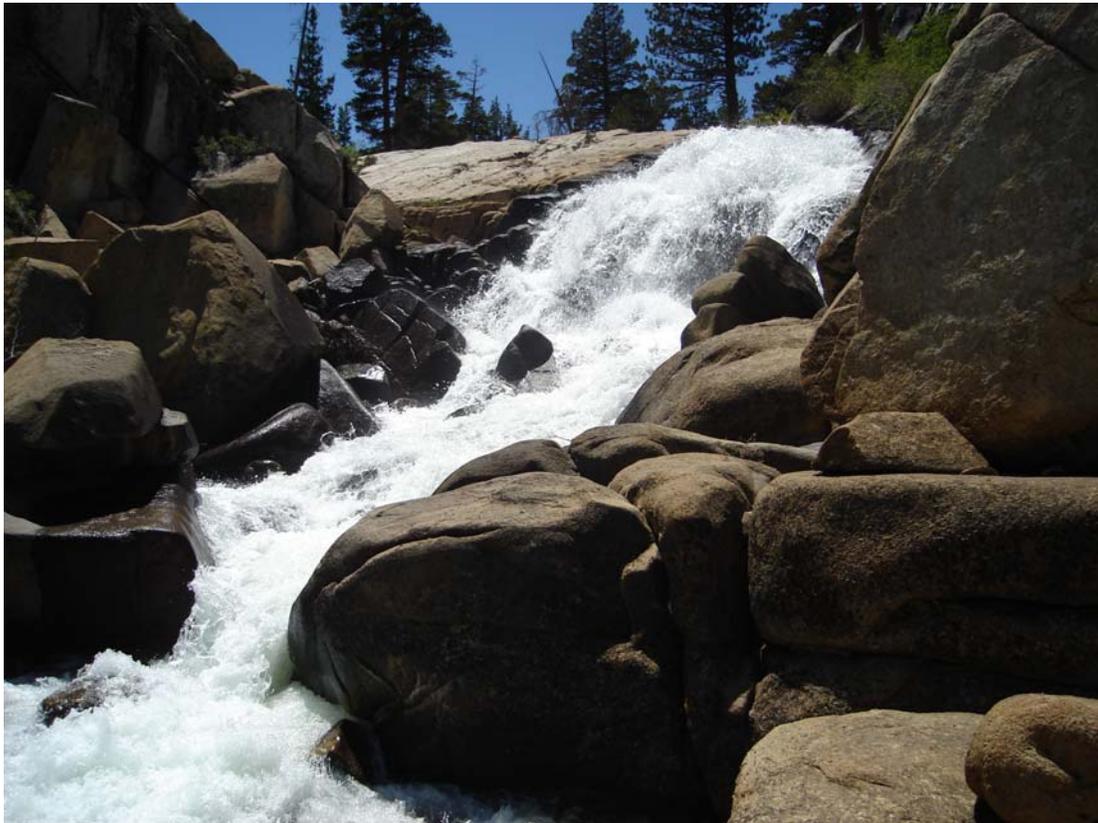


# **CHARITY VALLEY CREEK**

**Alpine County, California**

## **2006 Stream Habitat Survey Report**



**Prepared by:**

**Carson Ranger District: Humboldt- Toiyabe National Forest**

## **Introduction**

Charity Valley Creek is located in Alpine County, California. The mainstem of Charity Valley Creek flows for approximately 6.15 miles in a northwesterly direction from the headwaters above Blue Lakes Road (approximate elevation 8200 feet), down to the confluence with Hot Springs Creek (elevation of 7126 feet). Charity Valley Creek contributes roughly two-thirds of the total flow in Hot Springs Creek. The stream is located primarily within the boundaries of the Humboldt-Toiyabe National Forest; however, the creek flows through two private land parcels just downstream of Blue Lakes Road.

## **Purpose and Need**

The 1995 Lahontan Cutthroat Trout Recovery Plan requires that ecosystem management plans be developed for the Truckee and Walker River basins in order to both determine objectives for the future desired conditions of these watersheds, and to create strategies for achieving these objectives. Similar management plans are recommended for the Carson and Humboldt River basins. In 1998 Truckee and Walker River Basin Recovery Implementation Teams were organized to develop strategies for Lahontan cutthroat trout (LCT) restoration and recovery efforts in the Truckee and Walker River basins. In August 2003 both recovery teams completed Short-Term Action Plans for Lahontan Cutthroat Trout Recovery in the Truckee and Walker River Basins. The short-term action plans outline specific tasks to be completed within five years. Many of the short-term tasks identified in the Truckee and Walker River Basin Short-Term Action Plans are similar to one another and are applicable to recovery of LCT in the Carson River basin. The Carson Ranger District adopted some of the short-term tasks identified in the Truckee and Walker River Basin Short-Term Action Plans and began implementing these actions under an informal plan for the Carson River basin. These tasks include: (1) identifying and evaluating fish passage and existing barriers within the Carson River basin, (2) developing a watershed analysis of the physical components of the Carson River basin, and (3) initiating habitat surveys to evaluate potential LCT introduction streams and validating against existing LCT inhabited streams.

The Carson River watershed historically provided an estimated 405 miles of stream habitat (Kling and Mellison 2008) for the native Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*). Populations of these salmonids within the watershed were interactive and interconnected, and therefore these metapopulations likely had high genetic diversity and were capable of long term persistence through adverse conditions.

At present, no self-sustaining populations of genetically pure LCT are known to occupy historic habitat within the Carson River basin and since all of the drainage has been surveyed it is doubtful that any such populations remain to be discovered. The introduction of nonnative trout before the turn of the century is believed to be largely responsible for the extirpation of LCT within the Carson River drainage.

Although naturally occurring Lahontan cutthroat trout populations have been eliminated from the Carson River drainage, small populations have been established in the formerly fishless headwaters of the East Fork Carson River above Carson Falls and in the tributaries Murray Canyon Creek, Golden Canyon Creek, and Poison Flat Creeks above impassible barriers. Pure populations of LCT also occur in Red Lake, Heenan Lake, Heenan Creek, and possibly in Raymond Meadows Creek. Hybridized populations of LCT occur in Jeff Davis Creek and in Leviathan Creek upstream of Leviathan Mine. The artificially established pure populations of LCT in the East Fork Carson River watershed occupy about 17 miles of stream habitat: approximately 4.2% of the total miles that LCT presumably occupied historically.

The primary causes for the decline of LCT include: 1) reduction and alteration of stream discharge; 2) alteration of stream channels and morphology; 3) degradation of water quality; and 4) introductions of non-native fish species. The Carson River watershed downstream of Carson Falls is primarily inhabited by non-indigenous salmonids which include, but are not limited to: rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*), and brown trout (*Salmo trutta*). These competitive and aggressive introduced fishes have displaced the endemic Lahontan cutthroat trout.

Long term survival and recovery of LCT within the Carson River watershed will require sustained cooperation and effort from multiple federal and state agencies, including the Forest Service and personnel of the Humboldt-Toiyabe National Forest. Gaining information through immediate action can aid in prioritizing future objectives for the restoration of LCT. The 2006 Carson River watershed surveys are being conducted to gain information about streams in the basin, and furthermore to provide an inventory of potential fish habitat for LCT. The surveys include the tasks of identifying potential fish passage barriers and evaluating physical characteristics that pertain to the success of the native LCT. Should recommendations be made to re-introduce LCT, these surveys can provide baseline information for future management of the fishery. Charity Valley Creek was surveyed on June 19, 2006 by members of the Carson Ranger District of the Humboldt-Toiyabe National Forest. The surveyors were Brian Hodge and Robert Omann.

## **Materials and Methods**

Forest Service personnel surveyed Charity Valley Creek by hiking the watercourse in an upstream manner. Interesting and relevant features were documented, photographed, and recorded into a Trimble GPS unit. These features included but were not limited to: road crossings, trail crossings, fish sightings, permanent fish barriers, seasonal fish barriers, tributaries, springs, beaver dams, areas of erosion concern, grazing impacts, dispersed campsites, etc.

Fish passage barriers were noted and categorized into one of four categories: natural-permanent, natural-seasonal, artificial-permanent, and artificial-seasonal. A permanent barrier is categorized as an obstacle, waterfall, or drop in excess of 5ft that

would prevent passage of fish year-round (specifically LCT). A stadia rod was used to measure barriers where applicable. Barriers categorized as permanent barriers may actually be seasonal barriers, and some seasonal barriers may actually act as a permanent barrier.

## **Results**

Approximately 2.3 miles of Charity Valley Creek were surveyed between Sites 1-22, and the gradient of the surveyed reach is approximately 5.5 percent. Three seasonal barriers were identified (Sites 3, 5, & 18), and seven permanent barriers were documented (Sites 7, 9, 10, 12, 14, 19, & 21). An erosion concern was noted at Site 13, and an adjacent trail impact was noted at Site 6. Four tributaries were identified in the surveyed reach (Sites 4, 16, 17, & 20). No fish were sighted.

## **Discussion**

Charity Valley provides 1.04 miles of potential LCT habitat. The most favorable reach of stream is located between Site 14 and Site 19, and in addition the reach between Site 19 and Site 22 also provides LCT habitat. Downstream of Site 14 the creek contains pools that offer favorable places for refuge and foraging; however, the interspersed permanent fish barriers create discontinuity that would leave fish physically and genetically isolated. The habitat separation makes the reach between Site 1 and Site 22 suitable for LCT, though not optimal. Upstream of the survey end point (Site 22), the creek appears to be a low gradient meandering stream, and this reach may provide an additional 2.0 miles of continuous habitat. Because this upper reach is located on private property it was not surveyed by Forest Service personnel.

Charity Valley Creek was turbid during the survey, and a lack of water clarity may be one reason that no fish of any species were sighted. A social foot trail connects Blue Lakes Road to the Burnside Lake Trail/Grover Hot Springs trails, crossing directly through the aforementioned private parcels.

## **Recommendations**

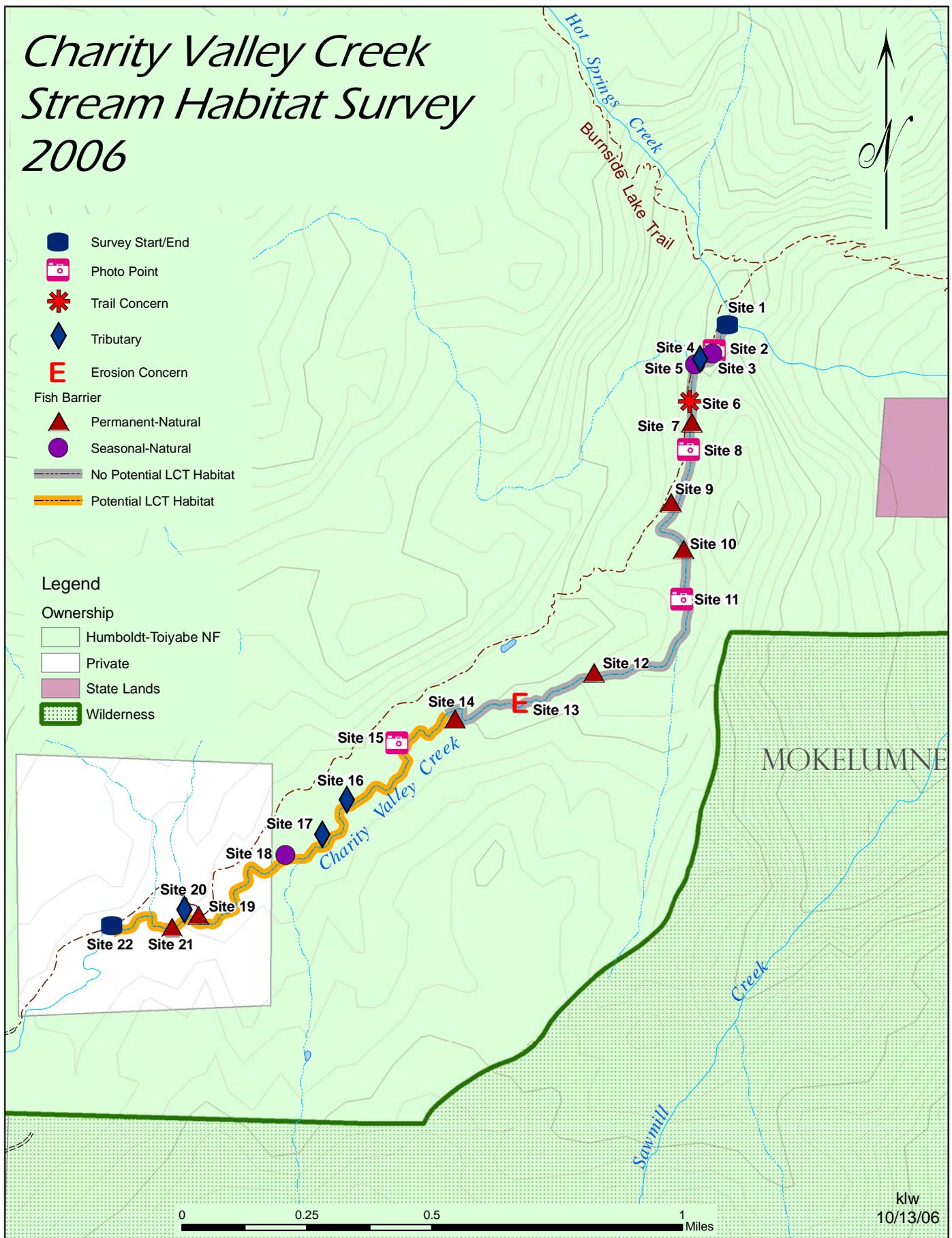
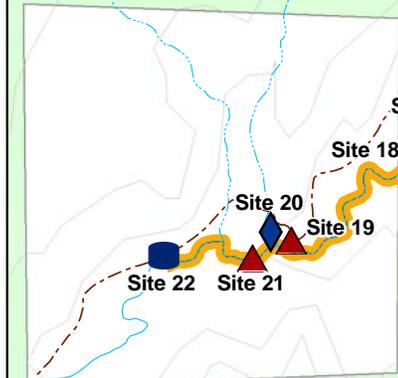
1. Consider the 1.04 mile section of Charity Valley Creek between Site 14 and Site 22 as potential LCT habitat and consider Charity Valley Creek a low candidate for restoration (individually); however, if additional LCT habitat is found upstream of Site 22 on the private property, Charity Valley Creek could become a medium candidate for restoration.
2. Contact landowners regarding the private parcels upstream of Site 22 in order to gain information regarding the stream and/or permission to survey this reach.

3. Work with forest service personnel and private landowners to re-locate the social trail running through Charity Valley on the private parcels between Blue Lakes Road and the Burnside Lake trail intersection. If relocating the trail is not possible, consider establishing a formal right-of-way through the private land.

# Charity Valley Creek Stream Habitat Survey 2006

-  Survey Start/End
-  Photo Point
-  Trail Concern
-  Tributary
-  Erosion Concern
- Fish Barrier**
-  Permanent-Natural
-  Seasonal-Natural
-  No Potential LCT Habitat
-  Potential LCT Habitat

- Legend**
- Ownership**
-  Humboldt-Toiyabe NF
  -  Private
  -  State Lands
  -  Wilderness



klw  
10/13/06



**Site 1:** Charity Valley Creek, Carson Ranger District. Upstream photo of Charity Valley Creek at the confluence with Hot Springs Creek. Charity Valley contributes 66% of flow to Hot Springs Creek. Note the turbidity. This site is located at UTM: N: 4287194 & E: 250050, Elev. 7126 ft. (2172 m).



**Site 2:** Charity Valley Creek, Carson Ranger District. A downstream photo from an elevated position shows a pool characteristic of this reach. This site is located at UTM: N: 4287107 & E: 250007, Elev. 7201 ft. (2195m).



**Site 3:** Charity Valley Creek, Carson Ranger District. Upstream photo of a small seasonal fish barrier. The height of the barrier is 3.0 ft with a max. pool depth of 3.0 ft. This site is located at UTM: N: 4287098 & E: 250000, Elev. 7215 ft. (2199 m).



**Site 4:** Charity Valley Creek, Carson Ranger District. A small, clear running tributary flows in from river left, contributing 5% of flow. The temp of the trib. was found to be 12° C and the temp of Charity Valley was 8°C. This site is located at UTM: N: 4287078 & E: 249961, Elev. 7247 ft (2207 m).



**Site 5:** Charity Valley Creek, Carson Ranger District. Upstream photo of a seasonal fish barrier that is 2.2 ft high and 8.0 ft long, with a pool depth of 2.5 ft. This site is located at UTM: N: 4287064 & E: 249940, Elev. 7241 ft (2207 m).



**Site 6:** Charity Valley Creek, Carson Ranger District. The erosion of the left bank is exacerbated by the adjacent footpath. This site is located at UTM: N: 42866437 E: 249927, Elev. 7169 ft (2185 m).



**Site 7:** Charity Valley Creek, Carson Ranger District. Upstream photo of a permanent fish barrier formed by a series of cascades up to 3.0 feet tall, with pool depths up to 3.0 ft. This site is located at UTM: N: 4286877 & E: 249935.



**Site 8:** Charity Valley Creek, Carson Ranger District. Upstream photo of cascades characteristic of this reach. This site is located at UTM: N: 4286788 & E: 249926.



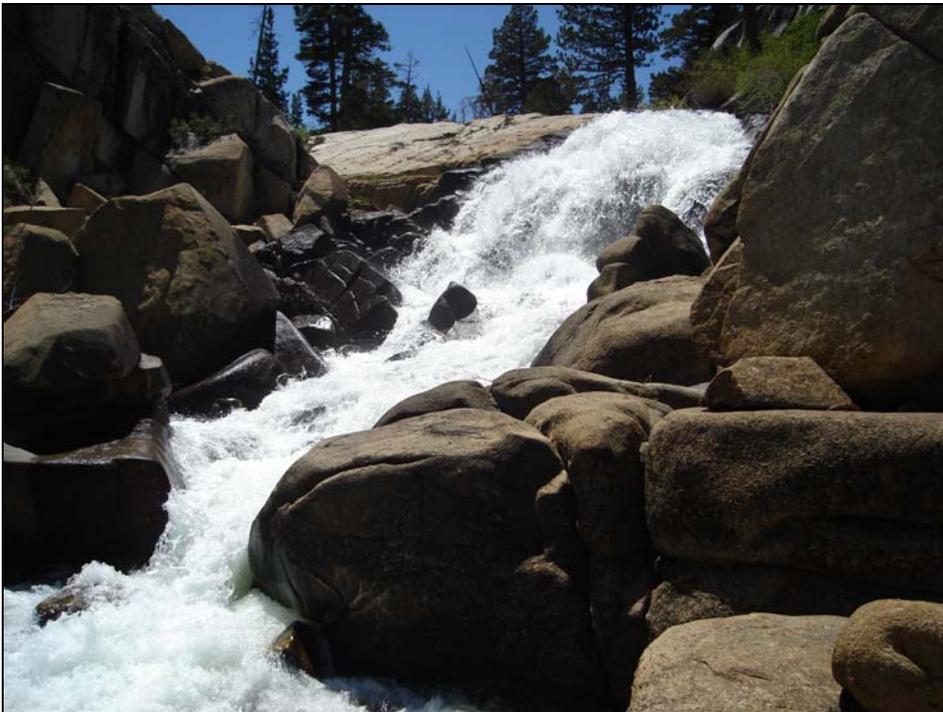
**Site 9:** Charity Valley Creek, Carson Ranger District. Upstream photo of a permanent fish barrier formed by a 5-foot waterfall (3.0 feet pool depth). This site is located at UTM: N: 4286621 & E: 249865, Elev. 7334 ft (2235 m).



**Site 10:** Charity Valley Creek, Carson Ranger District. Cross-sectional photo of a fish barrier: 6.0 ft high with a pool depth of 1.5-2.5 ft. This site is located at UTM: N: 4286467 & E: 249910, Elev. 7392 ft (2253 m).



**Site 11:** Charity Valley Creek, Carson Ranger District. Upstream photo showing the abundant vegetation common to this reach. This site is located at UTM: N: 4286308 & E: 249906, Elev. 7480 ft. (2280m).



**Site 12:** Charity Valley Creek, Carson Ranger District. Upstream photo of a permanent fish barrier: the height of the waterfall sequence is 50 ft, with a max pool depth of 3.0 ft. This site is located at UTM: N: 4286087 & E: 249613, Elev. 7457 ft, (2273m).



**Site 13:** Charity Valley Creek, Carson Ranger District. Upstream photo of an erosion concern found on river right. The length of the eroding bank is 30m, with a height of 1.5 m. This site is located at UTM: N: 42855773 & E: 249382, Elev. 7592 ft. (2314m).



**Site 14:** Charity Valley Creek, Carson Ranger District. Downstream photo of a permanent fish barrier formed by an 8-foot waterfall. This site is located at UTM: N: 4285914 & E: 2491613, Elev. 7595 ft (2315m).



**Site 15:** Charity Valley Creek, Carson Ranger District. Cross-sectional photo of a low-gradient meadow. This site is located at UTM: N: 4285843 & E: 248987, Elev. 7657 ft (2334 m).



**Site 16:** Charity Valley Creek, Carson Ranger District. Upstream photo of a small tributary that enters river left. This tributary contributes 1% of flow to the stream. This site is located at UTM: N: 4285560 & E: 248823, Elev. 7648 ft (2331m).



**Site 17:** Charity Valley Creek, Carson Ranger District. A small tributary enters river left and contributes 2% of flow. This site is located at UTM: N: 4285605 & E: 248699, Elev. 7644 ft (2330m).



**Site 18:** Charity Valley Creek, Carson Ranger District. Upstream photo of a seasonal fish barrier formed by fast water moving through a rock flume. This site is located at UTM: N: 4285530 & E: 248571, Elev. 7664 ft (2336m).



**Site 19:** Charity Valley Creek, Carson Ranger District. A permanent fish barrier formed by a 20-foot waterfall. Max. pool depth is 4-5 ft. This site is located at UTM: N: 4285289 & E: 248348, Elev. 7680 ft (2341m).



**Site 20:** Charity Valley Creek, Carson Ranger District. Downstream photo of a small tributary that enters river left. The tributary contributes 2-5% of flow in Charity Valley Creek. This site is located at UTM: N: 4285314 7 E: 248255, Elev. 7717 ft (2352m).



**Site 21:** Charity Valley Creek, Carson Ranger District. Upstream photo of a 20-foot waterfall that creates a permanent fish barrier. Pool depth is 3-4 ft. This site is located at UTM: N: 4285313 & E: 248255, Elev.7717 ft (2352m).



**Site 22:** Charity Valley Creek, Carson Ranger District. Upstream photo taken near the private property boundary. Note that the stream gradient is low and the habitat looks more suitable for LCT. This site is located at UTM: N: 4285251 & E: 248071, Elev. 7792 ft (2375m).