

Dunderberg Creek

Mono County, California

2008 Stream Habitat Survey Report



Prepared by:

Carson Ranger District: Humboldt-Toiyabe National Forest

Introduction

Dunderberg Creek originates in Mono County, California where tributaries coming from near Dunderberg Peak and Kavanaugh Ridge join to form the mainstem of Dunderberg Creek. Dunderberg Creek then flows in a northeasterly direction for approximately 8.7 miles until it enters Virginia Creek which then drains into Bridgeport Reservoir. The headwaters of Dunderberg Creek occur on lands managed by the Humboldt-Toiyabe National Forest, Bridgeport Ranger District. The creek then flows through lands managed by the Bureau of Land Management, and through a few parcels of private property. The survey for this stream started at the National Forest-private property boundary just downstream from where Forest Service Road 020 crosses Dunderberg Creek. The survey then continued upstream through Dunderberg Mill until water levels deemed it unnecessary to continue.

Purpose and Need

The 1995 Lahontan Cutthroat Trout Recovery Plan recommended that an ecosystem management plan be developed for the Walker River Basin in order to both determine objectives for the future desired conditions of the watershed, and to create strategies for achieving these objectives. In 1998 a Walker River Basin Recovery Implementation Team was organized to develop strategies for Lahontan cutthroat trout (LCT) restoration and recovery efforts in the Walker River Basin. In August 2003 the recovery team completed a Short-Term Action Plan for Lahontan Cutthroat Trout Recovery in the Walker River Basin. The short-term action plan outlines specific tasks to be completed within five years. Some of the tasks that were identified include: (1) identifying and evaluating fish passage and existing barriers within the Walker River Basin, (2) developing a watershed analysis of the physical components of the Walker River Basin, and (3) initiating habitat surveys to evaluate potential LCT introduction streams and validating against existing LCT inhabited streams.

The Walker River Basin historically provided an estimated 595 miles of stream habitat (Kling and Mellison 2008) and 49,400 acres of lake habitat 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.

Within the Walker River basin, LCT currently occupy one stream that is within their historic range; By-Day Creek. Lahontan cutthroat trout have also been introduced into the formerly fishless headwaters of five other Walker River basin streams; Wolf Creek, Silver Creek, Mill Creek, Slinkard Creek, and Murphy Creek. Together, LCT within these 6 streams occupy approximately 17 miles of stream habitat, approximately 2.9% 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, (4) reduction of lake levels and concentrated chemical components in natural lakes, and (5) introductions of non-native fish species. The Walker River Basin is primarily inhabited by non-native salmonid species that include but are not limited to: Rainbow Trout (*Oncorhynchus mykiss*), Brook Trout (*Salvelinus fontinalis*), and Brown Trout (*Salmo trutta*). These competitive and aggressive introduced fish have displaced the endemic LCT. A small native population of LCT can be found in By-Day Creek part of the East Walker River system.

Long term survival and recovery of LCT with the Walker River Basin 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 2007 Walker 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 reintroduce LCT, these surveys can provide baseline information for future management of the fishery. Dunderberg Creek was surveyed on September 28th, 2007 by Joel Ingram and Kevin Rybacki and on May 8th and May 14th, 2008 by Kevin Rybacki of the Carson and Bridgeport Ranger Districts: Humboldt-Toiyabe National Forest.

Methods and Materials

Forest Service personnel surveyed Dunderberg Creek by hiking the watercourse in an upstream manner. Interesting and relevant features were documented, photographed, and recorded into a GPS unit. These features included but were not limited to: road crossings, fish sightings, permanent fish barriers, seasonal fish barriers, tributaries, springs, beaver dams, areas of erosion concern, grazing impacts, 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. Some permanent barriers may actually act as seasonal barriers and some seasonal barriers may actually act as a permanent barrier.

Results

Approximately 4.3 miles of Dunderberg Creek were surveyed between Sites 1 and 13, and between Sites 5 and 29. Throughout the surveying of Dunderberg Creek the most prevalent feature documented was road-stream crossings and diversions. Water is being diverted at Sites 7, 14, 16, 17 and 23. Road-stream crossings were found at Sites 4, 9, 25, 26 and 27. Site 27 features a road that has digressed into a one track hiking trail. Tributaries were documented at Sites 5, 8, 10 and 28. Six locations were documented as either “other” or as photo points at Sites 6, 18, 20, 21, 22, and 24. These sites varied

from fencing across the stream to inlets and outlets of the pond as well as photos capturing characteristics of the stream at different locations. Fish barriers were found at Sites 11, 12 and 19. Sites 11 and 12 are seasonal fish barriers while Site 19 is a permanent fish barrier. A beaver dam was documented at Site 2 and fish were seen and documented at Sites 3 and 15. There were no campsites found near the stream. Dunderberg Creek has an average stream gradient of approximately 7.8% between Sites 1 and 13, and between Sites 5 and 29.

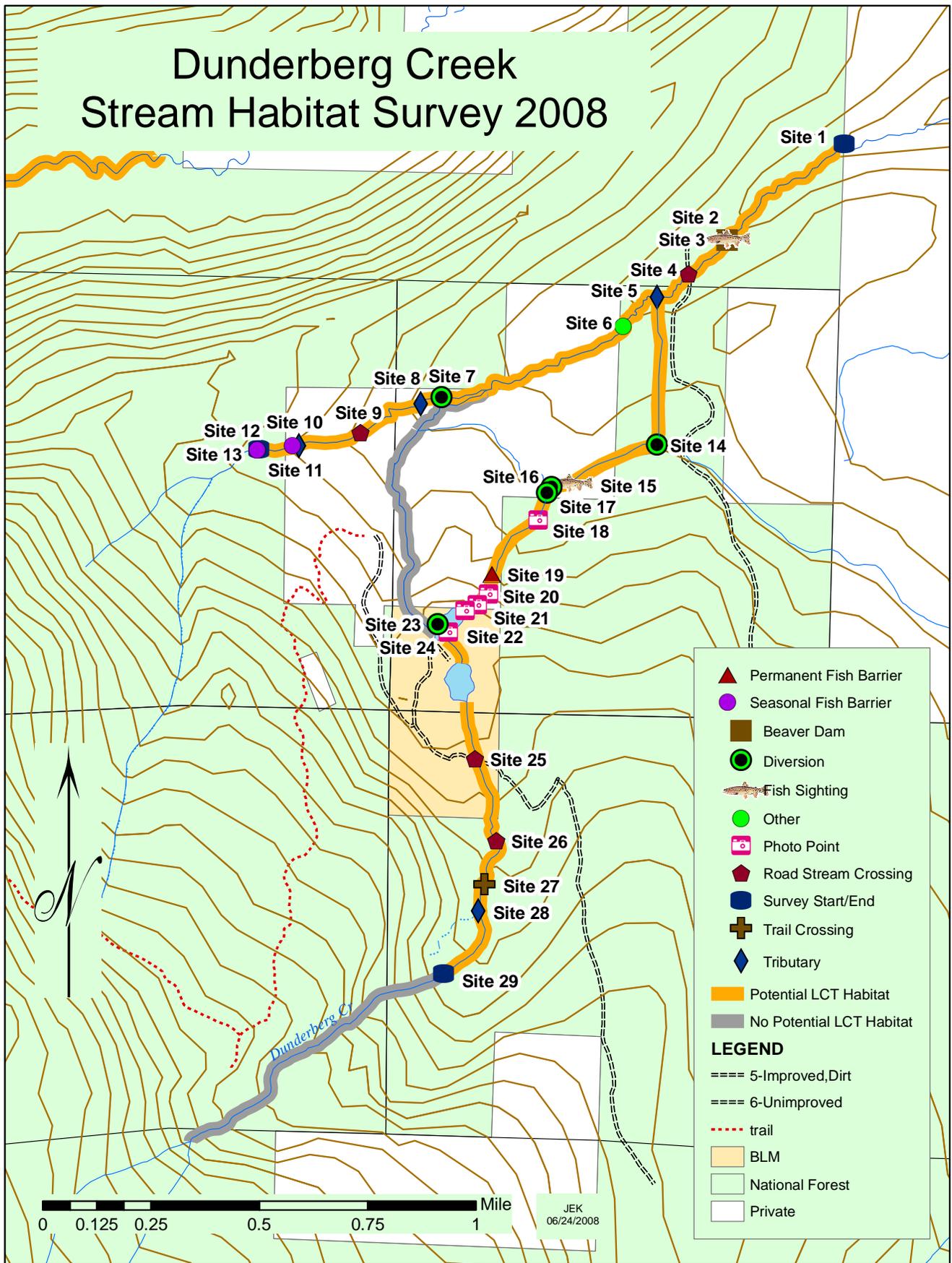
Discussion

The 3.6 mile section of Dunderberg Creek surveyed between Sites 1 and 13, and between Sites 5 and 29 should be considered potential LCT habitat. The area upstream of Site 29 is not considered potential LCT habitat due to low water levels and the lack of pools present in this section. Although there are 5 road crossings located on the creek, they appear to receive little use. The only road crossing that appears to receive regular use is the road crossing at Site 4, which has a culvert that does not appear to negatively affect the stream. That, along with the lack of campsites suggests that Dunderberg Creek is not heavily impacted by recreational use. However, Dunderberg Creek is being impacted and affected by several water diversions. The pond at Site 23 is artificially created and the water flowing from Site 23 down to Site 5 is in an artificially constructed channel. The section of stream between Sites 7 and 23 appears to be where the creek flowed historically. These diversions at Sites 7, 14, 16, 17, and 23 should be investigated to ensure that fish are not subject to terminal trips into irrigated pasture, and similarly ensure that water users are staying within the confines of their adjudicated rights. The areas that were identified as potential LCT habitat are characterized as having good pools, riffles, and well vegetated riparian areas.

Recommendations

1. Consider Dunderberg Creek to provide 3.6 miles of potential LCT habitat located between Sites 1 and 13, and between Sites 5 and 29 and consider Dunderberg Creek a low candidate for restoration.
2. Coordinate with the private land owner to conduct a stream habitat survey on the section of Dunderberg Creek between its confluence with Virginia Creek and the National Forest-private property boundary at Site 1.
3. Investigate the destination and impacts of the diversions at Sites 7, 14, 16, 17 and 23. Ensure that fish are not subject to terminal trips into irrigated pasture, and similarly ensure that water users are staying within the confines of their adjudicated rights.

Dunderberg Creek Stream Habitat Survey 2008





Site 1: Dunderberg Creek, Bridgeport Ranger District. Survey starts where Dunderberg Creek leaves Humboldt-Toiyabe National Forest land. A fence stretches across the creek marking the private property downstream. This site is located at UTM: N: 4220958 & E: 304450, Elev. 2485m.



Site 2: Dunderberg Creek, Bridgeport Ranger District. Photo depicts an old beaver dam that is still creating a good sized pool upstream of the dam. This site is located at UTM: N: 4220602 & E: 304014, Elev. 2514m.



Site 3: Dunderberg Creek, Bridgeport Ranger District. Four 5 to 6 inch fish are seen in the pond created by the beaver dam. This site is located at UTM: N: 4220607 & E: 304014, Elev. 2514m.



Site 4: Dunderberg Creek, Bridgeport Ranger District. USFS Road 020 intersects the creek via a culvert. The culvert here does not act as a fish passage barrier. This site is located at UTM: N: 4220475 & E: 303871, Elev. 2524m.



Site 5: Dunderberg Creek, Bridgeport Ranger District. A small tributary enters Dunderberg Creek on river right that contributes 15% of the overall flow. This site is located at UTM: N: 4220391 & E: 303754, Elev. 2527m.



Site 6: Dunderberg Creek, Bridgeport Ranger District. This non barbed wire fence is in poor shape as it lies in the creek channel. This fence marks where Dunderberg Creek leaves private property. This site is located at UTM: N: 4220279 & E: 303627, Elev. 2539m.



Site 7: Dunderberg Creek, Bridgeport Ranger District. Photo depicts a diversion used to irrigate surrounding lands. The dam is currently not allowing water to pass as the canal is filled with stagnant water. This site is located at UTM: N: 4220018 & E: 302953, Elev. 2579m.



Site 7 (cont'd): Dunderberg Creek, Bridgeport Ranger District. A view of the irrigation canal which has logs to help build a man made bank. This site is located at UTM: N: 4220018 & E: 302953, Elev. 2579m.



Site 8: Dunderberg Creek, Bridgeport Ranger District. A small tributary enters the main stem on river right adding 15% to the overall stream flow. This stream would actually be larger if not for the dam built at Site 23 to divert water flow from the pond. This site is located at UTM: N: 4219995 & E: 302875, Elev.



Site 9: Dunderberg Creek, Bridgeport Ranger District. A view of where Forest Service Road 178 crosses the stream. Water flowing down the road is eroding the route as well as adding sediment to the stream. This site is located at UTM: N: 4219886 & E: 302653, Elev. 2601m.



Site 10: Dunderberg Creek, Bridgeport Ranger District. A moderately sized tributary enters the creek on river left but it does not add any potential habitat due to its high gradient. This site is located at UTM: N: 4219837 & E: 302424, Elev. 2631m.



Site 11: Dunderberg Creek, Bridgeport Ranger District. The seasonal barrier pictured here is 2ft high and it has a maximum pool depth of 0.5ft. Different water levels might provide alternate routes for fish passage. This site is located at UTM: N: 4219836 & E: 302400, Elev.2632m.

Site 12: Dunderberg Creek, Bridgeport Ranger District. (Picture not available) A 2.5 foot drop over bedrock with a maximum pool depth of 0.5ft forms a seasonal fish barrier. This site is located at UTM: N: 4219822 & E: 302269, Elev. 2658m.



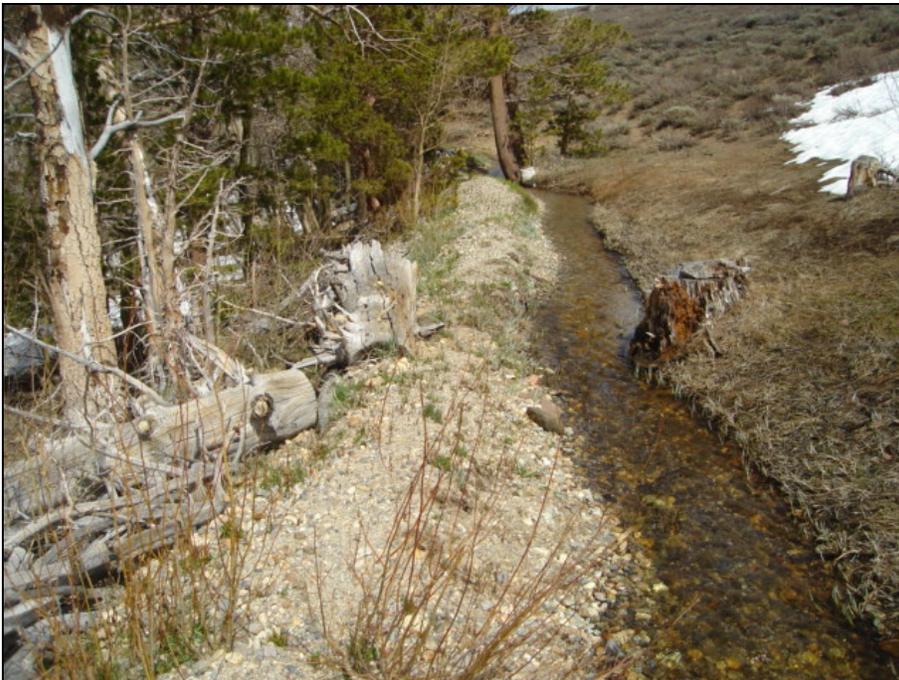
Site 13: Dunderberg Creek, Bridgeport Ranger District. Survey ends at the seasonal fish barrier due to the high gradient upstream of the barrier and the lack of pools. The survey continues at the tributary at Site 5. This site is located at UTM: N: 4219824 & E: 302275, Elev. 2693m.



Site 14: Dunderberg Creek, Bridgeport Ranger District. The diversion pictured here sends the diverted water back towards Dunderberg Creek at Site 5. This site is located at UTM: N: 4219843 & E: 303754, Elev. 2581m.



Site 15: Dunderberg Creek, Bridgeport Ranger District. Several fish were seen in this section of the creek where the stream flows along the side slope. The stream flow is slow with few meanders or turbulence. This site is located at UTM: N: 4219699 & E: 303429, Elev. 2578m.



Site 16: Dunderberg Creek, Bridgeport Ranger District. Photo depicts a man made stream bank as the stream has been diverted from its natural course. The entire left stream bank has been built up using small cobbles and gravel. This site is located at UTM: N: 4219684 & E: 303363, Elev. 2583m.



Site 16(cont'd): Dunderberg Creek, Bridgeport Ranger District. Picture shows how a tarp and gravel are used in an effort to divert the stream from its natural flow. This site is located at UTM: N: 4219684 & E: 303363, Elev. 2583m.



Site 17: Dunderberg Creek, Bridgeport Ranger District. Photo depicts water being diverted from its natural course. This site is located at UTM: N: 4219661 & E: 303345, Elev. 2591m.



Site 18: Dunderberg Creek, Bridgeport Ranger District. The photo point here shows the characteristics of the stream as it enters a meadow. This site is located at UTM: N: 4219562 & E: 303312, Elev. 2595m.



Site 19: Dunderberg Creek, Bridgeport Ranger District. This permanent fish barrier is defined by a series of cascading falls as high as 1.5m flowing at a high velocity with little to no pool depth. This site is located at UTM: N: 4219361 & E: 303141, Elev.2649m.



Site 20: Dunderberg Creek, Bridgeport Ranger District. Photo point shows characteristics of the stream as it exits a snow cave. This site is located at UTM: N: 4219287 & E: 303128, Elev. 2647m.



Site 21: Dunderberg Creek, Bridgeport Ranger District. This photo point shows the stream as it enters the snow cave. The creek flows under the snow for several meters. This site is located at UTM: N: 4219246 & E: 303087, Elev. 2677m.



Site 22: Dunderberg Creek, Bridgeport Ranger District. Photo depicts the origin of the stream that eventually enters Dunderberg Creek at Site 5. The stream here is not marked on the Bridgeport District map as exiting the pond from this location. This site is located at UTM: N: 4219227 & E: 303041, Elev. 2686m.



Site 23: Dunderberg Creek, Bridgeport Ranger District. The dam pictured here is where Dunderberg Creek according to the map, would normally flow out of the large pond. Due to the structure build here, the water now exits the pond at Site 22 and is flowing towards Site 5. This site is located at UTM: N: 4219175 & E: 302939, Elev. 12088.



Site 23(cont'd): Dunderberg Creek, Bridgeport Ranger District. This photo shows the drainage where Dunderberg Creek would normally flow its natural course. This site is located at UTM: N: 4219175 & E: 302939, Elev. 2686m.



Site 24: Dunderberg Creek, Bridgeport Ranger District. Photo shows the main inlet where Dunderberg Creek enters the large pond. This deep slow flowing stream is surrounded by wet swampy ground. This site is located at UTM: N: 4219145 & E: 302978, Elev. 2687m.



Site 24(cont'd): Dunderberg Creek, Bridgeport Ranger District. Photo shows the pond in which Dunderberg Creeks flows through. This site is located at UTM: N: 4219175 & E: 302939, Elev. 2688m.



Site 25: Dunderberg Creek, Bridgeport Ranger District. Looking at a road crossing that is causing stream channel widening and sediment to enter the stream. This site is located at UTM: N: 4218674 & E: 303077, Elev. 2723m.



Site 25 (Continued): Dunderberg Creek, Bridgeport Ranger District. A view looking downstream from the road crossing. This site is located at UTM: N: 4218674 & E: 303078, Elev.2724m.



Site 26: Dunderberg Creek, Bridgeport Ranger District. Photo depicts an old two track road crossing the stream. Although some ruts are visible, it appears as if the road receives little use. This site is located at UTM: N: 4218369 & E: 303157, Elev. 2764m.



Site 27: Dunderberg Creek, Bridgeport Ranger District. An old road crossing appears to have digressed into a single track hiking trail crossing the creek. This site is located at UTM: N: 4218206 & E: 303113, Elev. 2781m.



Site 28: Dunderberg Creek, Bridgeport Ranger District. A small tributary enters on the river right side contributing 50% of the overall flow. This section of stream runs through a meadow full of aspen and willows. This site is located at UTM: N: 4218109 & E: 303090, Elev. 2782m.



Site 29: Dunderberg Creek, Bridgeport Ranger District. Survey ends in the meadow where multiple tributaries merge to create Dunderberg Creek. Each tributary separately does not provide sustained fish habitat. Determining the main stream is also unclear through this meadow. This site is located at UTM: N: 4217876 & E: 302961.