVEY RESULTS

A reconnaissance level survey of the BSA was conducted in December 2010 at a time when Boggs Lake hedge hyssop would not have been evident and identifiable. Based on the reconnaissance level survey and a review of topographic maps and aerial photos, the BSA

provides only marginal habitat for Boggs Lake hedge hyssop. There are no vernal pools in the BSA. Roadside detention ponds, stockponds, etc. may provide marginal habitat for this species.

4.9.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

A floristic survey according to DFG (2009b) guidelines shall be conducted as described in Chapter 1. If Boggs Lake hedge hyssop is found, an ESA will be established with temporary fencing around the occurrence, prior to construction in that part of the BSA. The ESA shall remain in place until construction is completed in that part of the BSA. No vehicles or equipment staging shall be allowed in the ESA. If the ESA is in a segment of the BSA where the line will be installed underground, the trench alignment will be moved to avoid the ESA, or the ESA will be avoided with an underground horizontal directional bore.

4.9.2.3. PROJECT IMPACTS

There are no known occurrences of Boggs Lake hedge hyssop in the BSA, and the project will have no affect on any known occurrences of Boggs Lake hedge hyssop outside the BSA. If a new occurrence of Boggs Lake hedge hyssop is found in the BSA during the botanical survey, the project will not affect Boggs Lake hedge hyssop with implementation of the avoidance measure.

4.9.2.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.9.2.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.9.3. Discussion of Other Special-Status Plant Species

Appendix F lists 103 special-status plant species that are not listed under the federal or California Endangered Species Acts that have the potential to occur in the BSA. Descriptions of habitat, range, and other information for these species are provided in Appendix E.

4.9.3.1. SURVEY RESULTS

The December 2010 reconnaissance survey was conducted outside the evident and identifiable period for most species. No special-status species were identified during the reconnaissance-level survey.

Plumas National Forest provided their results from a 2004 botanical survey for a section of the route between Quincy and Portola, California (USFS 2010). Quincy lupine (*Lupinus*

dalesiae) was identified in several areas including about 8 sites that occur in the BSA. Constance's rock cress (*Boechera constancei*) was identified at locations approximately 800 ft from the BSA.

Appendix F lists known records of special-status plant species within 200 ft of the BSA and the months in which the plants are most likely to be evident and identifiable. Of the 103 special-status species, 20 have known records within 200 ft of the BSA. Some of these records are old and/or geographically imprecise and may not necessarily indicate their actual presence along the route.

4.9.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

A floristic survey according to DFG (2009b) guidelines shall be conducted as described in Chapter 1. ESAs will be established around locations of special-status plants as described in Chapter 1.

4.9.3.3. PROJECT IMPACTS

The project will not impact special-status plants with the implementation of the avoidance measures.

4.9.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.9.3.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

4.10. Special-Status Natural Communities

4.10.1. Discussion of Montane Freshwater Marsh

This is a type of wetland dominated by perennial, herbaceous, emergent monocots. Characteristic species are *Carex* spp., *Eriophorum*, *Scirpus acutus*, and *S. americanus*. It may contain many of the species commonly found in bogs and fens. Widely scattered throughout montane California, but less frequent in the Transverse and Peninsular ranges (Holland 1986).

4.10.1.1. SURVEY RESULTS

Areas of wet meadow, and some smaller areas adjacent to rivers and larger creeks, may be classified as montane freshwater marsh.

4.10.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance measures for waters and wetlands in Chapter 1 will also avoid impacts to montane freshwater marsh.

4.10.1.3. PROJECT IMPACTS

The project will not impact montane freshwater marsh with the implementation of the avoidance measures.

4.10.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is proposed.

4.10.1.5. CUMULATIVE EFFECTS

No cumulative effects were identified.

Chapter 5. Results: Permits and Technical Studies for Special Laws or Conditions

5.1. Federal Endangered Species Act (FESA) Consultation Summary

FESA defines "take" (section 9) and prohibits "taking" of a listed endangered or threatened animal (16 U.S.C. 1532, 50 CFR 17.3). If a federal-listed animal could be harmed by a project, then section 7 or 10 consultations must be initiated and an Incidental Take Permit must be obtained (16 U.S.C. 1539, 50 CFR 13).

Section 7 of FESA states that all federal departments and agencies shall, in consultation with and with the assistance of the Secretary of the Interior/Commerce, insure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of federal-listed or proposed species or result in adverse modification of designated critical habitat, unless an exception has been granted by the Endangered Species Committee (16 USC 1536(a)(2)).

Section 9(a)(1) of FESA and federal regulation pursuant to section 4(d) of FESA prohibit the take of endangered and threatened fish and wildlife species. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct.

Harass is defined by USFWS as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.

Harm is defined by USFWS to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering.

Based on the following criteria, a Biological Assessment evaluates the potential effects of an action on federal-listed species or critical habitat to determine whether or not the species or its habitat is likely to be adversely affected by the action (USFWS & NMFS 1998):

1. Based on the best available scientific and commercial data, is the species: a) likely to be found in the area; b) potentially found in the area; or c) unlikely to be found in the area.

2. If a species is unlikely to occur in or migrate through the BSA due to lack of suitable habitat or the BSA is outside of the known range of the species, it was determined that the project would have no effect on the species.
3. If it is reasonably foreseeable for a species to occur in the BSA, further analysis of the species' life history and habitat requirements, and the suitability of habitat for any life stage of the species, was made.
4. If suitable habitat for a species was determined to occur in the BSA, an analysis of the potential effects to the species was conducted. Details of life history and habitat requirements for potentially affected species were evaluated to ascertain the likelihood and severity of impact. Technical assistance was requested from resource agencies regarding the likelihood and timing of occurrence for species.
5. A determination was then made of the type of effect in accordance with terminology used by USFWS (USFWS & NMFS 1998) for listed species and/or designated critical habitat pursuant to FESA. The types of determinations based on USFWS terminology are listed in Table 6. A summary of FESA consultations for the Project are in Table 7.
6. If a conclusion was reached that the project "may affect" a federal-listed species, reasonable and prudent mitigation measures were developed to ensure that "take" would not occur or if "take" was anticipated, it would be minimized. Table 7 summarizes potential Project effects on federal listed special-status species.

Table 6. Types of federal consultation determinations.

Determination	Course of Action
No effect	No incidental take will occur. No incidental take statement is required. No consultation with USFWS is required.
May affect, but is not likely to adversely affect	No incidental take will occur. USFWS may concur in writing during informal consultation.
May affect, and is likely to adversely affect	Incidental take is anticipated to occur. A formal section 7 consultation is required to obtain an Incidental Take Statement. During consultation, USFWS will make the determination that the project is or is not likely to jeopardize the continued existence of the species or adversely modify critical habitat.
Is likely to jeopardize the continued existence of the species or adversely modify critical habitat	If the project is likely to jeopardize the continued existence of the species or adversely modify critical habitat, conference with the Secretary of the Department of Interior is required.

Table 7. Summary of FESA consultation requirement.

Scientific Name	Common Name	Federal Status	No Effect	May affect, but is not likely to adversely affect	May affect, and is likely to adversely affect
Invertebrates					
Pacifastacus fortis	Shasta crayfish	E	X		
Pseudocopaeodes eunus obscurus	Carson wandering skipper	E	X		
Fish					
Catostomus warnerensis	Warner sucker	T, CH	X		
Chasmistes cujus	Cui-ui	E	X		
Hypomesus transpacificus	Delta smelt	T, CH	X		
Oncorhynchus (=*Salmo*) *clarki henshawi*	Lahontan cutthroat trout	T	X		
Oncorhynchus mykiss	Central Valley steelhead	T, CH	X		
Amphibians					
Rana draytonii	California red-legged frog	T, CH	X		
Rana muscosa	Mountain yellow-legged frog (= southern CA DPS)	C	X		
Rana sierrae	Sierra Nevada yellow-legged frog	C	X		
Birds					
Centrocercus urophasianus	Greater sage-grouse	C	X		
Mammals					
Gulo gulo	Wolverine	C	X		

Scientific Name	Common Name	Federal Status	No Effect	May affect, but is not likely to adversely affect	May affect, and is likely to adversely affect
Martes pennanti (*pacifica*) DPS	Pacific fisher	C	X		
Plants					
Eriogonum ovalifolium var. *williamsiae*	Steamboat buckwheat	E	X		
Ivesia webberi	Webber's ivesia	C	X		
Orcuttia tenuis	Slender Orcutt grass	T, CH	X		
Rorippa subumbellata	Tahoe yellow cress	C	X		

A letter was sent by PSREC to the USFWS Reno and USFWS Sacramento offices on 11 February 2011 requesting written concurrence from USFWS of a 'No Effects' determination for the project. In a letter dated 8 March 2011 the USFWS Reno office provided written concurrence that the project is not likely to adversely impact federal listed species. In an email dated 30 March 2011 USFWS Sacramento office concurred with the determination made by the USFWS Reno office.

5.2. California Endangered Species Act (CESA) Consultation Summary

No take of California state listed species will occur as a result of this Project.

5.3. Wetlands and Other Waters Coordination Summary

Wetland and waters in the BSA were mapped using the National Hydrography Dataset (USGS 2011), National Wetland Inventory (USFWS 15 January 2011), and field reconnaissance surveys. A formal jurisdictional delineation of wetlands and waters of the U.S. was not conducted in the BSA. The BSA traverses several rivers, perennial and intermittent creeks, irrigation canals, ephemeral drainages, willow thickets, and wet meadows. These aquatic habitats are discussed in Chapter 1.

The major surface water features in the BSA are the Middle Fork Feather River, Truckee River, Long Valley Creek, and Susan River. The Middle Fork Feather River is a tributary to the Sacramento River. The Truckee River is tributary to Pyramid Lake, a closed depression in the Great Basin. Long Valley Creek and the Susan River are tributary to Honey Lake. Honey Lake is a closed depression with no outlet located entirely in California.

The Middle Fork Feather River in the BSA is a perennial river and, as such, is a jurisdictional waters of the U.S. pursuant to Section 404 of the Clean Water Act. The entire Middle Fork Feather River downstream from the confluence of its tributary streams 0.62 mi (3,280 ft) south of Beckwourth, California is designated as a Wild and Scenic River. The U.S. Army Corps of Engineers, Sacramento District has determined that the Truckee River is a "navigable in fact" waters of the U.S. and subject to Section 404 of the Clean Water Act (Corps 2011).

Honey Lake and its tributaries are in the Honey/ Eagle Lake Basin (HUC 18080003). The Honey/ Eagle Lake Basin is composed of numerous smaller watersheds. The majority of these smaller watersheds and associated drainages occur entirely with the State of California and are therefore intrastate drainage basins. Approximately 1/3, or less, of these smaller watersheds and associated drainages drain areas in both California and Nevada (interstate). A review of aerial imagery and topographic map indicates that no perennial interstate rivers occur in the Honey/ Eagle Lake Basin. There are ephemeral and some intermittent creeks that flow from Nevada into California and ultimately drain to Honey Lake. In the BSA, within the US 395 corridor, several interstate ephemeral drainage features occur primarily between Hallelujah Junction and the California/ Nevada Stateline. It has not been determined whether the ephemeral interstate drainage features located in the BSA, within the Honey/ Eagle Lake Basin, are subject to Section 404 of the CWA.

The Proposed Project will not require in water work. Some of the ephemeral creeks between Hallelujah Junction and Reno may be avoided with horizontal directional drills (HDD) conducted consistent with Caltrans (2008) and NDOT standards. Trenching is the current proposed construction method for crossing ephemeral drainages. The trenching of ephemeral drainages would occur during the dry season when water is not present. If it is determined that these ephemeral drainages are subject to Section 404 of the Clean Water Act and the trenching method is implemented, the trenching activities would be authorized under U.S. Army Corps of Engineers Nationwide Permit 12 (Utility Line Activities). If the ephemeral drainages are avoided by the use of HDD no Nationwide Permit is needed.

In addition to the erosion and sedimentation avoidance measure in Chapter 1, all rivers, large creeks, and the majority of small ephemeral creeks (excluding those discussed above) in the

BSA, including any adjacent willow thickets and wetlands, shall be avoided by either hanging new conduit on existing utility poles, attaching new conduit to existing bridges, or blowing new fiber in existing conduit. No vehicles or equipment staging shall be allowed in wetlands or willow thickets. Construction personnel, on foot, may need to cross part of a wetland or willow thicket if a pole is surrounded by a wetland or willow thicket.

With implementation of the environmental protection measures listed in Chapter 1, the Proposed Action will not adversely affect wetlands and waters in the BSA.

5.4. Essential Fish Habitat

Under the Magnuson-Stevens Fishery Conservation and Management Act, the Pacific Fishery Management Council (PFMC) manages salmon fisheries through the designation of EFH and monitoring of threats to that habitat from both fishing and non-fishing activities. Salmon EFH includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California. Salmon EFH excludes areas upstream of longstanding naturally impassible barriers (i.e., natural waterfalls in existence for several hundred years), but includes aquatic areas above all artificial barriers except specifically named impassible dams. Essential habitat types identified by NMFS for salmon include juvenile rearing areas, juvenile migration corridors, areas for growth and development into adulthood, adult migration corridors, and spawning areas (65 FR 7773).

Extant populations of the Central Valley spring-run Chinook salmon Evolutionarily Significant Unit (ESU) spawn in the Sacramento River and its tributaries, including the Feather River (Moyle 2002). Spring-run Chinook salmon reared at the Feather River Hatchery are included in this ESU (NMFS 2007). Some of the fish reared at the Feather River Hatchery are planted in Lake Oroville, which is hydrologically connected to waters in the BSA in both the North Fork and Middle Fork Feather River (DWR 2009). Numerous fish passage barriers prevent fish from migrating from Lake Oroville to the portion of the Middle Fork Feather River in the BSA (CalFish 2010). The Middle Fork of the Feather River (Hydrologic Unit Code 18020123) is not designated EFH for Spring-run Chinook salmon (USFWS 15 October 2008).

5.5. Evaluation of Invasive Plant Species (EO 13112)

Executive Order (EO) 13112 was signed into law in 1999. The EO calls on Executive Branch agencies to work to prevent and control the introduction and spread of invasive species. Under the EO, Federal agencies cannot authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of known invasive species in the United States or elsewhere

unless all reasonable measures to minimize risk of harm have been analyzed and considered. Known invasive plants are defined as those listed on the official noxious weed list of the State in which the activity occurs (FHWA 1999). The analysis below addresses known invasive plants as defined in EO 13112 as well as ecologically harmful invasive plants according to the California Invasive Plant Council (Cal-IPC 2006). Lists of noxious weeds and/or invasive plants for California (CDFA 2010), Nevada (NDA 2010), BLM (March 2008), USFS (pers. comm., Lynee Crawford), and Lassen, Plumas, and Sierra counties (Cal-IPC 2008; Lassen WMA 2011) are in Appendix G.

5.5.1. Survey Results

Four species of invasive plants, as defined in EO 13112 (species that occur on State noxious weed lists), were observed in the BSA during reconnaissance level biological surveys. The four species were yellow star-thistle (*Centaurea solstitialis*; CDFA rank C; NDA rank A), perennial pepperweed (*Lepidium latifolium*; CDFA rank B; NDA rank C), *Salsola paulsenii* (CDFA rank C; NDA no rank), and medusa head (*Taeniatherum caput-medusae*; CDFA rank C; NDA rank B).

The BLM is concerned about noxious weed species on the State noxious weed lists (NDA 2010; CDFA 2010). In California, the BLM Eagle Lake Field Office (ELFO) maintains a list of 25 of the CDFA (2010) noxious weeds that are known to occur on lands managed by the ELFO (BLM March 2008). Nevada BLM is especially concerned about invasive annual grasses (such as cheat grass, red brome, and *Schismus* spp.) that may transform sage brush and other low-desert vegetation communities through altered fire regimes (BLM 2009).

The USFS expressed concerns about invasive weed spread and introduction and the potential effect of invasive weeds on rare plants (pers. comm., Lynee Crawford; Mt. Hough Ranger District 2010). Botanical surveys conducted along a portion of the proposed route in 2004 in the Mt. Hough Ranger District documented medusahead (*Taeniatherum caput-medusae*) and yellow star-thistle (*Centaurea solstitialis*) in proximity to two special-status plants, Quincy lupine and Constance's rock cress. Additional weeds known from along the route include tall whitetop (*Lepidium latifolium*), spotted knapweed (*Centaurea maculosa*), scotch broom (*Cytisus scoparius*), musk thistle (*Carduus nutans*), and Canada thistle (*Cirsium arvense*) (pers. comm., Lynee Crawford).

Cal-IPC is widely recognized as the authority for invasive plants in California wildlands. In 2006, Cal-IPC completed an invasive plant inventory that categorized plants as "High," "Moderate," or "Limited," according to the extent of each species' ecological impact, invasive

potential, and ecological distribution in California. Species rated as "High" by Cal-IPC (2006) that were observed in the BSA are cheat grass (*Bromus tectorum)*, yellow star-thistle (*Centaurea solstitialis*), perennial pepperweed (*Lepidium latifolium*), Himalayan blackberry (*Rubus discolor*), and medusa head (*Taeniatherum caput-medusae*). Species rated as "Moderate" by Cal-IPC (2006) that were observed in the BSA are Mediterranean hoary mustard (*Hirschfeldia incana*) and sheep sorrel (*Rumex acetosella*). Species rated as "Limited" by Cal-IPC that were observed in the BSA are *Salsola paulsenii*, filaree (*Erodium cicutarium*), horehound (*Marrubium vulgare*), English plantain (*Plantago lanceolata*), curly dock (*Rumex crispus*), and woolly mullein (*Verbascum thapsus*). The noxious weeds and invasive plants observed in the BSA during reconnaissance surveys in 2010 are shown in Table 8.

Table 8. Noxious weeds and invasive plants observed in the BSA.

Family	Scientific Name	Common Name	N/I	CAL-IPC	CDFA	NDA
Asteraceae	*Centaurea solstitialis*	Yellow star-thistle	I	High	C	A
Brassicaceae	*Hirschfeldia incana*	Mediterranean hoary mustard	I	Moderate		
	Lepidium latifolium	Perennial pepperweed	I	High	B	C
Chenopodiaceae	*Salsola paulsenii*	--	I	Limited	C	
Geraniaceae	*Erodium cicutarium*	Filaree	I	Limited		
Lamiaceae	*Marrubium vulgare*	Horehound	I	Limited		
Plantaginaceae	*Plantago lanceolata*	English plantain	I	Limited		
Polygonaceae	*Rumex acetosella*	Sheep sorrel	I	Moderate		
	Rumex crispus	Curly dock	I	Limited		
Rosaceae	*Rubus discolor*	Himalayan blackberry	I	High		
Scrophulariaceae	*Verbascum thapsus*	Woolly mullein	I	Limited		
Poaceae	*Bromus tectorum*	Cheat grass	I	High		
	Taeniatherum caput-medusae	Medusa head	I	High	C	B

The four EO 13112 noxious weeds and all invasive plants rated "High" or "Moderate" by Cal-IPC (2006) that were observed in the BSA are described below. The ecology, reproductive biology, and dispersal mode of noxious and invasive plant species should be considered when determining methods that will achieve control or limit spread.

Cheat grass (*Bromus tectorum*) is an annual grass that crowds out native grasses and may increase the frequency and extent of wildfires (Cal-IPC 2006). It reproduces only by seed, which can remain viable for up to three years. It generally spreads by wind, attachment to human clothing or animal fur, hay transport, or machinery transport. In the BSA, cheat grass was observed in high abundance often along roadsides and in disturbed areas.

Yellow star-thistle (*Centaurea solstitialis*) grows as a deeply taprooted winter annual. Dense infestations of yellow star-thistle displace native plants and animals. Yellow star-thistle also significantly depletes soil moisture reserves in annual grasslands in California. Human activities are the primary mechanisms for the long-distance movement of yellow star-thistle seed. Seed is transported by road maintenance equipment, on the undercarriage of vehicles, and in contaminated hay and seed (Bossard et al. 2000; Cal-IPC 2006). In the BSA, yellow star-thistle was observed in low abundance primarily along roadsides near Quincy, California.

Mediterranean hoary mustard (*Hirschfeldia incana*) is a biennial or perennial herb that invades shrublands, grasslands, and riparian areas. It occurs in habitat openings caused by natural disturbances, roads, urban developments, agricultural fields, etc. Seeds are sticky when wet, facilitating dispersal on vehicles. Mediterranean hoary mustard is thought to be dispersed ballistically, by rodents, or as a contaminant in hay. It is unknown how long seeds can persist in soil (Cal-IPC 2006). In the BSA, Mediterranean hoary mustard was observed along roadsides in Plumas Co.

Perennial pepperweed (*Lepidium latifolium*) is found in riparian areas, marshes, estuaries, irrigation channels, wetlands, and floodplains, but may also occur on roadsides, native hay meadows, alfalfa fields, and rangelands. Perennial pepperweed reproduces by seed, rhizome, and fragmentation. Seeds have no special mechanisms for long-range dispersal, but can be transported by wind, by water, as a contaminant of hay bales used in erosion control, on agricultural equipment, and possibly by waterfowl (Cal-IPC 2006). Perennial pepperweed appears on the county-level invasive plant watch lists (Cal-IPC 2008) as a species of moderate abundance with high suitability in Sierra and Plumas counties, and as a species of widespread abundance with high suitability in Lassen Co. In the BSA, perennial pepperweed was observed in disturbed, vernally mesic areas in Lassen Co.

Himalayan blackberry (*Rubus discolor*) is a perennial shrub or vine that forms impenetrable thickets and rapidly displaces native plant species. It is thought that displacement of native plants occurs via shading from the dense blackberry canopy. It spreads by seed and by vegetative rooting of branch tips (Bossard et al. 2000). Himalayan blackberry appears on the county-level invasive plant watch lists (Cal-IPC 2008) as a species of high abundance with moderate suitability in Sierra and Plumas counties. In the BSA, Himalayan blackberry occurs primarily in riparian or wetland areas west of Beckwourth, CA (Plumas Co.).

Sheep sorrel (*Rumex acetosella*) is a perennial herb found in various coastal habitats and in closed cone coniferous forests and lower montane coniferous forests. It reproduces primarily by creeping rhizomes and by seed. Seeds are dispersed by wind, water, mud, animals, vehicle tires,

heavy equipment, and as seed, grain, and hay contaminant (Cal-IPC 2006). In the BSA, sheep sorrel was observed along disturbed roadsides in Plumas Co.

Salsola paulsenii is an annual herb found in disturbed areas east of the Sierra Nevada, in the Mojave Desert, in the Western Transverse Ranges including Santa Barbara, Kern, Inyo, and San Bernardino counties. It reproduces by seed (average 600 seeds/ plant). *Salsola paulsenii* matures early in early summer. Flowers are wind pollinated and self-fertile. Seeds survive 1-3 years and are dispersed either around parent plant or longer distances as seeds are released from deceased plants as they are scattered by the wind (Cal-IPC 2006). *Salsola paulsenii* was observed in the BSA along disturbed roadsides in Lassen and Washoe counties.

Medusa head (*Taeniatherum caput-medusae*) is an annual grass which increases litter density, depletes shallow soil moisture, and increases the frequency of fire (Cal-IPC 2006). It reproduces only by seed, which remains viable for up to two years. Seed is spread by wind, water, and by attachment to animals, humans, or machinery. Medusa head was observed in the BSA along SR 70 in Plumas Co. Medusa head appears on the county-level invasive plant watch lists (Cal-IPC 2008) as a species of moderate abundance with high suitability in Sierra and Plumas counties, and as a species of high abundance with moderate suitability in Lassen Co.

5.5.2. Avoidance and Minimization Efforts

The USFS identified the following botanical objectives for the project: 1) do not spread or introduce weeds into rare plant occurrences; 2) do not introduce weeds onto USFS lands; 3) do not spread existing weed occurrences either onto private land or onto uninfested areas of USFS lands (pers. comm., Lynee Crawford).

Noxious weeds/invasive plants for the purpose of the project includes plants rated A, B, or Q by CDFA (2010) for the parts of the BSA in CA, rated A or B by NDA (2010) for the parts of the BSA in Nevada, or rated high or moderate by Cal-IPC (2006) for the parts of the BSA in CA. The project shall implement the following avoidance and minimization efforts for invasive plants/noxious weeds:

- Prior to construction, discrete occurrences of noxious weeds shall be mapped (including areas previously surveyed on public lands) during botanical surveys (see Chapter 1). Vast areas of common noxious weeds, such as cheat grass in big sagebrush scrub, will be noted, but not mapped.
- Weeds rated A, B, or Q by CDFA (2010) for the parts of the BSA in CA, or rated A or B by NDA (2010) for the parts of the BSA in Nevada, shall be reported to the appropriate state or County Agricultural officer.

- The results of the botanical surveys and weed mapping, shall be reported to USFS and BLM for their lands.
- Construction equipment used in the BSA shall be cleaned (power or high-pressure cleaning) of all mud, debris, and plant parts before arriving at the BSA.
- Boots and clothing of project personnel shall be cleaned of seed before entering the BSA.
- Mapped weed locations will be avoided with equipment and vehicles if possible. If avoidance is not possible, the equipment, vehicles, and any contaminated clothing or footwear will be cleaned immediately adjacent to the existing infestation before leaving the that area of the BSA. If avoidance is not possible for mapped weeds on USFS or BLM land, the agency will be contacted prior to work for approval of cleaning methods and locations.
- PSREC will implement the appropriate noxious weed control measures from the following; Partners against Weeds (BLM 1996), The National Invasive Species Management Plan (National Invasive Species Council 2008), and the Weed Prevention and Management Guidelines for Public Lands (BLM 2011).

5.5.3. Project Impacts

Most of the noxious weed and invasive plant species that have been observed in the BSA are common in the counties in which they were observed. The limited scope of this Project precludes effective eradication of these invasive species from the BSA or the counties in which the BSA occurs. The Project will have a less than significant impact on the establishment and spread of noxious and invasive weeds with implementation of the avoidance and minimization measures.

5.5.4. Compensatory Mitigation

No compensatory mitigation is proposed.

5.5.5. Cumulative Effects

No cumulative effects were identified.

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