

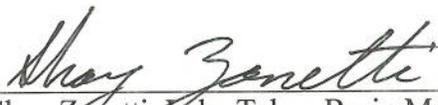
UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
LAKE TAHOE BASIN MANAGEMENT UNIT

Biological Assessment

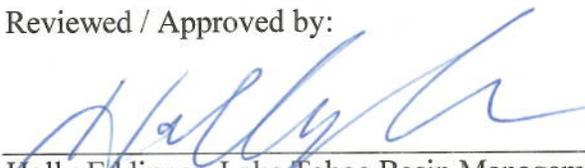
Burke Creek Highway 50 Crossing and Realignment Project

(Douglas County, NV)

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I. INTRODUCTION

The Forest Service, Nevada Tahoe Conservation District, and Tahoe Regional Planning Agency are proposing the Burke Creek Highway 50 Crossing and Realignment Project which proposes a restoration project to improve the health, functionality, and water quality of the rain and snowmelt runoff from the Burke Creek-Rabe Meadow Complex (**Figure 1**).



Figure 1. The Burke Creek Highway 50 Crossing and Realignment Project location.

This is a cooperative project involving multiple agencies. Activities are proposed on lands under the jurisdiction of Douglas County (County), Nevada Department of Transportation (NDOT), private (Sierra Colina and Apartments 801) and the U.S Forest Service (USFS), Lake Tahoe Basin Management Unit (LTBMU). The Nevada Tahoe Conservation District (NTCD) is acting on the behalf of NDOT and The County, as the recipient of a Federal Erosion Control Grant for the project, administered by the USFS. NDOT is also contributing funds to the project, as well as the Nevada Division of State Lands (NDSL) and Tahoe Regional Planning Agency (TRPA).

The project area is comprised of open space, roads, commercial development and parking lots owned by USFS, NDOT, the County, Sierra Colina LLC., and Apartments 801 LLC. The USFS LTBMU administers the USFS lands west of US 50. East of US 50 is commercial development owned by Apartments 801 LLC., Kahle Drive Community Center parking lots, ballfields and land owned by the County and vacant land along Burke Creek owned by Sierra Colina LLC. US 50, which runs through the project area, is owned and controlled by the NDOT. Single family residential and multi-family residential land use is found immediately to the south of the project area, on the south side of Kahle Drive. The entire project area drains to Lake Tahoe via surface drainage, mainly through Burke Creek. Stormdrain systems collect runoff from Kahle Drive, a portion of US 50 and the adjacent neighborhoods and route it to Burke Creek.

The County obtained a portion of the commercial parking lot north of the commercial complex (old Nugget Casino) located at 177 HWY 50 and adjacent to Burke Creek east of US 50 as part of the Boundary Line Adjustment (BLA) negotiated with Mr. Charles Bluth as recorded September 24, 2014 in the County recorded document numbers 0849812 through 0849815. As part of the BLA, the County also obtained an easement on a portion of the parcel located at 179 HWY 50 for the construction and maintenance of this project. In return, Mr. Bluth obtained a portion of the parking lot located at 175 HWY 50 to the south of the commercial building and a non-exclusive parking easement for a portion of the County owned parking lot located at 181 HWY 50. Mr. Bluth sold the property to Apartments 801 LLC. in the spring of 2015.

NTCD and the County coordinated with the new owner of the commercial complex (Apartments 801 LLC.) to participate in the project and allow project improvements at the commercial complex. A brochure summarizing the project benefits titled Burke Creek Highway 50 Crossing and Realignment Project: Potential Area Enhancements August 2015 was created and shared with Apartments 801 LLC., but the owner was not interested in project participation by allowing improvements on the commercial complex property. The proposed improvements to Apartments 801 LLC property are depicted on the 50% design plans but removed from further design.

The purpose of this **Biological Assessment** (BA) is to present an analysis of effects for the proposed action on federally listed endangered, threatened, candidate, and proposed species and their habitats. These federally listed species are managed under the authority of the Endangered Species Act (ESA) and the National Forest Management Act (NFMA; PL 94-588). The ESA requires federal agencies to ensure that all actions are not likely to jeopardize the continued existence of any federally listed species. The ESA requires that a BA be written and that the analysis conducted determine whether formal consultation or conference is required with the United States Department of Interior (USDI) Fish and Wildlife Service (FWS). This BA is

prepared in compliance with the requirements of the ESA, Forest Service Manual 2670, and also provides for compliance with Code of Federal Regulations (CFR) 50-402.12.

Species lists are based on the November 16, 2015 Fish and Wildlife Service (FWS) species list generated for this project by the FWS online tool “Information for Planning and Conservation” (IPAC; <http://ecos.fws.gov/ipac/>; consultation code # 08ENVD00-2016-SLI-0013 - Appendix A) for all federally threatened, endangered, proposed, and candidate species. Per requirements in the IPAC species list, the primary consultation office for the LTBMU has been designated as the Nevada Fish & Wildlife Service field office in Reno, NV.

Analysis is presented in this document to determine the effects of the Proposed Action for the Burke Creek Highway 50 Crossing and Realignment Project on the following threatened (T), endangered (E), proposed (P), and candidate (C) species.

Endangered:

- Sierra Nevada Yellow-legged Frog (*Rana sierrae*)
- Cui-ui (*Chasmistes cujus*)

Threatened:

- Lahontan cutthroat trout (*Oncorhynchus clarkia henshawi*)

Proposed Endangered:

- Critical Habitat for Sierra Nevada Yellow-legged Frog (*Rana sierrae*)

The LTBMU is outside the geographic range of the Cui-ui. Therefore, effects to this species would not occur and this species will not be further discussed and thus have a determination of “No Effect” for all alternatives of this project.

Only the Lahontan cutthroat trout (LCT), Sierra Nevada yellow-legged frog (SNYLF) and its proposed critical habitat will be considered further in this Biological Assessment for the Burke Creek Highway 50 Crossing and Realignment project.

II. CONSULTATION TO DATE

For the species Lahontan cutthroat trout (LCT), the species was listed as an endangered species in 1970 (Federal Register Vol. 35, p.13520). In 1975, under the Endangered Species Act of 1973 as amended (ESA), LCT was reclassified as threatened to facilitate management and to allow for regulated angling (Federal Register Vol. 40, p.29864). In 1995, the U.S. Fish and Wildlife Service (USFWS) released its recovery plan for LCT, encompassing six river basins within LCT historic range, including the Truckee River basin. The Recovery Plan acknowledged that historic and current lacustrine LCT populations in the Western Distinct Population Segment (DPS) (Lake Tahoe, Pyramid Lake, Independence Lake and Walker Lake) are important to the recovery of the species. The Recovery Plan also identified the need for basin-specific Recovery Implementation Teams (RITs) be formed to develop action plans and implement strategies for LCT. In 1999 LCT RITs were formed for the Truckee and Walker River basins and in 2007 the Tahoe Basin RIT was formed for locations specific to the Lake Tahoe basin. The Tahoe Basin RIT currently

meets throughout the year and is in the process of developing a Recovery Action Plan for Lake Tahoe.

For the species of Sierra Nevada yellow-legged frog (SNYLF) and proposed critical habitat, on April 25, 2013, the USFWS published the proposed listing for the Sierra Nevada yellow-legged frog as Endangered with Proposed Critical Habitat. On April 29, 2014, the USFWS published the final ruling to list the SNYLF as endangered (**Federal Register** / Vol. 79, No. 82 / Tuesday, April 29, 2014). Refer to the federal register for more information: <http://www.gpo.gov/fdsys/pkg/FR-2014-04-29/pdf/2014-09488.pdf>.

On June 10, 2013, the LTBMU provided input to the Regional Office regarding the Proposed Critical Habitat on the LTBMU (Appendix C). This input included recommendations to add approximately 5,600 acres of Critical Habitat in the headwaters of Trout Creek (Hellhole Meadow) and remove both Upper and Lower Echo Lakes (approximately 2,400 acres) from Proposed Critical Habitat (this portion of Proposed Critical Habitat is not in the Action Area).

In June of 2014, the Pacific Southwest Region of the Forest Service requested all projects within suitable habitat of the SNYLF be submitted for consultation with the USFWS per a programmatic Biological Assessment. Suitable habitat has been defined by the Region and USFWS to include *permanent water bodies or those hydrologically connected with permanent water such as wet meadows, lakes, streams, rivers, tarns, perennial creeks, permanent plunge pools within intermittent creeks, and pools, such as a body of impounded water contained above a natural dam. Mountain yellow-legged frogs have been observed using surrounding uplands up to a distance of 82 feet. When water bodies occur within 984 feet of one another, as is typical of some high mountain lake habitat, suitable habitat for dispersal and movement includes the overland areas between lake shorelines. In mesic areas such as lake and meadow systems, the entire contiguous or proximate areas are suitable habitat for dispersal and foraging.*

For this project specifically, it was identified as having 242 acres of suitable SNYLF habitat as defined by the FWS and the Forest Service Region 5. This project was not included in the forest projects submitted for regional programmatic batching for Section 7 ESA consultation on SNYLF. The programmatic effort included projects containing suitable habitat across all forests in Region 5.

On April 20, 2015 a phone conversation occurred between Rena Escobedo, Sarah Muskopf, Holly Eddinger (LTBMU biologists), and Chad Mellison (FWS Consultation Biologists) to discuss the level of consultation necessary for LCT and SNYLF for this project. Based on the actions and potential effects of this proposed action it was decided that because the proposed action could not meet all the requirements of the Programmatic Biological Opinion (December 19, 2014, ref#:FF08ESMF00-2014-F-0557), this project would not be appended to the Biological Opinion and informal consultation would be needed.

III. CURRENT MANAGEMENT DIRECTION

Current management direction on desired future conditions for Threatened, Endangered, Candidate, and Proposed Species on the LTBMU can be found in the following documents, filed at the Supervisor’s Office:

- Forest Service Manual and Handbooks (FSM/H 2670)
- National Forest Management Act (NFMA)
- Endangered Species Act (ESA)
- National Environmental Policy Act (NEPA)
- Lake Tahoe Basin Management Unit Land and Resource Management Plan (LRMP)
- Sierra Nevada Forest Plan Amendment (2004)
- TRPA Code of Ordinances

IV. DESCRIPTION OF THE ANALYSIS AREA AND PROPOSED ACTION

Analysis Area

The analysis area (242 acres) is based on the functional distance that SNYLF can disperse rounded up to 1,000 feet (based on the recommendation found in the Programmatic Biological Opinion (ref. FF08ESMF00-2014-F-0557; December 19, 2014)). Areas inside the 1,000 foot buffer that are not included in the analysis area were excluded because there is no habitat (e.g. urban areas, upland forest, etc.). Utilizing this analysis area also encompasses suitable LCT habitat (perennial streams) in the vicinity of the project area (**Figure 2**).

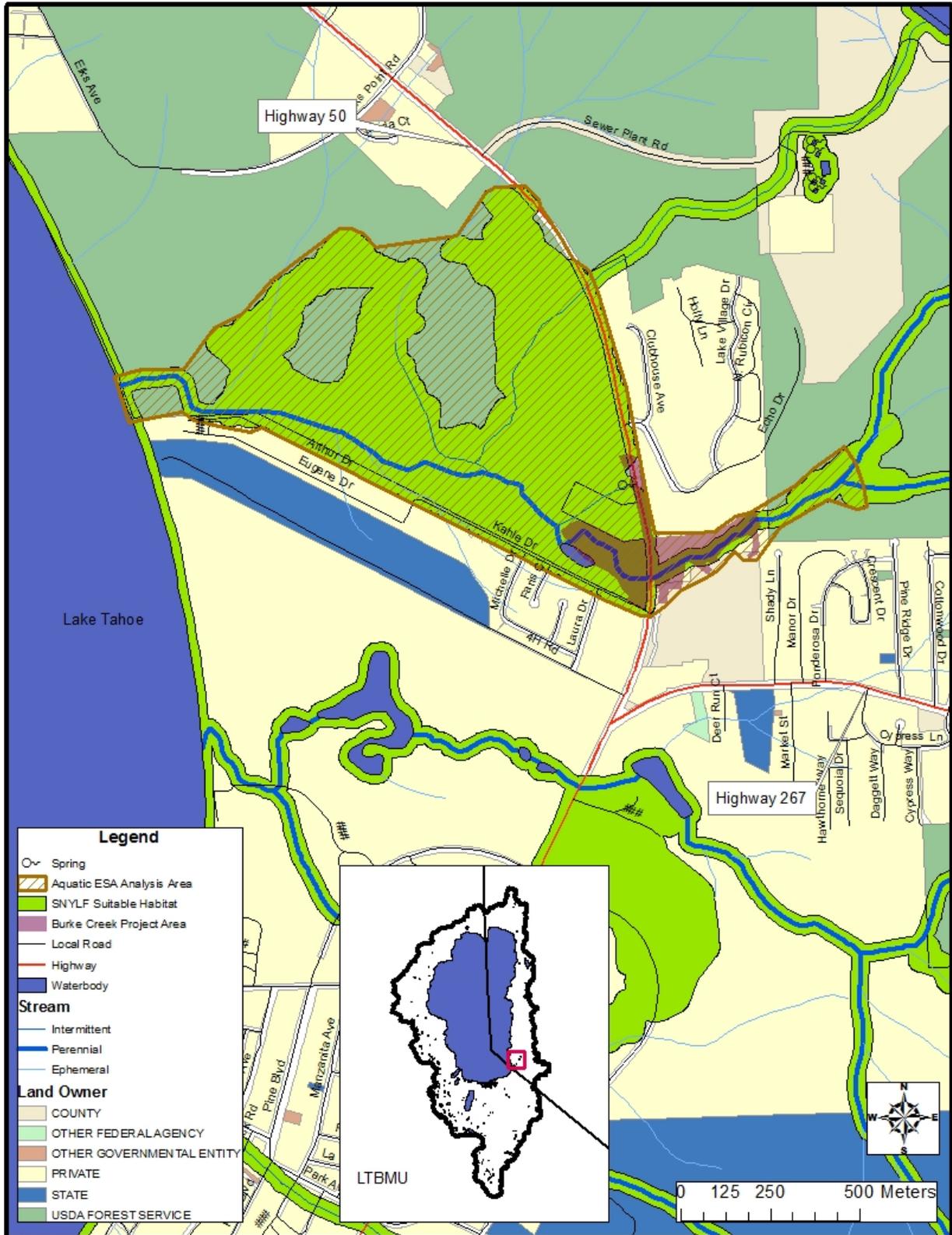


Figure 2. Burke Creek Highway 50 Crossing and Realignment Project analysis area and SNYLF habitat.

Existing Condition

The approximate 16.5 acre project area is located in Stateline, Douglas County, Nevada, on the east shore of Lake Tahoe, within the Burke Creek Watershed (TRPA Priority 3 Watershed 39). It is bordered by Kahle Drive to the south, Shady Lane to the east, Lake Tahoe to the west, and Elks Point Road to the north (**Figure 1**). The project area appears on the 1999 United States Geologic Survey (USGS) South Lake Tahoe 7.5-minute quadrangle in Sections 22 and 23 of Township 13 North, Range 18 East, of the MDBM, Latitude 38.9717°, and Longitude 119.9361°.

The project area includes a portion of the parking access to the Lam Watah Trail and the Rabe Meadow Multi-Use Trail. The Rabe Meadow Multi-Use Trail was built in 2012 and extends along Laura Drive in 2015. The trailhead facilities at the corner of Kahle Drive and US 50 provide popular recreation access and opportunity for diverse recreational pursuits. The trailhead parking lot and facilities were renovated during the bike path construction in 2013 to include 20 parking spaces, a restroom, a picnic area, and multiple interpretive signs/kiosks. The trailhead parking lot and Rabe Meadow Bike Path are managed by The County under Special Use Permit with the USFS. Shoreline Adventure Center offers bicycle, ski and snowshoe rentals from their location across the street from the trailhead. Pedestrians and bike riders travel through the meadow and enjoy meadow, forest, and stream environments as they travel to Nevada Beach or along the bike path to Round Hill Pines Resort. The Lam Watah Trail also starts at this trailhead and leads users past Jennings Pond, which supports waterfowl, lush vegetation and the occasional fisherman before terminating at the Nevada Beach campground. The Lam Watah Trail is managed by the USFS. The area's proximity to the concentrated Stateline hotels contributes to its popular recreation use.

The meadow adjacent to Burke Creek and the trailhead access has known infestations of invasive plants such as bull thistle, oxeye daisy, Canada thistle, and sulfur cinquefoil and does not contain desired montane riparian species.

Rabe Meadow and Burke Creek have been dramatically impacted over the last 100 years. The first major disturbance to the project area came from logging during the Comstock mining boom in the late 1800s. The area between Kingsbury Grade and Daggett Pass was heavily logged. During this time, roads were established throughout the area to support the logging, and other industries needed to service workers. Rabe Meadow was home to the Hobart Logging camp until a majority of the timber was depleted and mining in the area came to a close. After the end to the Comstock mining, the area became home to seasonal ranches and farms to support the resorts and estates around the Lake. During this time the Rabe family owned a majority of the project area and it remained in the family for many generations. The family mainly used the meadow for cattle ranching and grazing until the 1980s.

Some of the most significant impacts to the meadow and creek occurred in the 1940s and 1950s. In the late 1940's Burke Creek was relocated to the western part of the meadow for the development of an airport which later was closed and urbanized as a residential neighborhood. In the 1950's the stream was moved and straightened to accommodate development of the Tahoe Nugget Casino (now Apartments 801 owned) within the historic floodplain. As a result, Burke

Creek runs along a hillside via a berm. This hillside location affords little floodplain access and limited sinuosity and stream complexity.

Later, in 1978 the property at the corner of US 50 and Kahle Drive was sold to a casino developer. Construction of the Ted Jennings Tahoe Palace Resort and Casino was started but never finished. Remnants of the casino resort foundation can still be found. The property was sold to the USFS in the 1980s and the USFS quickly began restoration efforts, working to reverse some of the development impacts to the meadow and stream. Restoration conducted at that time included removal of the above ground structures, burial of some of the below ground foundation structure, as well as construction of Jennings Pond and channel restoration. The channel's location along the top of a knoll causes high flows to escape the channel and enter the urban environment. Burke Creek has flowed across the Lam Watah trail and trailhead sidewalk before entering the stormwater infrastructure along Kahle Drive.

At US 50, a 2 foot diameter metal corrugated pipe parallels the highway for 200 feet before conveying Burke Creek under the highway. HEC-RAS modeling suggests that the 2 foot diameter culvert is capable of passing 25 cubic feet per second (cfs) which equates to a 5 year flow event. This undersized culvert has potential to backwater US 50 travel lanes according to HEC-RAS modeling. A drop inlet also conveys stormwater runoff directly into the culvert and Burke Creek as it crosses US 50. Runoff habitually inundates US 50 eastbound lanes adjacent to the Lake Village development. A drop inlet in this area also directs US 50 stormwater untreated into Folsom Spring.

Upstream of US 50 on Sierra Colina property, head cuts exist and are causing channel entrenchment, bank undercutting and erosion. The entrenchment also restricts floodplain access and lowers the water table. Stormwater runoff from the County ballfields at the Kahle Community Center is conveyed into Burke Creek just above the commercial parking lot. These stormwater flows have occasionally breached the conveyance swale and flowed across the parking lot on private property.

Lakeside Casino has future redevelopment planned for their property along US 50 and Kahle Drive, while the Tahoe Beach Club is expected to begin construction of their redevelopment as early as 2016. Sierra Colina development near Lake Village is also expected to commence as early as 2017. The South Shore Area Plan (2013), South Shore Vision Plan (2011), Kahle Drive Vision Plan (2014) and the Draft Tahoe Douglas Area Plan (2014) detail additional potential development in the area.

Proposed Action

Alternative 1 – No Action

Under the No Action alternative, the existing conditions and resulting issues would continue, and none of the objectives of the Proposed Action would be realized.

Specifically, drainage and water quality issues within the US 50 right-of-way would continue resulting in flooding along US 50 due to an undersized culvert that cannot safely pass the 50-year event on Burke Creek, and untreated roadway stormwater runoff would continue to

discharge into Burke Creek and Folsom Spring.

Unstable channel bank conditions along portions of Burke Creek above and below US 50 would continue to be a source for sediment entering the downstream Burke Creek-Rabe Meadow system and flooding due to channel overtopping along the commercial complex parking lot and the Kahle Drive trailhead facilities would continue. Upland vegetation dominated by non-native and some invasive species will continue to thrive in the existing riparian corridor.

Alternative 2 – Proposed Action

The following detailed actions as illustrated on Figures 3, 4 and 5, are proposed to meet the purpose and need as described in the Burke Creek Highway 50 Crossing and Realignment EA.

Phase I: Improvement to US 50 and Burke Creek above US 50 including stormwater improvements along the west side of US 50 (*NTCD*).

US 50 Drainage and Stormwater Treatment Improvements

- Remove 70 feet of existing 24 inch culvert pipe along US 50 adjacent to slated parking lot removal and install 125 feet of 57 inch x 38 inch plastic-encased corrugated metal arch pipe beneath US 50 to convey at minimum the Burke Creek 50 year stream flows (94 cfs).
- Install a rock dissipater (with flow splitter) at the US 50 Burke Creek culvert outfall to transition the stream approximately 7 to 9 feet in elevation down a slope.
- Install approximately 160 linear feet of trench drain, 55 linear feet of vertical curb, 300 linear feet of rolled curb and gutter, 200 linear feet of culvert, 2 drainage inlets, a double sediment trap and rock dissipation structures at two stormwater culvert outfalls along US 50 between Lake Village Drive and Kahle Drive in conjunction with the US 50 Burke Creek culvert installation..
- At culvert outfall across from commercial complex, remove approximately 10 trees (willow and alder) from approximately 35 feet of abandoned Burke Creek channel and recontour to create an approximately 600 square foot depressed vegetated area to promote infiltration and disconnect stormwater runoff from stream flow.
- At culvert outfall across from Professional Building, convey stormwater flow to existing approximately 450 square feet of vegetated depression to treat NDOT runoff.
- Establish access route for stormwater improvements construction within NDOT US 50 right-of-way.
- Install a viewing area, seating bench and educational signage on east side of US 50, adjacent to Burke Creek and newly installed arch pipe.

Burke Creek Channel and Floodplain Improvements

- Decommission approximately 9,000 square feet of parking lot adjacent to Burke Creek and the commercial complex owned by Apartments 810 LLC. Remove approximately 15 trees between 6 inch diameter at breast height (dbh) and 27 inch dbh to enable floodplain grading on the County and Sierra Colina property.
- Excavate area of removed parking lot area and additional approximately 4,500 square

feet along the existing channel to lower surface elevation of floodplain.

- Relocate the berm which confines Burke Creek to its existing hillside location to the south edge of the newly excavated floodplain. Berm height will remain the same, varying between 6 feet to 0 at surface grade. Install curb between the remaining parking lot and the berm.
- Construct approximately 250 feet of new geomorphically stable channel with approximately 11 rock or log grade control structures through the newly excavated floodplain area. Install flow splitter to direct main flows to newly constructed channel and high flows (above approximately 40 cfs; 7 year flow event) to an approximately 100 foot retained portion of the existing channel. Construct 40 feet of connector channel to direct high flows from the existing channel into the newly constructed channel just upstream of the US 50 culvert inlet. Backfill and recontour 80 feet of existing channel to be abandoned.
- Install approximately 15 gully stabilization structures in the channel on Sierra Colina property to prevent further down and under cutting and promote channel aggradation over time. Many of these structures will be placed by hand in augered holes within the entrenched channel confines. In areas close to existing trails and roads, a mini excavator may be used to complete some of the work. Remove several trees between 6 inch and 14 inch dbh on private property to enable construction/access.
- Perform minor grading to existing drainage swale from ballfields to restore function. Currently flow escapes the swale and enters private property.
- Remove human generated trash within and adjacent to Burke Creek.
- Recontour approximately 300 square feet of floodplain adjacent to Burke Creek and just upstream of the parking lot removal to lower surface elevation. Remove approximately 4 trees between 6 and 14 inch dbh on the County property.
- Establish access routes along existing utility easement from the Kahle Community Center Ballfields and/or existing legacy roads on Sierra Colina property from US 50. Decommission approximately 950 feet of legacy roads and approximately 1,300 linear feet of trails, after project construction is complete.
- Utilize 600 feet of US 50 and Kahle Drive and 850 feet of Kahle Community Center sidewalk to access the Project area from the temporary staging area located in 7,750 square feet of the County parking lot on the northeast corner of Kahle Drive and US 50 as illustrated in Figure 4.

Phase II: Stream Restoration Below US 50

Burke Creek Channel Realignment (USFS)

- Construct approximately 230 feet of new channel for the south fork and 400 feet of new channel for the north fork. Install several log and rock grade control and bank stabilization structures along both forks. Reconnect the north and south forks to the existing channel approximately 475 feet and 250 feet below the existing culvert respectively.
- Recontour approximately 250 feet of abandoned Burke Creek channel to accept NDOT stormwater runoff for treatment via disconnected overland flow.
- Remove and salvage approximately half of the willow and alder along approximately 200

feet of existing channel to be recontoured for stormwater treatment for revegetation and stabilization of newly constructed channel and floodplain.

- Enforce temporary intermittent closure of the Kahle Drive trailhead parking lot entrance and the first few parking spaces to mobilize equipment and import material.
- Establish an approximately 2,300 square foot materials and equipment staging area adjacent to the site of new channel construction as illustrated in Figure 4. Construct a 15 foot wide temporary encapsulated road from the Kahle Drive trailhead parking lot to the staging area. In this access road foot print, cut shrubs down to ground surface, but leave roots intact to re-sprout.
- Infestations of non-native plants within and adjacent to proposed construction areas, staging areas and access routes will be treated or managed (e.g. flag and avoid, tarped during construction) prior to project construction. Manage for existing weed infestations throughout project area for at least three years post-implementation according to the project Invasive Plant Management Plan.

Biological Design Features

- Where possible, remove willow clumps outside of the avian nesting season (April-September). In the case of willow clumps that need to be removed during the avian nesting season an LTBMU qualified biologist, or a biologist under the direction of an LTBMU biologist, will survey each willow clump for nests not more than three days prior to removal. Based upon the survey results, the Responsible Official may implement a Limited Operating Period (LOP); adapt construction timelines or facility location as determined necessary to provide adequate protection.
- Where willow clipping is conducted, this activity should take place in a random fashion, taking more from larger clumps and less from smaller clumps. Clipping in a single willow clump should not be great enough to alter the visual shape or the overall structure of the clump. No branches attached to a bird nest or within one meter of any part of a bird nest should be clipped.
- Inform implementation crew members of sensitive resources known to occur in the project area, their locations, and resource protection measures prior to implementation.
- Implementation crews will participate in a special status wildlife orientation prior to conducting work in the project area. During project activities, any detection of threatened, endangered, proposed, candidate species, FSS species, or TRPA special interest species or of nests, roosts, or dens of these species would be reported to the project biologist. These species would be protected in accordance with management direction for the LTBMU.
- Maintain Limited Operating Periods (LOP) for threatened, endangered, proposed, candidate species, Forest Service Sensitive (FSS) species, and/or Tahoe Regional Planning Agency (TRPA) Special Interest Species (SIS) if/when it is determined that permitted activities would occur within a disturbance or buffer zone. Current LOPs are based on the LTBMU LRMP (1988), SNFPA (2004), and TRPA Code of Ordinances (2013) and are included in Appendix B of the terrestrial wildlife BE for this project; if LOPs are updated prior to implementation, the project would maintain the most current LOPs. LOPs may be waived where a biological evaluation concludes that there would

be no effects to breeding activities and according to conditions described in SNFPA (2004, e.g., S&G #77, 78, 79, 88). No LOPs are currently required.

- Retain known special status species nest/den/roost trees/snags if they are found within the project area.
- Retain snags, preferably larger than 15 inches diameter at breast height (DBH), for wildlife unless the snag would be hazardous to operations and/or human safety. Limit tree removal to that shown on 100% design plans.
- Western pearlshell mussel (*Margaritifera falcate*) surveys will be conducted by the LTBMU aquatic survey crew prior to implementation on Forest Service property.
- Mussels will be removed, where feasible, from the active Proposed Project reach prior to diverting channel flow into the newly constructed channel. Feasibility will be determined in the field by the Forest Service aquatic biologist and will take into consideration mussel population within and outside of the project area.
- Salvage/recovery of fish will be conducted within anticipated construction dewatering or diversion zones operations by electro-shocking or other suitable means as developed through consultation with the Nevada Department of Wildlife (NDOW) and LTBMU fisheries staff. Fish will be moved approximately 500-700 feet upstream or downstream of project activities, as determined by NDOW and USFS fisheries staff. Block nets will be installed to ensure fish do not move back into the project area.
- Nets will be cleaned one to two times daily to ensure the nets are functioning.
- Annual inventories for Sierra Nevada yellow-legged frog in suitable habitat may be required based on the forthcoming programmatic biological opinion. Required surveys shall be conducted by an LTBMU aquatic biologist or under the direction of an LTBMU aquatic biologist.
- Staging areas will not be in wet meadow, lakes, ponds, or any waterway.
- Equipment used in the project must be sanitized and free of non-native aquatic invasive species before moving into the project area to ensure that the equipment is free of soil, seeds, vegetative material, or other debris or water that could contain or hold seeds of non-native aquatic invasive species. It is recommended that all vehicles, especially large, off-road and/or earthmoving vehicles are cleaned and completely dry when they come into the LTBMU or come from an area known to contain non-native aquatic invasive species. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material, standing water, or other such debris.
- Leave existing downed trees and large woody debris (LWD) that are in perennial or intermittent stream channels in place unless removal would enhance or maintain channel stability, as determined by a LTBMU Watershed Specialist or Aquatic Biologist.
- Utilize BMPs in order to ensure implementation does not impact Folsom Spring.

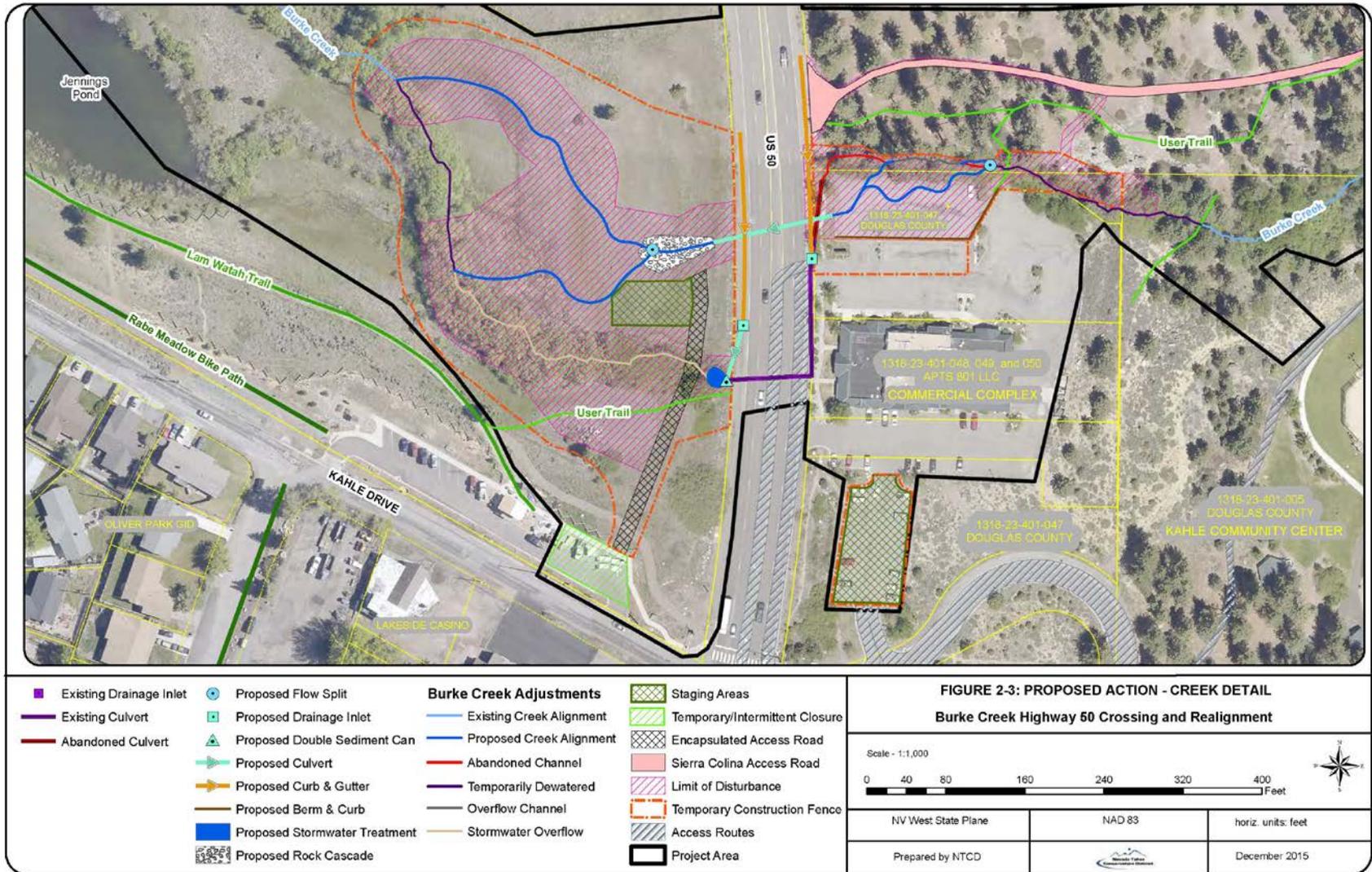


Figure 4. Detail of the Creek Section of the proposed action.

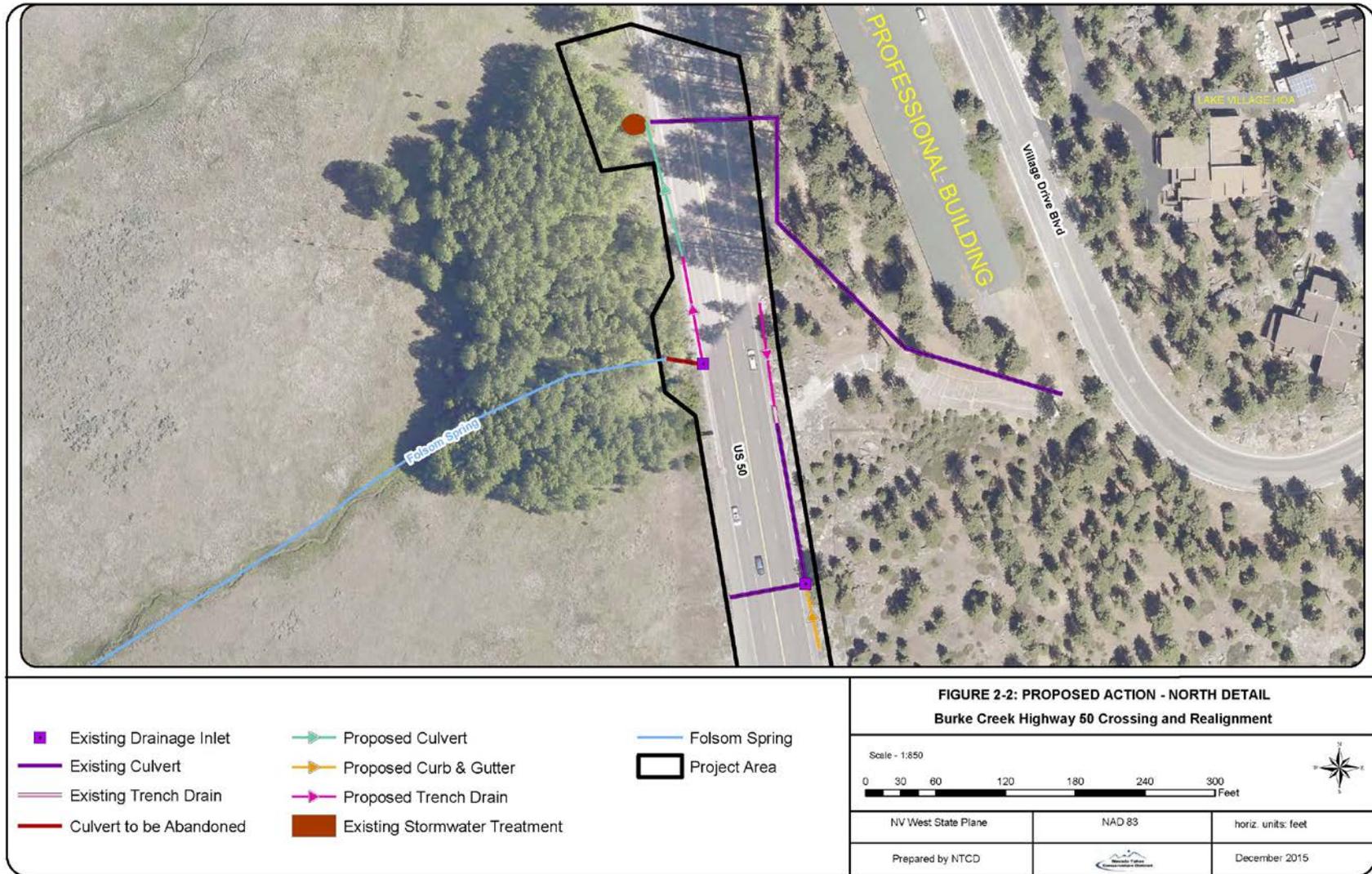


Figure 5. Detail of the North section of the proposed action.

V. DESCRIPTION OF AFFECTED SPECIES

Species Accounts and Status

Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*)

Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) (LCT) was listed as an endangered species in 1970 (Federal Register Vol. 35, p.13520). In 1975, under the Endangered Species Act of 1973 as amended (ESA), LCT was reclassified as threatened to facilitate management and to allow for regulated angling (Federal Register Vol. 40, p.29864). In 1995, the U.S. Fish and Wildlife Service (USFWS) released its recovery plan for LCT, encompassing six river basins within LCT historic range, including the Truckee River basin. Endangered Species Act specific recovery targets related to down listing (i.e. number of self-sustainable sub-populations) have yet to be determined for the LTBMU. The 2009 LCT 5-year status review recommended the following range-wide actions: revise the 1995 recovery plan, develop state and tribal hatchery management plans, improve utility of monitoring/accomplishment databases and develop regulations to help conserve LCT. Discussion regarding the revision to the 1995 recovery plan has occurred, but not been formally initiated.

Lahontan cutthroat trout habitat may include high elevation oligotrophic lakes, lower elevation terminal lakes and river/tributary systems. Lahontan cutthroat trout populations historically persisted in large interconnected aquatic ecosystems throughout their range (USFWS 1995). These systems were either lake habitats with tributary streams or large stream networks consisting of a river and tributaries. Lahontan cutthroat trout can express both fluvial and lacustrine life histories such that fluvial forms use stream/river habitats and lacustrine use both river and/or lake habitats in addition to tributaries (Northcote 1992; Rieman and Dunham 2000).

Lake Tahoe and its tributaries provided spawning and rearing habitat for both fluvial and lacustrine life history forms of LCT. These forms are functionally different as they use different habitats and express different growth rates, fecundity and longevity (Bozek and Hubert 1992; Gerstung 1988; Harvey and Stewart 1991). Because most of the lacustrine strains of LCT were extirpated in the early 20th century, little information exists about their specific habitat requirements and life history patterns in Lake Tahoe.

Eggs are deposited in gravels within riffles, pocket water or pool crests. Spawning beds must be well oxygenated and relatively silt-free for good egg survival. Lahontan cutthroat trout eggs generally hatch in 4-6 weeks, depending on water temperature, and fry emerge from the red 13-23 days later (Lea 1968; Rankel 1976). Fry emigration has a distinct diel pattern with peak rates found in the early morning hours (Rissler et al. 2006). Some fluvial-adapted fish remain for 1-2 years in nursery streams before emigrating in the spring (Coffin 1983; Johnson et al. 1983; Rankel 1976; Umek 2007).

Stream-resident LCT feed on primarily terrestrial and aquatic insects (Baxter et al. 2005; Dunham et al. 2000; Moyle 2002). In lakes, small LCT feed largely on insects and zooplankton (Calhoun 1942; Lea 1968; McAfee 1966), and larger LCT become piscivorous, feeding on other fish species such as tui-chub, Lahontan redbreast shiners, speckled dace, and Tahoe suckers (Sigler et al. 1983).

Non-native salmonids have displaced many LCT populations. Introduced fall spawning salmonids may have an advantage over spring spawning LCT because altered watersheds provide poor habitat

with such conditions as excessive turbidity, limited spawning gravel, and high flows. Furthermore, nursery habitat during the summer may be impacted by rapidly increasing water temperatures, and drying of stream segments important for fry survival. Habitat improvement without the removal of non-native salmonids could impact LCT populations through hybridization and displacement (USFWS 1995).

Species Occurrence

Lahontan cutthroat trout were introduced to the headwaters of the Upper Truckee River in Meiss Meadows in the late 1980's and early 1990's through a cooperative effort between the California Department of Fish and Wildlife (CDFW), USFS and FWS. The Meiss Meadow population is one of the only high-elevation meadow populations of LCT in the Sierra Nevada mountain range and also functions as a source population for LCT in lower river segments of the Upper Truckee River. This is the only self-sustaining population in the LTBMU. Expansion efforts were initiated to increase the range of this population in 2009 and will continue through 2016. Additional recovery actions for LCT are ongoing in Fallen Leaf Lake and Glen Alpine Creek. All of these locations are on the south shore of Lake Tahoe, while the analysis area is on the east shore.

Lahontan cutthroat trout have been stocked by both Nevada Department of Wildlife (NDOW) and CDFW throughout the LTBMU for recreational fishing opportunities, including Lake Tahoe. Although these efforts are not for the recovery of LCT, where stocking occurs and where migration of LCT is possible, analysis of potential effects to this listed species is required. Burke Creek was surveyed in 2012 and 2013. No Lahontan cutthroat trout were found.

Sierra Nevada yellow-legged frog (*Rana sierrae*) and Proposed Critical Habitat

Sierra Nevada (mountain) yellow-legged frog (SNYLF, *Rana sierrae*) is an Endangered Species with Proposed Critical Habitat under the Endangered Species Act (ESA) and a Region 5 Forest Service Sensitive Species (USDA Forest Service 1998). On April 25, 2013, the US Fish and Wildlife Service (FWS) published a proposal in the Federal Register (Federal Register Vol.78, No. 80) proposing listing SNYLF as endangered and designating critical habitat. On April 29, 2014, the final rule was published in the **Federal Register** Vol. 79, No. 82 on Tuesday, April 29, 2014 (<http://www.gpo.gov/fdsys/pkg/FR-2014-04-29/pdf/2014-09488.pdf>) designating the species Endangered. The effective date of this final rule is June 30, 2014. There is not a final rule on the Proposed Critical Habitat to date. The criterion for the listing was based on the danger of extinction throughout the species entire range and on the immediacy, severity, and scope of the threats to its continued existence. These threats include habitat degradation and fragmentation, predation and disease, climate change, inadequate regulatory protections, and the interaction of these various stressors impacting small remnant populations. There has been a range wide reduction in abundance and geographic extent of surviving populations of frogs following decades of fish stocking, habitat fragmentation, and most recently a disease epidemic. This combination of population stressors makes persistence of the species precarious throughout the currently occupied range in the Sierra Nevada. Citations from the federal register found in this document can be found at this location for the final ruling (<http://www.gpo.gov/fdsys/pkg/FR-2014-04-29/pdf/2014-09488.pdf>).

SNYLF currently exist in montane regions of the Sierra Nevada of California. Throughout their range, these species historically inhabited lakes, ponds, marshes, meadows, and streams at elevations ranging from 1,370 to 3,660 meters (m) (4,500 to 12,000 feet) (Federal Register Vol. 79, No. 82). SNYLF are highly aquatic; they are generally not found more than 1 m (3.3 feet) from water (Federal Register Vol. 79, No. 82). Adults typically are found sitting on rocks along the shoreline, usually where there is

little or no vegetation (Federal Register Vol. 79, No. 82). Although they may use a variety of shoreline habitats, both tadpoles and adults are less common at shorelines that drop abruptly to a depth of 60 cm (2 feet) than at open shorelines that gently slope up to shallow waters of only 5 to 8 cm (2 to 3 in) in depth (Federal Register Vol. 79, No. 82).

SNYLF in the Sierra Nevada are most abundant in high-elevation lakes and slow-moving portions of streams (Federal Register Vol. 79, No. 82). Lake depth is an important attribute defining habitat suitability for SNYLF. As tadpoles must overwinter multiple years before metamorphosis, successful breeding sites are located in (or connected to) lakes and ponds that do not dry out in the summer, and also are deep enough that they do not completely freeze or become oxygen depleted (anoxic) in winter. Both adults and tadpole SNYLF overwinter for up to 9 months in the bottoms of lakes that are at least 1.7 m (5.6 feet) deep; however, overwinter survival may be greater in lakes that are at least 2.5 m (8.2 feet) deep (Federal Register Vol. 79, No. 82).

Adults tend to move between selected breeding, feeding, and overwintering habitats during the course of the year. Though typically found near water, overland movements by adults of over 66 m (217 feet) have been routinely recorded (Federal Register Vol. 79, No. 82); the farthest reported distance of a SNYLF from water is 400 m (1,300 feet) (Federal Register Vol. 79, No. 82).

Unlike other declining amphibian populations around the world, direct habitat modification does not seem to be a primary factor associated with the decline of SNYLF (Federal Register Vol. 79, No. 82). In most cases, SNYLF occur at high elevations in the Sierra Nevada, which have not had the types or extent of large-scale habitat conversion and physical disturbance that have occurred at lower elevations (Federal Register Vol. 79, No. 82), similar to meadow/aquatic habitat in the Action Area.

Other human activities, however, have played a role in the modification of habitat and the curtailment of the species range. The aggregation of these threats has degraded and fragmented habitats range wide to a significant extent. These threats include: recreational activities, fish introductions, dams and water diversions, livestock grazing, timber management, road construction and maintenance, and fire management activities. Such activities have degraded habitat in ways that have reduced their capacity to sustain viable populations and have fragmented and isolated populations from each other.

One habitat feature that is documented to have a significant detrimental impact to SNYLF populations is the presence of trout from current and historical stocking for the maintenance of a sport fishery. To further angling success and opportunity, trout stocking programs in the Sierra Nevada started in the late 19th century (Federal Register Vol. 79, No. 82). This anthropogenic activity has community-level effects and constitutes the primary detrimental impact to SNYLF habitat and species viability. Prior to extensive trout planting programs, almost all streams and lakes in the Sierra Nevada at elevations above 1,800 m (6,000 feet) were fishless. Of the project meadows with perennial streams, only Hellhole is known to be fishless.

Introduced trout, whose significance is well-established because it has been repeatedly observed that nonnative fishes and frogs rarely coexist, and it is known that introduced trout can and do prey on all frog life stages (Federal Register Vol. 79, No. 82). It is estimated that 63 percent of lakes larger than 1 ha (2.5 ac) in the Sierra Nevada contain one or more nonnative trout species, and greater than 60 percent of streams contain nonnative trout (Federal Register Vol. 79, No. 82), in some areas comprising greater than 90 percent of total water body surface area (Federal Register Vol. 79, No. 82). The multiple-year tadpole stage of SNYLF requires submersion in the aquatic habitat year round until

metamorphosis. Moreover, all life stages are highly aquatic, increasing the frog's susceptibility to predation by trout (where they co-occur) throughout its lifespan. Overwinter mortality due to predation is especially significant because, when water bodies ice over in winter, tadpoles are forced from shallow margins of lakes and ponds into deeper unfrozen water where they are more vulnerable to predation; fish encounters in such areas increase, while refuge is less available. The predation of SNYLF by fishes observed in the early 20th century by Grinnell and Storer and the documented declines of the 1970s (Federal Register Vol. 79, No. 82) were not the beginning of the SNYLF decline, but rather the end of a long decline that started soon after fish introductions to the Sierra Nevada began in the mid-1800s (Federal Register Vol. 79, No. 82). In 2004, Vredenburg (Federal Register Vol. 79, No. 82) concluded that introduced trout are effective predators on SNYLF tadpoles and suggested that the introduction of trout is the most likely reason for the decline of the SNYLF complex. This threat is a significant, prevalent risk to SNYLF rangewide, and it will persist into the future.

Activities that alter the terrestrial environment (such as road construction and timber harvest) may impact amphibian populations in the Sierra Nevada (Federal Register Vol. 79, No. 82). These impacts are understandably in proportion to the magnitude of the alteration to the environment, and are more pronounced in areas with less stringent mitigation measures. Road construction and timber harvest were likely of greater significance historically, and may have acted to reduce the species' range prior to the more recent detailed studies and systematic monitoring that have quantified and documented these losses. Timber harvest activities remove vegetation and cause ground disturbance and compaction, making the ground more susceptible to erosion (Federal Register Vol. 79, No. 82). This erosion increases siltation downstream that could potentially damage SNYLF breeding habitat. The majority of erosion caused by timber harvests is from logging roads (Federal Register Vol. 79, No. 82). Additionally, roads, including those associated with timber harvests, can contribute to habitat fragmentation and limit amphibian movement, thus having a negative effect on amphibian species richness (Federal Register Vol. 79, No. 82). This effect could fragment SNYLF habitat if the road bisected habitat consisting of water bodies in close proximity. However, neither of these factors (timber management and roads) has been implicated as an important contributor to the decline of this species (Federal Register Vol. 79, No. 82). It is likely a minor prevalent threat to SNYLF factored across the range of the species.

However, in some areas within the current range of the SNYLF, long-term fire suppression has changed the forest structure and created conditions that increase fire severity and intensity (Federal Register Vol. 79, No. 82). Excessive erosion and siltation of habitats following wildfire is a concern in shallow, lower elevation areas below forested stands. However, prescribed fire has been used by land managers to achieve various silvicultural objectives, including fuel load reduction. In some systems, fire is thought to be important in maintaining open aquatic and riparian habitats for amphibians (Federal Register Vol. 79, No. 82), although severe and intense wildfires may reduce amphibian survival, as the moist and permeable skin of amphibians increases their susceptibility to heat and desiccation (Federal Register Vol. 79, No. 82). Amphibians may avoid direct mortality from fire by retreating to wet habitats or sheltering in subterranean burrows. It is not known what impacts fire and fire management activities have had on historical populations of SNYLF. Neither the direct nor indirect effects of prescribed fire or wildfire on the SNYLF have been studied. However, where wildfire has occurred in southern California, the character of the habitat has been significantly altered, leading to erosive scouring and flooding after surface vegetation is denuded (Federal Register Vol. 79, No. 82). When a large wildfire does occur in occupied habitat, SNYLF are susceptible to direct mortality (leading to significantly reduced population sizes) and indirect effects (habitat alteration and

reduced breeding habitat). Based on the best available scientific and commercial information, the threats of modification and curtailment of the species' habitat and range from large scale wildfire is a significant, ongoing threat to the SNYLF.

Chytridiomycosis is an infectious disease of amphibians caused by the fungus *Batrachochytrium dendrobatidis* (“*Bd*”; Longcore et al. 1999). The extraordinary virulence of *Bd* has caused the decline or extinction of hundreds of amphibian species around the world during the last several decades (Skerratt et al. 2007) and hundreds more are considered at risk as *Bd* spreads into new areas. SNYLF is particularly susceptible to *Bd*, and the spread of this pathogen across California during the past 30 years has caused the loss of hundreds of frog populations from remaining fishless habitats in the Sierra Nevada (Rachowicz et al. 2006, Vredenburg et al. 2010). The population of SNYLF is *Bd* positive.

The analysis area contains up to 242 acres of suitable SNYLF habitat as defined by the FWS and the Forest Service Region 5: all areas within 25 meters (82 feet) of perennial or intermittent streams, lakes, meadows, and ponds that are also within 305 meters (1,000 feet) of the project area and all habitat downstream of the project area (**Figure 2**).

Species Occurrence

SNYLF has been extirpated from over 90% of its historical range. A small remnant population was discovered in Hellhole Meadow (headwaters of Trout Creek) in the 1990's. Monitoring in the last decade has shown that the Hellhole population has drastically declined, presumably due to prevalence of *Bd* and potentially confounded by OSV use in the area. The LTBMU recommended adding the Hellhole area to the Proposed Critical Habitat. Hellhole is approximately 44 kilometers south of the analysis area.

In an effort to avoid extirpation from the LTBMU, a recovery effort, the Sierra Nevada Yellow-legged Frog Habitat Restoration project, was initiated in 2008 to restore habitat in Desolation Wilderness. Seven lakes (Ralston, Tamarack, Cagwin, Margery, Lucille, Jabu and LeConte Lakes) were identified in close proximity to source population on the Eldorado National Forest. Research in Desolation Wilderness (which includes both the Eldorado National Forest and the LTBMU) was initiated in 2012 by Knapp and Vredenburg to determine the success of various recovery tools including translocation, head start programs, and *Bd* treatments utilizing naturally occurring skin microbes. Adult frogs and egg masses were relocated in 2014 into two restored lakes on the LTBMU (Lucille and Jabu). Relocation into a third lake within the LTBMU boundary was planned for 2015. This area is outside the analysis area for this project.

The proposed SNYLF critical habitat is in Desolation Wilderness and in the vicinity of Echo Lakes, both of which are more than 15 kilometers southeast of the analysis area.

VI. EFFECTS OF THE PROPOSED ACTION

Analysis of direct, indirect, and cumulative effects on FWS aquatic species and habitat is presented for Alternative 2 (Proposed Action) as described in detail in Chapter 2 of this EA.

Direct/Indirect Effects Analysis

Analysis of direct, indirect and cumulative effects of the proposed action on FWS listed and Forest Service Sensitive aquatic species (TES) and habitat is presented below:

Proposed project activities could add up to 550 feet of riparian habitat; however, habitat upstream of US 50 would not be accessible to LCT due to culverts being inaccessible to fish species. Habitat may be altered and could affect individuals and/or populations of LCT and SNYLF if they migrate to the project area. Proposed project activities, described above, could disturb individuals and/or populations of LCT or SNYLF during implementation (changes in flow pattern, disruption of sediments and gravels).

Cumulative Effects Analysis

The analysis area, as described above, is spatially defined the functional distance that SNYLF can disperse rounded up to 1,000 feet (based on the recommendation found in the Programmatic Biological Opinion (ref. FF08ESMF00-2014-F-0557; December 19, 2014)). Areas inside the 1,000 foot buffer that are not included in the analysis area were excluded because there is no habitat (e.g. urban areas, upland forest, etc.). The analysis is temporally bound by five years.

In order to understand the contribution of past actions to the cumulative effects of the Proposed Action and No Action alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior actions that have affected this project area and might contribute to cumulative effects.

Past Actions

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. In addition, public scoping for this project did not identify any public interest or need for detailed information on individual past actions. Finally, the CEQ issued an interpretive memorandum on June 24, 2005, regarding analysis of past actions, which states, “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.”

The analysis of past actions in this section is based on current environmental conditions. Past actions which make up the current conditions include: Comstock Mining Era logging, formalization of US 50 and drainage paths, cattle ranching, airport construction, urbanization, and casino construction.

Specific past projects that have been constructed within proximity to the project area include:

- The acquisition of Rabe Meadow by the USFS in 1978 provided the opportunity for the USFS to end the seasonal cattle grazing in Rabe Meadow and restore the Jennings Casino site. In 1981, the USFS restored the casino site by breaking up and burying the foundations, reshaping and restoring Burke Creek in the upper one-third of the meadow where it had been previously diverted into a concrete lined ditch. USFS also transformed an excavated borrow pit into an in-stream sediment pond (Jennings Pond) and performed revegetation of the disturbed areas.

- In 1992, The County implemented the Burke Creek/Kahle Ditch Restoration Project. The Project implemented stormwater conveyance and treatment infrastructure along Kahle Drive and backfilled Kahle Ditch, which conveyed Burke Creek along Kahle Drive during the 1960s and 1970s.
- In 1992, the USFS implemented the Burke Creek Channel Restoration Project, which reconstructed 2,000 feet of channel in the Nevada Beach Campground area.
- In 1998, the USFS performed maintenance and improvements on the Burke Creek Channel Restoration Project (1992) to address channel instability by reconstructing rock check dams, recontouring and armoring eroded channel banks, and stabilizing a head cut.
- NDOT implemented Water Quality and Erosion Control Project along US 50 in The County beginning at Kahle Dr., north to Elks Point Rd. The Project was completed in 2005 and installed improvements along the NDOT right of way consisting of curb and gutter, retaining walls, riprap slope stabilization, conveyance piping, drainage inlets and sediment traps.
- In 2007, The County implemented the Kahle Drive Water Quality Improvement Project, which installed stormwater conveyance infrastructure and constructed wetlands in the Oliver Park General Improvement District (GID).
- Lake Village Phase I and Ib WQIP (EIP # 679) was completed in 2007. This project was broken into two phases. The majority of work was completed in the 2006 Phase I effort. This phase addressed significant water quality and erosion control issues throughout Lake Village. Phase 1B was a limited effort during the 2007 construction season to install rock slope protection of the steep eroding slope, associated curb and gutter, a linear detention basin, and revegetation of a 20 foot tall 1:1 cut bank along Lake Village Drive between Echo Drive and US 50.
- In 2010, USFS improved the Lam Watah hiking/biking trail consisting of 1.1 miles of trail through Rabe Meadow, from parking area on the east side of Kahle Drive at the intersection of US 50 to Nevada Beach. The trail whose name is derived from the Washoe Indian phrase meaning permanent mortar by the stream includes the following features: willow-lined pond, a meadow of wildflowers, a perennial stream, stands of pines and interpretive signage along the trail to Nevada Beach.
- Lake Village Phase II and IIa WQIP (EIP # 679) was completed in 2012. This project was split into two phases due to title issues on adjacent private property. Phase II installed erosion control and water quality improvements to improve the stormwater quality generated and discharged from The County right-of-way within Lake Village. The project specifically addressed Lake Village Drive, Echo Drive and flows entering the public right-of-way from adjacent drainage areas. Erosion control improvements include: revegetation, retaining walls, rock slope protection, storm drain inlets, AC swales, valley gutters, and Armorflex swales. Water quality improvements include: a treatment train composed of several dry basins, storm vaults and storm filters installed for the purpose of reducing peak flows and treating stormwater runoff for sediment less than 16 microns and nutrients. Phase IIa involved the installation of Armorflex swale and rerouting stormwater culvert on Professional Building property.
- The first segment of the Nevada Stateline to Stateline Bikeway South Demonstration Project was completed in 2012. This segment installed 1.1 miles of separated shared-use path from Kahle Drive to Elks Point Road through Rabe Meadow. With few exceptions, the bike path is 10-foot wide with 2-foot wide shoulders on both sides. The Project also included renovations to the trailhead parking lot along Kahle Drive.
- The second Segment of the Nevada Stateline to Stateline Bikeway South Demonstration Project was completed in 2013. This segment installed 1.3 miles of path from Elks Point

Drive through USFS lands to Round Hill Pines Resort. This Phase also improved the Kahle Drive Trailhead parking lot and facilities by expanding the existing parking lot and adding a restroom, educational kiosk and picnic table.

- The third segment was completed in 2015. This segment reconfigured Laura Drive to allow for installation of 0.1 miles of path along Laura Drive (Kahle to 4H Road).

Present Actions

- In response to U.S. Environmental Protection Agency requirements, KGID has almost completed the construction of the relocated water treatment plant and pump station. The facilities are scheduled to come on line in October 2015. This project is located at the east end of the Tahoe Shores Mobile Home Park.
- The Beach Club at Lake Tahoe Project will be the first and only multi-family residential development approved in the Tahoe Basin in 25 years. The project will be constructed on a 20 acre parcel located on Kahle Drive at the site of the Tahoe Shores Mobile Home Park. The project will restore two acres of meadow area as part of the project. Construction began in summer of 2014 with improvements to the pier. In 2015, the project also initiated relocation and upgrade to the Kingsbury GID Water Treatment Plant (described above). The Water Treatment Plant was relocated within the Beach Club project area to allow for subsequent Beach Club development. Construction of the Beach Club development is expected to continue in 2016 dependent on funding and permitting.

Reasonably Foreseeable Future Actions

- The Oliver Park GID has completed the first part of an Evaluation of Existing Conditions Memorandum (ECAM) to determine if the existing wet basin installed in 2007 as part of the Kahle Drive Water Quality Improvement Project is sufficient for treating the private property neighborhood runoff as an area wide water quality treatment. Much of Oliver Park is constrained for BMP implementation due to high ground water and slow soil infiltration rates.
- Kahle Basin Redesign Project is currently in the conceptual design process. NTCD is coordinating with the County, NDOT and private property owners whose stormwater is directed to the basin to create a stormwater collective. Construction of the project is not expected to begin until 2018 at the earliest.
- Sierra Colina Village is designed to be a single and multi-family residential neighborhood that will provide a mixture of Leadership in Energy and Environmental Design (LEED) Green Certified and Energy Star rated sustainable market-rate and deed-restricted moderate-income homes. Sierra Colina Village is filing permit applications for construction beginning in 2017.

Effects on Species

Lahontan Cutthroat Trout

Direct and Indirect Effects

Alternative 2 (Proposed Action)

The proposed action will not affect Lahontan cutthroat trout directly because fish assessment surveys in Burke Creek have not located LCT in or adjacent to the project area. Only brook trout were found in Burke Creek during assessment surveys. Brook trout generally outcompete LCT therefore as long

as brook trout are present, it would be unlikely to find LCT in Burke Creek. LCT may occupy Lake Tahoe, into which Burke Creek drains, downstream of the project area. The proposed action will likely improve aquatic habitat by improving depth and siltation in stream habitat between US 50 and Jennings Pond and upstream of US 50, but will not affect habitat downstream of Jennings Pond. Additionally, the proposed action could increase the amount of LCT habitat by up to 380 feet of stream.

Cumulative Effects

Alternative 2 (Proposed Action)

When past, present and reasonably foreseeable future projects are considered, there would be no cumulative effect on Lahontan cutthroat trout because the proposed action won't directly affect LCT and could have a beneficial affect on LCT habitat.

Sierra Nevada yellow-legged frog and Proposed Critical Habitat

Direct and Indirect Effects

Alternative 2 (Proposed Action)

No Proposed Critical Habitat occurs within the analysis area. The Burke Creek Highway 50 Crossing and Realignment project will have **“No Effect”** on Proposed Critical Habitat.

While no surveys for SNYLF have been conducted, Burke Creek provides habitat for non-native aquatic species known to predate and compete with SNYLF. The presence of these species reduces the likelihood that SNYLF could become established in the analysis area or survive long-term without additional management actions outside the scope of this project.

Implementation could introduce additional disturbance to SNYLF if they are present. However, this would be short-term disturbance that would be alleviated after implementation. Implementation could reduce habitat quality in the areas where the stream is relocated but would also add habitat in the new stream path. Long-term this project should improve SNYLF defined suitable habitat by reducing sedimentation and erosion from the impaired stream segments. Additionally, project RPMs and BMPs that protect water quality will reduce the potential effects to suitable habitat.

Cumulative Effects

Alternative 2 (Proposed Action)

When past, present and reasonably foreseeable future projects are considered, the proposed action would not have any effect on species composition. It would not increase or decrease the amount or access of non-native salmonids that are currently occupy perennial water sources within the analysis area, which is a well documented threat to the establishment and survival of this species. The expected changes to the defined suitable habitat for SNYLF is very minor compared to the amount of habitat within the LTBMU as a whole. Therefore, no measureable cumulative effects are expected to result from implementation of this project.

VII. DETERMINATIONS

Based on the description of the proposed alternatives and the analysis considered, the following determinations were made:

It is my determination that the no-action alternative (Alternative 1) and the proposed action (Alternative 2) **will not affect** cui-ui as this species does not occur within the project area.

For the species and habitats analyzed further in this BA, the determinations are:

Lahontan cutthroat trout:

It is my determination that the no action alternative (Alternative 1) **will not affect** the Lahontan cutthroat trout.

It is my determination that the proposed action (Alternative 2) **may affect but is not likely to adversely affect the** Lahontan cutthroat trout.

Rationale:

- Fish assessment surveys in Burke Creek did not locate LCT.
- Brook trout generally outcompete LCT therefore as long as brook trout are present LCT would not be likely to be found in Burke Creek.
- The proposed action will likely improve habitat by improving depth and siltation in stream habitat between Highway 50 and Jennings Pond and upstream of Highway 50, but will not affect habitat downstream of Jennings Pond.

Sierra Nevada yellow-legged frog:

It is my determination that the no action alternative (Alternative 1) **will not affect** the Sierra Nevada yellow-legged frog.

It is my determination that the proposed action **may affect but is not likely to adversely affect the** Sierra Nevada yellow-legged frog.

Rationale:

- The presence of non-native aquatic species that predate SNYLF makes the presence of SNYLF within the analysis area unlikely.
- Implementation would introduce short-term disturbance.
- While some defined SNYLF suitable habitat is likely to be altered, additional SNYLF suitable habitat will be gained in the long-term based on the restoration actions.
- Project implementation will reduce sedimentation and erosion in defined SNYLF suitable habitat within the project area.
- Project RPMs and BMPs that protect water quality will reduce the potential effects to define SNYLF suitable habitat.

Proposed critical habitat for Sierra Nevada yellow-legged frog:

It is my determination that the no-action alternative (Alternative 1) and the proposed action (Alternative 2) **will not affect** Proposed Critical Habitat for the Sierra Nevada yellow-legged frog as this does not occur within or adjacent to the project boundary or aquatic analysis area.

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Appendix A: Endangered Species Act Species List; Consultation Code 08ENV00-2016-SLI-0013



United States Department of Interior
Fish and Wildlife Service

Project name: Burke Creek Highway 50 Crossing and Realignment Project

Official Species List

Provided by:

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(775) 861-6300
<http://www.fws.gov/nevada/>

Consultation Code: 08ENV00-2016-SLI-0013

Event Code: 08ENV00-2016-E-00083

Project Type: LAND - RESTORATION / ENHANCEMENT

Project Name: Burke Creek Highway 50 Crossing and Realignment Project

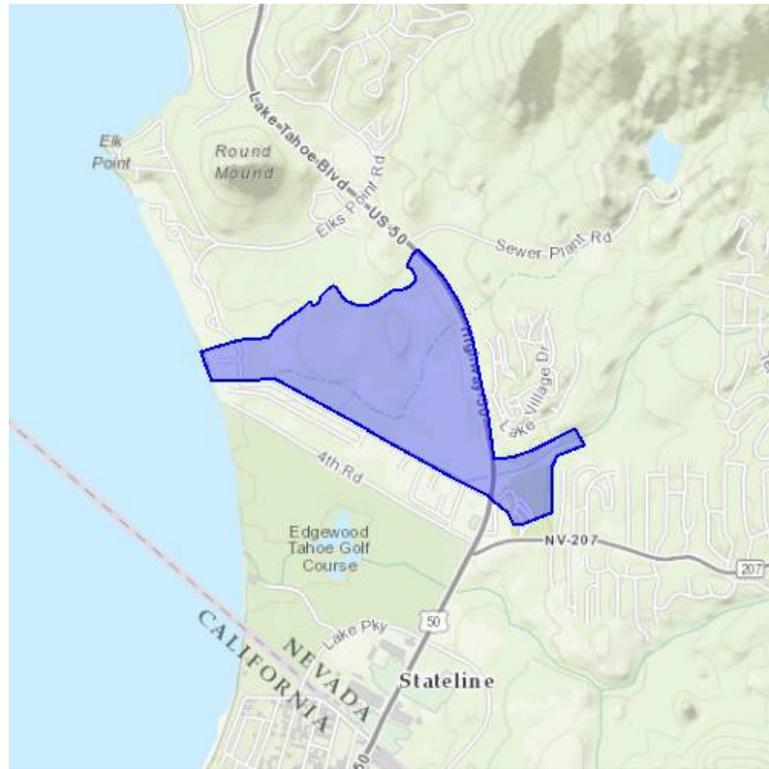
Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior
Fish and Wildlife Service

Project name: Burke Creek Highway 50 Crossing and Realignment Project

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Douglas, NV



United States Department of Interior
 Fish and Wildlife Service

Project name: Burke Creek Highway 50 Crossing and Realignment Project

Endangered Species Act Species List

There are a total of 3 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	Status	Has Critical Habitat	Condition(s)
Sierra Nevada Yellow-legged Frog (<i>Rana sierrae</i>)	Endangered	Proposed	
Fishes			
cui-ui (<i>Chasmistes cujus</i>) Population: Entire	Endangered		
Lahontan cutthroat trout (<i>Oncorhynchus clarkii henshawi</i>) Population: Entire	Threatened		



United States Department of Interior Fish
and Wildlife Service

Project name: Burke Creek Highway 50 Crossing and Realignment Project

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Appendix B: Chytrid decontamination protocol

Appendix B: Bd (*Batrachochytrium dendrobatidis*) Disinfection Protocol

Disinfection of Field Gear

All field gear (footwear, nests, etc) that comes in contact with water is disinfected using a 0.016% solution of quaternary ammonia between meadows greater than 100 m apart to prevent the spread of amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) and other potential pathogens (Johnson et al. 2003).

Gear should be disinfected between any meadows more than 100m apart. When moving among hydrologically connected sites (less than 100m) disinfection is probably neither useful nor practical.

However, if travelling across steeper topography with significant cascades or barriers to amphibians, such as ridges, then err on the safe side and disinfect. For example, disinfect between Upper and Lower Kerrick, or between Upper and Lower Cathedral Lakes, or between significant reaches of Lyell Canyon. For this same reason, when possible, survey large meadows from the higher end to the lower end.

At the site which you are leaving, rinse all infected gear to remove mud and debris. Then mix 7 eye drops of Quat 256 per liter of water, in a drybag, and immerse and saturate all contaminated gear for 5 minutes, mixing occasionally. Do this away from water.

Discard the quat mixture in broken-down organic soil in a non-vegetated area away from water. A trail path often works well. Cover lightly with soil.

Continue to your next survey location. When you arrive, retrieve enough water from the meadow (using your dry bag) to rinse your disinfected gear. Discard the rinse water as carefully as you would the original disinfecting quat mixture.

For Further Reference see: http://www.parcplace.org/Bd_conference.html

Appendix C: June 10, 2013 Forest Supervisor letter to Regional Office regarding
Proposed Critical Habitat.

File Code: 2670

Date: June 10, 2013

Diane Macfarlane
Program Leader--Threatened, Endangered & Sensitive
Species Ecosystem Management Staff
USDA Forest Service, Pacific Southwest Region
1323 Club Drive
Vallejo, CA 94592

Dear Ms. Macfarlane:

The Lake Tahoe Basin Management Unit (LTBMU) would like to take this opportunity to comment on the proposed critical habitat identified for the Sierra Nevada Yellow-Legged Frog (SNYLF) by the US Fish & Wildlife Service (<http://www.gpo.gov/fdsys/pkg/FR-2013-04-25/pdf/2013-09598.pdf>).

On the LTBMU, critical habitat Sub-unit 2E (Crystal Range) is located in Desolation Wilderness and falls within the management boundaries of the LTBMU. The sub-unit primarily encompasses lakes that have been recently restored to support SNYLF recovery and offers the habitat characteristics for recovery and expansion. However, within the subunit, approximately 2,397 acres include Upper and Lower Echo Lakes (Figure 1). We believe that these lakes should be excluded from the proposed critical habitat for the following reasons:

- Echo Lakes are in a highly urbanized condition. With the amount of use and development it would be challenging to manage the area as critical habitat.
- Echo Lakes have been stocked annually with rainbow trout and, occasionally, Lahontan cutthroat trout. These lakes receive extensive fishing pressure as people can drive right to the lake from Highway 50.
- The Echo Lakes area does not share the same characteristics or opportunities for recovery as the remainder of Sub-unit 2E.

In addition to the exclusion of the Echo Lakes area from proposed critical habitat, the LTBMU would like to recommend an additional 5,592 acres of critical habitat in the headwaters of Trout Creek within Hellhole Meadow (Figure 1). The LTBMU anticipates working with the Regional Office and US Fish and Wildlife Service to refine this boundary to protect the existing occupied habitat while providing habitat for dispersal. The LTBMU is recommending this habitat as it contains the only existing population of SNYLF within the Lake Tahoe basin. This population has been declining for the past 10 years. There are no fish present; however, the population is *Batrachochytrium dendrobatidis* (Bd) positive. This area was designated as a Critical Aquatic Refuge in the 2001 and 2004 Sierra Nevada Forest Plan Amendments (Framework) and is currently designated as an Inventoried Roadless Area (IRA).

If you need additional information regarding these recommendations, please contact Holly Eddinger, Biological Program Leader at 530-543-2633 (heddinge@fs.fed.us) or Sarah Muskopf, Aquatic Biologist, at 530-543-2835 (smuskopf@fs.fed.us).

Sincerely,



NANCY J. GIBSON
Forest Supervisor

cc: Sarah Muskopf, Holly Eddinger