

Buckeye Creek

Mono County, California

2006 Stream Habitat Survey Report



Prepared By

Humboldt-Toiyabe National Forest, Bridgeport Ranger District

Introduction

Buckeye Creek is located in Mono County, California. The main stream of Buckeye Creek flows for approximately 19 miles in an Easterly direction to its confluence with Bridgeport Reservoir and the East Walker River. The majority of Buckeye Creek flows through National Forest Lands. Some of the creek flows through private property that is found between Buckeye Hot Springs and Bridgeport Reservoir. Approximately 13.7 miles of Buckeye Creek were surveyed between Buckeye Hot Springs (Site 1, 2084m) and approximately 1 mile downstream of Buckeye Pass on the South Fork of Buckeye Creek within the Hoover Wilderness (Site 31, 2767m).

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 2006 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. Buckeye Creek was surveyed on June 11-19, 2006 by Joel Ingram and Harrison Davis of the Bridgeport Ranger District: Humboldt-Toiyabe National Forest.

Methodology

Forest Service personnel surveyed Buckeye Creek by hiking the stream 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 13.7 miles of Buckeye Creek were surveyed between Buckeye Hot Springs (Site 1) and approximately 1 mile downstream of Buckeye Pass on the South Fork of Buckeye Creek within the Hoover Wilderness (Site 31). Two naturally occurring permanent fish passage barriers were identified at Sites 22 and 29. Two seasonal fish barriers were identified at Sites 24 and 28. Three road-stream crossings, all of which appear to be heavily used, were documented at Sites 2, 5, and 7. Tributaries were documented at Sites 11, 13, 16, 17, 20, 21, 23, and 27.

Campsites were documented at Sites 3, 4, 10, 18, and 26. Photo points were taken at sites 9, 15, and 19. Although fish were sighted throughout the surveyed area, specific sightings were documented at Sites 25 and 30. There was one beaver dam documented at Site 14 as well as one area of erosion concern at Site 12. "Other" features that were documented include an old historical building at Site 27, a log jam section that provided fish habitat at Site 6, and an irrigation channel that was documented at Site 8. The tributary at Site 13 has also been used for irrigation. The average stream gradient between Site 1 and Site 31 is 3.1%.

Discussion

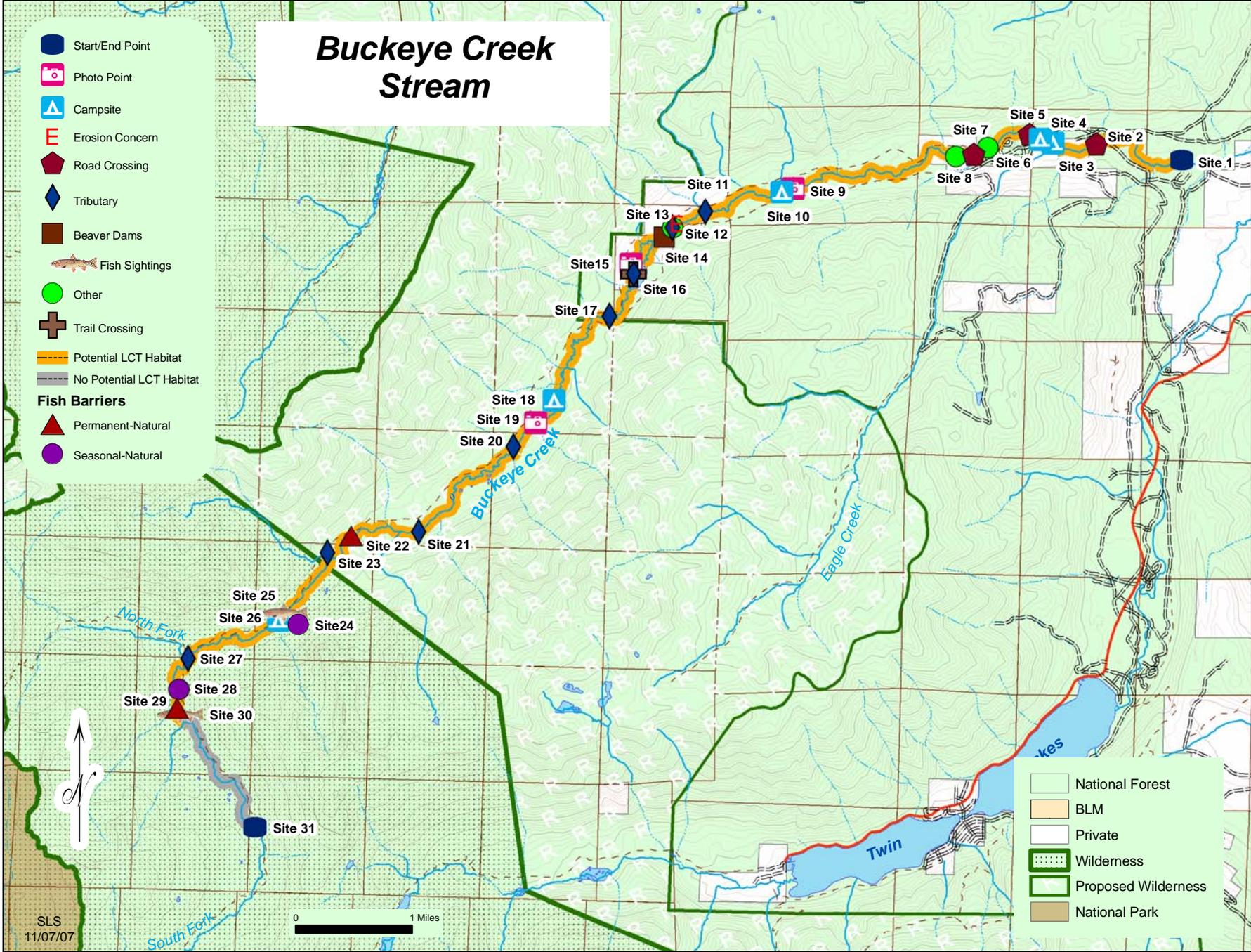
Buckeye Creek provides 10.5 miles of potential LCT habitat between Sites 1 and 29. The average stream gradient between Site 1 and Site 29 is also 3.1%. The most favorable LCT habitat occurs between Sites 1 and 22, and between Sites 25 and 27. Between Sites 1 and 22, Buckeye Creek offers a large free flowing stream with good riffle and pool complexity. The section between Sites 14 and 16 offers good slow water habitat with several undercut banks. Buckeye Creek, especially in the lower sections (Sites 1-8), receives high amounts of recreational use. Between Sites 3 and 6, Buckeye Campground is located within walking distance to the stream. Dispersed campsites are also located in the area at Sites 3 and 4. A frequently used hot spring is located near Site 1. In addition to the recreational use and associated disturbances, heavy cattle grazing also occurs downstream of Site 1 on private lands.

The section of stream between Sites 25 and 27 is favorable LCT habitat because through this section the stream is moving slowly and there is a lot of underwater structure to provide shelter. Through this section the stream meanders through groves of large trees and thick underbrush. This section offers deep holes and undercut banks, and good fish habitat created by fallen trees and large rocks.

Recommendations

1. Consider Buckeye Creek to have 10.5 miles of potential LCT habitat located between Site 1 and Site 29 and consider Buckeye Creek a medium candidate for restoration. The most favorable LCT habitat occurs between Sites 1 and 22, and between Sites 25 and 27.
2. Increase public awareness of Leave-No-Trace principles along Buckeye Creek, (i.e.) more signs at Buckeye Campground and at the main trailhead.
3. Close and decommission all dispersed campsites within 100 feet of Buckeye Creek. Only allow camping to occur more than 100 feet away from the stream edge.
4. Further investigate the impact Buckeye Campground is having on the fisheries habitat and water quality in Buckeye Creek.
5. Investigate if/what impacts are occurring as a result of the irrigation channel located at Site 8 and if/what impacts are occurring as a result of using the tributary at Site 13 for irrigation. Ensure that water users are staying within the confines of their adjudicated rights.

Buckeye Creek Stream





Site 1: Buckeye Creek, Bridgeport Ranger District, looking upstream at the survey start point just upstream from private property boundary in Bridgeport Meadows. The stream is flowing extremely fast and the creek is approximately 20-25 ft wide with lots of debris lining the shores. This site is located at UTM: N: 4234404 & E: 297222, Elevation 2084m.



Site 1 continued: Buckeye Creek, Bridgeport Ranger District, looking downstream at the survey start point just upstream from private property boundary in Bridgeport Meadows. This site is located at UTM: N: 4234404 & E: 297222, Elevation 2084m.



Site 2: Buckeye Creek, Bridgeport Ranger District, looking upstream at where Buckeye Road crosses the creek. The bridge gets heavy usage. On the north side of the stream at this site there is a parking area and a small campsite which looks to get moderate use. This site is located at UTM: N: 4234626 & E: 296038, Elevation 2118m.



Site 2 continued: Buckeye Creek, Bridgeport Ranger District, looking downstream from the bridge. This site is located at UTM: N: 4234626 & E: 296038, Elevation 2118m.



Site 3: Buckeye Creek, Bridgeport Ranger District, a large camping and picnic area located on private property along the side of Buckeye Creek. This site has several permanent tables and grills and also has an outhouse structure that is within 15m of the stream. This site is located at UTM: N: 4234638 & E: 295435, Elevation 2146m.



Site 4: Buckeye Creek, Bridgeport Ranger District, this campsite is a small dispersed campsite located directly on the edge of the stream. The campsite is on the north bank and has a fire ring and flat cleared areas for tents. This site is located at UTM: N: 4234686 & E: 295261, Elevation 2152m.



Site 5: Buckeye Creek, Bridgeport Ranger District, this is the bridge that has to be crossed to gain access to the Buckeye Creek Campground. It is a large bridge with cement anchors that channel the water underneath it. There is also cement debris from a previous bridge in the stream bed. This site is located at UTM: N: 4234755 & E: 295110, Elevation 2172m.



Site 5 continued: Buckeye Creek, Bridgeport Ranger District, looking upstream from the bridge. This site is located at UTM: N: 4234755 & E: 295110, Elevation 2172m.



Site 5 continued: Buckeye Creek, Bridgeport Ranger District, looking downstream from the bridge. This site is located at UTM: N: 4234755 & E: 295110, Elevation 2172m.



Site 6: Buckeye Creek, Bridgeport Ranger District, this section of stream had many logjams which changed the flow of the stream and created several large deep pools where fish were sighted. This site is located at UTM: N: 4234571 & E: 294525, Elevation 2192m.



Site 7: Buckeye Creek, Bridgeport Ranger District, looking upstream at a timber framed bridge that crosses the stream to gain access to private property. This site is located at UTM: N: 4234477 & E: 294342, Elevation 2186m.



Site 8: Buckeye Creek, Bridgeport Ranger District, this is an irrigation channel that has been dug on the south side of the stream in order to allow for the flooding of a low meadow area. The channel was not dug very deep and there was no valve on the channel so it appears to only be used to divert high water. In the slow moving water several small fish were sighted. This site is located at UTM: N: 4234446 & E: 294088, Elevation 2182m.



Site 9: Buckeye Creek, Bridgeport Ranger District, this is a photo point looking upstream that shows the stream characteristics for this section. This site is located at UTM: N: 4234009 & E: 291838, Elevation 2231m.



Site 9 continued: Buckeye Creek, Bridgeport Ranger District, this is a photo point looking downstream that shows the stream characteristics for this section. This site is located at UTM: N: 4234009 & E: 291838, Elevation 2231m.



Site 10: Buckeye Creek, Bridgeport Ranger District, a small dispersed campsite located in a large meadow along the stream. This site is located at UTM: N: 4233959 & E: 291689, Elevation 2239m.



Site 11: Buckeye Creek, Bridgeport Ranger District, a small tributary enters Buckeye Creek on river left. As the tributary enters the stream it falls approximately 0.7m (2.3ft). The tributary contributes less than 5% of overall flow to Buckeye Creek and probably does not add additional fish habitat. This site is located at UTM: N: 4233689 & E: 290631, Elevation 2261m.



Site 12: Buckeye Creek, Bridgeport Ranger District, a cross-section view of erosion along one stream bank of Buckeye Creek that measures approximately 15m long and is about 4m high. This site is located at UTM: N: 4233519 & E: 290238, Elevation 2276m.



Site 13: Buckeye Creek, Bridgeport Ranger District, a small tributary enters Buckeye Creek on river left. The tributary has been used as a form of irrigation by a rancher where the stream is harnessed through a culvert system that can be blocked for flood irrigating fields. The gates are currently open and water flows into Buckeye Creek. This site is located at UTM: N: 4233468 & E: 290176, Elevation 2279m.



Site 13 continued: Buckeye Creek, Bridgeport Ranger District, a small tributary enters Buckeye Creek on the river left side. This site is located at UTM: N: 4233468 & E: 290176, Elevation 2279m.



Site 14: Buckeye Creek, Bridgeport Ranger District, this site has a fairly recent beaver dam that is broken in the middle to allow water to pass. This site is located at UTM: N: 4233342 & E: 290057, Elevation 2280m.



Site 14 continued: Buckeye Creek, Bridgeport Ranger District, looking upstream from the beaver dam. This site is located at UTM: N: 4233342 & E: 290057, Elevation 2280m.



Site 15: Buckeye Creek, Bridgeport Ranger District, this is a photo point showing the stream characteristics for this section of stream. Notice the flow has decreased considerably. At this point the stream is meandering through Big Meadows. This site is located at UTM: N: 4232968 & E: 289604, Elevation 2277m.



Site 16: Buckeye Creek, Bridgeport Ranger District, a small tributary enters Buckeye Creek on the river left side. This tributary runs through Big Meadows and acts more as a collective drainage spot for water seeping off the meadow. Also at this site is a trail crossing which appears to be more heavily used by cattle than by people or vehicles. This site is located at UTM: N: 4232829 & E: 289642, Elevation 2278m.



Site 17: Buckeye Creek, Bridgeport Ranger District, this is a small tributary entering Buckeye Creek on the river left side. This site is located at UTM: N: 4232243 & E: 289307.



Site 18: Buckeye Creek, Bridgeport Ranger District, this is a small dispersed campsite that appears to get little use; however, a fire ring, old tin cans, and sitting logs mark the site. This site is located at UTM: N: 4231079 & E: 288539.



Site 19: Buckeye Creek, Bridgeport Ranger District, looking upstream at the stream characteristics for this section of stream. This site is located at UTM: N: 4230773 & E: 288289, Elevation 2333m.



Site 19 continued: Buckeye Creek, Bridgeport Ranger District, looking downstream at the stream characteristics for this section of stream. This site is located at UTM: N: 4230773 & E: 288289, Elevation 2333m.



Site 20: Buckeye Creek, Bridgeport Ranger District, a small tributary enters Buckeye Creek on river left. The tributary is contributing about 5% to the overall flow of Buckeye Creek and adds about 100m of additional trout habitat before the tributary gets too small. This site is located at UTM: N: 4230443 & E: 287979, Elevation 2335m.



Site 21: Buckeye Creek, Bridgeport Ranger District, a small tributary enters on the river left side and contributes approximately 5% to the overall stream flow in Buckeye Creek. This site is located at UTM: N: 4229270 & E: 286665, Elevation 2374m.



Site 22: Buckeye Creek, Bridgeport Ranger District, looking upstream at a naturally occurring permanent fish passage barrier. Several more waterfalls acting as permanent fish passage barriers occur in this section known as the “Roughs”. The largest of the falls measures approximately 4-5m (13-16.5ft) in height and is accompanied with several 1.5m and 2m drops. This site is located at UTM: N: 4229217 & E: 285731, Elevation 2426m.



Site 23: Buckeye Creek, Bridgeport Ranger District, a large tributary enters on the river left side and contributes approximately 30% of the overall flow in Buckeye Creek. This tributary is extremely steep with several waterfalls with the largest being approximately 20m (66ft) in height. This site is located at UTM: N: 4228979 & E: 285409, Elevation 2494m.



Site 24: Buckeye Creek, Bridgeport Ranger District, a cross-section view of a seasonal fish barrier. This downed log creates a 1.2m fall with a 1m plunge pool. This site is located at UTM: N: 4228154 & E: 284812, Elevation 2505m.



Site 25: Buckeye Creek, Bridgeport Ranger District, a cross-section view of seasonal fish barrier in Site 24. Several 10 inch fish were sighted in this large pool created by the downed tree. This site is located at UTM: N: 4228154 & E: 284812, Elevation 2505m.



Site 26: Buckeye Creek, Bridgeport Ranger District, a small campsite marked by a fire ring and sitting logs. The site is approximately 8-10m (26-33ft) away from the creek. This site is located at UTM: N: 4228044 & E: 284728, Elevation 2511m.



Site 27: Buckeye Creek, Bridgeport Ranger District, looking upstream at an old historical home which is located at the confluence of the North and South Forks of Buckeye Creek. Both the North and South Forks seem to be contributing an equal amount of water and enter at a “T” type intersection. The South Fork enters from the picture left side and the North Fork enters from the picture right side. This site is located at UTM N: 4227517 and E: 283483.



Site 27 continued: Buckeye Creek, Bridgeport Ranger District, this is the old historical home that is located at the confluence of the North and South Forks of Buckeye Creek. This site is located at UTM N: 4227517 and E: 283483.



Site 28: South Fork Buckeye Creek, Bridgeport Ranger District, looking upstream at a seasonal fish barrier. This site is located at UTM: N: 4227093 & E: 283352, Elevation 2609m.



Site 29: South Fork Buckeye Creek, Bridgeport Ranger District, looking upstream at a naturally occurring permanent fish passage barrier. The South Fork of Buckeye Creek is getting to a point where the water flows through a granite canyon with huge boulders and rock formations lining the creek. Several more waterfalls are located near this site. This waterfall measures about 3m (9.8 ft) high. This site is located at UTM: N: 4226833 & E: 283324, Elevation 2616m.



Site 30: South Fork Buckeye Creek, Bridgeport Ranger District, this pool is located upstream of several permanent fish passage barrier waterfalls; however, fish were still sighted in the area. In this pool two 8 inch fish were sighted. This site is located at UTM: N: 4226755 & E: 283371, Elevation 2648m.



Site 31: South Fork Buckeye Creek, Bridgeport Ranger District, looking upstream from the survey end point. The survey ended at this point due to the steep terrain, several small waterfalls, and few pools. However, fish were still sighted in the few pools that exist. This site is located at UTM: N: 4225191 & E: 284409, Elevation 2767m.