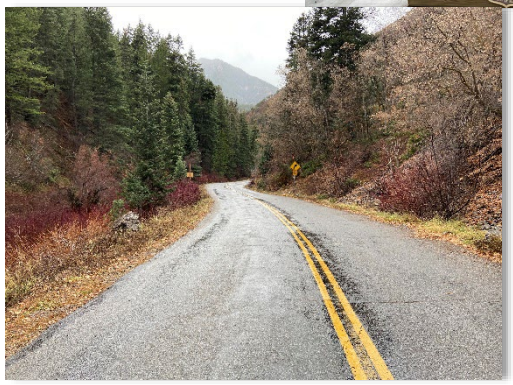
Upper Mill Creek Canyon Road Improvement Project

FHWA Project No. UT FLAP SLA 10(1)
Salt Lake County, Utah

Environmental Assessment and Draft Section 4(f) Evaluation



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U.S. Department of Transportation
Federal Highway Administration
Central Federal Lands Highway Division

In Cooperation with:
Uinta-Wasatch-Cache National Forest
Salt Lake County
Millcreek

ENVIRONMENTAL ASSESSMENT
AND
DRAFT SECTION 4(F) EVALUATION

for the

Upper Mill Creek Canyon Road Improvement Project
FHWA Project No. UT FLAP SLA 10(1)
Salt Lake County, Utah

Pursuant to 42 USC § 4332(2)(c) and 49 USC § 303

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FHWA-CFLHD, Chief of Business Operations

Summary

The Federal Highway Administration, Central Federal Lands Highway Division, in cooperation with the United States Department of Agriculture Forest Service, Salt Lake County, and Millcreek, is proposing to improve access and safety for visitors to upper Mill Creek Canyon on the Uinta-Wasatch-Cache National Forest in Salt Lake County, Utah. This Environmental Assessment considers proposed improvements to the upper 4.6 miles of Mill Creek Canyon Road. The Federal Highway Administration is the lead federal agency for this project and is designing and constructing the project.

Mill Creek Canyon Road is a locally maintained road that provides access to recreation areas and private cabins on the Uinta-Wasatch-Cache National Forest. The road is about 8.6 miles long, with the lower 4 miles below Winter Gate constituting the lower canyon and the 4.6 miles above Winter Gate constituting the upper canyon. The project area, as used in this Environmental Assessment, refers to the segment of Mill Creek Canyon Road beginning about 400 feet west of Winter Gate and extending through the Upper Big Water Trailhead. The road through the upper canyon is an asphalt-paved road with narrow or no shoulders from Winter Gate to the Upper Big Water Trailhead. Bicycles and motorized vehicles are allowed on the entire length of Mill Creek Canyon Road. The upper canyon does not have dedicated bicycle lanes. Most of the proposed project would occur on USFS lands, with a small portion taking place on land owned by Salt Lake County.

This EA evaluates the No Action alternative and Proposed Action. As the lead agency, the Federal Highway Administration, Central Federal Lands Highway Division worked with the cooperating agencies through an iterative design approach to develop the Proposed Action, which was determined to best meet the project's purpose and need while limiting undesirable environmental, social, and economic impacts. The Proposed Action in this Environmental Assessment includes widening Mill Creek Canyon Road, adding an uphill bicycle lane extending from Winter Gate to Elbow Fork, reconfiguring and/or relocating parking areas, improving drainage, and incorporating other safety improvements to benefit all canyon users.

The Federal Highway Administration, Central Federal Lands Highway Division coordinated with the public, providing opportunities at three stages of the design process to provide input and identify issues of concern. Public input was considered and helped guide the design to what is considered in this Environmental Assessment as the Proposed Action.

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List of Acronyms and Initialisms

ABA	Architectural Barriers Act
APE	Area of Potential Effects
BMP	Best Management Practice
CFR	Code of Federal Regulations
EA	Environmental Assessment
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FHWA-CFLHD	Federal Highway Administration, Central Federal Lands Highway Division
FLAP	Federal Lands Access Program
FRTA	Forest Road and Trail Act
IRA	Inventoried Roadless Area
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
R4FSS	USFS Region 4 Regional Forester's Sensitive Species List
RHCA	Riparian Habitat Conservation Area
ROS	Recreation Opportunity Spectrum
SHPO	State Historic Preservation Officer
SIO	Scenic Integrity Objective
USC	United States Code
USDOT	United States Department of Transportation
USFS	United States Department of Agriculture Forest Service
UWCNF	Uinta-Wasatch-Cache National Forest

1. Purpose and Need

The Federal Highway Administration, Central Federal Lands Highway Division (FHWA-CFLHD), in cooperation with the United States Department of Agriculture Forest Service (USFS), Salt Lake County, and Millcreek,[1] is proposing to improve access and safety for visitors to upper Mill Creek Canyon on the Uinta-Wasatch-Cache National Forest (UWCNF) in Salt Lake County, Utah (Figure 1).

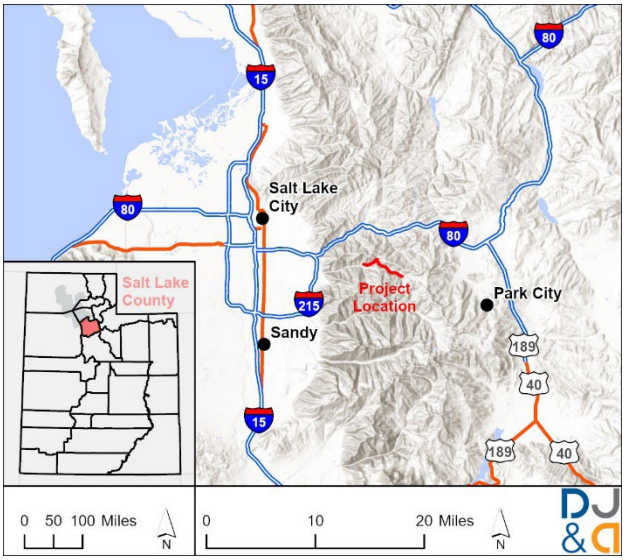

Figure 1. Upper Mill Creek Canyon Road Vicinity

This Environmental Assessment (EA) was prepared to meet the requirements of the National Environmental Policy Act (NEPA) of 1969, as amended; Council on Environmental Quality Regulations Implementing NEPA (Title 40, Section 1500); FHWA's NEPA implementing regulations (23 Code of Federal Regulations [CFR] 771); and related guidelines. FHWA-CFLHD is serving as the lead federal agency for the environmental review process, with the USFS, Salt Lake County, and Millcreek serving as cooperating and participating agencies. FHWA's Federal Lands Access Program (FLAP) is contributing funding for the project, with Salt Lake County as the applicant also contributing funds from fees collected for recreational uses in the canyon.[2] The USFS has been involved in the design and environmental review process and may have certain approvals related to activities on National Forest System (NFS) lands, which continue to be coordinated.

This chapter presents an overview of the current road conditions and the purpose and needs of the project. This EA is organized into the following chapters:

- Chapter 1: Purpose and Need
- Chapter 2: Alternatives
- Chapter 3: Affected Environment and Environmental Consequences
- Chapter 4: Draft Section 4(f) Evaluation
- Chapter 5: Other Considerations
- Chapter 6: References
- Chapter 7: List of Preparers and Reviewers

1.1 Route Description

Mill Creek Canyon Road is a locally maintained road that provides access to recreation areas and private cabins on the UWCNF. The road is about 8.6 miles long, with the lower 4.0 miles below Winter Gate

[1] As used in this report, "Millcreek" refers to the population center at the base of Mill Creek Canyon, and "Mill Creek" refers to the actual creek.

[2] Salt Lake County collects recreational fees for entry into the lower canyon, which is required to reach the upper canyon. No changes to the fee collection program are proposed as part of this project.

constituting the lower canyon and the 4.6 miles above Winter Gate constituting the upper canyon. The project area, as used in this EA, refers to the segment of Mill Creek Canyon Road beginning about 400 feet west of Winter Gate and extending through the Upper Big Water Trailhead as shown in Figure 2. The road through the upper canyon is an asphalt-paved road with narrow or no shoulders from Winter Gate to the Upper Big Water Trailhead. Bicycles and motorized vehicles are allowed on the entire length of Mill Creek Canyon Road. The upper canyon does not have dedicated bicycle lanes. The character of the first 1.5 miles of roadway (Winter Gate to Elbow Fork Trailhead) is noticeably different from the character of the segment from Elbow Fork Trailhead to Upper Big Water Trailhead. Road characteristics for these two segments are described below.

- **Winter Gate parking area to Elbow Fork Trailhead:** This approximately 1.5-mile road segment ranges in width from 16 to 24 feet. This segment ascends just over 500 feet at a moderately steep grade, averaging about 6.5%. This section has fewer curves than the upper portion of the route, and all areas easily accommodate two-way traffic.
- **Elbow Fork Trailhead to Upper Big Water Trailhead:** This approximately 3.1-mile road segment is generally narrower than the lower segment of the route, ranging in width from 13 to 20 feet. In portions, the road is only wide enough for one-way traffic. This segment contains numerous sharp curves and ascends nearly 1,000 feet at a moderately steep grade, averaging about 6.1%. Steeper slopes exist in a few places with some grades approaching 10%.

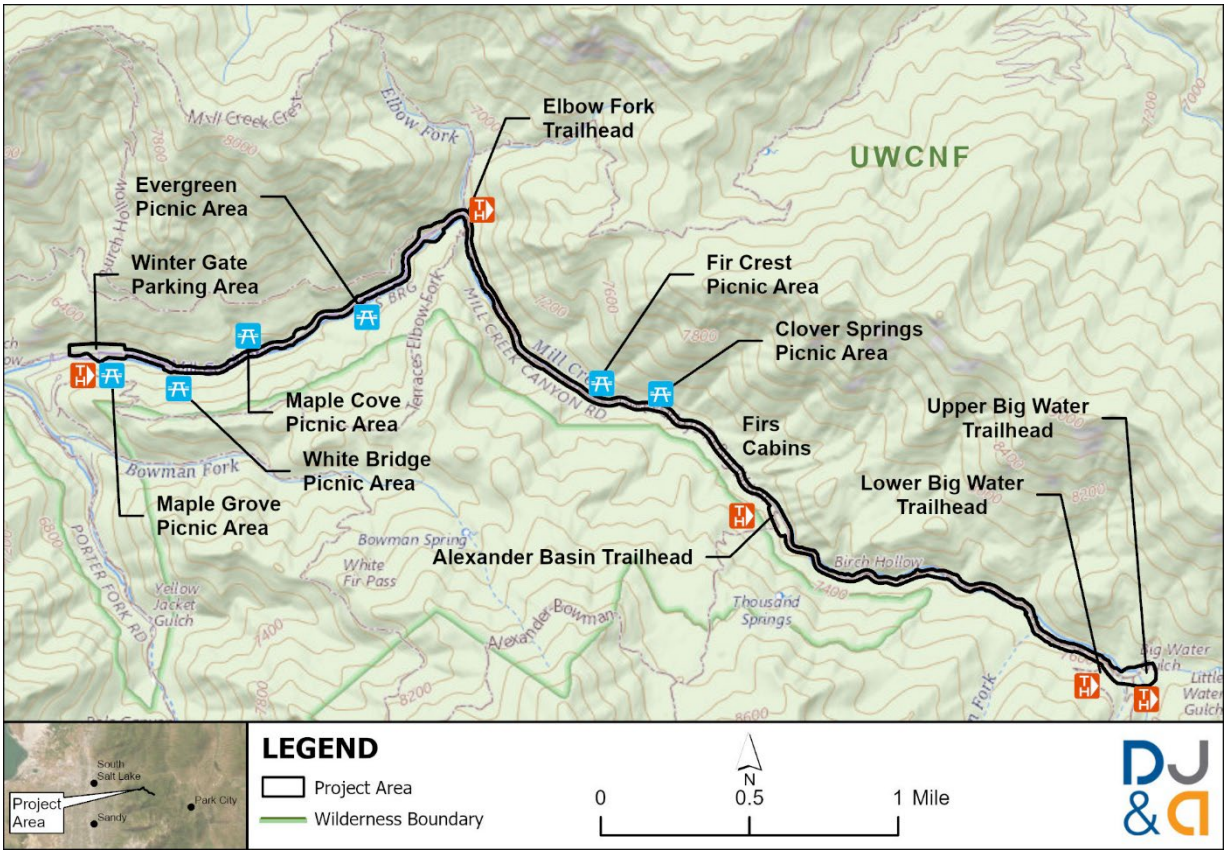

Figure 2. Project Area Map

The USFS maintains five trailheads and six picnic areas along the road (Figure 2). The Winter Gate parking area serves as a trailhead during the winter months when the upper canyon road is closed. Access and parking vary at these recreation areas. Some have an access road that leads to paved parking areas and striped parking stalls. Others are simply pull-offs directly adjacent to the road and often lack striping. In

addition, several informal parking areas are located off the edge of the roadway, often serving as overflow parking.

Informal, user-created parking areas exist throughout the length of the upper canyon. Some of these areas are located on curves with limited sight distance, and many do not have adequate space for a vehicle to pull fully off the roadway. Limited sight distance exists even at established parking areas as a result of curves and steep grades near entrance and exit points. Informal parking, limited sight distance, and parked vehicle encroachment on the roadway all contribute to unsafe conditions throughout the canyon.

The pavement is cracking in places along the road and is deteriorating along the edges in some locations where the road shoulder is nonexistent (Terracon 2023). The roadway thickness is highly variable, with asphalt ranging from about 3.25 to 6 inches in thickness and the underlying gravel basecourse ranging from 0 to 12 inches in thickness. This variability has contributed to rutting, potholes, and other types of surface deterioration that are generally more pronounced in the segment of the project area above Elbow Fork.

Stormwater runoff is causing erosion of exposed soil along roadway edges and in and around parking areas. Sediment transported by runoff typically ends up in Mill Creek and its tributaries. Informal parking along the roadway and in unpaved areas has created erosion issues through both the parking itself and the informal trails that develop as people walk from these unauthorized parking spots to their destinations.

The road crosses Mill Creek nine times above Winter Gate. At each crossing, the creek is conveyed beneath the road through concrete box culverts, some of which currently restrict the road width. One of these structures, White Bridge, is an open-bottom concrete culvert located approximately 0.25 mile east of Winter Gate. White Bridge was constructed in the 1920s and is nearing the end of its design life, risking potential failure or collapse, and does not meet current FHWA or modern design and safety standards (DJ&A 2022). Failure or collapse of the culvert structure would block access to recreation areas and private cabins in the upper canyon. The existing structure is 11 feet wide, 6 feet tall, and 27 feet long and crosses the roadway at an angle. The road narrows at the bridge between its historic railings, which are 22.4 feet apart based on a 2021 survey (Figure 3). The White Bridge railings are deteriorating, fail to meet modern height requirements, and do not extend far enough to prevent vehicles from driving over the bridge's wingwalls.

Annual visitation to Mill Creek Canyon was estimated to be about 532,000 in 2015 (Lamborn and Burr 2016), more than 750,000 in 2019 (communication with Salt Lake County), and 434,000 in 2022 (Smith and Lamborn 2023). These visitation estimates are for uses throughout the canyon, and none of them indicate what percentage of visitors travel into the upper canyon. A 2012 feasibility study for this project (Fehr & Peers 2012) estimates summer visitation in the upper canyon to be 30-40% of total canyon visits. The study methods used for these studies varied considerably, so visitor use trends could not be estimated with any certainty. However, use levels are expected to be proportional to the population of the greater Salt Lake City area, which is increasing. Long-term use increases in the upper canyon have led to increased vehicle congestion, particularly on weekends and holidays and in places where two-way travel cannot be readily accommodated.

Mill Creek Canyon Road is subject to seasonal closures above Winter Gate, with the gate typically being closed on November 1. However, early-season snowfall can result in closures in October. The roadway typically reopens July 1, but reopening is dependent on the timing of annual snowmelt. During the months when the gate is open, the upper canyon attracts picnickers, hikers, trail runners, cyclists, mountain bikers, and other recreationists visiting the Wasatch Mountains. When the road is closed in the winter, hikers, snowshoers, riders on "fat" bikes, cross-country skiers, backcountry skiers, and snowboarders all use Mill Creek Canyon Road for recreation opportunities and forest access. The USFS grooms the road to facilitate cross-country skiing between Winter Gate and Upper Big Water Trailhead.

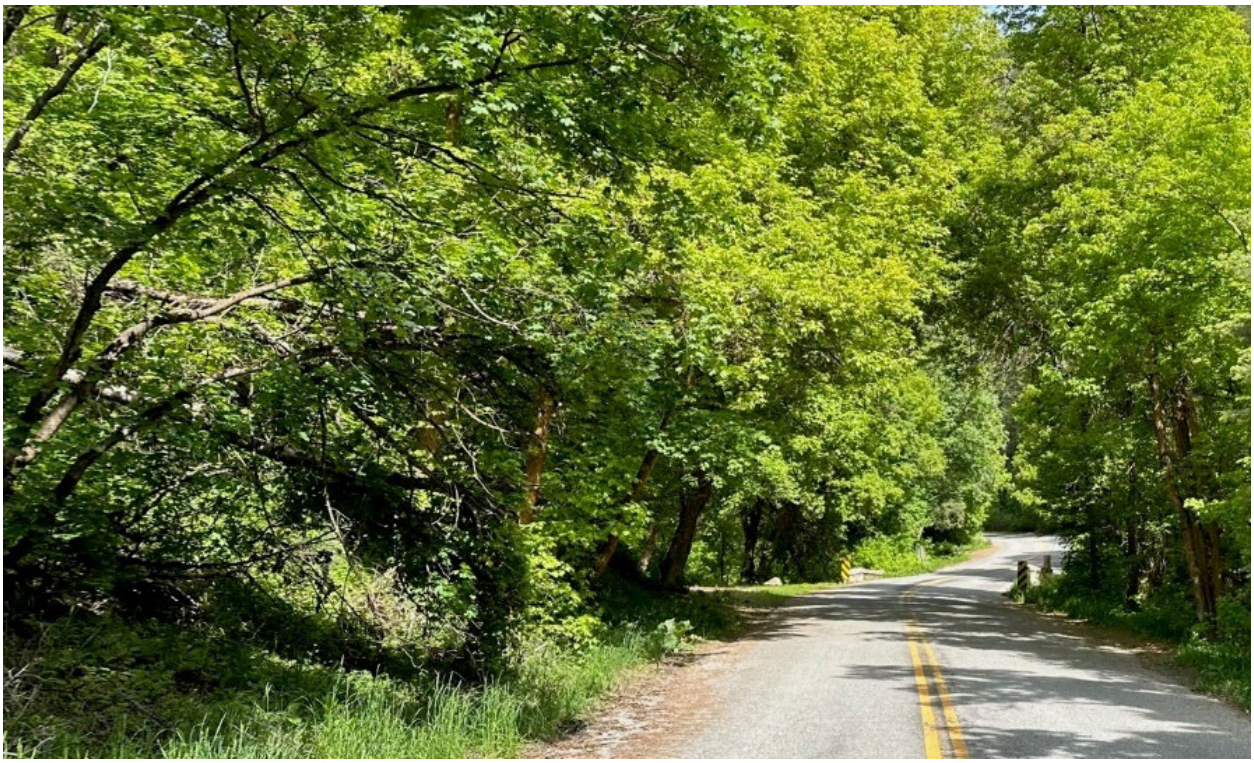

Figure 3. Road Narrowing at White Bridge

1.2 Purpose of and Need for the Project

The purpose of the project is to improve user safety, access to recreational opportunities for all users, and water quality degraded by surface erosion and poor drainage infrastructure. As part of the design and environmental review processes, the following needs were identified:

- **Inconsistent Roadway Width.** The narrow and variable road width makes it difficult and dangerous for vehicles to pass each other. These same conditions inhibit the ability of emergency vehicles to efficiently travel through the canyon. Vehicles often need to pull off the road to let others pass during heavy use times (e.g., weekends and holidays), which worsens traffic congestion. Several creek crossings along the alignment result in constrictions to the already narrow roadway. A consistent roadway width is needed to safely accommodate users in the upper canyon.
- **Limited Pedestrian and Bicycle Facilities.** The lack of road shoulders, lack of bicycle lanes, limited sight distances (Figure 4), informal parking, and lack of crosswalks and signs create unsafe conditions for cyclists and pedestrians using and crossing the roadway. Improvements are needed to better accommodate pedestrians and bicyclists.
- **Substandard Parking.** Informal, undesignated parking areas located on corners with poor sight distance create hazards as vehicles enter and exit these spots. User-created pullouts that are too narrow to fully accommodate vehicles create hazards for motorists and cyclists when parked vehicles encroach on the roadway. Use associated with these informal parking areas and associated trails often results in resource damage and increased erosion resulting from reduced vegetation cover and soil compaction. Existing designated parking areas have substandard access points, show signs of erosion, and lack capacity to accommodate visitors. Well-designed and designated parking areas are needed to better accommodate visitor volume and eliminate informal parking areas and the hazards and resource degradation associated with them.

- **Poor Drainage.** Soil erosion and uncontrolled surface runoff due to poor drainage patterns result in a need for updated drainage infrastructure to reduce erosion and improve water quality of nearby streams. In conjunction with the road improvements, a system of culverts, ditches, and similar infrastructure is needed to ensure proper drainage off the roadway and parking areas.

Figure 4. Example of Limited Sight Distance at Elbow Fork

1.3 Public Involvement

FHWA-CFLHD and its partner agencies on the project held three public open houses during the preliminary design phases to share conceptual and preliminary plans with the public and gather information about their priorities, preferences, and concerns related to the project. Each meeting was accompanied by a public comment period of at least 30 days. The first two meetings and associated comment periods were held before initiating preparation of the EA (November 9, 2021, and May 19, 2022), with a goal of soliciting input on the project itself. The third meeting (held virtually on June 13, 2023, and in person on June 14, 2023) and comment period were held to solicit input on issues to consider in the EA, as well as present updated design plans.

In total, over 700 comments were received. Comments were generally oriented toward proposed design elements, such as roadway width, parking, travel speed, and bicycle infrastructure. However, many of them related, directly or indirectly, to environmental resources. The public expressed interest and concerns related to the protection of cultural resources; impacts to aquatic and terrestrial wildlife; impacts to water resources such as Mill Creek, springs, and side streams; erosion and effects on water quality; protection of plants and trees; alterations to the visual landscape and soundscape; and recreational impacts. Public input was used to help inform the iterative design process. Additional details are included in the comment summary and response documents associated with each public meeting (HDR 2022a, 2022b; DJ&A 2023).

1.4 Separate USFS Decision Process

The USFS will be issuing its own, separate decision related to the Proposed Action and this NEPA document. The USFS decision space on the Upper Mill Creek Canyon Road Improvement Project is limited by the 1991 Forest Road and Trail Act (FRTA) easement held by Salt Lake County for a non-exclusive,

66-foot-wide easement for highway purposes for Mill Creek Canyon Road over NFS lands in Mill Creek Canyon.[3] The USFS will make decisions related to the following project components:

- Termination of the existing 1991 FRTA easement and authorization of a FRTA easement of similar width over NFS lands. The new easement will include several expanded areas containing infrastructure likely to require frequent maintenance by Salt Lake County, such as drainage features.
- Authorization of construction on NFS lands outside of the new FRTA easement to stabilize slopes adjacent to the roadway. This may include clearing of vegetation to facilitate construction activities. These areas would not require frequent maintenance by Salt Lake County for the operation of the roadway following project completion, and therefore would not be included in the new FRTA easement.
- Improvements to replace unsafe and informal roadside parking as identified in the proposed action. This includes relocation and/or expansion of trailheads, parking areas, and picnic areas. These facilities would remain under the sole jurisdiction of the USFS.
- Trail relocations to connect existing trails to the relocated improvements.

The USFS will issue a separate decision on these items based on the analyses in this EA. The USFS decision is subject to 36 CFR § 218 subparts A and B.

The USFS has reviewed the Proposed Action for consistency with USFS direction and the Forest Plan. This proposal is consistent with the 2003 Wasatch-Cache Revised Forest Plan (USFS 2003) as amended. The project is consistent with Management Prescription 4.5, Developed Recreation Areas because developed facilities are allowed, and visitors can expect to encounter such facilities. The project is consistent with Forestwide Desired Future Conditions for Facilities and Roads and Recreation Resources. The project area is in the Central Wasatch Management Area and is consistent with the area's desired future conditions for roads/trails/access, recreation, balanced diversity of recreational opportunities, and land ownership. The project is consistent with Forestwide Goal 5, Road/Trail and Access Management. Finally, the Proposed Action is consistent with the Roadless Area Conservation Rule.

2. Alternatives

This chapter presents alternatives that were considered during the EA process, including the No Action alternative and alternatives that were considered but not analyzed in detail. The Proposed Action discussed below was developed by considering the purpose and need of the project, project partner and public input, and feasible design options. FHWA-CFLHD has an overall goal of developing context-sensitive designs for its transportation projects, and the Proposed Action considers the above items as well as environmental concerns to reduce resource impacts and protect sensitive resources.

2.1 No Action Alternative

The No Action alternative is included as a baseline for comparison to the Proposed Action. Under this alternative, Salt Lake County would continue performing roadway maintenance as needed and scheduled for routine upkeep of the road surface and shoulders. The USFS would continue to maintain the parking areas and trails. Seasonal vehicle closures due to snow and snow grooming for winter recreation use would continue. Roadway width, pedestrian and bicycle space and patterns, parking areas, bridges, drainage

[3] The existing and proposed FRTA easements are discussed in Subsection 2.2.7.

patterns, water quality, and safety elements would remain in their existing conditions or deteriorate with time.

2.2 Proposed Action

The Proposed Action is the only action alternative analyzed in detail in this EA. This alternative includes roadway widening; modifications to, relocation of, or removal of parking areas, including informal roadside parking; establishment of an uphill bicycle lane from the Winter Gate to the Elbow Fork Trailhead; drainage improvements; and associated minor safety improvements.

These project elements are described in the following sections, and major project elements are shown in Figure 5. The project area is about 75 acres, and the proposed disturbance area where project activities would occur is approximately 33 acres and encompasses the roadway; existing parking areas with proposed improvements; areas where parking areas would be expanded or established; and areas where drainage, retaining walls, and other features are needed to accommodate the proposed road and parking improvements.

2.2.1 Roadway Improvements

Mill Creek Canyon Road would be widened to accommodate two travel lanes from the Winter Gate parking area to the Upper Big Water Trailhead. Roadway improvements were designed to be as consistent as possible while accounting for topographical, environmental, and other constraints. Proposed roadway improvements are described in detail below from west to east.

- The first 600 feet of roadway would be reconstructed at its current width of 26 feet and striped to include a 4-foot bicycle lane on the eastbound (uphill) side of the road.
- A new roundabout would be constructed about 250 feet east of the Winter Gate parking area to provide snowplows and large vehicles with a convenient place to turn around. The interior will be surfaced with colored, stamped concrete to mimic native rocks in the area. The uphill bicycle lane will merge with traffic through the roundabout but will become a separated lane again just east of the roundabout.
- The Winter Gate would be relocated approximately 200 feet to the east of its current location to accommodate the new roundabout.
- From the proposed roundabout to Elbow Fork, which is approximately 1.5 miles, the roadway would be reconstructed from its current variable width of 16–24 feet to a consistent 24 feet.
    - This road segment would consist of two 10-foot-wide lanes and a 4-foot-wide bicycle lane on the eastbound (uphill) side.
    - A 200-foot section within this segment, located about 0.5 mile east of the Winter Gate Trailhead, would be limited to a width of 21 feet (two 9-foot-wide travel lanes and a 3-foot-wide bicycle lane) due to topographic constraints and the width of the existing culvert (Stone Bridge 1) at that location.
- From Elbow Fork to the Upper Big Water Trailhead, which is approximately 3.1 miles, the roadway would be reconstructed from its current variable width of 13–20 feet to 18–20 feet. Major topographic constraints (i.e., narrow canyon with steep hillsides) do not allow for the continuation of the 24-foot-wide road in this upper portion without significant hillside cuts and retaining walls. A 20-foot-wide roadway can accommodate two-way traffic, while also minimizing visual and natural resource impacts.

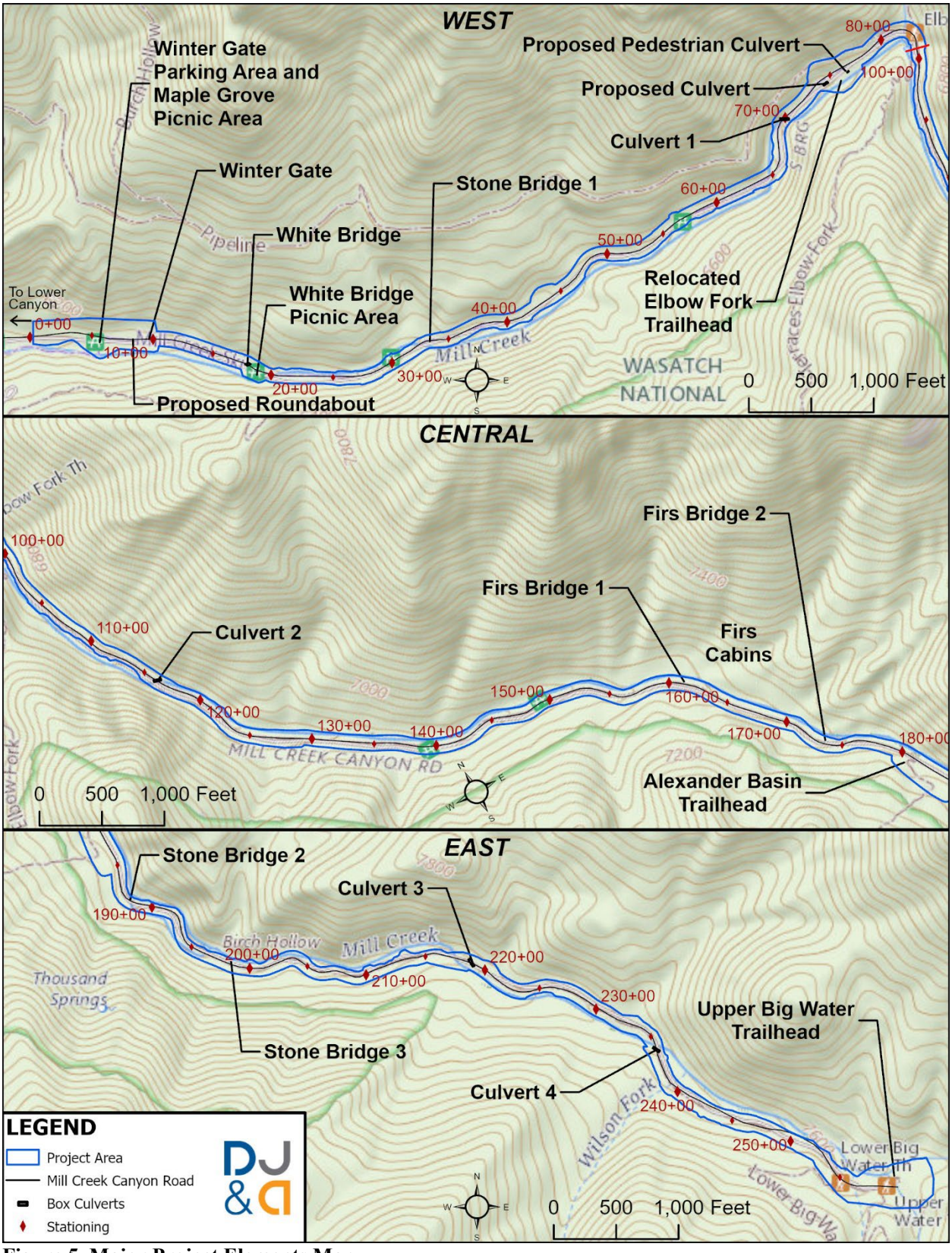

Figure 5. Major Project Elements Map

- Most of this section (2.7 miles) would consist of two 10-foot-wide lanes without shoulders.
- Two narrower sections totaling about 1,800 feet would consist of two 9-foot-wide lanes without shoulders. The two narrow sections would include a 1,200-foot section near Thousand Springs and a 600-foot section near the Firs Cabins. These narrower 18-foot-wide segments are in areas with topographic constraints and where existing stream crossings are only 18 feet wide and impractical to modify.
- The proximity of adjacent sensitive resources, such as the Firs Cabins, Mill Creek, and Thousand Springs, also contribute to the need to maintain a narrower width in this upper section.
- Access roads branching off the main road would be resurfaced for a short length to match the modified Mill Creek Canyon Road.

All 4.6 miles of the roadway would be reconstructed, meaning that the existing roadway (asphalt and aggregate base) would be removed and replaced. The road would be adjusted in some areas (shifted, raised, and/or lowered) to make the roadway width more consistent, improve curves, improve sight distance, and address roadway drainage.

2.2.2 Parking Areas

Formal parking areas would be constructed, and existing parking areas would be improved to increase visitor safety, improve visitor experience through amenities (e.g., accessible toilets), reduce soil erosion, facilitate drainage improvements, and offset the loss of informal roadside parking spaces. As described below, four existing parking areas at picnic areas or trailheads would be modified, one new parking area would be established, and existing informal roadside parking areas would be decommissioned or formalized. When combined, parking spaces added in proposed parking areas and those removed through the decommissioning of informal roadside parking would roughly maintain the overall existing parking capacity in the upper canyon based on available information.[4]

Maple Grove Picnic Area/Winter Gate Parking Area

The Winter Gate and Maple Grove Picnic Area share the same parking lot. When the gate is open, recreationists use the parking area to access the Maple Grove Picnic Area, which is located on the opposite side of Mill Creek from the parking area and accessed by a pedestrian bridge. When the gate is closed, users park here to access recreation opportunities in the upper canyon. The parking area and picnic area are considered a single recreation site for the purposes of this project.

During the gate closure period, parking demand at the Winter Gate parking area consistently exceeds capacity, forcing visitors to park farther down the canyon. The existing parking area would be reconstructed and expanded to better accommodate summer and winter uses, including visitor access and snow removal operations. The existing parking area is 0.23 acre, and the proposed parking area would be approximately 0.31 acre. The proposed parking area improvements would require the removal of two picnic tables adjacent to the existing parking area, but the Maple Grove Picnic Area located across Mill Creek would not be impacted.

The reconstructed parking area would be surfaced with asphalt and would accommodate 10 additional parking spaces (an increase from 23 spaces to 33 spaces), including Architectural Barriers Act (ABA)-

[4] The USFS identified informal parking throughout the upper canyon and provided recommendations for which areas should be closed. The design team used these recommendations to approximate to number of lost informal parking spots and replace them with formal parking spots to roughly maintain the parking capacity within the upper canyon.

compliant spaces. The parking area would be widened to facilitate turning movements by large vehicles such as snowplows and emergency service vehicles (e.g., fire engines). The parking area would also include a pick-up and drop-off location.

The parking area would include a vegetated swale to collect surface water runoff and facilitate infiltration. The existing vault toilet would be relocated and replaced with a facility of similar size and appearance meeting ABA accessibility standards because the existing facility is outdated and in need of repair.

White Bridge Picnic Area

The White Bridge Picnic Area is about 0.33 mile east of Winter Gate. The existing 0.09-acre White Bridge parking area is gravel surfaced, lacks striping, and is suitable for about five vehicles. The parking area and entrance would be shifted about 30 feet east to improve sight distance for vehicles exiting the picnic area. The reconstructed parking area would be approximately 0.07 acre, paved with asphalt, and would include five parking spaces, matching current capacity. Parking spaces would be formalized and include one ABA-compliant space. A new sidewalk would connect the parking area to the existing vault toilet, which would remain as is.

Elbow Fork Trailhead

The existing Elbow Fork Trailhead parking area would be relocated to the south side of Mill Creek, approximately 700 feet to the west of its current location (about 1.2 miles east of Winter Gate). The parking area would require a short access road, which would be located along a relatively straight portion of roadway to increase sight distance and improve safety for pedestrians, bicyclists, and vehicles compared to the existing parking situation. The existing parking area is surfaced with gravel, is not striped, and is suitable for about 10 vehicles. The existing parking area would be re-graded and revegetated to appear as a natural hillslope. The existing vault toilet would be removed.

The new trailhead parking area entrance would require a concrete box culvert to cross Mill Creek (see Drainage Improvements subsection below). The parking area would be paved and include 23 formalized parking spots including ABA-compliant spaces, a vault toilet, connections to existing trails, and a water quality detention basin. A 30-foot-long rockery wall would be constructed on the east and south sides of the parking area to reduce cut slopes and tree removal. Rockery walls are discussed below in the Retaining Walls subsection. The proposed Elbow Fork Trailhead parking area would be approximately 0.21 acre, including the access road.

A short section of trail would be constructed to connect the new parking area location to the nearby Pipeline and Mt. Aire Trails, located on the north side of Mill Creek Canyon Road. A concrete box culvert would be constructed where the trail crosses Mill Creek to facilitate pedestrian and bicycle access from the parking area to the trail system on the opposite side of the creek.

Alexander Basin Trailhead

A new parking area would be constructed immediately west of the existing informal parking area associated with the Alexander Basin Trailhead, about 3.2 miles east of Winter Gate. The existing parking area is surfaced with gravel, is unstriped, and is suitable for about 15 vehicles (about 0.08 acre). The proposed parking area would be approximately 0.21 acre and surfaced with asphalt. This parking area would be striped to include 20 formalized parking spots, including ABA-compliant spaces, a vault toilet, new signs, and connections to existing trails. It would also include a pick-up and drop-off area at the location of the current informal parking area.

A 200-foot-long rockery wall would be constructed on the south and west sides of the parking area to reduce cut and fill slopes and tree removal. Rockery walls are discussed below in the Retaining Walls subsection. Surface runoff would be conveyed to a vegetated swale to facilitate infiltration.

Upper Big Water Trailhead

The Upper Big Water Trailhead parking area, located about 4.6 miles east of Winter Gate and at the road's terminus, would be reconstructed and expanded. The existing parking area is 0.36 acre, and the proposed parking area would be approximately 0.84 acre. The new asphalt-surfaced parking area would accommodate 39 additional parking spaces (an increase from 32 spaces to 71 spaces), including ABA-compliant spaces. An approximately 300-foot-long, 4-foot-tall rockery wall would be constructed to reduce encroachment into the adjacent meadow. Rockery walls are discussed below in the Retaining Walls subsection.

Existing trails would receive minor modifications to connect them to the expanded parking area. A portion of the existing trail between Little Water Trailhead and Big Water Trailhead would be shifted to accommodate the proposed parking area improvements.

A passenger pick-up and drop-off area would be located on the east side of the parking area. The existing yurt, which can be reserved for overnight stays by winter recreationists, would be relocated to the southeast corner of the parking area. The existing vault toilet facility would be removed and replaced with a new vault toilet on the east side of the parking area.

Drainage improvements would include curb and gutter, a vegetated swale, and a water quality basin, which would be constructed to collect and infiltrate surface water runoff from the parking area.

Informal Parking Areas

Informal roadside parking areas exist throughout the project area and allow for one or more vehicles to pull off the road and park adjacent to the roadway. Approximately eight of these pullouts would be formalized to include a paved surface and striped parking stalls. The remaining informal parking areas would be made unavailable through the placement of locally sourced boulders. These areas would be seeded with native species using a USFS-approved seed mix.

Recreational Amenities

The new and replaced vault toilets mentioned above would consist of prefabricated concrete models similar to those recently installed by the USFS in nearby canyons. Toilets will be ABA-compliant with fully accessible pathway access from the parking lots. All developed recreation amenities will comply with the Forest Service Outdoor Recreation Accessibility Guidelines.

Informational kiosks would be installed at modified and new parking areas as part of parking area improvements. Exact kiosk locations will be determined during final design. Kiosk structural and aesthetic details would adhere to USFS guidelines by using appropriate materials, colors, and design principles (USFS 2013).

2.2.3 Retaining Walls

Multiple retaining walls would be constructed throughout the length of the corridor to facilitate road widening and parking area construction. Retaining walls are proposed at six locations along the roadway, with a total length of approximately 950 feet. Walls required to support parking area construction are proposed at the Elbow Fork, Alexander Basin, and Upper Big Water parking areas, with a total length of approximately 530 feet. Installation of the retaining walls would reduce the need for large cut and fill slopes and vegetation removal. Depending on site-specific conditions and constraints, two types of retaining walls are being considered: rockery and soil nail walls. Examples of rockery and soil nail walls are shown in Figure 6 and Figure 7.

Figure 6. Example of a Rockery Wall

- Rockery walls would generally be used when wall heights are less than 12 feet and slopes above the walls are not excessive. The average rockery retaining wall height is expected to be 4 feet. Rockery walls would be constructed of large boulders. Boulders would be selected to blend in with native rocks in the area.
- Soil nail walls would generally be used where taller wall heights are required or slopes above the walls are excessively steep. Soil nail retaining walls would range from 4 to 12 feet tall. Soil nail walls would be constructed of soil nails (rebar, grouted in place), reinforced shotcrete, and finished with an architectural façade, such as sculpted concrete with coloration added to mimic rock outcroppings in the area.

Figure 7. Example of a Soil Nail Wall (Under Construction) with Sculpted Shotcrete Facing

2.2.4 Drainage Improvements

Drainage improvements would be constructed to control surface water runoff from the roadway and parking areas and ensure adequate conveyance to Mill Creek. With the widening of the roadway and recreation improvements, some existing culverts would need to be lengthened and new culverts constructed. Additionally, stabilization is proposed to protect the road embankment from erosion at stream crossings. White Bridge would be replaced for the reasons described below. Other improvements would consist of roadside ditches, curb and gutter sections, vegetated swales, and water quality (infiltration) basins to capture and filter surface runoff from paved parking areas.

<u>Concrete Box Culverts</u>

Seven concrete box culverts would be improved, replaced, or installed as part of the project. This includes five of the nine existing culverts where Mill Creek Canyon Road crosses Mill Creek (including White Bridge) and two new culverts across Mill Creek associated with the Elbow Fork Trailhead parking area.

White Bridge would be replaced with a larger concrete box culvert measuring approximately 17 feet wide, 8 feet tall, and 30 feet long. The proposed structure would include concrete headwalls and wingwalls on both the upstream and downstream sides. The bottom 3 feet of the culvert would be lined with cobbles (river rock) to mimic the natural streambed and support aquatic organism passage. The railing would also be replaced to meet current safety design standards and designed to mimic, as closely as possible, the existing railing and historic design.

Four existing concrete box culverts would be lengthened to accommodate the widened roadway. These box culverts would be lengthened between 9 feet and 25 feet. Culvert extensions would consist of precast, reinforced concrete box culvert sections. Each of these four culverts would have concrete headwalls and wingwalls on both the upstream and downstream sides to retain soil and protect against erosion and structural damage during high flow events. The locations of these four box culverts are shown on Figure 5 and described below.

- Culvert 1: approximately 0.25 mile west of Elbow Fork Trailhead
- Culvert 2: approximately 0.30 mile east of Elbow Fork Trailhead
- Culvert 3: approximately 0.75 mile west of Upper Big Water Trailhead
- Culvert 4: approximately 0.45 mile west of Upper Big Water Trailhead

A new concrete box culvert would be installed under the entrance road for the new Elbow Fork Trailhead. This culvert would be approximately 15 feet wide, 7 feet high, and 60 feet long. The bottom 3 feet of the culvert would be lined with cobbles to mimic the natural stream bed and support aquatic organism passage. Headwalls and wingwalls would be constructed similar to the other box culverts. A similar new concrete box culvert would be constructed as a pedestrian/bicycle crossing adjacent to the northeast corner of the parking area. This culvert would facilitate access to the trail system on the opposite side of the creek.

New and modified box culverts may include concrete cutoff walls on the upstream side of the culvert. Cutoff walls would extend up to 4 feet below the base of the culvert (or culvert and wingwalls) to limit scour and subsurface flow beneath the concrete structures.

The project would involve minor repairs to stone walls at Stone Bridge 1 (technically a culvert), located about 0.5 mile east of the Winter Gate Trailhead (Figure 8). This work would repair past damage to the stone walls. The walls are expected to be taken apart down to the road surface level then rebuilt in their same location and configuration, reusing the existing stones as much as possible and supplementing them with similar appearing stones in areas that have missing stones. The mortar and concrete cap would also match the original type to maintain the visual appearance and historic feeling of the stone walls.

Figure 8. Stone Bridge 1 Wall

Other Drainage Elements

Curb and gutter would be used in areas where the roadway is too narrow to include a roadside ditch. Curb and gutter would be concrete and consist of about 2 feet of gutter and a 6-inch-tall curb. The curb and gutter would direct water to roadside ditches and culvert inlets.

Where possible, ditches would be constructed along one side of the road. The ditches would typically be V-shaped and range from 6 to 10 feet wide.

Vegetated swales would be constructed at the Winter Gate parking area and at the Alexander Basin Trailhead parking area. The swales would be V-shaped or flat-bottomed ditches seeded with a USFS-approved native seed mix. Vegetated swales allow for increased stormwater and meltwater infiltration, naturally filtering sediment and contaminants from surface water runoff.

Water quality basins would be constructed at the Elbow Fork Trailhead and the Upper Big Water Trailhead parking areas. These basins would be vegetated depressions that would collect surface water runoff from parking areas and naturally filter sediment and contaminants from the collected water as it infiltrates through the soil. The water quality basins at the Elbow Fork Trailhead and Upper Big Water Trailhead parking areas would measure approximately 16 feet by 21 feet and 87 feet by 66 feet, respectively.

Several side streams and drainage features cross the roadway through culverts within the project area. Depending on the existing conditions, existing culverts may be replaced or left in place, new culverts may be installed, and existing inlets and outlets may be repaired to reduce erosion. New culverts would be constructed with corrugated metal pipes up to 42 inches in diameter to accommodate design flows and protect the reconstructed roadway. Approximately 40 culverts are included in the proposed project.

2.2.5 Associated Improvements and Other Work

Other associated minor improvements include the following:

- Roadway and informational signs would be replaced and designed to visually match existing signs in the area. The speed limit on Mill Creek Canyon Road would remain at 30 miles per hour with lower advisory speeds at some curves.
- The entire road would be striped to designate lanes and the roadway edge.
- Snow pole holders would be installed in the Winter Gate area to mark obstructions and protect improvements from snowplow damage.
- Crosswalks and signage would be installed in areas where pedestrians and bicyclists cross the roadway to access trails, parking areas, and picnic areas.
- Trails would be modified to maintain and provide new connections to existing trail systems near existing and new parking areas and to accommodate roadway widening.
- Trail connections with the proposed Elbow Fork Trailhead would include the addition of a trail segment that connects the parking lot to the proposed pedestrian culvert, crosses Mill Creek Canyon Road, and ascends the slope northwest of the parking area to connect with the Pipeline Trail.
- The trail connection adjustment with the Alexander Basin Trailhead would be relatively minor and involve only a short section of modified trail near the trailhead improvements.

- A trail alteration would be required approximately 0.4 mile west of Upper Big Water Trailhead where vertical roadway realignment requires a trail connecting to the road at that location to be raised several feet and graded to merge with the raised road surface.
- The Upper/Lower Connector Trail that parallels the south side of the road between Upper and Lower Big Water Trailheads would be relocated uphill to accommodate a cut slope required for road widening.
- Trail connection adjustments with the Upper Big Water Trailhead would be relatively minor and involve only short sections of modified trails near the trailhead improvements.
- A joint utility trench would be constructed beneath the roadway with three conduits (empty pipes) installed. One conduit would be reserved for the relocation of the existing overhead powerline underground between the Winter Gate and Firs Cabins. The other conduits would be installed to accommodate potential future dry utilities, including utilities to support potential future communication systems in the canyon. Periodic pull boxes would be constructed to facilitate future utility line installation. No utilities would be installed in these conduits as part of the Proposed Action, and any future line installation would be completed by others.

2.2.6 Construction

Construction of the project is anticipated to require two seasons to complete. The construction season would start as soon as feasible after funding and approvals are obtained, anticipated around May 2025, and would continue until winter conditions prevent further construction, likely around December 1. The winter closure period would allow for winter recreation between December 15 and March 15, and possibly longer depending on conditions and the actual construction schedule. The USFS would continue to groom the snow along the road for recreation uses during the winter construction closure period.

Outside of the winter recreation period, the road and adjacent recreation areas would be closed to the public during construction. The construction contractor would be responsible for preparing and implementing a traffic control plan with public noticing. Firs Cabin owners would be provided with access to their cabins over four designated weekends (Memorial Day, Pioneer Day, Independence Day, and Labor Day) each construction season to check on cabins and perform any needed maintenance. During these scheduled access times, the roadway would be drivable by high-clearance vehicles such as trucks or sport utility vehicles. Steel plates to cover ditches, open trenches, and holes would be installed as necessary to allow vehicle passage. Mill Creek Canyon Road within the project area would remain closed to the general public during these weekends.

During the construction season, trails terminating in upper Mill Creek Canyon would be closed to prevent visitors from inadvertently entering the construction area. Trails paralleling upper Mill Creek Canyon (e.g., Pipeline Trail) would remain open. Trails connecting through Mill Creek Canyon would remain open and a crossing through the construction area would be provided at Elbow Fork. The USFS would be responsible for posting signs along trails at major intersections and trailheads before construction. Proposed trail closures and information sign locations are shown on Figure 9.

In general, season one would include survey and staking, clearing and grubbing, retaining wall construction, and major earthwork. Season two would include roadway construction and completion of the work. Standard mechanized construction equipment would be used to complete the project, including feller bunchers and log trucks during clearing operations; excavators and dozers for grading and rockery retaining wall construction; drills and concrete trucks for soil nail wall construction; cranes, backhoes, skid steers, and haul trucks for support; and pavers and rollers for road construction.

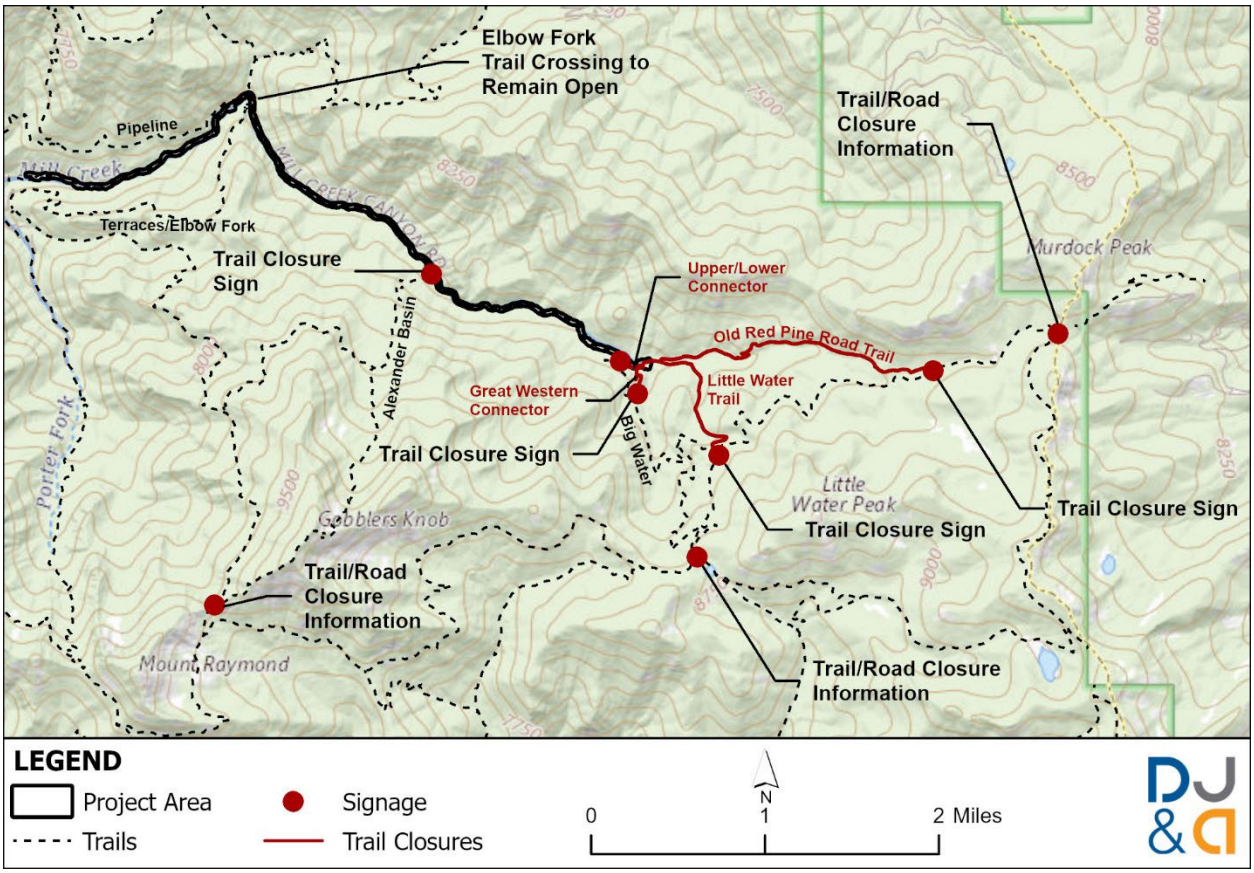

Figure 9. Proposed Trail Closure Plan

The construction contractor would be responsible for complying with FHWA-CFLHD's *Standard Specifications for the Construction of Roads and Bridges on Federal Highway Projects*, which includes standard best management practices (BMPs) and other practices to control erosion and dust, follow a spill prevention and cleanup plan, keep the work area clean, limit disturbance to the designated construction limits, and comply with applicable permits and regulations. The construction limits define the area in which the contractor may operate. For this project the construction limits include the extents of proposed improvements (e.g., top of cut slope, toe of fill slope) plus a 5-foot buffer around that area. The clearing and grubbing limits, mentioned previously, may extend up to the construction limits.

Dewatering or stream diversions are expected for in-stream work at White Bridge and other creek crossings, depending on stream flow levels. The construction contractor would prepare a dewatering plan for FHWA-CFLHD approval and obtain necessary permits before initiating any dewatering activities.

Staging is anticipated to be along the road, in designated areas within the construction limits, and at adjacent parking areas that would already be affected during construction. The construction contractor would identify staging, material sources, and other areas to be used for construction and ensure applicable approvals are obtained to use those areas.

2.2.7 Easements

The improvements described as part of the Proposed Action would take place on NFS lands and a small portion of land owned by Salt Lake County. In 1991 Salt Lake County was granted a 66-foot-wide easement (33 feet on both sides of the centerline) by the USFS pursuant to the FRTA, to operate and maintain the

roadway across NFS lands, including both the upper and lower sections of the canyon. The 1991 easement replaced the original Special Use Permit from 1939 that permitted Salt Lake County to design, build, and maintain the roadway. The existing easement does not include adjacent parking areas, trailheads, picnic areas, and other facilities as those are maintained by the USFS. Salt Lake County owns a parcel of land at the east side of the project area that overlaps with the Upper Big Water Trailhead parking area.

The existing county easement would be modified under the Proposed Action. The easement would remain at 66 feet but would be expanded at isolated locations to permit county maintenance of roadside structures, including retaining walls and culverts. These changes would add less than one acre to the easement, increasing the total easement area from approximately 37.0 to 37.7 acres. The existing easement would be replaced by a new FRTA easement. Recreation sites (e.g., parking areas, picnic areas, and trailheads) would remain outside of the easement and the USFS would continue to be responsible for the maintenance and management of the recreation sites. See Section 1.4 for information regarding a USFS NEPA decision specific to the new easement.

2.3 Alternatives Considered but Dismissed from Further Evaluation

FHWA-CFLHD considered input from the public and partner agencies when identifying alternatives to consider in this EA. Several alternative design options were initially considered but dismissed from further evaluation because they do not meet the purpose and need and/or are infeasible due to existing physical and/or natural resource constraints. These alternatives are discussed below, along with the rationale for dismissal.

2.3.1 24-Foot Road Width for Length of Project

An initial project concept to construct a roadway with two 10-foot lanes and a 4-foot climbing lane for bicycles all the way to Upper Big Water Trailhead was identified during the early planning phase. Preliminary design efforts revealed spatial constraints due to topography (narrow canyon with steep slopes) and sensitive resources (roadway directly adjacent to the stream at multiple locations) that rendered this concept impractical beyond Elbow Fork Trailhead. A 24-foot road width through the entire upper canyon would have resulted in undesired impacts to canyon aesthetics and Mill Creek. This concept did not meet FHWA-CFLHD's design approach for providing a context-sensitive solution. While the concept of widening the road would meet the purpose and need, this alternative was determined to be infeasible because of spatial constraints and environmental resource concerns.

2.3.2 20-Foot Road Width from Elbow Fork to Upper Big Water

To maximize uniformity and create consistency for driver expectations, one early concept involved a 24-foot road to Elbow Fork Trailhead and 20-foot road (two 10-foot lanes with no bicycle lane) from Elbow Fork Trailhead to Upper Big Water Trailhead. Design concepts in the upper part of the canyon revealed two localized areas where construction of a 20-foot roadway would be impractical due to existing box culvert widths, natural barriers (rock walls and steep slopes), and the location of the adjacent creek bed. Similar to the 24-foot road concept, this concept did not meet FHWA-CFLHD's design approach for providing a context-sensitive solution and was considered infeasible for similar reasons.

2.3.3 Separate Bicycle Path/Advisory Bicycle Lanes

Based on public comments, alternatives to roadside bicycle lanes were considered to increase cyclist safety. One of these options was a separated bicycle path that would parallel the roadway to separate cyclists from vehicle traffic. Due to the topography and constraints along the road, a separated bicycle path would not fit within the canyon adjacent to the road. Consequently, the bicycle path would need to be located on the

adjacent hillsides, requiring large cuts and fills as well as separate bridges where the path would need to cross Mill Creek and its tributaries. This concept would be cost prohibitive and result in extensive undesirable environmental resource impacts. Although the concept would reduce vehicle and bicycle conflicts, this alternative was determined to be infeasible due to various physical constraints and environmental resource concerns, and was eliminated from further analysis.

Advisory bicycle lanes (a.k.a., advisory shoulders or dashed bicycle lanes) were also considered to reduce conflicts between vehicles and cyclists. Advisory bicycle lanes delineate a safe space for bicycles on narrow, low-volume, low-speed roads. The bicycle lanes, typically delineated with dashed white lines, become a space shared by both vehicles and cyclists, with cyclists having the right-of-way when both are present. It was ultimately determined that advisory bicycle lanes were inappropriate in Mill Creek Canyon, primarily due to the traffic volumes experienced during weekends and holidays and sight distance constraints. Consequently, this alternative was dismissed from further consideration.

2.3.4 White Bridge Considerations

Several options were considered to preserve White Bridge. One option was to leave the bridge as-is, possibly with minor rehabilitation, and narrow the roadway as it approaches the bridge from both directions. This option would be unsafe due to the condition of the bridge railings, which are deteriorating, fail to extend above the wingwalls, and do not meet current design standards. Rehabilitation of the railings only was considered but determined infeasible without other structure improvements This option is also undesirable because it would add two more locations where the road width changes, and it would not accommodate a bicycle lane.

Road realignment, which would involve constructing a new bridge at a different location and retaining White Bridge as a historic structure, was also considered. Options for locating a new bridge are limited given the confined nature of the canyon. Natural resource disturbance associated with this option would be much higher, as would costs, than that associated with other options considered.

Thus, the above alternatives to bridge replacement were excluded from further evaluation.

2.3.5 Parking Area Considerations

Parking area designs were developed through an iterative process that considered different parking area sizes, configurations, and locations. The intent was to meet USFS direction to convert informal roadside parking spaces into an equivalent number of formal parking spaces. Design iterations evaluated the best way to meet these needs considering concentrated recreational use areas, trail access points, environmental impacts, visitor safety, and topographical constraints. Parking area locations were limited due to the steep-sided canyon with few flat areas. Creating new flat areas, while possible, would result in undesirable natural resource impacts.

2.3.6 Operational Considerations

Multiple options were considered related to operational changes to recreational use and access in Mill Creek Canyon based on public input. These included: (1) restricting private vehicle use and implementing a shuttle system, (2) implementing a system to limit the number of vehicles in the canyon at any given time, (3) incentivizing use during non-peak hours and days, (4) installing automated speed enforcement cameras, (5) implementing a reservation system for parking spots, and (6) restricting motorized vehicle use to every other day, among other suggestions.

The project's stated purpose is to improve user safety, access to recreational opportunities, and water quality degraded by surface erosion and poor drainage infrastructure. While these options have the potential to reduce congestion and improve user safety in upper Mill Creek Canyon, they do not address existing erosion issues or the inadequate drainage infrastructure. The ability of these operational considerations to improve recreational access varies, and many of them would restrict access to certain user groups, which is counter to improving recreational opportunities. As proposed, the project would not inhibit the implementation of any of these operational considerations in the future. However, these and similar types of operational considerations are beyond the scope of this project and fail to fully meet the project's purpose and need; thus, they were excluded from further analysis.

3. Affected Environment and Environmental Consequences

This chapter discusses environmental resource topics typically considered in environmental documents prepared for FHWA-CFLHD projects. It dismisses some resource topics from detailed evaluation and analyzes in detail those resources that are of potential concern in the project area or nearby areas. The dismissal rationale and analyses consider standard construction practices contained in *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects* (FP-14) that apply to all FHWA-CFLHD projects and are incorporated into the Proposed Action by default, which may avoid or reduce potential effects. Where adverse effects are identified, mitigation measures or other environmental commitments were developed to reduce adverse effects. Mitigation measures are discussed in the relevant resource sections below and listed in Section 5.3.

3.1 Resource Topics Dismissed from Further Evaluation

The following resource topics have been dismissed from detailed analysis because they are either not present in the project area or impacts to the resource associated with the Proposed Action are expected to be negligible.

- **Air Quality.** Construction activities would result in temporary, minor impacts to air quality, but would not be expected to adversely affect sensitive receptors (e.g., recreationists) in the area. Standard construction practices would be implemented to control fugitive dust during construction and reduce emissions associated with construction equipment. No long-term impacts to air quality are anticipated as a result of the project.
- **Environmental Justice.** The proposed road and parking improvements would accommodate all types of visitors to the canyon, with no changes to operations, and would not disproportionately affect minority populations or low-income populations, as defined in Executive Order 12898 and U.S. Department of Transportation Order 5610.2(c). No developed areas or population centers are in the project area.
- **Farmland.** Approximately 1.9 acres of land in the project area is mapped as having statewide importance for farmland purposes. This area extends eastward from the western edge of the proposed project for about 900 feet. Over 80% of this mapped area lies within the existing road easement, meaning that it is dedicated to transportation use and, therefore, not categorized as farmland within the easement. The portion of this mapped area lying outside of the easement but within the disturbance area (less than 0.5 acre) consists of small slivers of heavily vegetated land and the Winter Gate parking area within a confined part of the canyon corridor. Based on these factors, most of the area within the described map unit is disqualified from consideration as farmland due to the existing easement.
- **Geology and Soils.** Construction activities would involve soil and rock disturbance. Proposed improvements would address existing erosion issues by reducing informal parking, creating

formalized parking areas, and implementing a variety of design features to manage runoff and stabilize erodible surfaces. Standard construction practices would be used during construction to limit runoff and sediment transport and stabilize temporarily disturbed surfaces.

- **Hazardous Waste and Materials.** No known hazardous waste sites have been reported in or adjacent to the project area. Standard construction practices would be used to prevent hazardous materials associated with the operation of construction equipment from entering Mill Creek or contaminating the environment.
- **Noise.** No sensitive receivers would be present in the area during construction. Long-term noise levels would be similar to current conditions. Standard construction practices would be implemented to limit short-term noise-related impacts.
- **Paleontological Resources.** No fossils or paleontological resources are known to be present in the project area based on research performed as part of the environmental process, and no impacts to paleontological resources are anticipated. If paleontological resources are discovered during construction, standard inadvertent discovery protocols will be followed.
- **Section 6(f) Properties.** No properties subject to Section 6(f) of the Land and Water Conservation Fund Act of 1965 have been documented in or adjacent to the project area.
- **Socioeconomics.** No population centers are in or near the project area. The proposed road and parking improvements would benefit recreation access and user safety and would not alter the types of recreation opportunities in the canyon. Temporary expenditures associated with construction activities could benefit the local or regional economy, but the improvements would otherwise not alter the greater socioeconomic conditions in or around the project area.
- **Wild and Scenic Rivers.** There are no wild and scenic rivers in or adjacent to the project area.

3.2 Resource Topics Evaluated

The resource topics evaluated in detail and summarized in this section include Recreation and Access, Vegetation, Terrestrial and Aquatic Wildlife, Water Resources and Quality, Visual Resources, Archaeological Resources, Architectural Resources, and Land Use. Section 4(f) resources are summarized and evaluated in Chapter 5. Any resource-specific mitigation measures beyond the standard design considerations (USDOT 2014) are outlined in Chapter 5, Summary List of Mitigation Measures, and referred to in text by a resource-specific mitigation measure number (e.g., VEG-1, WL-1, ARCH-1).

3.2.1 Recreation and Access

This section describes the recreation resources in and near the project area. Information in this section is based on published recreation use studies, the 2003 Wasatch-Cache National Forest Revised Forest Plan, communication with the USFS and Salt Lake County, 70% project design plans, and an understanding of the recreation resources and values obtained through the public involvement process for this project. The analysis area used for this resource includes the project area and adjacent developed recreation areas (e.g., trails) that are commonly accessed from the project area.

Affected Environment

Mill Creek Canyon is a heavily used recreation resource located near Salt Lake City, Utah, a metropolitan area that has experienced rapid growth over the last decade. A recent visitor use study in Mill Creek Canyon (Smith and Lamborn 2023) estimated annual visitation in the canyon (upper and lower) at 434,000 recreational visits. The dominant primary activity reported by visitors was hiking (67%), followed by picnicking (21%). Biking, nature viewing, cross-country skiing, backcountry skiing, and “other activities”

each accounted for between 1% and 3% of the primary activities reported by visitors. This study also compared visitors' perceptions of the importance or a particular experience with their satisfaction of that experience. This comparison can be used by land managers to target improvements where importance is high and satisfaction is relatively low. Four factors in Mill Creek Canyon were identified where importance exceeded satisfaction: road conditions, restroom cleanliness, parking availability, and natural environment conditions.[5] Annual visitation to recreation resources in Mill Creek Canyon is expected to grow in proportion to the population growth in the greater Salt Lake City area, and high usage is expected to continue (Envision Utah 2010).

The USFS classifies the Recreation Opportunity Spectrum (ROS) for the project area as "Roaded Natural" (USFS 2003), meaning the setting is characterized as predominately natural appearing with moderate sights and sounds of human activities and development and may include improved highways; developed campgrounds and other recreation sites; small resorts and summer homes; and evidence of other multiple uses and management activities. The density of use is moderate except at developed sites, where concentrations of use are higher. Regulations pertaining to user behaviors are common. Adjacent areas are managed as "Semi-Primitive Non-Motorized" and "Wilderness/Semi-Primitive Non-Motorized" (USFS 2003). These areas are generally characterized as predominantly natural appearing landscapes with minimal rustic improvements to protect resources and varying levels of remoteness.

Mill Creek Canyon Road runs the length of the canyon up to the Upper Big Water Trailhead parking area and is subject to seasonal (winter) vehicle closure. The Winter Gate, which is near the west edge of the project area, marks the beginning of the seasonal closure. The Winter Gate typically closes on November 1; however, early-season snowfall can result in earlier closure. The roadway typically reopens around July 1 depending on the seasonal snowpack and rate of snowmelt. The following sections describe recreation and recreation access in the project area during these two distinct seasons.

Open Gate (Summer Conditions)

When the road is open to vehicular traffic, vehicles and cyclists share the road. Most hikers, dogwalkers, anglers, and many mountain bikers access trailheads by car and park at the trailheads or along the road in informal parking areas.

Mill Creek Canyon Road is popular with cyclists, as it offers a challenging and scenic 9-mile climb, the upper half of which is located in the project area, followed by a fast descent. The road within the project area contains no dedicated bicycle lanes and has little to no paved shoulders, so cyclists share the travel lanes with motorists. Mountain bikers frequently use the surrounding trail system but will sometimes climb or descend Mill Creek Canyon Road to access trailheads. Mountain bikers using the trail system often cross Mill Creek Canyon Road at Elbow Fork to connect to popular mountain bike trails.

The project area contains six picnic areas and five major trailheads that provide access to a robust network of trails. The trail system extends well beyond Mill Creek Canyon, providing connections to Big Cottonwood Canyon to the south, Lambs Canyon to the northeast, and Snyderville and Park City to the east.

Parking areas, trailheads, and picnic areas within the construction limits, and described previously in Chapter 2, include: Maple Grove Picnic Area/Winter Gate parking area, White Bridge Picnic Area, Elbow Fork Trailhead, Alexander Basin Trailhead, and Upper Big Water Trailhead.

[5] The Proposed Action has been designed to address all four of these importance-satisfaction gaps to various degrees.

Recreation sites in the project area but outside of the construction limits include:

- **Maple Cove Picnic Area.** The Maple Cove Picnic Area, located on the north side of the road about 0.5 mile east of Winter Gate, has five picnic tables and a vault toilet.
- **Evergreen Picnic Area.** The Evergreen Picnic Area, located on the south side of the road about 1.0 mile east of Winter Gate, has five picnic tables and a vault toilet.
- **Fir Crest Picnic Area.** The Fir Crest Picnic Area, located on the north side of the road about 0.8 mile east of Winter Gate, has four picnic tables and a vault toilet.
- **Clover Springs Picnic Area.** The Clover Springs Picnic Area, located on the north side of the road about 1.0 mile east of Elbow Fork, has multiple picnic tables and a vault toilet.
- **Lower Big Water Trailhead.** The Lower Big Water Trailhead is in the eastern portion of the project area, about 350 feet west of Upper Big Water Trailhead, and provides access to the Great Western Trail (Upper Pipeline) and the Lower Big Water Link Trail. This trailhead also serves as overflow parking for the Upper Big Water Trailhead and is connected by a trail that parallels the roadway. The parking area can accommodate about 20 passenger vehicles. This trailhead has a vault toilet.

Mill Creek Canyon Road ends at the Upper Big Water Trailhead. This trailhead and Lower Big Water Trailhead fill up early on weekend mornings. Vehicles queue in this area, either waiting for a parking space to become available or waiting in line to turn around and head back down the canyon. The narrowest segments of Mill Creek Canyon Road are near these two trailheads. At some locations, vehicles must pull onto the road shoulder to pass one another. High use combined with the narrow roadway results in increased congestion in this part of the upper canyon, particularly during periods of high visitation. Vehicle congestion often exacerbates conflicts between motorists and cyclists.

Informal roadside parking is common along Mill Creek Canyon Road, especially near popular trailheads and picnic areas. Informal parking is also used by anglers to access fishing spots far removed from designated recreation areas. Most informal parking areas are large enough that vehicles can pull entirely off the road. However, smaller areas result in parked vehicles extending into the roadway, further narrowing the usable road width, and reducing sight distance. Visitors who use informal parking spots either walk along the road, which can result in conflicts between motorists and pedestrians, or use informal social trails adjacent to the road, which can damage vegetation and contribute to erosion.

In addition to the recreation resources described above, the Firs Cabins are a Recreation Residence Tract consisting of 24 cabins located about 2.8 miles east of the Winter Gate. Cabin use is authorized by the USFS through special use permits. Permittees can access the cabins throughout the summer season when the Winter Gate is open. Cabin leaseholders also have motorized access during the shoulder seasons, when the gate is closed but the road is clear. The cabins are supplied with power but no other utilities.

Closed Gate (Winter Conditions)

Although closed approximately eight months of the year, the upper portion of Mill Creek Canyon Road sees considerable use during this time. The road is groomed for cross-country skiing and is also used by snowshoers, hikers, dog walkers, and snow-bikers. The snow-covered road also provides access to backcountry terrain for skiers and snowboarders. The USFS classifies the entire project area east of Winter Gate as a nonmotorized winter recreation area (USFS 2003), so all winter travel must be nonmotorized. The primary access point is the Winter Gate parking area, immediately west of Winter Gate. The parking area always fills up on weekends and holidays, and frequently after typical work hours on weekdays at which point recreationists begin using overflow parking areas, the closest of which is located about 800 feet west of the Winter Gate parking area. During the gate closure period, vault toilets at Elbow Fork

Trailhead, Clover Springs Picnic Area, and Upper Big Water Trailhead are open to the public and maintained by the USFS.

When the gate is closed but the road is dry, typically in late spring, the road provides road bikers a unique opportunity to ride above Winter Gate without vehicular traffic. The road is also used as a trail by walkers, runners, and dog walkers; for fishing access by anglers; and for trail access by mountain bikers.

Environmental Consequences

This section discusses the environmental consequences of the No Action alternative and Proposed Action on recreation resources in and near the project area. If adverse effects are expected, mitigation measures are identified to reduce or avoid the effects. A comprehensive list of mitigation measures is provided in Section 5.3.

No Action Alternative

Under the No Action alternative, no changes to recreation access or opportunities would occur. Recreation use of upper Mill Creek Canyon is expected to continue increasing as Salt Lake County's population increases, increasing the use of Mill Creek Canyon facilities and leading to more frequent vehicle congestion and user conflicts. Continued recreation use in the project area would lead to ongoing erosion and vegetation damage associated with existing informal parking spaces and trails with no alleviation of congestion along the roadway. Safety concerns associated with the narrow and inconsistent road width, poor sight distance, informal parking, and a lack of bicycle lane or road shoulder would remain.

Operation and use of the Firs Cabin Recreation Residence Tract would continue under current conditions, with the USFS overseeing use via special use permits. Existing utilities (power supplied to Firs Cabins) would not be modified and would continue to be maintained and updated as needed by the utility provider.

Although recreation access would remain similar to current conditions, White Bridge is nearing the end of its design life, and it is conceivable that further aging and deterioration of the structure would render it unsafe for vehicle passage. If White Bridge is closed in the future due to safety concerns, vehicles (and possibly bicycles and pedestrians) would not be able to access the upper canyon beyond the bridge, impeding recreation access in the upper canyon. In addition, ongoing roadway degradation would continue until a roadway maintenance project, such as paving, is undertaken. The narrow roadway would remain, limiting opportunities for future shuttle or transit opportunities.

Proposed Action

The Proposed Action would result in both positive and negative impacts to recreation and access in upper Mill Creek Canyon. This analysis discusses short-term impacts associated with temporary access restrictions and closures during construction and long-term impacts associated with access improvements and modifications to recreation resources.

Short-Term Impacts. Spring, summer, and fall access to recreation resources in the upper canyon would be limited or restricted for the 2-year construction period. All recreation areas (parking areas, trailheads, and some trail segments) accessed directly from Mill Creek Canyon Road would be closed to public access for the duration of construction with the following exceptions:

- Winter recreation would be maintained as follows: a winter construction shutdown would extend from December 15 to March 15, possibly longer depending on the timing of seasonal snowfall and snow melt. During the construction shutdown, the road beyond the gate would be groomed and winter

recreation would be permitted as usual. The Winter Gate parking area west of the gate would be open for public parking as usual during this time. The USFS would plan to open vault toilets for public use at Elbow Fork Trailhead (until this toilet is removed, during the construction period) and Clover Springs Picnic Area during this period. The yurt and vault toilet at Upper Big Water Trailhead would likely remain closed.

- Construction would cease for four weekends (Memorial Day, Pioneer Day, Independence Day, and Labor Day) during the construction season to allow Firs Cabin owners to check on cabins and perform any needed maintenance. The road would be made passable to high-clearance vehicles during these weekends. Aside from Firs Cabin owners, public road access would not be allowed.

The roadway throughout the project area would be closed to public access during construction. Adjacent recreation sites (picnic areas and trailheads) would also be closed during construction because they would be inaccessible. Most trails in the area would remain open. Trails terminating in upper Mill Creek Canyon would be closed to prevent visitors from ending up in the construction area. Trails paralleling upper Mill Creek Canyon (e.g., Pipeline Trail) would remain open but might have shorter closures during trail realignment projects. Trails connecting through Mill Creek Canyon would stay open and a crossing through the construction area would be provided at Elbow Fork. Trails would be posted accordingly with signs at major intersections and trailheads prior to construction. Potential conflicts and concerns for trail users would be alleviated through a trail closure plan that would detail alternative access points to trails that can be accessed from outside of the project area, providing that this access does not interfere with construction activities.

These recreation closures and access restrictions would likely push users to adjacent recreation areas offering similar opportunities, such as lower Mill Creek Canyon, Neffs Canyon, Big Cottonwood Canyon, Little Cottonwood Canyon, City Creek Canyon, and several smaller recreation areas scattered throughout the Wasatch Front. Residents living near the base of Mill Creek Canyon who visit the upper canyon frequently would be most impacted by short-term construction closures as they would need to travel farther to reach these alternate locations. Users travelling farther distances to reach Mill Creek Canyon could more easily choose alternate destinations with little to no adverse impact. It is likely that other recreation areas near Mill Creek Canyon would experience increased use levels, which has the potential to negatively impact the experience of recreationists seeking solitude. Considering the quantity of alternative, nearby recreation locations offering similar opportunities, it is anticipated that upper Mill Creek Canyon users would disperse among these options and not contribute to adverse effects in these alternate locations.

USFS special use permittees require special consideration as they cannot relocate their use to adjacent recreation sites. Firs Cabins special use permittees would not be able to access their cabins by vehicle aside from the four weekends mentioned previously. These impacts would be temporary and unavoidable. To help alleviate impacts to Firs Cabins permittees, the USFS anticipates that lease fees will be discounted for cabin owners during the 2-year construction period. No other special use permits are expected to be impacted by the Proposed Action.

Long-Term Impacts. The proposed improvements to recreation resources along Mill Creek Canyon Road would be consistent with the USFS ROS classification of "Roaded Natural" because all characteristics describing this classification (summarized above) would remain applicable to the project area after the Proposed Action is implemented. Portions of the project area with semi-primitive non-motorized ROS classifications would not be impacted by the proposed action because no work would be done in these areas and their characteristics would not change as a result of the project. Vehicle travel along the roadway would be safer and less congested due to the wider and more consistent lane widths and increased sight distance. The new road surface would also improve recreationist experiences through the elimination of potholes and

other damaged pavement sections. The speed limit would remain the same, so user experiences related to vehicle travel speeds would not be impacted.

Parking throughout the upper canyon would be made safer by consolidating parking at formalized parking areas with improved ingress and egress. Parking areas at trailheads and picnic areas will be more user-friendly for people with physical disabilities. The elimination of many informal parking areas and formalization of others would also increase user safety as motorists would be prevented from parking vehicles where egress is dangerous or where they cannot park completely off the roadway.

The elimination of some informal parking spaces may be viewed by some user groups, such as anglers, as negative because it would restrict their ability to use less popular access points. FHWA-CFLHD and USFS evaluated fishing access and other recreation opportunities to minimize these impacts. The formalization of several previously informal roadside parking areas throughout the canyon would help alleviate such impacts. While the net number of parking spaces in the upper canyon is not expected to increase, the Proposed Action would formalize and redistribute available parking spaces to better meet user needs based on historic use patterns. Formalized parking areas would also provide a safer place for recreationists to prepare for their trip after parking (e.g., remove bikes from bicycle racks, leash up dogs, prepare to ski or snowshoe, etc.).

The expansion of the Winter Gate parking area would require the removal of two accessible picnic tables on the south side of the road. The Maple Grove picnic area on the opposite side of the creek at this location would not be altered. This picnic area includes multiple picnic tables, one of which is accessible.

The Proposed Action would also result in improved cyclist safety by adding an uphill bicycle lane from Winter Gate to Elbow Fork. Above Elbow Fork, the widened roadway creates more space for vehicles and cyclists to share the road. Sight distance and parking improvements discussed above would also improve cyclist safety as motorists would be able to see cyclists from farther away, and vehicles parked along the roadway would be less likely to impede that sight distance or encroach directly into the bicycle lane or roadway. Crosswalks and other signs would be added to further increase pedestrian and cyclist safety.

The replacement of existing and addition of new vault toilets would improve recreational experiences and help protect water quality. Vault toilet installations similar to that shown in Figure 10 are planned at the Winter Gate, Elbow Fork, Alexander Basin, and Upper Big Water parking areas. Other amenities at these locations will also contribute to improved user experiences and increased accessibility, such as sidewalks and informational kiosks.

Figure 10. Double Rocky Mountain Vault Toilet

Other proposed improvements, such as the addition of retaining walls and drainage elements throughout the project area, would not directly impact recreation resources or public access in the long term. Indirectly, retaining walls would be necessary to facilitate the previously mentioned recreational benefits (e.g., wider roadway and parking area improvements). Similarly, drainage improvements would provide indirect recreational benefits by reducing erosion, improving water quality, enhancing aquatic habitat, and ensuring continued access into the upper canyon (e.g., where White Bridge is replaced with a new structure). These project impacts have the potential to provide recreational benefits in the form of improved visual resources (cleaner water and fewer eroded surfaces) and improved fish habitat and thus fishing opportunities.

Users of the Firs Cabin tract would also benefit from the road improvements over the long term as the project would ensure continued access to the cabins, as allowed under current operations.

Removal of roadside vegetation would result in more sun exposure along portions of Mill Creek Canyon Road. Tree removal on the south side of roadway has been minimized, especially in the lower portion of the project area, which melts out earlier than the higher elevations of the upper canyon. Where possible, roadway widening occurs along the northern portion of the road, allowing the existing trees on the south side to remain and continue shading the roadway. In some areas, increased sun exposure could result in increased rates of snowmelt from the roadway, so recreationists may encounter patches of bare asphalt earlier in the spring compared to the No Action alternative.

No long-term operational or management changes are associated with the Proposed Action. Once construction is complete, preexisting access opportunities, maintenance, and seasonal gate closures would resume. The Proposed Action would have no impact on the types of recreation allowed in upper Mill Creek Canyon.

3.2.2 Vegetation

This section presents an overview of the vegetation communities found in or near the project area, including forests, riparian areas, and wetlands; invasive plants that have been documented in the project area during survey efforts; and Region 4 Regional Forester's Sensitive Species List (R4FSS) plant species that have potential to occur in or near the project area. Information in this section is based on the Biological Resources Existing Conditions Report (HDR 2023b) and USFS Botany Survey Summary (USFS 2023). These included a review of species occurrences in and around the project area and field surveys to assess habitat conditions and potential for federally listed and R4FSS plant species to occur. Field surveys were conducted in and around the project area.

Federally listed species are those that are protected under the Endangered Species Act (ESA), and if listed species could be affected by a federal agency action, the federal agency is responsible for initiating consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service, who are the agencies responsible for administering the act. No plant species that are threatened, endangered, or candidates for listing under the ESA have the potential to occur in or around the project area (HDR 2023b); therefore, these species are not further discussed in this EA. R4FSS plant species are species identified as a concern through USFS planning efforts and warrant special consideration for activities on NFS lands. Several R4FSS plant species could occur in the project area and are discussed below.

Affected Environment

Vegetation found in the project area is common to the Wasatch Mountains. Communities consist primarily of forests, riparian areas, and wetland areas. Many of the vegetation communities in the project area have been disturbed to some extent by the existing road, unauthorized roadside parking areas, and informal trails leading from the unauthorized parking areas to nearby trails and recreation areas. Erosion and runoff are exacerbated in disturbed areas due to reduced vegetation cover and soil compaction. Ongoing ground disturbance from the use of informal parking areas and trails perpetuates the ability of invasive plant species to spread into other areas and reduces the quality of habitat for R4FSS plant species, specifically in areas between the road and Mill Creek.

Vegetation Communities

The forest community is well represented in the Mill Creek corridor and is found on steep slopes within the project area. The forest community is also found on rock outcrops that extend to the southern edge of the

existing road, especially in the eastern portion of the project area. Forests are also associated with small inclusions of isolated upland shrubby areas and clearings with gaps in canopy cover. The largest of these clearings is a small (less than one acre) grassy meadow on the easternmost end of the project area, adjacent to the Great Western Trailhead. The forests in the project area contain a dense overstory of trees, primarily Rocky Mountain maple (*Acer glabrum*), bigtooth maple (*Acer grandidentatum*), Gambel oak (*Quercus gambelii*), Douglas-fir (*Pseudotsuga menziesii*), quaking aspen (*Populus tremuloides*), and boxelder (*Acer negundo*). The understory of these forests, which serve as its own mountain-brush community, is composed primarily of shrubby species, including common snowberry (*Symphoricarpos albus*), Oregon boxleaf (*Paxistima myrsinites*), and blue elderberry (*Sambucas nigra* ssp. *Cerulea*). Much of the forest community provides low quality habitat immediately adjacent to the roadway because it has already been disturbed by past road construction, current informal roadside parking, and stormwater and snowmelt runoff. The USFS manages forested areas in the project vicinity under the 2003 Wasatch-Cache National Forest Revised Forest Plan, which provides goals, objectives, standards, and guidelines for minimizing impacts to and maintaining the resource (USFS 2003).

Riparian areas are dispersed and intertwined throughout the project area. These riparian areas follow and are adjacent to Mill Creek, which parallels and crosses Mill Creek Canyon Road in the project area. Riparian areas in the project area are generally a mix of trees and shrubs. Common riparian plant species in the project area include redosier dogwood (*Cornus sericea*), Utah honeysuckle (*Lonicera utahensis*), watercress (*Nasturtium officinale*), northern black currant (*Ribes hudsonianum*), Bebb willow (*Salix bebbiana*), blue elderberry (*Sambucus nigra* ssp. *Cerulea*), narrowleaf willow (*Salix exigua*), water birch (*Betula occidentalis*), and narrowleaf cottonwood (*Populus angustifolia*). The USFS manages riparian areas as Riparian Habitat Conservation Areas (RHCAs) under the 2003 Wasatch-Cache National Forest Revised Forest Plan, which provides goals for minimizing impacts to the resource (USFS 2003). Management requirements for RHCAs are discussed in the Land Use section.

During survey efforts, wetlands were found in three isolated areas, two of which are associated with Mill Creek and one of which is associated with Thousand Springs, a complex of springs that serves as a tributary to Mill Creek. Hydrophytic (wetland) vegetation associated with these areas includes narrowleaf willow (*Salix exigua*), redtop (*Agrostis gigantea*), common threesquare (*Schoenoplectus pungens*), watercress (*Nasturtium officinale*), and western goldentop (*Euthamia occidentalis*). The USFS also considers wetland areas as RHCAs. These wetland areas total approximately 0.04 acres within the project area and are approximately 1.25 miles down canyon from Upper Big Water Trailhead. One is immediately adjacent to the pond described in the Water Resources and Quality section, opposite the roadway, and is dominated by willows. The second wetland is located on the south side of the road approximately 200 feet east of the pond. This wetland sits at the base of the roadway fill slope and is saturated, with a thick cover of herbaceous plants. The third wetland is located within Thousand Springs, also described in the Water Resources and Quality section. It is on the lower third of the hillside at Thousand Springs and includes numerous herbaceous plants.

Invasive plant species are known to occur in the project area and have potential to occur in all vegetation communities discussed above. White top (*Lepidium draba*), wand mullein (*Verbascum virgatum*), lesser burdock (*Arctium minus*), gypsy flower (*Cynoglossum officinale*), field sowthistle (*Sonchus arvensis*), field bindweed (*Convolvulus arvensis*), dalmatian toadflax (*Linaria dalmatica*), Canada thistle (*Cirsium arvense*), and bull thistle (*Cirsium vulgare*) occur in the lower part of the project area near the Winter Gate (Kovel 2021). Additional invasive species scattered along the length of the project area include common mullein (*Verbascum 27hapsus*), common dandelion (*Taraxacum officinale*), prostrate knotweed (*Polygonum aviculare*), annual ragweed (*Ambrosia artemisiifolia*), and black medic (*Medicago lupulina*). These latter species occur in individual, isolated instances rather than continuous, large patches.

Region 4 Regional Forester's Sensitive Species List

The USFS manages sensitive plants on NFS lands through each Forest's plan and monitors other species that could warrant future federal listing or protection in the future. The species are designated by the USFS R4FSS in part because their habitats or populations are trending downward and are managed to prevent them from becoming federally listed under the ESA. Based on biological studies, 11 sensitive or watch list species have the potential to occur in or near the project area, as described below (HDR 2023b; USFS 2023). The USFS recorded three of these species in the project area—two previously unknown occurrences of sand fleabane (*Erigeron arenarioides*), a watch list species, and one previously known population of Wasatch fitweed (*Corydalis caseana* ssp. *Brachycarpa*), a sensitive species (USFS 2023).

- **Slender moonwort (*Botrychium lineare*).** The preferred habitat of slender moonwort is highly variable, occurring in both meadows and roadsides. Suitable habitat exists throughout the project area along roadsides and in clearings (HDR 2023b).
- **Wasatch draba (*Draba brachystylis*).** The preferred habitat of Wasatch draba includes moist locations on rocky slopes in montane vegetation communities. Suitable habitat exists in select locations, primarily on the south side of the roadway in the upper portion of the canyon, where rocky slopes are present in forested areas (HDR 2023b; USFS 2023).
- **Wasatch fitweed (*Corydalis caseana* ssp. *Brachycarpa*).** Wasatch fitweed grows in or along streams. Suitable habitat exists in and surrounding the wetland areas and within riparian areas along Mill Creek throughout the project area (HDR 2023b). USFS has documented occurrences in and near the project area, including a large hillside population of Wasatch fitweed with the closest plant approximately 30 feet from the roadside (USFS 2023).
- **Wasatch jamesia (*Jamesia americana* var. *macrocalyx*).** Wasatch jamesia grows in cracks and crevices of rocky slopes within mountain brush and spruce-fir communities. Suitable habitat exists in the shrubby understory of the forests in the project area, primarily on the south side of the roadway in the upper portion of the canyon where substrate in the forest tends to be rockier (HDR 2023b; USFS 2023).
- **Wasatch pepperwort *(Lepidium montanum* var. *alpinum*).** Wasatch pepperwort is typically found in damp crevices of cliffs and ledges within mountain brush and spruce-fir communities. Suitable habitat exists in the shrubby understory of the forests in the project area, primarily on the south side of the roadway where it is shaded and tends to be damper (HDR 2023b; USFS 2023).
- **Wasatch shooting star (*Dodecatheon dentatum* ssp. *Utahense*).** Wasatch shooting star prefers shady, moist, mossy places in cracks and crevices where water is seeping or flowing. Suitable habitat exists throughout the riparian area along Mill Creek and within the wetland area associated with Thousand Springs (HDR 2023b).
- **Wheeler's angelica (*Angelica wheeleri*).** Wheeler's angelica prefers wet areas of riparian communities or in seeps and springs. Suitable habitat exists at Thousand Springs and adjacent to Mill Creek throughout the project area (HDR 2023b).
- **Broadleaf beardtongue (*Penstemon platyphyllus*).** Broadleaf beardtongue grows in open, rocky sites within mountain brush communities. Suitable habitat exists throughout the project area where gaps in canopy cover occur within forested areas (HDR 2023b). The USFS has a documented occurrence in Mill Creek Canyon but outside of the project area.
- **Burke's draba (*Draba maguirei* var. *burkei* or *Draba burkei*).** Burke's draba grows in crevices of rock outcrops and shallow, rocky soils in the vicinity of outcrops on a variety of substrates. Suitable habitat exists in forested areas associated with Douglas-fir throughout the project area (USFS 2023).

- **Sand fleabane (*Erigeron arenarioides*).** Sand fleabane grows in crevices of rock outcrops in the Wasatch Mountains. Suitable habitat exists in rocky crevices found intermittently throughout the project area (HDR 2023b). Two occurrences of sand fleabane were documented in the project area in cliff outcroppings near the road southwest of the Elbow Fork area (USFS 2023).
- **Tower rockcress (*Arabis glabra* var. *furcatipilis*).** Tower rockcress grows in mountain brush, pinyon-juniper, aspen, aspen/maple, and spruce-fir communities. Suitable habitat exists throughout the project area where gaps in the forest overstory occur and where aspen and maple form the dominant overstory of forested areas (HDR 2023b; USFS 2023).

Environmental Consequences

This section discusses the environmental consequences of the No Action alternative and Proposed Action on vegetation communities, R4FSS plant species, which includes watch list plants, and invasive species/noxious weeds in the project area. If adverse effects are expected, mitigation measures are identified to reduce or avoid the effects. A comprehensive list of mitigation measures is provided in Section 6.3.

No Action Alternative

Under the No Action alternative, no new impacts to vegetation in the project area would occur. Ongoing disturbances associated with the continued use of informal parking areas and associated trails would continue and could result in inadvertent damage to R4FSS plant species and spread of invasive species. Vegetation in the project area would continue to be managed under the 2003 Wasatch-Cache National Forest Revised Forest Plan, which includes ongoing noxious weed management and inventory across the forest and monitoring considerations for sensitive species as applicable to implementation of projects on NFS land (USFS 2003). The planned Mill Creek Stewardship Fuels Treatments would remove understory vegetation, dead or dying trees, and downed woody materials. This vegetation thinning is intended to increase resistance to wildfire and insects but will result in less overall vegetation.

Proposed Action

The Proposed Action would result in varying levels of disturbance and vegetation removal in the project area, which could also affect R4FSS plant species and facilitate the spread of invasive plants and noxious weeds. This analysis focuses primarily on direct and indirect effects that could be short- or long-term. Short-term or temporary effects would be associated with construction activities and would allow for the re-establishment of the original vegetation. Long-term or permanent effects would lead to a loss or conversion of vegetation types.

Vegetation Communities. Clearing and grubbing activities to accommodate road widening, parking area expansions and construction, new trail establishment, and associated improvements would disturb or remove vegetation from forested and riparian communities adjacent to the existing road and parking areas. Many of these areas have already been disturbed by visitor use, but areas further from existing improvements are less disturbed.

Tree removal would be required in some areas, and many of the trees are considered merchantable timber and would require a removal permit or contract from the USFS. FHWA-CFLHD will continue coordinating with the USFS to ensure the proper permit or contract is obtained. To minimize the number of trees that are removed, the design incorporates removal of large trees only where necessary for construction, selective tree removal in certain areas, and protection of clumps of trees where feasible. The use of retaining walls in areas of road widening also reduces the disturbance area and would help protect adjacent vegetation and stabilize slopes over the long term.

Where disturbance is considered temporary and vegetation is removed (up to about 5 feet beyond the permanent facility footprint), standard practices require seeding of the disturbed area with a USFS-approved native seed mix, which typically consists of grasses and forbs, and protection with appropriate BMPs to prevent soil erosion. For disturbed areas with understory vegetation that consists of grasses and forbs, this impact is considered short term, as the vegetation would reestablish soon after construction. In forested and riparian areas, this is a long-term impact that would result in a loss of forested and riparian vegetation due to the conversion of the communities from trees and shrubs to grasses and forbs. Based on impact calculations, a total of approximately 16.0 acres of forests would be permanently lost or converted and approximately 4.5 acres of riparian vegetation would be temporarily disturbed or permanently converted. The long-term impacts are considered negligible based on the relatively small area of impact adjacent to existing roads and parking areas and in relation to the extent of these vegetation communities in the surrounding area.

Proposed activities along Mill Creek, particularly the culvert replacements and modifications, would require some removal of woody riparian vegetation that provides shaded canopy cover over the stream and helps stabilize the stream banks. This removal would be limited to the smallest area necessary to accommodate the proposed improvements and associated construction activities. A temporary loss of vegetation would occur until it can naturally reestablish, and where the woody vegetation cover does not fully reestablish, this impact would be considered permanent. This loss of streamside vegetation could have other effects to water quality and aquatic species, as discussed in the Water Resources and Quality and Terrestrial and Aquatic Wildlife sections, respectively, but these are expected to be short term and minimal.

To facilitate reestablishment of woody riparian vegetation and comply with USFS requirements for RHCAs, FHWA-CFLHD will prepare a riparian restoration plan in coordination with USFS (Mitigation Measure VEG-1) and ensure standard BMPs are implemented to protect disturbed areas from erosion during and after construction. The riparian restoration plan could include actions such as willow or other riparian shrub plantings and monitoring post-planting areas for successful establishment.

Roadway widening could result in the temporary disturbance of wetland vegetation; however, the current design incorporates context-sensitive design considerations, such as minimizing roadway widening and applying standard construction practices to limit disturbance and protect wetland vegetation. Drainage improvements under the Proposed Action would reduce long-term water quality impacts to the wetlands in the project area, which would better support wetland vegetation.

Although construction activities can facilitate the establishment or spread of invasive plants and noxious weeds, standard practices, such as washing equipment before entering the work area, reseeding disturbed areas with a USFS-approved native seed mix, leaving natural vegetation buffers in place where possible, and using weed-free materials and devices, would help reduce this potential (Mitigation Measure VEG-3). Where known populations of invasive plants or noxious weeds are found in the project area, the clearing and grubbing activities would remove them, which would help control their spread. The establishment of formal parking areas and trail connections would also help reduce visitor use-related disturbances to vegetation and the spread of invasive plants and weeds over the long term.

R4FSS. Most of the proposed improvements are unlikely to disturb R4FSS plant species because they would take place in areas that are unlikely to support the plants. Activities in areas that could support the plants have the potential to disturb or remove individuals if present, although the potential for this impact is considered unlikely for species that have not been documented in the project area. Removal of vegetation in and disturbance to riparian habitat could result in the removal or damage of Wasatch fitweed and Wasatch shooting star if present. Retaining wall construction and roadway improvements along steep slopes could result in the removal of or damage to individuals of Wasatch draba, Wasatch jamesia, Wasatch pepperwort, Burke's draba, and sand fleabane if present. In forested areas, roadway widening, parking area

improvements, and associated activities could result in the removal of or damage to individuals of tower rockcress if present.

The Wasatch fitweed population in the Thousand Springs area partially overlaps the anticipated construction limits, and some individuals may be removed during clearing and grubbing activities. Most of the population would not be disturbed, and as a protection measure, FHWA-CFLHD would coordinate with the USFS and construction contractor to flag or clearly mark the construction limits on the south side of Mill Creek Road at the location of the known population to avoid inadvertent disturbance beyond those limits (Mitigation Measure VEG-2). In addition, the two known populations of sand fleabane may be disturbed during road widening activities, but avoidance may be feasible if the steep slopes adjacent to the road can be left undisturbed during construction. As a protection measure, FHWA-CFLHD will coordinate with the USFS and construction contractor to flag the populations prior to construction activities in the area and assess the ability to protect the plants (Mitigation Measure VEG-2).

Although the Proposed Action could affect individuals of Wasatch fitweed and sand fleabane, it would not cause a trend towards federal listing or loss of viability of the R4FSS plant species, which includes USFS watch list plants. None of the other R4FSS plant species are expected to be affected.

3.2.3 Terrestrial and Aquatic Wildlife

This section presents an overview of wildlife found in the project area, including general terrestrial and aquatic species, a candidate species under the ESA, R4FSS wildlife species, and migratory bird species. Information in this section is based on the Biological Resources Existing Conditions Report (HDR 2023b), which included a review of species occurrences in and around the project area and field surveys to assess habitat conditions and potential for federally listed, candidate, and R4FSS wildlife species to occur. Field surveys were conducted in and around the project area to encompass areas that could potentially be disturbed by project activities. No wildlife species that are threatened or endangered under the ESA have suitable habitat and therefore it is not anticipated that they will occur in the project area (HDR 2023b); therefore, there will be no effect to these species, and they are not further discussed in this EA. This includes the North American wolverine (*Gulo gulo luscus*), which was listed as threatened under the ESA in November 2023.

Affected Environment

The project area includes several different habitat types that are home to a variety of wildlife species. These habitats consist broadly of riparian, forested, and wetland areas as discussed above in the Vegetation section. Within the forest community, habitats can be further broken out into areas that are considered upland, rocky, moist, dry, cliffy, or open areas that create microhabitats and provide habitat requirements for wildlife. Within the riparian and wetland community in the project area, niche habitats include springs, seeps, cliffs, and pond areas. High visitor use in the canyon causes noise and visual disturbance as part of the baseline conditions; however, wildlife sightings are common.

General Terrestrial and Aquatic Wildlife

Large mammals found in Mill Creek Canyon include mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), moose (*Alces alces*), coyotes (*Canis latrans*), cougars (*Felis concolor*), bobcats (*Lynx rufus*), and black bear (*Ursus americanus*). Smaller animals include raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*), marmots (*Marmota flaviventris*), voles (*Microtus* spp.), shrews (*Soricidae* spp.), muskrats (*Ondatra zibethicus*), pikas (*Ochotona princeps*), porcupines (*Erethizon dorsatum*), beavers (*Castor canadensis*), rattlesnakes (*Crotalus* spp.), lizards, rabbits, squirrels, bats, rats, and a variety of birds. Many

of these species are habitat generalists and found throughout the project area, using forested, riparian, wetland, and open areas.

Mill Creek in and near the project area is home to longnose dace (*Rhinichthys cataractae*) and mountain sucker (*Catostomus platyrhynchus*). These native species were reintroduced by the USFS as part of an effort to remove non-native species and aid in the recovery of Bonneville cutthroat trout (*Oncorhynchus clarki utah*).

Candidate Species for Federal Listing

The monarch butterfly (*Danaus plexippus*) is a candidate species for listing under the ESA. It relies on its host plant, milkweed (*Asclepias* spp.), which is used for laying eggs and feeding. Monarchs are most common in the Wasatch Mountains starting in May and reside there until September. While monarchs feed on the nectar from many plants, milkweed is the sole host plant for this species. Common places where milkweed grows include roadsides, wetlands, and riparian areas, all of which are dispersed throughout the project area. The USFS has documented small, isolated milkweed occurrences in or near the project area (USFS 2023).

Region 4 Regional Forester's Sensitive Species List

The USFS identifies and manages sensitive wildlife species on NFS lands through the 2003 Wasatch-Cache National Forest Revised Forest Plan (USFS 2003). These sensitive species are determined in part because their habitats or populations are trending downward and are managed to prevent them from becoming federally listed under the ESA. Based on the Biological Resources Existing Conditions Report (HDR 2023b), suitable habitat is present in or near the project area for six R4FSS wildlife species, described below.

- **Boreal toad (*Bufo boreas*).** Boreal toad habitat includes mountain wetlands and upland habitats near slow-moving rivers and streams. Suitable habitat exists in the project area adjacent to Mill Creek, Thousand Springs, and several pond areas.
- **Columbia spotted frog (*Rana luteiventris*).** The Columbia spotted frog usually lives at the grass and sedge margins of streams, lakes, ponds, springs, and marshes. Suitable habitat exists in the project area adjacent to Mill Creek, Thousand Springs, and several ponded areas.
- **American three-toed woodpecker (*Picoides dorsalis*).** The three-toed woodpecker prefers coniferous forests with abundant insect-infested snags (dead, upright trees). Suitable breeding and nesting habitat exists in the forested areas throughout the project area, and the woodpecker has been observed in and near the project area (eBird 2021).
- **Flammulated owl (*Psiloscops flammeolus*).** The flammulated owl breeds in dry, relatively open, mature mountain forests of ponderosa pine or other large coniferous trees. Suitable habitat exists in the forested areas throughout the project area, and the owl has been observed near the project area (eBird 2021).
- **Northern goshawk (*Accipiter gentilis*).** The northern goshawk nests in coniferous and mixed forests. Suitable breeding and nesting habitat exists in the forested areas throughout the project area, and individuals have been observed throughout the canyon and near the project area (eBird 2021).
- **Bonneville cutthroat trout (*Oncorhynchus clarkii utah*).** Habitat for this fish ranges from high-elevation streams with coniferous and deciduous riparian trees to low-elevation streams in sage-steppe grasslands containing herbaceous riparian zones. Because of successful reintroduction efforts, this species is present in Mill Creek throughout the project area.

Migratory Birds

The project area contains forest tree cover associated with both upland and riparian habitats, as well as an abundance of shrubs and ground cover—all of which provide nesting habitat for migratory birds. In the Wasatch Mountains and in the project area, migratory birds are most common from February through August. Common birds in the area include violet-green swallow (*Tachycineta thalassina*), American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), and evening grosbeak (*Coccothraustes vespertinus*). In the project area, birds would most likely use trees, shrubs, and open ground for nest sites. These nests would more likely be built further from Mill Creek Canyon Road rather than near vehicle use areas and popular recreation areas.

Environmental Consequences

This section discusses the environmental consequences of the No Action alternative and Proposed Action on terrestrial and aquatic wildlife. If adverse effects are expected, mitigation measures are identified to reduce or avoid the effects. Mitigation measures to reduce or avoid potential effects are provided in Section 5.3.

No Action Alternative

Under the No Action alternative, no new impacts to wildlife in the project area would occur. Ongoing disturbances associated with the continued use of informal parking areas and associated trails would continue and could result in inadvertent disturbance to wildlife through noise, habitat destruction, and general human presence. Wildlife in the project area would continue to be managed under the 2003 Wasatch-Cache National Forest Revised Forest Plan, which includes species management across the forest and monitoring considerations for sensitive species as applicable to implementation of projects on NFS land (USFS 2003). The planned Mill Creek Stewardship Fuels Treatments would remove understory vegetation, dead or dying trees, and downed woody materials. This vegetation thinning would alter a minor amount of habitat in areas adjacent to Mill Creek Canyon Road.

Proposed Action

The Proposed Action would result in varying levels of disturbance and habitat removal in the project area, which could affect R4FSS wildlife species and other wildlife and fish. This analysis focuses primarily on direct and indirect effects that could be short or long term. Short-term or temporary effects would be associated with construction activities and would allow for the re-establishment of habitat conditions and return of wildlife to the area after construction. Long-term or permanent effects would lead to a loss of individuals or conversion of habitat types. Project design is incorporating context-sensitive design considerations, such as minimizing roadway widening, designing culverts to allow for fish passage and to mimic natural habitat, and using clear water diversions during in-stream work.

Terrestrial Wildlife. Short-term or temporary impacts from construction on terrestrial wildlife and R4FSS wildlife species could result from noise and human presence by temporarily altering foraging or movement behavior in and near the project area. It is assumed that wildlife along existing roads and trails is acclimated to existing traffic and user levels; however, construction traffic and ground disturbance could present the risk of nest failure or abandonment for avian species. Auditory and/or visual disturbance from temporary construction traffic and human presence may displace individual wildlife species from areas adjacent to the project area. Vegetation removal during the breeding period for migratory birds (May through August) could disrupt nesting activities and remove potential nests. Although vegetation removal would be minimized through the design, mitigation measures would be necessary to avoid the potential for removal of active nests or impacts to nesting birds (Mitigation Measure WL-1).

Long-term or permanent removal of trees and shrubs would reduce foraging and hiding cover for terrestrial wildlife and USFS wildlife sensitive species. Disturbance would include minor and negligible loss and modification of habitat along the construction limits.

Impacts to USFS wildlife species with potential to occur in the project area may impact individuals or habitat but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Removal or reduction of milkweed populations could prevent monarch butterflies from using the area and reduce available breeding habitat during construction activities and during the time it takes to naturally reestablish. Construction activities would likely overlap with the seasonal occurrence (May through September) of monarchs in the project area; however, there is a negligible amount of monarch butterfly breeding habitat in the survey area and there are no anticipated effects to this candidate species from project activities because the occurrences of milkweed are sporadic and isolated. If this species were to be listed before project implementation, there would be no need for consultation with the United States Fish and Wildlife Service because there would be no effects to the species.

Aquatic Wildlife and Fish. Temporary increases in sedimentation from culvert replacement, bridge replacement, culvert improvements, and other earth moving activities could injure or displace native and R4FSS fish and amphibian species. Temporary dewatering of short stretches of Mill Creek may be necessary to help reduce impacts where in-stream work is concentrated. These potential impacts would be avoided, minimized, and reduced by seasonally restricting in-stream work, implementing standard BMPs, strategically using dewatering, equipping dewatering pumps with intake screens, and relocating and fish remaining in dewatered areas to the adjacent creek (Mitigation Measure WL-2).

Drainage improvements would result in a long-term benefit due to the reduction of sediment in stormwater runoff flowing into Mill Creek.

3.2.4 Water Resources and Quality

This section presents an overview of water resources found in the project area as well as associated water quality concerns. Information in this section is based on the Aquatic Resources Delineation Report (HDR 2023a), which included background research and field surveys to map aquatic resources that could be waters of the U.S. and natural streams. Wetlands are also an aquatic resource that was mapped as part of the delineation, and they are discussed in the Vegetation section as a type of vegetation community. Waters of the U.S. are regulated under the Clean Water Act and discharges into them are subject to permitting. In addition, natural streams in Utah are regulated as part of the Stream Alteration Program under Section 73-3-29 of the Utah Code.

Affected Environment

The following water resources are in the project area; these resources are waters of the U.S. and are part of USFS-managed RHCAs:

- **Streams.** Four perennial streams flow through the project. Mill Creek is the largest of these streams, generally flowing adjacent to Mill Creek Canyon Road. Mill Creek flows west, eventually draining to the Jordan River. Three main tributaries flow into Mill Creek within the project area: Elbow Fork, Thousand Springs, and an unnamed stream located on the south side of Upper Big Water Trailhead. These streams are natural streams under the Utah Code.
- **Pond.** A 0.08-acre pond is located approximately 500 feet east of Alexander Basin Trailhead, on the south side of Mill Creek Canyon Road. This pond is located along Mill Creek and formed by water

backing up behind woody debris that clogs a downstream culvert. As a component of Mill Creek, it is part of the natural stream. A small wetland is also associated with the pond.

- **Springs.** Thousand Springs is located approximately 1,500 feet east of Alexander Basin Trailhead, on the south side of Mill Creek Canyon Road, and is approximately 0.05 acre in size. It consists of numerous springs and seeps found along the hillside and is associated with a small wetland. This water flows into a roadside ditch and eventually into Mill Creek.

A Zone A regulatory floodplain exists along the majority of Mill Creek in the project area. Flood Zone A is a special flood hazard area designation by the Federal Emergency Management Agency. Commonly called the 100-year floodplain, Zone A areas have a 1% annual chance of flooding.

Water quality refers to the physical, chemical, radiological, and bacteriological properties of a water body. Water quality in and downstream of the project area has been negatively affected by erosion and sediment transport associated with informal parking and poor stormwater drainage management along the road. Mill Creek and its tributaries have overall good water quality, though, and are not considered impaired under Section 303(d) of the Clean Water Act (UT DWQ 2022). The streams are classified as Category 1 waters, which means the State has determined them to be of exceptional recreational or ecological significance and will review the project to verify that potential pollution is temporary and BMPs are implemented.

Environmental Consequences

This section discusses the environmental consequences of the No Action alternative and Proposed Action on water resources and quality. If adverse effects are expected, mitigation measures are identified to reduce or avoid the effects. Mitigation measures to reduce or avoid potential effects are provided in Section 5.3.

No Action Alternative

Under the No Action alternative, no new impacts to water resources or the floodplain in the project area would occur. Ongoing disturbances associated with the continued use of informal parking areas and associated trails would continue and could result in water quality impacts. Existing drainage issues would continue to negatively affect water quality of streams in and downstream of the project area through soil erosion and uncontrolled surface runoff. The water bodies in the project area would continue to be managed under the 2003 Wasatch-Cache National Forest Revised Forest Plan, which includes various management considerations for RHCAs as applicable to implementation of projects on NFS land (USFS 2003).

Proposed Action

Under the Proposed Action, discharges to water resources within the project area would occur (Table 1). Construction of proposed drainage and roadway improvements, such as culvert installation and repair, instream work, and temporary dewatering would be required. Fill such as riprap, road base material, and rock armored slopes would be placed in streams at select locations to protect the roadway and culverts from scour and erosion. All temporary disturbance to the streams would be restored by regrading disturbed areas to original contours.

Because the water resources of the project area are waters of the U.S., and the project would result in discharges of fill into these waters, project activities would require permitting under Sections 401 and 404 of the Clean Water Act as well as Utah's Stream Alteration Program (Section 73-3-29 of the Utah Code). The project would likely be covered by Nationwide Permit 14.

Pursuant to the water quality certification issued by the Utah Department of Environmental Quality for 2020 Nationwide Permits, notification to the State is required for Nationwide Permit 14 if Category 1 waters

are impacted to ensure that Utah's antidegradation policies are being implemented effectively. Because the streams of the project area are natural streams and the project will alter the bed and bank, a Stream Alteration Permit is also required.

Table 1. Water Resources and Anticipated Impacts

Water Resource	Dimensions Mapped in Project Area	Anticipated Impact
Mill Creek	5.26 acres, 27,865 linear feet	0.45 acre, 2,657 linear feet
Elbow Fork tributary	0.01 acre, 82 linear feet	<0.01 acre, 15 linear feet
Thousand Springs tributary	0.01 acre, 91 linear feet	None
Unnamed tributary	0.05 acre, 587 linear feet	<0.01 acre, 35 linear feet
Pond	0.08 acre	<0.01 acre
Springs	0.05 acre	None
Total	**5.46 acres, 28,625 linear feet**	**0.46 ac, 2,707 linear feet**

In summary, it is anticipated that FHWA-CFLHD will need to obtain the following permits pertaining to waters of the U.S.:

- Section 404 Nationwide Permit 14
- Section 401 Water Quality Certification subject to specific conditions due to Mill Creek and its tributaries being Category 1 waters
- Joint Permit Application for Utah Stream Alteration Permit

Project activities that would take place in and adjacent to Mill Creek would be considered development within the Zone A regulatory floodplain as defined by the Federal Emergency Management Agency. For this reason, it is anticipated that FHWA-CFLHD will need to obtain a Salt Lake County Floodplain Development Permit and Salt Lake County Flood Control Permit for the project. The replacement of White Bridge with a larger structure would improve conveyance of floodwaters.

The project would result in ground disturbance during construction. Water quality could be negatively affected during storm events due to increased surface runoff resulting in the potential introduction of sediment and other pollutants associated with construction activities to the water resources of the area. A stormwater pollution prevention plan will be prepared by the construction contractor to cover the proposed work. The construction contractor will also be required to prepare a Notice of Intent for submission to the State to obtain coverage under Utah's General Permit for Storm Water Discharges from Construction Activities (Permit No. UTRC00000).

Portions of RHCAs, which can help reduce water quality impacts, would also be impacted by the project. A project-specific mitigation measure (Mitigation Measure VEG-1) pertaining to RHCA restoration is included in Chapter 5 to limit these impacts. Restoration in RHCAs will incorporate USFS provided objectives, which include the following: minimize erosion and sedimentation, maintain adequate stream temperatures, reduce construction impacts to the extent practicable, minimize floodplain impacts, limit impacts to aquatic organism passage, and minimize the introduction of invasive species. In addition, the water bodies in the project area would continue to be managed under the 2003 Wasatch-Cache National Forest Revised Forest Plan as described in the No Action Alternative section above.

Because FHWA-CFLHD standard construction practices are incorporated into the Proposed Action by default, many potential impacts to the water resources and quality of the project area would be avoided or minimized to the extent practicable. Mitigation of unavoidable impacts would be covered by compliance with the terms and conditions of the applicable permits listed above. Finally, the drainage improvements,

stormwater control features, and elimination of informal parking areas planned throughout the project area would result in a long-term decrease of sediment discharge into the water resources of the project area, thus improving water quality.

3.2.5 Visual Resources

This section describes the scenic environment in and around the project area and discusses the different viewer groups that use the area. The analysis area for visual resources includes the project area, forests and landscapes visible from the project area, and areas from which the project area is visible. Due to the forested nature of the area, the analysis area is generally considered to be within 200 feet of the project area with isolated exceptions where meadows and other non-forested areas permit more distant views. Information in this section is based on the 2003 Wasatch-Cache National Forest Revised Forest Plan; 70% project design plans; communication with the USFS and Salt Lake County; and the existing vegetation, topography, geology, use patterns, and development in the project area.

Affected Environment

Mill Creek Canyon Road generally parallels Mill Creek through the project area. Mill Creek Canyon is situated in the heart of the Central Wasatch Mountains, with adjacent peak elevations ranging from 7,000 to 10,000 feet. Riparian vegetation is found along streams, with upland plants occurring on adjacent slopes. Oaks, maples, and grasses are typically found on south-facing slopes, with mixed conifer forests typical on north-facing slopes. Refer to the Vegetation section for more details on vegetation in the project area. Typical roadside views are provided in Figure 11 and Figure 12. Numerous developed recreation areas exist in the project area, including picnic areas and trailheads, as described above in the Recreation and Access section. Historic stone and concrete culverts and modern wayfinding signs associated with the roadway are present throughout the corridor. The Firs Cabins (previously described) are visible from select locations along the road. Historic stone structures (e.g., bridge parapet walls) present along the roadway date from the Civilian Conservation Corps era in the 1930s and add to the character of the canyon.

Figure 11. Typical Roadside View in Upper Mill Creek Canyon

The primary viewers are (1) recreationists using the roadway as a trail during the 8 months of the year when the road is closed to vehicles, (2) motorists and cyclists on the road during the 4 months of the year when the road is open to vehicles, and (3) visitors using the adjacent recreation amenities including trails and picnic areas. From these locations, foreground views within 200 feet of the project area include the roadway itself, signs and wayfinding, trailheads, picnic areas, streams, forests, and meadows. The visual setting in high-use areas along the road has been degraded by erosion caused by informal parking areas and associated user-created trails. Much of the project area is undeveloped, and forests are the dominant foreground feature. Middle-ground views are typically upslope, taking in mountainsides, which include a mix of forested areas, rock outcrops, and rocky slopes. Background views are rare because they are mostly blocked by topography and vegetation but include the ridgelines that bound Mill Creek Canyon.

The USFS manages visual resources across the forest using their Scenery Management System, which classifies the scenic integrity of a given area based on the landscape's character and the Scenic Integrity Objective (SIO) prescribed to that area in the forest's management plan. Scenic integrity is a measure of intactness within the landscape character unit. Units that represent the valued landscape character as defined in the Forest Plan are considered to have scenic integrity. Built features like trails, campgrounds, and picnic areas can be compatible with the landscape's character and contribute to scenic integrity. SIO can be low, moderate, high, or very high depending on the landscape character. Relevant to this project, a "high" SIO means that the landscape appears intact. Deviations such as roads or structures may be present, but they mimic the scenic character well and are not obtrusive. A "very high" SIO means that the valued landscape character is intact with only subtle, if any, deviations. In high SIO areas, users anticipate infrastructure facilitating access and expect it to fit into the existing environment.

Figure 12. Roadside View with Middle-ground and Background Visible

The USFS defines the landscape character in developed portions of the project area as "developed natural appearing" with a high SIO (USFS 2003). Mill Creek Canyon Road, recreation facilities, concentrated use areas, and undeveloped recreation areas occur within the project area, which are consistent with the high SIO definition. The undeveloped portions of the project area and surrounding landscapes are predominantly defined as "natural evolving" and "natural appearing" and have a very high SIO.

Environmental Consequences

This section discusses the environmental consequences of the No Action alternative and Proposed Action on visual resources. If adverse effects are expected, mitigation measures are identified to reduce or avoid the effects. Mitigation measures to reduce or avoid potential effects are provided in Section 5.3.

No Action Alternative

Under the No Action alternative, the visual characteristics of the roadway corridor and surrounding area would not change. Eroded areas associated with informal parking spaces and user-created trails would remain and may become more visually prominent with time. The planned Mill Creek Stewardship Fuels Treatments would remove understory vegetation, dead or dying trees, and downed woody materials. This vegetation thinning would result in more open views from the roadway.

Proposed Action

Short-Term Impacts. Visual impacts during construction would be minimal because few recreationists would be in close enough proximity to see them. Trail users on trails paralleling Mill Creek Canyon Road may observe construction equipment on the roadway, in recreation sites, or in adjacent staging areas. During the winter season, recreationists travelling through the project area may observe signs of vegetation removal or materials and equipment that remain in approved areas.

Long-Term Impacts. The widening of Mill Creek Canyon Road would result in a roadway that looks similar to the existing road in many areas. Some areas would require cut slopes, fill slopes, and retaining walls to accommodate the widened road, many of which would be visible to motorists and recreationists

travelling through the project area. In many areas, vegetation overhangs the road, especially in the upper canyon. Vegetation removal required for roadway widening could result in a more open viewshed as seen by roadway users in some areas. While the reconstructed road would involve minor realignments, it would follow natural topographic contours and visually fit in with the landscape in much the same way as the existing road. Visual simulations of the proposed road are shown in Figure 13 and Figure 14.

Figure 13. Road Simulation - Below Elbow Fork

Foreground views in areas where new trailheads are proposed would change, but they would be consistent with other developed recreation areas within Mill Creek Canyon. Roadside clearing and grubbing would expand the width of the road corridor by a few feet along much of the roadway. Areas that require large cuts would change from a forested setting to slopes with grasses and forbs. The changes would be most apparent a year or two following construction, before vegetation is reestablished. Selective tree removal, discussed in the Vegetation section, will help further limit foreground scenery changes as visitors would see feathered vegetation edges that create a more natural and less linear appearance. Closing and revegetating or formalizing roadside parking locations would likely result in positive visual impacts by decreasing the amount of exposed roadside soil, contributing to a more natural appearance.

The proposed retaining walls would likely be the most visible project element as many of these walls would be visible from the roadway and adjacent recreation areas. Retaining wall aesthetic details would help them blend in with the natural environment, including: (1) soil nail walls would be finished with a sculpted shotcrete facing colored to mimic the appearance of native stone, (2) rockery walls would be constructed with boulders selected to match the appearance of native rock found in the canyon, and (3) areas cleared above the wall locations would be reseeded with a USFS-approved native seed mix. Lengthened culverts and other creek crossing structure modifications might also be visible in the foreground to roadway users. Visual impacts associated with these improvements would be minimal because their appearance would match existing structures to the extent practicable.

Kiosks and vault toilets at parking areas would also be visible to users of those recreation areas. Because these structures would be constructed using materials and coloration that blend in with the natural surroundings, impacts to foreground views would be limited and the structures would not be readily seen by visitors outside of the immediate area.

Forested areas, rock outcrops, and rocky slopes would remain the dominant middle-ground views. Clearing and grubbing may open up middle-ground and background views in some areas but changes to middle-ground and background views are not expected to be noticeable.

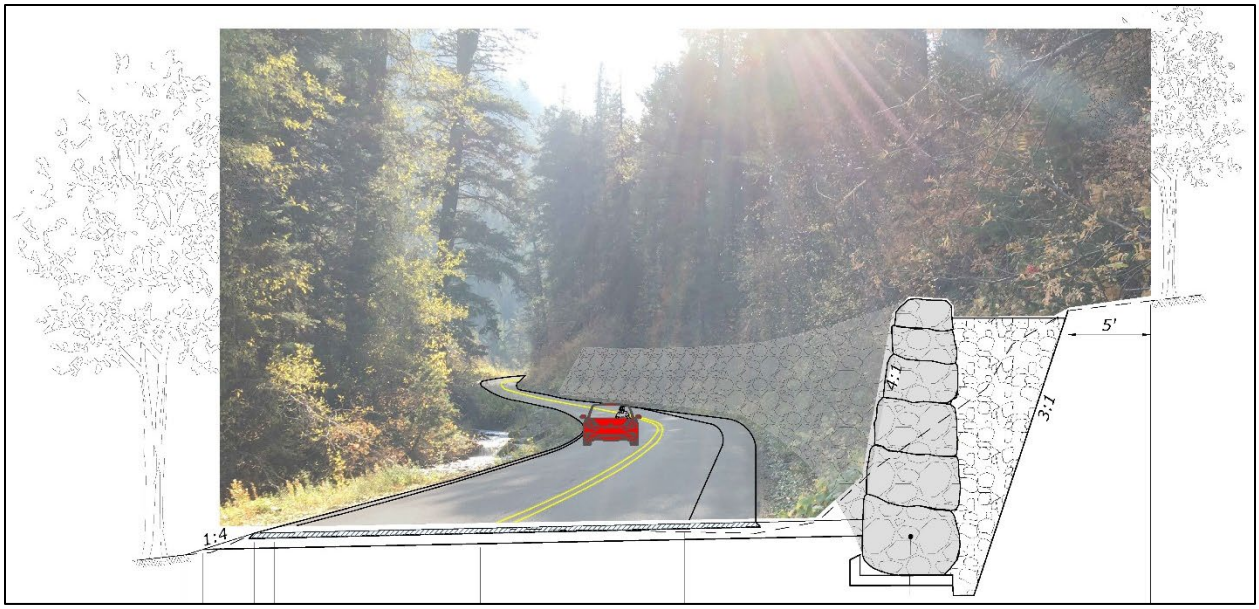

Figure 14. Road Simulation with Retaining Wall

Changes to the visual setting at each trailhead and parking area within the construction limits are summarized below.

- **Winter Gate Parking Area.** The parking area expansion at the Winter Gate parking area would increase the size of the parking area by about 35%. The size increase would not fundamentally alter the visual feel of the parking area because the increase would be modest, and the character would match existing conditions. Other proposed improvements at the parking area would have minimal visual impacts because the scope, scale, size, and nature of the proposed improvements would be visually similar to existing conditions.
- **White Bridge Picnic Area.** The parking area associated with the White Bridge Picnic Area would be paved and remain about the same size. A short section of new sidewalk would be constructed to connect the parking area to the existing vault toilet. Visitors to the picnic area and those passing by on the roadway would see these changes. While the visual impacts associated with each of these improvements would be relatively minor, collectively they may contribute to visitors experiencing a slightly more developed and less rustic recreation site.
- **Elbow Fork Trailhead.** Improvements at the new Elbow Fork Trailhead parking area would include construction of a box culvert to provide access over Mill Creek, a paved lot with 23 parking spots, a rockery wall, a vault toilet, and trail sections to connect to existing trails. All of this would be constructed in an area that is currently forested. The new trailhead, box culvert, and access road would be visible to users from some locations along Mill Creek Canyon Road. While the visual character of the immediate area would change from forest to developed trailhead, the new appearance would be in line with adjacent developed areas and consistent with USFS management goals for the area. Because the relocated trailhead would be in a heavily wooded area, it would not be highly visible to users from a distance and would not impact the viewshed beyond the immediate trailhead vicinity.
- **Alexander Basin Trailhead.** Improvements at the new Alexander Basin Trailhead parking area would include a paved lot with 20 parking spots, a rockery wall, a vault toilet, and a trail section to connect to the existing trail system. The parking area would be elevated above the road, making it less visible from the roadway compared to the existing roadside parking. Because the trailhead would be

in a heavily wooded area, it would not be highly visible to users from a distance and would not impact the viewshed beyond the immediate trailhead vicinity.

- **Upper Big Water Trailhead.** The Upper Big Water Trailhead improvements would more than double the parking area size to about 0.84 acre. The proposed expansion would largely take place in an existing meadow. This would result in a perceived loss of scenic quality and integrity because users of the parking area may experience the size increase as altering the visual characteristics of the area toward a more developed and less rustic appearance. Because the parking area is in a meadow, it could be visible to users in more distant areas offering middle-ground and background views. Other proposed improvements at this trailhead would result in minimal visual impacts.

While there would be visual changes associated with the proposed action, the anticipated visual impacts would be consistent with the landscape character and SIOs defined by the USFS for the analysis area. Aesthetic considerations and context-sensitive design elements would further contribute to reducing visual impacts and maintaining the current level of scenic integrity throughout the analysis area.

3.2.6 Archaeological Resources

This section presents an overview of the archaeological resources found in the project area. Information in this section is based on the archaeological resources report (SWCA 2023a), which entailed background research through Utah databases, the USFS, and other sources; field surveys along the road to record resources; and evaluation of the resources for listing to the National Register of Historic Places (NRHP) in support of compliance with the National Historic Preservation Act (NHPA). As part of the NHPA process, an Area of Potential Effects (APE) was defined to represent those areas that could be directly or indirectly affected by the project and was used as the investigation area for assessing historic properties (resources eligible for listing to the NRHP); the project area encompasses the direct effect portion of this area as defined in Chapter 2 and is used as the analysis area for archaeological resources. Architectural resources, such as built structures, are discussed in the Architectural Resources section.

Affected Environment

Archaeological resources are artifacts, features, sites, or other remnants of past human life that are of interest in understanding the way people lived. They can be prehistoric, which is generally considered before Native American contact with Europeans, or historic, which is after European contact and settlement. Examples of prehistoric archaeological resources include temporary living areas or campsites, artifact scatters (e.g., pottery fragments, grinding stones, beads, shells), petroglyphs, rock shelters, and areas of cultural importance to tribes. Examples of historic archaeological resources include remains of old buildings, historic roads, evidence of past mining and agricultural uses, and artifact scatters (e.g., cans, bottles, and fragments). Archaeological resources that are eligible for listing to the NRHP (i.e., historic properties) are considered important for their association with historic events or people, their distinctive characteristics, or their ability to provide information on the past, either through data recovery or preservation in place.

Based on the archaeological resources inventory for the project, the following archaeological resources were identified in the project area:

- **Mill Creek Hydroelectric System.** This 3-mile-long site historically contained a system of water control and associated features along Mill Creek and Elbow Fork, most of which is outside the project area, and dates to the early 1900s. Components of the hydroelectric system in the project area include remnants of a rock wall and a previously recorded pipeline, evidence of which was not observed during the most recent survey. The rock wall is near an existing trail and trailhead on the north side of

Mill Creek Canyon Road. The site has been affected by current uses of the area, erosion, and structural decay. The USFS previously evaluated the site and determined it eligible for listing to the NRHP, which has been confirmed for this project. This site is important for preservation in place and is unlikely to yield additional information through data recovery.

- **Recreation Residence.** A former recreation residence was previously documented as part of the hydroelectric system and has been separated as its own site as part of the current investigation. Remnants of the residence, including a segment of a dirt road, rock walls, tree stumps, and a coal dump, remain on the south side of Mill Creek Canyon Road in the project area. The site has been degraded from erosion, an existing hiking trail, and other recreational uses. The site is not eligible for the NRHP.
- **Elbow Fork Trail Network.** This historic trail follows Elbow Fork on the north side of Mill Creek Canyon Road and dates to the mid-1900s. It is associated with Civilian Conservation Corps work. The trail has been affected by modifications and regular use. A previous evaluation concluded the trail was not eligible for listing to the NRHP, which has been confirmed for this project.
- **Dendroglyphs.** Carvings on trees near the road were identified during the current survey effort. The carvings date to the mid-1900s. They are not eligible for listing to the NRHP.
- **Mill Creek Canyon Road.** The road itself dates to the early 1900s and contains associated structures, such as bridges and culverts, that are also historic and date to the early- to mid-1900s. Based on its importance for local uses and events, the road is eligible for listing to the NRHP. The structures are considered architectural resources and are discussed in the Architectural Resources section.

Environmental Consequences

This section discusses the environmental consequences of the No Action alternative and Proposed Action on archaeological resources. If adverse impacts are expected, mitigation measures are identified to reduce or avoid the impacts. A comprehensive list of mitigation measures is provided in Section 5.3.

No Action Alternative

Under the No Action alternative, no new impacts to archaeological resources in the project area would occur. Ongoing effects related to continued uses of the area, erosion, and structural decay would continue to occur and further degrade some of the archaeological resources along the road. Mill Creek Canyon Road would continue to be subject to periodic maintenance activities, but the lack of road improvements could further degrade road conditions in the upper canyon.

Proposed Action

The proposed road improvements would involve various levels of construction disturbance and clearing activities in the project area that could disturb archaeological resources, and the improvements would modify Mill Creek Canyon Road, a historic property. Through the design process, potential impacts to the Mill Creek hydroelectric system and dendroglyphs were avoided, and no disturbance to resources at either site is expected. No activities are planned that would disturb the rock wall associated with the hydroelectric system near the Elbow Fork Trailhead, and the wall features would be marked for avoidance during any nearby trail work (Mitigation Measure ARCH-1). Roadwork where the pipeline likely crossed Mill Creek Canyon Road would be limited to the existing roadway prism and depth and immediately adjacent areas. If the pipeline remains buried in this area, it would not be disturbed or otherwise affected by the roadwork because of the shallow depth of the improvements. As a standard construction practice, the construction contractor would follow inadvertent discovery protocols if any potential cultural resources are encountered during construction (USDOT 2014).

The overall project, by its nature, would modify Mill Creek Canyon Road through widening, striping, and associated improvements. The general alignment and location of the road would not change, and the appearance of the road would remain similar to current conditions. Minor adjustments of the road may be noticeable to travelers in some areas, but overall, the feeling of the road as a historic road would not change. The purpose of the road would also not change, which is one of the reasons it was determined eligible for listing (association with local transportation in the canyon). Due to the replacement of White Bridge, which is a contributing element to the eligibility of the road, however, the road would be adversely affected. FHWA-CFLHD, in coordination with the USFS and Utah State Historic Preservation Officer (SHPO), executed a Memorandum of Agreement (MOA) to resolve the adverse effects through the NHPA consultation process (Mitigation Measure ARCH-2). This agreement includes a measure to install an interpretive sign at a nearby trailhead that includes information on the historic road uses (see the Architectural Resources section).

Establishment of a formal parking area for the Elbow Fork Trailhead on the east side of the road would require removal of some of the features associated with the recreation residence site and clearing of the area for construction. These effects to the site would not remove important aspects of history because the site is not eligible for listing and the features do not contribute unique information on past uses based on their current condition. Similarly, adjustments to a trail segment near the Elbow Fork Trailhead would affect the Elbow Fork trail network, but the trail system would continue to serve its current purpose and have a similar feel as current conditions, without affecting historic associations of the trail network, even though it is not an eligible site.

3.2.7 Architectural Resources

This section presents an overview of the architectural resources found in and near the project area. Information in this section is based on the architectural resources report (SWCA 2023b), which entailed background research through Utah databases, the USFS, and other sources; reconnaissance-level field assessments of built resources; and evaluation of the resources for listing to the NRHP in support of compliance with the NHPA. As part of the NHPA process, an APE was defined to represent those areas that could be directly or indirectly affected by the project and was used as the investigation area for assessing historic properties (resources eligible for listing to the NRHP). The project area encompasses the direct effect portion of this area as defined in Chapter 2, and the project area plus the indirect effect area, which extends up to about 300 feet from the roadway in some areas, is used as the analysis area for architectural resources. Archaeological resources are discussed in the Archaeological Resources section.

Affected Environment

Architectural resources are associated with the built environment and include buildings, structures, objects, and groups of structures or buildings (referred to as historic districts) that are generally more than 50 years old. From an age perspective, they are associated with the historic era or post-European contact with Native Americans. Examples of architectural resources include houses, churches, commercial buildings, bridges, culverts, sculptures, and other historic structures. Architectural resources that are eligible for listing to the NRHP (i.e., historic properties) are considered important for their association with historic events or people, their distinctive characteristics, or their ability to provide information on the past.

Based on the architectural resources inventory for the project, 10 bridges/culverts, 9 cabins, and 1 flume were identified in the analysis area. Other structures, such as picnic facilities, were also assessed, but they were not considered to be old enough to be classified as architectural resources. Four of the ten bridges/culverts are along Mill Creek Canyon Road, and the other six bridges/culverts are associated with side access to the Firs Cabin Tract and picnic areas. The Parshall flume is along Mill Creek near the Elbow Fork Trailhead. Key characteristics of each resource are below.

- The concrete Parshall flume is a metal grate bridge and sheet metal shed with an assumed date of initial construction of 1966. Although the concrete part is old enough to be considered historic, the metal and wood structures appear to be modern, and the weir does not have unique characteristics. Therefore, the flume is not eligible for listing to the NRHP.
- Four bridges span Mill Creek to provide access to the Clover Springs, Evergreen, and Maple Cove picnic areas. All are timber stringer bridges and appear to have been modified recently, which means they no longer maintain a strong association with a historic period or have distinct design characteristics. None of these bridges are eligible for listing to the NRHP.
- Two metal culverts span Mill Creek to provide access to the Firs Cabin Tract. Firs Bridge 1 is a culvert with loose, stacked fieldstone and compacted earth around the culvert. Due to its modern nature and lack of association with the historic period of development of the Firs Cabin Tract, it is not eligible for listing to the NRHP. Firs Bridge 2 is an older culvert with stacked fieldstone and compacted earth around the culvert. It appears to date to the mid-1900s and is associated with the Firs Cabin Tract development, making it eligible for listing to the NRHP.
- White Bridge is a box culvert with a concrete slab bridge on top and formed concrete balustrade for the bridge railing. Due to minimal alterations since its original construction, the bridge is important for its association with Mill Creek Canyon Road and its distinct design from the early 1900s. White Bridge is eligible for listing to the NRHP.
- Three stone bridges span Mill Creek and have similar associations and characteristics as White Bridge. Stone Bridge 1 is a concrete slab bridge with sandstone wingwalls and is located near White Bridge in the western portion of the project area. Stone Bridges 2 and 3 are arched culverts with uncoursed rubble stone wingwalls and are located just east of the Firs Cabin Tract in the eastern portion of the project area. All three of these bridges are eligible for listing to the NRHP.

The Firs Cabin Tract is a group of 24 recreation residences built on established tracts on the UWCNF mostly between 1922 and 1976, with some being newer replacements of older structures. Based on the history of the tract, the collective group of cabins is an eligible historic district, with some cabins contributing to the overall eligibility and characteristics of the district and some being too modern and not contributing. All the cabins are outside the project area, but nine are in the analysis area, while the other cabins are not. Only the nine cabins in the analysis area were evaluated for eligibility and are described below.

- Firs Cabin 1 is a rustic style cabin built in 1935 with no recent alterations and is associated with the historic period of the overall tract. It is eligible for listing to the NRHP.
- Firs Cabin 2 is an A-frame style cabin built within the past 45 years, which may be in place of a previous cabin, and is not associated with the historic period of the overall tract. It is not eligible for listing to the NRHP.
- Firs Cabin 3 is a vernacular style cabin built in 1939 with some modern alterations and is associated with the historic period of the overall tract. It is eligible for listing to the NRHP.
- Firs Cabin 4 is a rustic style cabin built in 1933 with some modern alterations and is associated with the historic period of the overall tract. It is eligible for listing to the NRHP.
- Firs Cabin 5 is a rustic style cabin built in 1930 with no recent alterations and is associated with the historic period of the overall tract. It is eligible for listing to the NRHP.
- Firs Cabin 21 is a rustic style cabin built in 1938 with some modern alterations and is associated with the historic period of the overall tract. It is eligible for listing to the NRHP.

- Firs Cabin 22 is a late 1900s-style cabin built in 1976 with some modern alterations and is associated with the historic period of the overall tract. It is eligible for listing to the NRHP.
- Firs Cabin 23 is a neo-rustic style cabin built within the past 45 years in place of a previous cabin and is not associated with the historic period of the overall tract. It is not eligible for listing to the NRHP.
- Firs Cabin 24 is a post-World War II style cabin built in 1933 with no recent alterations and is associated with the historic period of the overall tract. It is eligible for listing to the NRHP.

Environmental Consequences

This section discusses the environmental consequences of the No Action alternative and Proposed Action on architectural resources. If adverse impacts are expected, mitigation measures are identified to reduce or avoid the impacts. A comprehensive list of mitigation measures is provided in Section 5.3.

No Action Alternative

Under the No Action alternative, no new impacts to architectural resources in the analysis area would occur. Ongoing effects related to continued uses of the area and structural decay would continue to occur and further degrade some of the bridges and culverts in the area. The structures would continue to be subject to periodic maintenance activities, but the lack of improvements or modifications could disrupt access to portions of the upper canyon if the structures fail or collapse, particularly White Bridge.

Proposed Action

The proposed road improvements would involve various levels of construction-related noise and ground-borne vibration disturbances in and near the project area and would include replacement or modification of several structures and construction of new structures, which would introduce new visual elements into the setting along the roadway. Through the design process potential impacts to the Parshall flume and Clover Springs, Evergreen, and Maple Cove picnic area bridges were avoided. Roadwork on top of Firs Bridges 1 and 2 is not expected to require modifications to the culverts and associated fieldstone, with the disturbance limited to the road surface for repaving activities. Stone Bridges 2 and 3, both historic properties, are along the road where the proposed improvements would be limited to road reconstruction with no need to modify the bridge structures or associated features that make them eligible. Nearby work, including formalization of a pullout near Stone Bridge 2 and pullout grading and retaining wall installation near Stone Bridge 3, would also not directly or indirectly affect the bridges. The culverts and bridges would be marked for avoidance during nearby work (Mitigation Measure ARCH-1).

Stone Bridge 1. Stone Bridge 1, a historic property, is on a segment of Mill Creek Canyon Road that would be widened, but the existing bridge width is sufficient to accommodate the modified roadway across the bridge (22 feet wide). Minor modifications to the bridge are proposed to repair past damage to the headwalls and ensure they remain in stable condition. The headwalls are expected to be taken apart down to the road surface level then rebuilt in their same location and configuration, reusing the existing stones as much as possible and supplementing them with similar appearing stones in areas that have missing stones. A wall reconstruction plan will be required to ensure proper restoration of the walls to match their historic conditions (Mitigation Measure HIST-1). Although modifications to the headwalls associated with Stone Bridge 1 are proposed, they would not alter the bridge's historic association with Mill Creek Canyon Road. With the proposed wall reconstruction plan, the headwall modifications would help retain the bridge's original design, materials, and use, which contribute to its eligibility. The bridge would not lose its historic integrity with proper reconstruction of the headwalls and would not be adversely affected.

White Bridge. The Proposed Action would fully replace the culvert associated with White Bridge to accommodate the road improvements and update the structure to meet current design standards The replacement of White Bridge would make the historic site no longer eligible for listing, as none of the contributing elements would remain, particularly its distinctive characteristics of an early 20th century concrete vehicular bridge. The railing would be replaced to meet current safety design standards but designed and constructed to appear similar to the existing railing. The new White Bridge would remain associated with Mill Creek Canyon Road and continue to be part of the transportation system in the canyon, but it would no longer retain the historic association. These effects are considered adverse. As discussed in the Archaeological Resources section, FHWA-CFLHD, in coordination with the USFS and Utah SHPO, executed a MOA to resolve the adverse effects through the NHPA consultation process (Mitigation Measure ARCH-2). This agreement includes a measure to install an interpretive sign at a nearby trailhead that could include information on White Bridge, as well as the road, historic documentation of White Bridge, and possibly preservation of a section of the railing if feasible.

Firs Tract Historic District and Cabins. All of the proposed improvements would be along Mill Creek Canyon Road near the Firs Tract with minor work on the two access roads to the cabins. None of the cabins would be directly affected by the project. Indirect effects could result from visual changes associated with the installation of retaining walls and ground-borne vibrations associated with general construction activities, but as discussed below, these would not be adverse effects to the eligible cabins or historic district, as they would not alter their eligibility for listing and would retain the overall historic integrity of the cabins and district. For the cabins that are not eligible, the effects associated with nearby road improvements would be negligible as the cabins already have a modern feeling and setting.

A proposed wall or riprap on the creek bank below the road may be visible from four of the cabins (nos. 21, 22, 23, and 24). The four cabins are more than 180 feet from the proposed riprap locations, and the wall/riprap is unlikely to be visible through the existing trees and understory. Based on the proposed location for the wall/riprap in relation to the cabins, the project would not alter the visual setting associated with the four cabins.

Five cabins (nos. 1, 2, 3, 4, and 5) may be in the viewshed of the proposed wall on the slope above the road. Cabin 3 is about 100 feet from the proposed wall location but is on the opposite side of the road and Mill Creek from where the wall is proposed. Existing trees and understory would mask visibility of the wall, although it may be visible from certain angles through the trees. Cabins 1, 2, 4, and 5 are more than 180 feet from the proposed wall location and it is unlikely to be visible through the existing vegetation. The retaining wall would be aesthetically treated to give a stone appearance. Therefore, the wall would not alter the visual setting associated with the five cabins.

Construction activities near the cabins would involve typical construction equipment, such as excavators, graders, and pavers, which would generate varying levels of noise and could cause ground-borne vibrations during some activities. No pile driving or drilling is expected near the cabins based on the design; these activities tend to have higher levels of noise and vibrations. Based on general information about construction activities, vibrations could be felt for 10 to 40 feet from the activities and would not be expected to result in damage to or deterioration of the cabins more than 100 feet away. No indirect structural effects to the cabins are anticipated during construction.

3.2.8 Land Use

This section discusses the land use in and near the project area and how those lands are managed. The USFS manages NFS lands under the 2003 Wasatch-Cache National Forest Revised Forest Plan (USFS 2003), and Salt Lake County manages unincorporated lands under the Salt Lake County Resource Management Plan

(Salt Lake County 2017). Information in this section is based on these management plans as well as the updated Wasatch Canyons General Plan (Salt Lake County 2020).

Affected Environment

Mill Creek Canyon Road and adjacent trailheads and picnic areas are located on the UWCNF, with some amenities on NFS lands and some on County-owned lands. No private land exists in the project area. While the project area is primarily developed for access and recreation purposes, most of the surrounding area is undeveloped open space. Developed areas include trailheads, trails, picnics areas, and one permitted residential area, the Firs Cabins Recreation Residence Tract. Mill Creek Canyon Road is within an existing 66-foot-wide easement across NFS lands and is maintained by Salt Lake County. The USFS maintains the recreation amenities.

The 2003 Wasatch-Cache National Forest Revised Forest Plan (USFS 2003) classifies the entire project area under the management prescription of Developed Recreation Area. This is a multiple resource management prescription, with an emphasis on recreation resources. Developed recreation areas typically include facilities such as campgrounds, picnic areas, and trailheads with high levels of visitor interaction to be expected. Biological resources in the project area include RHCAs, which are defined and managed by the USFS. The 2003 Wasatch-Cache National Forest Revised Forest Plan includes guidelines for establishing RHCAs. RHCAs include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by (1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams; (2) providing root strength for channel stability; (3) shading the stream; and (4) protecting water quality. This designation still allows for a full range of activities, but it emphasizes the achievement of riparian management objectives that are identified on a site-specific basis. These objectives should include riparian vegetation and instream habitat condition. Two USFS Inventoried Roadless Areas (IRAs) overlap the project area, the Mount Aire IRA and the Mount Olympus IRA. IRAs were established by USFS regulation (36 CFR Part 294) to provide relatively large blocks of habitat for plants and wildlife, aid in watershed health, and provide recreation opportunities. Within IRAs, regulations explicitly prohibit road construction, road reconstruction, and timber cutting with several listed exceptions. Although the IRA boundaries were intended to exclude Mill Creek Canyon Road, they overlap the project area in some locations due to mapping errors and outdated mapping techniques. This is a nationwide issue that USFS currently addresses on a project-by-project basis.

The only location in the project area that is not on NFS land is the meadow immediately east of the Upper Big Water Trailhead. This meadow is within an unincorporated area in Salt Lake County and is zoned FR-20 (Forestry and Recreation). It is managed under the Wasatch Canyons Master Plan (Salt Lake County 1989) and Wasatch Canyons General Plan Update. The purpose of the forestry and recreation zone is to permit the development of the foothill and canyon areas of the county for forestry, recreation, and other specified uses. Additionally, the Salt Lake County Resource Management Plan defines policies, goals, and objectives for managing natural resources on public lands in Salt Lake County. Regarding forest management, Salt Lake County desires to maintain and improve forest health for water quality, wildlife habitat, and aesthetics. Regarding land use, Salt Lake County desires to prioritize resource protection on public lands while striving to balance the needs for clean water, recreational demand, and countywide and statewide economic benefits provided by public lands. Regarding recreation, Salt Lake County "desires a recreation system that is balanced, sustainable, and provides a range of settings that accommodates for year-round outdoor recreation opportunities" (p. 78). Salt Lake County also acknowledges that "[t]he recreation system must account for heavy and increasing demands with sufficient facilities, maintenance, and transportation to support high levels of use at locations with convenient access" (p. 78).

Environmental Consequences

This section discusses the environmental consequences of the No Action alternative and Proposed Action on land use and management of the area. If adverse impacts are expected, mitigation measures are identified to reduce or avoid the impacts. A comprehensive list of mitigation measures is provided in Section 5.3.

No Action Alternative

Under the No Action alternative, land use designations in the project area would not change, and management of resources would be the same, with the County maintaining the road and USFS maintaining the recreation facilities. No improvements to the canyon or its resource use would occur, and ongoing conflicts associated with different user groups and impacts related to informal parking and trails would continue to be present.

Proposed Action

The Proposed Action would be consistent with the Salt Lake County Resource Management Plan as it supports the plan's goals of meeting recreation demands, improving access, and balancing resource protection with other plan goals. The Proposed Action recognizes the acknowledgement of the Salt Lake County Resource Management Plan to support high levels of use at locations with convenient access. The Proposed Action would also be consistent with the Wasatch Canyons Master Plan and Wasatch Canyons General Plan Update as it provides roadway improvements, bicycle infrastructure, and improved parking areas. Additionally, the Proposed Action incorporates elements designed to accommodate additional operation changes should such future systems be implemented. Based on the current land uses in the project area as defined in these plans, the Proposed Action is consistent with existing management direction and would not result in changes to management direction within the project area. The Proposed Action would benefit the continued and increased safe use of the existing land use designation while reducing impacts to resources in the project area over the long term.

The Proposed Action would be consistent with the management prescription of Developed Recreation Area identified in the 2003 Wasatch-Cache National Forest Revised Forest Plan (USFS 2003). This type of land use commonly includes developed facilities with high levels of interaction, and guidelines that allow for road construction, new recreation development, and new trail construction for the purpose of providing public enjoyment, safety, and protection of site investments. Road closures during construction activities would reduce access to recreation opportunities in the short-term, with expected long-term benefits to recreationists from improvements to visitor experience, safety, and access to recreation resources, as previously described in the Recreation and Access section. All components of the Proposed Action are consistent with this land use designation, and any changes from the Proposed Action would not change the land use designation but rather enhance user safety and experience within the current designation.

Construction activities would result in temporary disturbance within RHCAs as well as drainage improvements that are intended to benefit stream flow and water quality. Much of this area is directly adjacent to Mill Creek Canyon Road and is already disturbed from road use, informal parking areas, and exposed soil that contributes to erosion. The design of the proposed improvements has minimized disturbance along Mill Creek and its riparian corridor, and standard construction practices and compliance with applicable permits, such as under the Clean Water Act, would help reduce erosion during and after construction. Project-specific mitigation measures as previously discussed in the Vegetation and Water Resources and Quality sections would also help minimize adverse effects to riparian vegetation, streams, aquatic organisms and fish, and the RHCAs. These measures ensure consistency with the Forest's goal of maintaining or restoring riparian habitats in RHCAs and comply with riparian management objectives identified for this specific project. Since adverse effects to biological resources would be minimized to the

greatest extent possible and in the long-term even provide benefits by minimizing erosion and disturbance from informal trail use, there would be no land use change associated with impacts to these resources.

Some of the proposed improvements and associated activities, such as tree removal, would overlap with the Mount Aire IRA and the Mount Olympus IRA. Because the proposed road improvements would occur along an existing roadway along the margins of the IRAs, the Proposed Action would minimally affect the area's roadless characteristics. All Proposed Action overlaps with IRAs meet the requirements for at least one of several regulatory exceptions for road construction and/or timber removal, so the Proposed Action is compatible with USFS management of IRAs. USFS regulations allow exceptions for certain activities in mapped IRA boundaries. Relevant to this project, regulations allow exceptions to the road construction prohibition in IRAs when:

- 36 CFR § 294.12(b)(4) Road realignment is needed to prevent irreparable resource damage that arises from the design, location, use, or deterioration of a classified road and that cannot be mitigated by road maintenance. Road realignment may occur under this paragraph only if the road is deemed essential for public or private access, natural resource management, or public health and safety; and
- 36 CFR § 294.12(b)(5) Road reconstruction is needed to implement a road safety improvement project on a classified road determined to be hazardous on the basis of accident experience or accident potential on that road.

Regulations allow for exceptions to the timber cutting prohibitions when:

- 36 CFR § 294.13(b)(3) The cutting, sale, or removal of timber is needed and appropriate for personal or administrative use, as provided for in 36 CFR part 223.[6]

Based on the nature of the proposed activities in the overlapping areas of the Mount Aire and Mount Olympus IRAs, the Proposed Action is expected to fit under one or more of these exceptions, pending approval from USFS.

4. Draft Section 4(f) Evaluation

4.1 Introduction

This chapter presents an evaluation of the project relative to Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966 (49 United States Code [USC] § 303) and its implementing regulations at 23 CFR Part 774. Sections 4.2 and 4.3 contain background information previously provided in Chapters 1 and 2 so that this chapter may serve as a standalone document for Section 4(f) purposes.

Section 4(f) of the USDOT Act of 1966, as amended, and codified in 49 USC § 303, declares that "[i]t is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." The FHWA has adopted regulations to ensure its compliance with Section 4(f) (23 CFR Part 774).

Section 4(f) of the USDOT Act specifies that the FHWA may not approve a transportation project or program requiring use of publicly owned land of a public park, recreation resource, or wildlife and

[6] 36 CFR Part 223 covers USFS regulations for timber sales.

waterfowl refuge of national, state, or local significance, or land from a historic property unless a determination is made under paragraph (a) or (b) of this section.

(a) The Administration determines that:

(1) There is no feasible and prudent avoidance alternative, as defined in 23 CFR 774.17, to the use of land from the property; and

(2) The action includes all possible planning, as defined in 23 CFR 774.17, to minimize harm to the property resulting from such use; or

(b) The Administration determines that the use of the property, including measures to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures) committed to by the agency, will have a *de minimis* impact, as defined in 23 CFR 774.17, on the property.

Section 4(f) further requires consultation with the U.S. Department of the Interior and, as appropriate, the U.S. Department of Agriculture, the U.S. Department of Housing and Urban Development, and relevant state and local officials with jurisdiction over the Section 4(f) property. Documentation of compliance with Section 4(f) is required for a transportation project that receives federal funding and/or approval through USDOT. The Action Alternative developed for this project [FHWA-CFLHD Project UT FLAP SLA 10(1)] involves federal funding and, therefore, meets that requirement. This Section 4(f) evaluation has been prepared in accordance with FHWA regulations for Section 4(f) compliance codified at 23 CFR Part 774, the FHWA Technical Advisory T 6640.8A (1987), and the revised FHWA Section 4(f) Policy Paper (77 FR 42802, July 20, 2012).

4.2 Purpose and Need

The purpose of the project is to improve user safety, access to recreational opportunities for all users, and water quality degraded by surface erosion and poor drainage infrastructure. As part of the design and environmental review processes, the following needs were identified:

- **Inconsistent Roadway Width.** The narrow and variable road width makes it difficult and dangerous for vehicles to pass each other. These same conditions inhibit the ability of emergency vehicles to efficiently travel through the canyon. Vehicles often need to pull off the road to let others pass during heavy use times (e.g., weekends and holidays), which worsens traffic congestion. Several creek crossings along the alignment result in constrictions to the already narrow roadway. A consistent roadway width is needed to safely accommodate users in the upper canyon.
- **Limited Pedestrian and Bicycle Facilities.** The lack of road shoulders, lack of bicycle lanes, limited sight distances, informal parking, and lack of crosswalks and signs create unsafe conditions for cyclists and pedestrians using and crossing the roadway. Improvements are needed to better accommodate pedestrians and bicyclists.
- **Substandard Parking.** Informal, undesignated parking areas located on corners with poor sight distance create hazards as vehicles enter and exit these spots. User-created pullouts that are too narrow to fully accommodate vehicles create hazards for motorists and cyclists when parked vehicles encroach on the roadway. Use associated with these informal parking areas and associated trails often results in resource damage and increased erosion resulting from reduced vegetation cover and soil compaction. Existing designated parking areas have unsafe access points, show signs of erosion, and lack capacity to accommodate visitors. Well-designed and designated parking areas are needed to better accommodate visitor volume and eliminate informal parking areas and the hazards and resource degradation associated with them.

- **Poor Drainage.** Soil erosion and uncontrolled surface runoff due to poor drainage patterns result in a need for updated drainage infrastructure to reduce erosion and improve water quality of nearby streams. In conjunction with the road improvements, a system of culverts, ditches, and similar infrastructure is needed to ensure proper drainage off the roadway and parking areas.

4.3 Proposed Action

The Proposed Action includes roadway widening; modifications to, relocation of, or removal of parking areas, including informal roadside parking; establishment of an uphill bicycle lane from the Winter Gate to the Elbow Fork Trailhead; drainage improvements; and associated minor safety improvements.

These project elements are described in the following sections, and major project elements are shown in Figure 15. The project area is about 75 acres, and the proposed disturbance area where project activities would occur is approximately 33 acres and encompasses the roadway; existing parking areas with proposed improvements; areas where parking areas would be expanded or established; and areas where drainage, retaining walls, and other features are needed to accommodate the proposed road and parking improvements.

4.3.1 Roadway Improvements

Mill Creek Canyon Road would be widened to accommodate two travel lanes from the Winter Gate parking area to the Upper Big Water Trailhead. Roadway improvements were designed to be as consistent as possible while accounting for topographical, environmental, and other constraints. Proposed roadway improvements are described in detail below from west to east.

- The first 600 feet of roadway would be reconstructed at its current width of 26 feet and striped to include a 4-foot bicycle lane on the eastbound (uphill) side of the road.
- A new roundabout would be constructed about 250 feet east of the Winter Gate parking area to provide snowplows and large vehicles with a convenient place to turn around.
- The Winter Gate would be relocated approximately 200 feet to the east of its current location to accommodate the new roundabout.
- From the proposed roundabout to Elbow Fork, which is approximately 1.5 miles, the roadway would be reconstructed from its current variable width of 16–24 feet to a consistent 24 feet.
    - This road segment would consist of two 10-foot-wide lanes and a 4-foot-wide bicycle lane on the eastbound (uphill) side.
    - A 200-foot section within this segment, located about 0.5 mile east of the Winter Gate Trailhead, would be limited to a width of 21 feet (two 9-foot-wide travel lanes and a 3-foot-wide bicycle lane) due to topographic constraints and the width of the existing culvert (Stone Bridge 1) at that location.
- From Elbow Fork to the Upper Big Water Trailhead, which is approximately 3.1 miles, the roadway would be reconstructed from its current variable width of 13–20 feet to 18–20 feet. Major topographic constraints (i.e., narrow canyon with steep hillsides) do not allow for the continuation of the 24-foot-wide road in this upper portion without significant hillside cuts and retaining walls. A 20-foot-wide roadway can accommodate two-way traffic, while also minimizing visual and natural resource impacts.
    - Most of this section (2.7 miles) would consist of two 10-foot-wide lanes without shoulders.

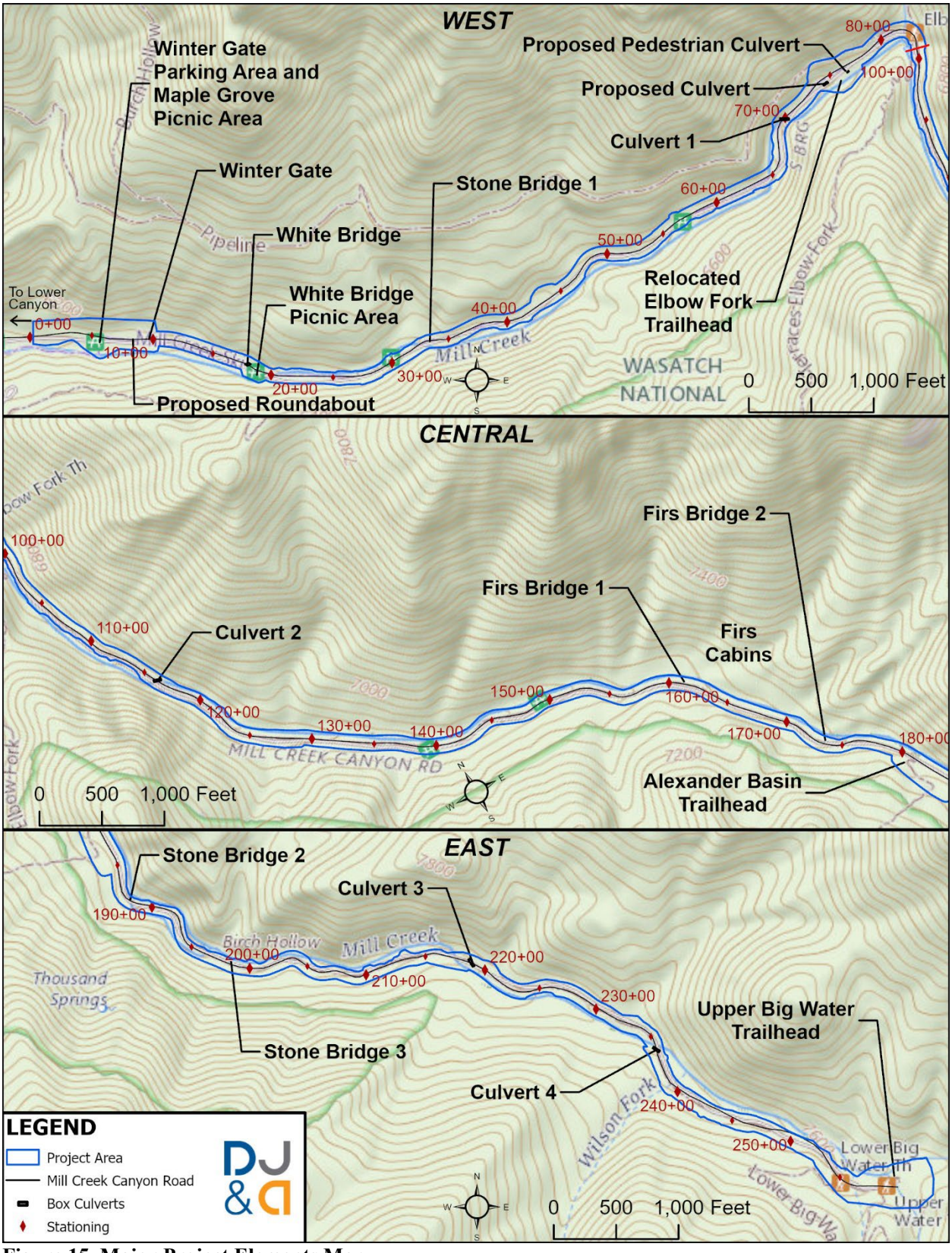

Figure 15. Major Project Elements Map

- Two narrower sections totaling about 1,800 feet would consist of two 9-foot-wide lanes without shoulders. The two narrow sections would include a 1,200-foot section near Thousand Springs and a 600-foot section near the Firs Cabins. These narrower 18-foot-wide segments are in areas with topographic constraints and where existing stream crossings are only 18 feet wide and impractical to modify.
- The proximity of adjacent sensitive resources, such as the Firs Cabins, Mill Creek, and Thousand Springs, also contribute to the need to maintain a narrower width in this upper section.
- Access roads branching off the main road would be resurfaced for a short length to match the modified Mill Creek Canyon Road.

All 4.6 miles of the roadway would be reconstructed, meaning that the existing roadway (asphalt and aggregate base) would be removed and replaced. The road would be adjusted in some areas (shifted, raised, and/or lowered) to make the roadway width more consistent, improve curves, improve sight distance, and address roadway drainage.

4.3.2 Parking Areas

Formal parking areas would be constructed, and existing parking areas would be improved to increase visitor safety, improve visitor experience through amenities (e.g., accessible toilets), reduce soil erosion, facilitate drainage improvements, and offset the loss of informal roadside parking spaces. As described below, four existing parking areas at picnic areas or trailheads would be modified, one new parking area would be established, and existing informal roadside parking areas would be decommissioned or formalized. When combined, parking spaces added in proposed parking areas and those removed through the decommissioning of informal roadside parking would roughly maintain the overall existing parking capacity in the upper canyon based on available information.[7]

Maple Grove Picnic Area/Winter Gate Parking Area

The Winter Gate and Maple Grove Picnic Area share the same parking lot. When the gate is open, recreationists use the parking area to access the Maple Grove Picnic Area, which is located on the opposite side of Mill Creek from the parking area and accessed by a pedestrian bridge, When the gate is closed, users park here to access recreation opportunities in the upper canyon. The parking area and picnic area are considered a single recreation site for the purposes of this project.

During the gate closure period, parking demand at the Winter Gate parking area consistently exceeds capacity, forcing visitors to park farther down the canyon. The existing parking area would be reconstructed and expanded to better accommodate summer and winter uses, including visitor access and snow removal operations. The existing parking area is 0.23 acre, and the proposed parking area would be approximately 0.31 acre. The proposed parking area improvements would require the removal of two picnic tables adjacent to the existing parking area, but the Maple Grove Picnic Area located across Mill Creek would not be impacted.

The reconstructed parking area would be surfaced with asphalt and would accommodate 10 additional parking spaces (an increase from 23 spaces to 33 spaces), including ABA-compliant spaces. The parking

[7] The USFS identified informal parking throughout the upper canyon and provided recommendations for which areas should be closed. The design team used these recommendations to approximate to number of lost informal parking spots and replace them with formal parking spots to roughly maintain the parking capacity within the upper canyon.

area would be widened to facilitate turning movements by large vehicles such as snowplows and emergency service vehicles (e.g., fire engines). The parking area would also include a pick-up and drop-off location.

The parking area includes a vegetated swale to collect surface water runoff and facilitate infiltration prior to conveying runoff to Mill Creek. The existing vault toilet would be relocated and replaced with a facility of similar size and appearance because the existing facility is outdated and in need of repair.

White Bridge Picnic Area

The White Bridge Picnic Area is about 0.33 mile east of Winter Gate. The existing 0.09-acre White Bridge parking area is gravel surfaced, lacks striping, and is suitable for about five vehicles. The parking area and entrance would be shifted about 30 feet east to improve sight distance for vehicles exiting the picnic area. The reconstructed parking area would be approximately 0.07 acre, paved with asphalt, and would include five parking spaces, matching current capacity. Parking spaces would be formalized and include one ABA-compliant space. A new sidewalk would connect the parking area to the existing vault toilet, which would remain as is.

Elbow Fork Trailhead

The existing Elbow Fork Trailhead parking area would be relocated to the south side of Mill Creek, approximately 700 feet to the west of its current location (about 1.2 miles east of Winter Gate). The parking area would require a short access road, which would be located along a relatively straight portion of roadway to improve safety for pedestrians, bicyclists, and vehicles compared to the existing parking situation. The existing parking area is surfaced with gravel, is not striped, and is suitable for about 10 vehicles. The existing parking area and restroom would be removed, and the area would be revegetated.

The new trailhead parking area entrance would require a concrete box culvert to cross Mill Creek (see Drainage Improvements subsection below). The parking area would be paved and include 23 formalized parking spots including ABA-compliant spaces, a vault toilet, connections to existing trails, and a water quality detention basin. A 30-foot-long rockery wall would be constructed on the east and south sides of the parking area to reduce cut slopes and tree removal. Rockery walls are discussed below in the Retaining Walls subsection. The proposed Elbow Fork Trailhead parking area would be approximately 0.21 acre, including the access road.

A short section of trail would be constructed to connect the new parking area location to the nearby Pipeline Trail, located on the north side of Mill Creek Canyon Road.

Alexander Basin Trailhead

A new parking area would be constructed immediately west of the existing informal parking area associated with the Alexander Basin Trailhead, about 3.2 miles east of Winter Gate. The existing parking area is surfaced with gravel, is unstriped, and is suitable for about 15 vehicles (about 0.08 acre). The proposed parking area would be approximately 0.21 acre and surfaced with asphalt. This parking area would be striped to include 20 formalized parking spots, including ABA-compliant spaces, a vault toilet, new signs, and connections to existing trails. It would also include a pick-up and drop-off area at the location of the current informal parking area.

A 200-foot-long rockery wall would be constructed on the south and west sides of the parking area to reduce cut and fill slopes and tree removal. Rockery walls are discussed below in the Retaining Walls subsection. Surface runoff would be conveyed to a vegetated swale to facilitate infiltration prior to conveying runoff to Mill Creek.

Upper Big Water Trailhead

The Upper Big Water Trailhead parking area, located about 4.6 miles east of Winter Gate and at the road's terminus, would be reconstructed and expanded. The existing parking area is 0.36 acre, and the proposed parking area would be approximately 0.84 acre. The new asphalt-surfaced parking area would accommodate 39 additional parking spaces (an increase from 32 spaces to 71 spaces), including ABA-compliant spaces. An approximately 300-foot-long, 4-foot-tall rockery wall would be required to reduce encroachment into the adjacent meadow. Rockery walls are discussed below in the Retaining Walls subsection.

A passenger pick-up and drop-off area would be located on the east side of the parking area. The existing yurt, which can be reserved for overnight stays by winter recreationists, would be relocated to the southeast corner of the parking area. The existing vault toilet facility would be removed and replaced with a new vault toilet on the east side of the parking area.

Drainage improvements would include curb and gutter, a vegetated swale, and a water quality basin, which would be constructed to collect and infiltrate surface water runoff from the parking area prior to conveying it to Mill Creek.

Informal Parking Areas

Informal roadside parking areas exist throughout the project area and allow for one or more vehicles to pull off the road and park adjacent to the roadway. Approximately eight of these pullouts would be formalized to include a paved surface and striped parking stalls. The remaining informal parking areas would be made unavailable through the placement of locally sourced boulders. These areas would be seeded with native species using a USFS-approved seed mix.

Recreational Amenities

New and replaced vault toilets mentioned above would consist of prefabricated concrete models similar to those recently installed by the USFS in nearby canyons.

Informational kiosks would also be installed at the modified parking areas in conjunction with parking area improvements. Exact kiosk locations will be determined during final design. Kiosk structural and aesthetic details would adhere to USFS guidelines by using appropriate materials, colors, and design principles (USFS 2013).

4.3.3 Retaining Walls

Multiple retaining walls would be constructed throughout the length of the corridor to facilitate road widening and parking area construction. Retaining walls are proposed at six locations along the roadway, with a total length of approximately 950 feet. Walls required to support parking area construction are proposed at the Elbow Fork, Alexander Basin, and Upper Big Water parking areas, with a total length of approximately 530 feet. Installation of the retaining walls would reduce the need for large cut and fill slopes and vegetation removal. Depending on site-specific conditions and constraints, two types of retaining walls are being considered: rockery and soil nail walls.

- Rockery walls would generally be used when wall heights are less than 12 feet and slopes above the walls are not excessive. The average rockery retaining wall height is expected to be 4 feet. Rockery walls would be constructed of large boulders. Boulders would be selected to blend in with native rocks in the area.

- Soil nail walls would generally be used where taller wall heights are required or slopes above the walls are excessively steep. Soil nail retaining walls would range from 4 to 12 feet tall. Soil nail walls would be constructed of soil nails (rebar, grouted in place), reinforced shotcrete, and finished with an architectural façade, such as sculpted concrete with coloration added to mimic rock outcroppings in the area.

4.3.4 Drainage Improvements

Drainage improvements would be constructed to control surface water runoff from the roadway and parking areas and ensure adequate conveyance to Mill Creek. With the widening of the roadway, some existing culverts would need to be lengthened. Additionally, stabilization is proposed to protect the road embankment from erosion at stream crossings. White Bridge would be replaced for the reasons described below. Other improvements would consist of roadside ditches, curb and gutter sections, vegetated swales, and water quality (infiltration) basins to capture and filter surface runoff from paved parking areas.

Concrete Box Culverts

Six concrete box culverts would be improved, replaced, or installed as part of the project. This includes five of the nine existing culverts where Mill Creek Canyon Road crosses Mill Creek (including White Bridge) and one new culvert where the access road to the relocated Elbow Fork Trailhead parking area would cross Mill Creek.

White Bridge would be replaced with a larger concrete box culvert measuring approximately 17 feet wide, 8 feet tall, and 30 feet long. The proposed structure would include concrete headwalls and wingwalls on both the upstream and downstream sides. The bottom 3 feet of the culvert would be lined with cobbles (river rock) to mimic the natural streambed and support aquatic organism passage. The railing would also be replaced to meet current safety design standards and designed to mimic, as closely as possible, the existing railing and historic design.

Four existing concrete box culverts would be lengthened to accommodate the widened roadway. These box culverts would be lengthened between 9 feet and 25 feet. Culvert extensions would consist of precast, reinforced concrete box culvert sections. Each of these four culverts would have concrete headwalls and wingwalls on both the upstream and downstream sides to retain soil and protect against erosion and structural damage during high flow events. The locations of these four box culverts are shown on Figure 15 and described below.

- Culvert 1: approximately 0.25 mile west of Elbow Fork Trailhead
- Culvert 2: approximately 0.30 mile east of Elbow Fork Trailhead
- Culvert 3: approximately 0.75 mile west of Upper Big Water Trailhead
- Culvert 4: approximately 0.45 mile west of Upper Big Water Trailhead

A new concrete box culvert would be installed under the entrance road for the new Elbow Fork Trailhead. This culvert would be approximately 15 feet wide, 7 feet high, and 60 feet long. The bottom 3 feet of the culvert would be lined with cobbles to mimic the natural stream bed and support aquatic organism passage. Headwalls and wingwalls would be constructed similar to the other box culverts.

New and modified box culverts may include concrete cutoff walls on the upstream side of the culvert. Cutoff walls would extend up to 4 feet below the base of the culvert (or culvert and wingwalls) to limit scour and subsurface flow beneath the concrete structures.

The project would involve minor repairs to stone walls at Stone Bridge 1 (technically a culvert), located about 0.5 mile east of the Winter Gate Trailhead. This work would repair past damage to the stone walls. The walls are expected to be taken apart down to the road surface level then rebuilt in their same location and configuration, re-using the existing stones as much as possible and supplementing them with similar appearing stones in areas that have missing stones. The mortar would also match the original type to maintain the visual appearance and historic feeling of the stone walls.

Other Drainage Elements

Curb and gutter would be used in areas where the roadway is too narrow to include a roadside ditch. Curb and gutter would be concrete and consist of about 2 feet of gutter and a 6-inch-tall curb. The curb and gutter would direct water to roadside ditches and culvert inlets.

Where possible, ditches would be constructed along one side of the road. The ditches would typically be V-shaped and range from 6 to 10 feet wide.

Vegetated swales would be constructed at the Winter Gate parking area and at the Alexander Basin Trailhead parking area. The swales would be V-shaped or flat-bottomed ditches seeded with a USFS-approved native seed mix. Vegetated swales allow for increased stormwater and meltwater infiltration, naturally filtering sediment and contaminants from surface water runoff.

Water quality basins would be constructed at the Elbow Fork Trailhead and the Upper Big Water Trailhead parking areas. These basins would be vegetated depressions that would collect surface water runoff from parking areas and naturally filter sediment and contaminants from the collected water as it infiltrates through the soil. The water quality basins at the Elbow Fork Trailhead and Upper Big Water Trailhead parking areas would measure approximately 16 feet by 21 feet and 87 feet by 66 feet, respectively.

Several side streams and drainage features cross the roadway through culverts within the project area. Depending on the existing conditions, existing culverts may be replaced or left in place, new culverts may be installed, and existing inlets and outlets may be repaired to reduce erosion. New culverts would be constructed with corrugated metal pipes up to 42 inches in diameter to accommodate design flows and protect the reconstructed roadway. Approximately 40 culverts are included in the proposed project.

4.3.5 Associated Improvements and Other Work

Other associated minor improvements include the following:

- Roadway and informational signs would be replaced and designed to visually match existing signs in the area. The speed limit on Mill Creek Canyon Road would remain at 30 miles per hour with lower advisory speeds at some curve.
- The entire road would be striped to designate lanes and the roadway edge.
- Snow pole holders would be installed in the Winter Gate area to mark obstructions and protect improvements from snowplow damage.
- Crosswalks would be installed in areas where pedestrians and bicyclists cross the roadway to access trails, parking areas, and picnic areas.
- Trails would be modified to maintain and provide new connections to existing trail systems near existing and new parking areas and to accommodate roadway widening.

- Trail connections with the proposed Elbow Fork Trailhead would include the addition of a trail segment that crosses Mill Creek Canyon Road and ascends the slope northwest of the parking area to connect with the Pipeline Trail.
- The trail connection adjustment with the Alexander Basin Trailhead would be relatively minor and involve only a short section of modified trail near the trailhead improvements.
- A trail alteration would be required approximately 0.4 mile west of Upper Big Water Trailhead where vertical roadway realignment requires a trail connecting to the road at that location to be raised several feet and graded to merge with the raised road surface.
- The Upper/Lower Connector Trail that parallels the south side of the road between Upper and Lower Big Water Trailheads would be relocated uphill to accommodate a cut slope required for road widening.
- Trail connection adjustments with the Upper Big Water Trailhead would be relatively minor and involve only short sections of modified trails near the trailhead improvements.
- A joint utility trench would be constructed beneath the roadway with three conduits (empty pipes) installed. One conduit would be reserved for the relocation of the existing overhead powerline underground between the Winter Gate and Firs Cabins. The other conduits would be installed to accommodate potential future dry utilities. Periodic pull boxes would be constructed to facilitate future utility line installation. No utilities would be installed in these conduits as part of the Proposed Action, and any future line installation would be completed by others.

4.3.6 Construction

Construction of the project is anticipated to require two seasons to complete. The construction season would start as soon as feasible after funding and approvals are obtained, anticipated around May 2025, and would last as long as feasible until winter conditions prevent further construction, likely around December 1. The winter closure period would allow for winter recreation between December 15 and March 15, and possibly longer depending on conditions and the actual construction schedule. The USFS would continue to groom the snow along the road for recreation uses during the winter construction closure period.

Outside of the winter recreation period, the road and modified recreation areas would be closed to the public during construction. The construction contractor would be responsible for preparing and implementing a traffic control plan with public noticing. Firs Cabin owners would be provided with access to their cabins over four designated weekends (Memorial Day, Pioneer Day, Independence Day, and Labor Day) per construction season to check on cabins and perform any needed maintenance. During these scheduled access times, the roadway would be drivable by high-clearance vehicles such as trucks or sport utility vehicles. Steel plates to cover ditches, open trenches, and holes would be installed as necessary to allow vehicle passage. Access to the canyon from the road would remain closed to the general public during these weekends.

During the construction season, trails terminating in upper Mill Creek Canyon would be closed to prevent visitors from inadvertently entering the construction area. Trails paralleling upper Mill Creek Canyon (e.g., Pipeline Trail) would remain open. Trails connecting through Mill Creek Canyon would remain open and a crossing through the construction area would be provided at Elbow Fork. The USFS would be responsible for posting signs along trails at major intersections and trailheads before construction and would coordinate with FHWA-CFLHD and its contractor on the schedule.

4.4 Section 4(f) Properties

Section 4(f) properties include (1) parks and recreational areas of national, state, or local significance that are publicly owned and open to the public, (2) publicly owned wildlife and waterfowl refuges, and (3) historic sites of national, state, or local significance in public or private ownership regardless of public accessibility. The project area includes several recreational and historic Section 4(f) resources, but no wildlife or waterfowl refuges, as described below.

4.4.1 Parks and Recreational Resources

Within areas of public lands managed for multiple uses, which is the case for this project, Section 4(f) only applies to those portions of lands which function for, or are designated as being for, significant park, recreation, or wildlife and waterfowl refuge purposes. Consequently, each recreation site in the project area was evaluated separately. The canyon as a whole, because it is not managed singularly for recreation, was not considered an individual resource.

Recreation Section 4(f) properties in the project area include the parking areas, picnic areas, trailheads, and trails previously described in this report and listed in Table 2. For additional information on each of these resources see Section 3.2.1, Recreation and Access.

Table 2. Summary of Section 4(f) Recreation Resources in the Project Area

Resource Name	Purpose	Use Per Section (4f)
Maple Grove Picnic Area and Winter Gate parking area	Picnic area and winter trailhead	Yes
White Bridge Picnic Area	Picnic area	Yes
Maple Cove Picnic Area	Picnic area	Yes
Evergreen Picnic Area	Picnic area	Yes
Elbow Fork Trailhead	Trailhead providing access to the Pipeline Trail, Mount Aire Trail, Terraces Elbow Fork Trail,	Yes
Fir Crest Picnic Area	Picnic area	Yes
Clover Springs Picnic Area	Picnic area	Yes
Alexander Basin Trailhead	Trailhead providing access to the Alexander Basin Trail	Yes
Alexander Basin Trail	Multiuse trail	Yes
Lower Big Water Trailhead	Trailhead, primarily an overflow lot of the Upper Big Water Trailhead	Yes
Upper Big Water Trailhead	Trailhead providing access to the Big Water Trail, Little Water Trail, Old Red Pine Road Trail, and the Great Western Trail	Yes
Big Water Trail	Multiuse trail	Yes
Great Western Trail	Multiuse trail	Yes
Little Water Trail	Multiuse trail	Yes
Old Red Pine Road Trail	Multiuse trail	Yes
Mill Creek Canyon Road (serving as a trail when the winter gate is closed)	Multiuse trail	Yes
Terraces Elbow Fork Trail	Multiuse trail	No

For resources in which there is no use, only Terraces Elbow Fork Trail, no additional discussion or analysis is included.

4.4.2 Historic Resources

The APE is an approximately 80- to 130-foot-wide corridor along 4.5 miles of Mill Creek Canyon Road and adjacent areas where parking would be formalized or expanded and where potential indirect effects could extend beyond the roadway corridor (where walls are proposed). The APE encompasses about 76 total acres.

Eleven historic properties and two archeological sites within the project's APE were determined to be eligible for listing in the NRHP and considered Section 4(f) resources potentially used by the proposed project. These sites are summarized in Table 3. For additional information on each of these resources see Section 3.2.6, Archaeological Resources, and Section 3.2.7, Architectural Resources.

Table 3. Summary of Section 4(f) Historic Resources in the Area of Potential Effects

Resources Name	Type	Use Per Section (4f)
Stone Bridge No. 1	Architectural	Yes
Mill Creek Canyon Road (including White Bridge)	Archeological	Yes
Firs Bridge 2	Architectural	No
Firs Cabin 1	Architectural	No
Firs Cabin 3	Architectural	No
Firs Cabin 4	Architectural	No
Firs Cabin 5	Architectural	No
Firs Cabin 21	Architectural	No
Firs Cabin 22	Architectural	No
Firs Cabin 24	Architectural	No
Mill Creek Hydroelectric System	Archeological	No
Stone Bridge No. 2	Architectural	No
Stone Bridge No. 3	Architectural	No

4.5 Evaluation of Use

4.5.1 Parks and Recreational Resources

Section 4(f) Recreation Properties Which Qualify for the Transportation Enhancement Exception

Short sections of the following several trails overlap with the Proposed Action and would be closed during construction and impacted as follows:

- **Alexander Basin Trail.** Temporary closure and minor trail realignment to connect to the expanded Alexander Basin Trailhead.
- **Big Water Trail**. Temporary closure and minor trail realignment to connect to the expanded Upper Big Water Trailhead.
- **Little Water Trail.** Temporary closure and minor trail realignment to connect to the expanded Upper Big Water Trailhead.
- **Great Western Trail**. Temporary closure and minor trail realignment to connect to the expanded Upper Big Water Trailhead. Another portion would be relocated south to avoid the proposed roadway improvements.

- **Old Red Pine Road Trail**. Temporary closure and minor trail realignment to connect to the expanded Upper Big Water Trailhead.

The above modifications are necessary to accommodate the relocated and or reconfigured trailheads, which would provide enhanced access and user amenities for trail users. Trail sections beyond the improvements would generally remain open to the public, however they would need to be accessed from trailheads outside of the project area. These uses would be for the sole purpose of enhancing the trails and improving their associated recreation opportunities, and with USFS concurrence, the transportation enhancement exception (23 CFR § 774.13(g)) would apply.

Upper Mill Creek Canyon Road serves as a trail when the gate is closed. The road would likely remain closed because of construction during the shoulder seasons when insufficient snow precludes skiing. A winter construction shutdown would extend from December 15 to March 15, possibly longer depending on the timing of seasonal snowfall and snow melt. This would allow recreational uses to resume on Mill Creek Canyon Road during this time. These impacts on recreation constitute a use per Section 4(f). In this case, the use is solely for the purpose of enhancing the roadway and the recreation opportunities it supports, and with USFS concurrence, the transportation enhancement exception (23 CFR § 774.13(g)) would apply.

Section 4(f) Recreation Properties Which Qualify as a *De Minimis* Use

Six picnic areas and four trailheads in the project area would be closed during construction and impacted as described below. For a full description of the proposed trailhead improvements see Section 3.2.2, Parking Areas.

- **Maple Grove Picnic Area/Winter Gate.** Temporary closure, parking formalized, and amenities improved. Two accessible picnic tables would be removed to facilitate construction of the proposed parking improvements. All other picnic tables, including an accessible picnic table, would remain. The parking area would be publicly available during the winter construction shutdown period.
- **White Bridge Picnic Area.** Temporary closure, parking lot paved, entrance relocated to improve sight distance, and sidewalk added to improve ABA accessibility.
- **Maple Cove Picnic Area.** Temporary closure, no improvements planned.
- **Evergreen Picnic Area.** Temporary closure, no improvements planned.
- **Fir Crest Picnic Area.** Temporary closure, no improvements planned.
- **Clover Springs Picnic Area.** Temporary closure, no improvements planned.
- **Elbow Fork Trailhead.** Temporary closure, trailhead relocated, parking formalized, amenities improved, enhanced trail access.
- **Alexander Basin Trailhead.** Temporary closure, parking formalized, amenities improved.
- **Lower Big Water Trailhead.** Temporary closure, no improvements planned.
- **Upper Big Water Trailhead.** Temporary closure, parking formalized and expanded, amenities improved.

Long-term recreation impacts to each of these properties would range from no impact to multiple enhancements/improvements as described in Chapter 2. The only location where existing recreation opportunities would be permanently impacted is at the Winter Gate parking area where two picnic tables would be removed to facilitate construction of the proposed parking improvements. All picnic tables at the adjacent Maple Grove Picnic Area would remain, so these impacts are considered minor and would not be adverse.

Because the Proposed Action would result in temporary impacts to recreation that do not qualify for an exception, and the impacts would not adversely affect the features, attributes, or activities qualifying the properties for protection under Section 4(f) in the long term, impacts to picnic areas and trailheads would be considered *de minimis* with USFS concurrence.

4.5.2 Historic Resources

Section 4(f) Historic Properties Which Qualify for the Historic Transportation Facilities Exception

Minor modifications to the stone of Stone Bridge 1 are proposed to repair past damage. The walls are expected to be taken apart down to the road surface level then rebuilt in their same location and configuration, reusing the existing stones as much as possible and supplementing them with similar appearing stones in areas that have missing stones. A wall reconstruction plan will be required to ensure proper restoration of the walls to match their historic condition. FHWA-CFLHD determined, pursuant to Section 106, that there would be no adverse effect to Stone Bridge 1. The Utah SHPO, the official with jurisdiction, concurred in a letter dated November 14, 2023.

Section 4(f) Historic Properties with a Use

Mill Creek Canyon Road is a historic road constructed in the early 1900s and contains associated structures, such as bridges and culverts, that also date to the early to mid-1900s. The road's importance for local uses and events associated with recreation and tourism and association with federally funded New Deal improvement projects (Criterion A) make it eligible for listing to the NRHP. Four bridges are contributing features because of their New Deal association (Stone Bridges 1, 2, and 3 and Firs Bridge 2). White Bridge is an important contributing feature of the historic road that represents a distinctive type of construction, specifically 1920s formed concrete bridge design, and makes the road also eligible under Criterion C. The road retains integrity of location and setting.

White Bridge is a historic box culvert, installed in the 1920s, with a concrete slab bridge on top and formed concrete b railing. The culvert crosses Mill Creek along Mill Creek Canyon Road near the White Bridge Picnic Area. White Bridge is eligible for listing individually and as a contributing feature of Mill Creek Canyon Road. It retains its original design, materials, and use and embodies the distinctive characteristics of an early 1900s concrete vehicular bridge (Criterion C). White Bridge maintains integrity in location, setting, design, materials, workmanship, feeling, and association. The location has not been compromised, and the bridge remains in the same place as when it was constructed within a rural, wooded setting. The design, materials, and workmanship have not been substantially altered as minor improvements or modifications were made over the years. The bridge also maintains its feeling as an early 1900s structure associated with Mill Creek Canyon Road.

As described in Chapter 3 of this EA, the Proposed Action consists of improvements to Mill Creek Canyon Road from just west of the Winter Gate to the road's terminus at Upper Big Water Trailhead. Improvements include roadway widening, establishment of an uphill bicycle lane from the Winter Gate to the Elbow Fork Trailhead, drainage improvements, associated minor safety improvements, replacement of White Bridge, and various improvements to parking areas and trails along the road.

Based on the analysis of effects on historic properties as part of the Section 106 compliance process, the proposed replacement of White Bridge would adversely affect both Mill Creek Canyon Road and White Bridge because the historic properties would lose a character-defining feature (White Bridge) and would no longer be eligible for NRHP listing under Criterion C. Due to this adverse effect and consistent with FHWA regulations related to Section 4(f), the project would result in the use of these two Section 4(f) properties. This use of a historic transportation facility is solely related to replacement of White Bridge, as

the other improvements to Mill Creek Canyon Road would not adversely affect the historic integrity of the road in relation to its eligibility under Criterion A. The Utah SHPO concurred with the effects in November 2023 as part of the consultation process.

The following section, Avoidance Alternatives, is focused solely on Mill Creek Canyon Road and White Bridge as these are the only Section 4(f) properties with a use that would not qualify for an exception or meet the requirements for *de minimis* use.

4.6 Avoidance Alternatives

The following alternatives were considered to avoid use of Mill Creek Canyon Road and White Bridge with consideration for the feasible and prudent criteria identified in the regulations:

- No Action (no improvements or modifications to White Bridge)
- Relocation to New Location (retain White Bridge and construct new creek crossing)
- Rehabilitation Without Affecting Historic Integrity (minor repairs or modifications to White Bridge)

4.6.1 No Action

As an avoidance alternative, no action would mean leaving White Bridge in place and either not improving Mill Creek Canyon Road across it or improving the road only with no modifications to White Bridge. This alternative could mean beginning the road improvements on the east side of White Bridge to avoid any work at the culvert or only repaving and striping the section of the road across the culvert. Future activities would be limited to routine maintenance of the culvert structure and associated features, such as minor repairs to the railing, and improvements at White Bridge may end up being deferred to a future project to ensure the structure does not collapse or fail. This alternative would not correct the existing deficiencies associated with White Bridge, as described in Chapter 1 of this EA (e.g., the age of the structure and its unknown structural integrity, inadequate and unsafe railings), and could create conflicts and unacceptable safety and operational concerns with travelers due to inconsistent road widths and unprotected precipitous drop offs at both bridge abutments. Structural concerns identified as part of the design process would not be corrected, resulting in a risk of failure of the culvert that would cause access restrictions to the upper portion of Mill Creek Canyon. The level of risk of failure is considered high because the structure has not been improved or modified in a meaningful way since its construction in the early 1900s. It does not meet current design or safety standards and shows evidence of deterioration in the culvert and associated features. This alternative is not considered prudent because it does not address the purpose and need for the project.

4.6.2 Relocation to New Location

As an avoidance alternative, a relocation alternative would mean realigning a segment of Mill Creek Canyon Road to construct a new bridge or culvert parallel to or near the existing bridge and leaving White Bridge in place, possibly to use for pedestrian- or bicycle-only traffic. Due to adjacent conditions, primarily the steep slopes, heavily vegetated areas, and stream, a parallel or adjacent structure would be difficult to design and construct (see Figure 3 in Chapter 1 for perspective on the bridge location). Where Mill Creek flows through White Bridge, the stream forms an "s" curve that does not allow sufficient space to construct a parallel structure. The road alignment would need to be modified substantially to accommodate a perpendicular crossing and meet current design standards, and a new structure could not be located in the immediate area. No other roads provide access to upper Mill Creek Canyon, so redirecting traffic to another road is not an option.

Design of this realignment would be difficult due to the adjacent conditions and limited area available for realignment and would not meet sound engineering judgment. Such a relocation could also result in severe impacts to other resources, such as the stream, riparian and forested vegetation, adjacent slopes (stability concerns), and a nearby parking area/trailhead, and result in higher construction costs. The USFS also manages the surrounding land, and a realignment could make this project incompatible with its land and resource management plan, result in unacceptable impacts to the forest, and require modifications to the existing road easement that Salt Lake County has with the USFS. In addition, leaving the existing White Bridge in place without adequate rehabilitation to meet current design and safety standards could continue to pose safety concerns for users if the structure enters a state of disrepair due to it no longer serving as the primary travel route for visitors in the canyon and Salt Lake County being unable to properly maintain it (e.g., due to funding needs). For these reasons, a new alignment of the road and bridge is not considered feasible or prudent because it would result in unacceptable safety and operational problems.

4.6.3 Rehabilitation Without Affecting Historic Integrity

As a rehabilitation alternative, repairs to White Bridge may include fixing the damaged railings to maintain their integrity and minor adjustments to the structure to stabilize or extend its life without affecting its historic integrity. The railings have the following issues:

- Railing concrete is deteriorating.
- The railings do not meet modern height requirements.
- The railings do not meet current crash test standards. Vehicles have crashed into them and caused damage that has not been repaired.

These safety concerns, when viewed cumulatively, result in an unacceptable safety concern. Based on the railing design, minor repairs to increase its height or length would not be able to match the historic design or features without altering it so much that it loses its historic integrity.

For the reasons noted above, the railings would require major repairs or reconstruction to meet current design and safety standards. Minor repairs would not be enough to make them safe, even with consideration of design exceptions for keeping railings in place that do not meet crash test requirements.

The existing culvert and wingwalls were not designed to accommodate minor adjustments to lengthen the culvert without substantially modifying the entire structure. Project design engineers were unable to identify minor modifications that could facilitate the road improvements across White Bridge due to the current structure condition and configuration, and replacement was identified as a need to support the project. The ability to engineer such adjustments is further constrained by the lack of as-built drawings for the structure.

Maintaining White Bridge in place would continue to pose other concerns with regard to safety and operations, especially with the proposed improvements to Mill Creek Canyon Road on each side of the culvert. The culvert and its railing cannot be left in place and just modified as part of the road improvements based on the above discussion. For these reasons, rehabilitation of White Bridge is not considered feasible or prudent because it would result in unacceptable safety and operational problems.

4.7 Measures to Minimize Harm

As part of the Section 106 compliance process and in consultation with the Utah SHPO and USFS, FHWA-CFLHD agreed to implement the following mitigation measures through a MOA to resolve adverse effects related to the replacement of White Bridge:

- The new railing will be a best match that mimics the appearance and feeling of the historic railing, while meeting current crash standards.
- Historic American Engineering Record level II documentation will be obtained for the culvert and associated features.
- An interpretive sign documenting photos of the historic culvert and road and their importance to the transportation history of the area will be developed and likely placed at one of the nearby trailheads.
- A section of the historic railing, if feasible, will be preserved and displayed at a nearby trailhead or incorporated into the trail or trailhead improvements.

Measures to minimize harm to Stone Bridge 1 include the following:

- A narrower roadway will be constructed in the vicinity of Stone Bridge 1 so the existing walls can be rehabilitated instead of removed and replaced.
- The stone parapet walls will be rehabilitated to best match their existing appearance. The stone walls will be taken apart down to the road surface level then rebuilt in their same location and configuration, re-using the existing stones as much as possible and supplementing them with similar appearing stones in areas that have missing stones.
- A wall reconstruction plan will be developed, in coordination with USFS, to ensure proper restoration of the walls to match their historic condition.

Measures to minimize harm to Section 4(f) recreation properties include the following:

- User amenities at trailheads will be improved. This includes bathrooms and signage at the Maple Grove Picnic Area/Winter Gate parking area, Elbow Fork Trailhead, Alexander Basin Trailhead, and Upper Big Water Trailhead.
- Retaining walls will be used at the Alexander Basin and Upper Big Water Trailheads to limit trail realignments.
- To minimize trail access disruption, most trails in the area would remain open, although the trailheads along Mill Creek Canyon Road would be inaccessible. Trails paralleling upper Mill Creek Canyon (e.g., Pipeline Trail) would remain open. Trails connecting through Mill Creek Canyon would stay open, and a crossing through the construction area would be provided at Elbow Fork. Trails would be posted accordingly with signs at major intersections and trailheads prior to construction. A trail closure plan would be developed, in coordination with USFS. The plan would detail alternative access points to trails, providing that access does not interfere with construction activities.
- Winter recreation will be allowed on upper Mill Creek Canyon Road. A winter construction shutdown would extend from December 15 to March 15, possibly longer depending on the timing of seasonal snowfall and snow melt. During the shutdown, the road beyond the gate would be groomed and winter recreation would be permitted as usual. The Winter Gate parking area west of the gate would be open for public parking as usual during this time. The USFS would plan to open vault toilets for public use at Elbow Fork Trailhead and Clover Springs Picnic Area during this period.

4.8 Least Harm Analysis

Based on the above analysis, there is no feasible and prudent avoidance alternative. Therefore, the Proposed Action is the only alternative remaining that uses a Section 4(f) property. Since there are not multiple alternatives under consideration that use a Section 4(f) property, a least overall harm analysis is not necessary under 23 CFR 774.3(c).

4.9 Coordination

FHWA-CFLHD coordinated with the USFS throughout the environmental review process, beginning in 2020, and consulted with the Utah SHPO as part of the Section 106 process, which was initiated in January 2023. FHWA-CFLHD also notified the Advisory Council on Historic Preservation of the Finding of Adverse Effect in a letter dated November 13, 2023. The Council did not respond to the letter within 15 days or to a follow-up email, and FHWA-CFLHD is assuming they have declined participation in the consultation process to resolve adverse effects. To resolve the adverse effects, FHWA-CFLHD coordinated with the USFS and the Utah SHPO on a MOA, which outlines the roles and responsibilities of each agency and the agreed-upon mitigation measures noted above. This agreement was finalized on February 16, 2024.

4.10 Next Steps

As part of the NEPA process, the draft Section 4(f) evaluation is included as a chapter of this EA and will be available for public review and comment with the EA. FHWA-CFLHD will also provide a copy of this EA to the Utah SHPO and the U.S. Department of the Interior for review. After review of the aforementioned considerations and comments received, in accordance with 23 CFR § 774.3, FHWA-CFLHD will make the final determination, likely within the NEPA decision document, on whether there is no feasible and prudent alternative to the use of Mill Creek Canyon Road and White Bridge and affirm that the project includes all possible planning to minimize harm to the Section 4(f) properties resulting from such use.

5. Other Considerations

This chapter presents a discussion of cumulative impacts associated with the Proposed Action; a summary list of permits; a summary list of mitigation measures; and a summary of agency, tribal, and public coordination undertaken throughout the development of this EA.

5.1 Cumulative Impacts

The following reasonably foreseeable projects or actions could be implemented at the same time as the Proposed Action or have resource impacts that are cumulatively considerable when combined with those associated with the Proposed Action: Pipeline Trail connection at Elbow Fork (ongoing communication with USFS personnel), USFS fuel treatments, Rocky Mountain Power utility line installation, and the City Creek Canyon closure.

The USFS is planning to construct a trail connection along the north side of Mill Creek Canyon Road at Elbow Fork to connect the Pipeline Trail with the Great Western Trail trailhead at Elbow Fork's southernmost pullout. The proposed trail section would be approximately 500 feet long and parallel Mill Creek Canyon Road. Construction of this trail segment, expected in Summer 2024, would facilitate trail connectivity and prevent the need for trail users to use the roadway to connect the trails. Construction of this trail section would minimally impact an area of the canyon which currently sees high use levels and contains existing recreation facilities. These impacts would be near proposed improvements at Elbow Fork trailhead associated with the Proposed Action. Standard construction practices implemented for each project would minimize potential resource impacts, and sensitive areas, such as important features associated with the Mill Creek hydroelectric system historic property, would be avoided. While the cumulative environmental impacts associated with this project and the Proposed Action would be minimal, they would both positively contribute to the cumulative safety benefits and recreation enhancements associated with the project analyzed in this EA.

The USFS has ongoing and proposed fuels treatments that overlap portions of the project area, as well as adjacent areas (USFS 2022). Ongoing and proposed treatments include the use of hand and mechanical tools, such as chainsaws, to cut and lop vegetation. Treatments are designed to reduce the risk of wildfires and promote the resilience of stands to insects and disease. Fuels treatments combined with the Proposed Action would result in loss of vegetation along Mill Creek Canyon Road but would not result in adverse cumulative effects.

Rocky Mountain Power is planning to move overhead powerlines underground as part of its wildfire risk mitigation plan (Rocky Mountain Power 2020; USFS 2021). Replacing the overhead lines with underground facilities would reduce wildfire risk, improve wildlife habitat by reducing disturbance during maintenance activities, and improve vegetation growing conditions by reducing tree trimming efforts to accommodate the overhead powerline. If the Proposed Action considered in this EA does not proceed, it is likely that Rocky Mountain Power would need to implement a partial or full road closure for several weeks during the summer to dig a trench in the roadway and move the line underground. This action appears to meet the NEPA requirements to be categorically excluded from further analysis and documentation in an Environmental Impact Statement or EA and would potentially be completed under categorical exclusion 36 CFR § 200.6(e)(3) – Approval, modification, or continuation of minor special uses of NFS lands that require less than 20 contiguous acres of land. Design Criteria would be implemented to minimize any impacts to cultural, hydrology and fisheries, and botany resources as well as for avoiding increasing the spread of invasive species (USFS 2021). If the Proposed Action does proceed, it is anticipated that Rocky Mountain Power could install the line in the preinstalled conduit in a much shorter timeframe with minimal disruption to traffic and without the need to excavate or disturb soil or otherwise impact resources in the area. Disruption of the power supply to Firs Cabins is expected to be similar under both options. Because the powerline would be installed in a conduit placed during the Mill Creek Canyon Road Improvements Project, the additional environmental impacts associated with this work would be negligible and the cumulative effects associated with these two actions would be the same as for the Proposed Action itself.

City Creek Canyon Road, a nearby canyon road that offers similar recreational amenities to Mill Creek Canyon Road, is currently closed above Bonneville Boulevard to personal vehicles. This closure is for the rebuilding of the City Creek Water Treatment Plant and is expected to last through January 2027. The Federal Emergency Management Agency is currently preparing an EA for the project, which is expected to be completed in the Spring of 2024. The water treatment plant is near popular hiking and biking areas which are still accessible during weekends and holidays via foot or bicycle. Any trails past the water treatment plant are off-limits to bicyclists and pedestrians for the duration of the project. In combination with the proposed closures for the Proposed Action in Mill Creek Canyon, canyon-based recreation opportunities in the greater Salt Lake City area would be marginally limited during overlapping construction activities. As discussed in the Recreation and Access section, the Wasatch Front has numerous similar recreation opportunities in addition to those impacted by the City Creek Canyon project and potentially impacted by this Proposed Action. Ultimately, safer access to the upper portion of Mill Creek Canyon Road along with parking area and trailhead improvements would benefit recreationists in the long term.

5.2 Summary List of Permits

Permits pertaining to this project are identified and discussed in the relevant resource sections in Chapter 3. The following list summarizes the previously identified permits:

- Section 404 Nationwide Permit #14
- Section 401 Water Quality Certification
- Utah Stream Alteration Permit

- General Permit for Storm Water Discharges from Construction Activities (Utah Permit Discharge Elimination System Permit No. UTRC00000)
- General Permit for Construction Dewatering and Hydrostatic Testing (Utah Permit Discharge Elimination System Permit No. UTG070000)
- Salt Lake County Floodplain Development Permit
- Salt Lake County Flood Control Permit
- USFS Merchantable Timber Permit or Firewood Permit

5.3 Summary List of Mitigation Measures

FHWA-CFLHD will be responsible for implementing appropriate mitigation measures as listed below to reduce or alleviate adverse impacts associated with the Proposed Action. The measures listed below have been identified based on specific impacts described in Chapter 3 and will be incorporated into the Proposed Action if it is implemented.

5.3.1 Vegetation Mitigation Measures

VEG-1. FHWA-CFLHD will coordinate with USFS to create a restoration plan for riparian areas based on the USFS-provided riparian management objectives. Examples of what could be included in this plan consist of the following:

- Minimize loss of stream shading by incorporating woody vegetation plantings like willows or other species in temporarily disturbed areas along Mill Creek.
- Minimize erosion and sedimentation through the use of BMPs.
- Obtain USFS approval of the Storm Water Pollution Protection Plan prior to construction.
- Restoring contours or banks that have been temporarily disturbed.
- Coordination with USFS regarding post-planting monitoring and remediation as necessary.
- Control for noxious and invasive plant species during construction.
- Obtain USFS approval of seed mix.

VEG-2. Flag or clearly mark the construction limits in the following locations prior to construction activities in the area and assess the ability to protect the plants:

- On the south side of Mill Creek Road at the location of the known population of Wasatch fitweed to avoid inadvertent disturbance outside the construction limits (approximated between Project Station 195+00 and 197+00).
- At the two known occurrences of sand fleabane area (around Project Station 33+15 and Station 73+00).
- Notify USFS prior to ground disturbance in these areas.

VEG-3. FHWA-CFLHD will control for invasive plant species during construction to minimize the introduction and spread of invasive species within the project area. Examples of treatment could include the following:

- Leave natural vegetation buffers in place where possible.
- Avoid walking through or placing equipment, materials, or supplies in areas that are infested by noxious and invasive weeds.
- All equipment should be cleaned and free of vegetation, soil, and debris prior to beginning work on USFS land.
- Native seed mix used will be approved by the USFS botanist and certified weed-free for revegetation of areas of ground disturbance where reseeding is necessary. Reseed as soon as practical.
- Noxious and invasive weeds, including cheatgrass, should not be increased due to project work activities within the project area.

5.3.2 Wildlife Mitigation Measures

WL-1. Schedule vegetation removal outside of the nesting season (May 1 through August 15) if possible. Conduct preconstruction surveys for active migratory bird nests if vegetation removal will occur between May 1 through August 15. Establish no-disturbance buffers, in coordination with USFS, around active nest sites and monitor the nest activity.

WL-2. FHWA-CFLHD will avoid, minimize, and mitigate impacts to cutthroat trout through the following measures:

- Preclude work that results in direct disturbance to Mill Creek or creates increased sediment inputs or sediment loading to Mill Creek or its tributaries from May 1 to July 15.
- Implement BMPs when working in live water to minimize sediment transport.
- Dewater at select locations to eliminate downstream transport of sediment plumes.
- Equip dewatering pumps with intake screens to prevent impact to aquatic species.
- Relocate any fish remaining in dewatered areas to the adjacent creek.

5.3.3 Archeology Mitigation Measures

ARCH-1. FHWA-CFLHD will include notes or callouts on the design plans at the locations of the rock walls associated with the Mill Creek hydroelectric system, Firs Bridges 1 and 2, and Stone Bridges 2 and 3 to ensure no disturbance or damage to the structures/features occurs during construction. The construction contractor will not modify the structures/features, and if inadvertent damage occurs, the contractor will notify FHWA-CFLHD immediately and coordinate on a plan to repair the damage. FHWA-CFLHD may also need to consult with the USFS and Utah SHPO in the event of damage.

ARCH-2. FHWA-CFLHD executed a MOA with the USFS and Utah SHPO to resolve adverse effects related to Mill Creek Canyon Road and White Bridge. The MOA was finalized on February 16, 2024 and will be implemented before initiation of construction activities or as part of construction, depending on the measure. Specific measures included in the MOA are:

- FHWA-CFLHD will retain a qualified historian to prepare Historic American Engineering Record Level II documentation of the White Bridge culvert and associated features, which will be submitted to the USFS and Utah SHPO for review and filing.
- FHWA-CFLHD will design an interpretive sign that documents photos of the historic culvert, its importance to the transportation history of the area, and the historic uses of the road. The construction

contractor will install the sign at the picnic area near White Bridge or another approved location in coordination with the USFS.

- FHWA-CFLHD will assess the ability to preserve a section of the historic railing at White Bridge and display it at a nearby trailhead or with the interpretive sign or possibly incorporate it into nearby trail or trailhead improvements (assuming the railing can be successfully detached and relocated without further damage). The design plan will depict the specific details of the preservation approach and location if this measure is deemed feasible. The construction contractor will be responsible for removing the railing and placing it where shown in the design plans.

5.3.4 Historical Architecture Mitigation Measures

HIST-1. FHWA-CFLHD will require its construction contractor to retain a Secretary of Interior-qualified architectural historian and a qualified stone mason to oversee reconstruction of the parapet walls associated with Stone Bridge 1 and to prepare and submit a wall reconstruction plan for the work. The plan will include pre- and post-work photographs, identification of the in-kind materials (e.g., stones, mortar) to be used to match the historic materials where existing materials must be replaced, an approach to track stones being removed and replaced to ensure their placement matches the current style and configuration, and other appropriate measures to avoid loss of historic integrity of the walls and existing stones. FHWA-CFLHD will coordinate with the USFS and Utah SHPO on their review of the plan to ensure the bridge is not adversely affected.

5.4 Agency, Tribal, and Public Coordination

FHWA-CFLHD coordinated with the USFS, Salt Lake County, and Millcreek throughout the environmental review process and led federal agency consultations to meet federal requirements. As discussed in Section 2.13, the process included public involvement in the form of open houses and comment periods to solicit input and feedback from the public on the proposed project and associated environmental concerns. This input was used to consider alternatives under NEPA and identify and address environmental concerns in this EA. FHWA-CFLHD will also consider public comments on the EA when making a decision on the project in terms of the applicability of a Finding of No Significant Impact or the need to prepare an Environmental Impact Statement. The level of public involvement used on this project met FHWA's regulatory responsibilities under NEPA and FHWA implementing regulations for NEPA specific to EAs.

In compliance with Section 106 of the NHPA and other applicable regulations, FHWA-CFLHD sent letters about the project to 12 Native American tribes in April 2022, based on contacts provided by the USFS and State of Utah. The Hopi Tribe responded in May 2022 with interest in consulting if prehistoric sites are encountered; however, no prehistoric sites were encountered during the cultural resource investigations and further consultation was not determined necessary. The Paiute Indian Tribe of Utah responded in December 2022 and deferred to other more local tribes. FHWA-CFLHD followed up via email initially in April 2022 and again in December 2022, and no other responses have been received to date. The tribes have also had opportunities to be involved with the project through public involvement activities and will be notified about the availability of the EA for review.

As a requirement under Section 106 of the NHPA, FHWA-CFLHD initiated consultation with the Utah SHPO in January 2023, initially requesting review of the APE, and the Utah SHPO responded in February 2023 with concurrence on the APE. In May 2023, FHWA-CFLHD followed up with eligibility determinations for cultural resources in the APE based on archaeological and architectural resources investigation reports prepared by a consultant. FHWA-CFLHD, the USFS, and Utah SHPO staff met in July 2023 to discuss the project and results of the cultural resources investigations. Comments provided by

the Utah SHPO staff were addressed in revised reports submitted in September 2023. FHWA-CFLHD then submitted the finding of effect to the Utah SHPO in November 2023. The Utah SHPO responded in the same month with concurrence on the eligibility determinations and finding of effect. FHWA-CFLHD coordinated with the Utah SHPO and USFS to execute a MOA and confirm measures needed to resolve the adverse effects to White Bridge and Mill Creek Canyon Road. The agreement was finalized on February 16, 2024.

Based on the results of the Biological Resources Existing Conditions Report (HDR 2023b), the project will not affect federally listed species, and consultation with the U.S. Fish and Wildlife Service in compliance with Section 7 of the ESA was not necessary. FHWA-CFLHD coordinated with the USFS on effects to R4FSS sensitive species and specific measures needed to comply with the 2003 Wasatch-Cache National Forest Revised Forest Plan related to the species and other resources managed by USFS on NFS lands. These measures have been incorporated into the proposed action or are identified as mitigation measures in Section 5.3.

In compliance with Section 4(f) of the Department of Transportation Act, FHWA-CFLHD coordinated with the USFS, as the official with jurisdiction, on the *de minimis* findings and decisions to apply exceptions for use of USFS-managed recreation areas and trails along Mill Creek Canyon Road. The public review of this EA will meet the regulatory requirements for public involvement related to the *de minimis* findings. FHWA-CFLHD will send a letter to the USFS following the public review period to present the Section 4(f) findings for each resource and request concurrence. For historic Section 4(f) resources, the Section 106 process described above was used as the basis for the individual evaluation presented in this EA and for the applicability of exceptions under Section 4(f) to some of the historic properties. The specific coordination requirements for individual evaluations are discussed further in Chapter 5.

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7. List of Preparers and Reviewers

Individuals responsible for preparing and reviewing this EA are listed below (Table 4), along with their organization/agency, title, and role in EA development.

Table 4. List of Preparers and Reviewers

Name	Organization / Agency	Title	Role
Braden Peters	FHWA-CFLHD	Project Manager	Project Manager, Reviewer
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Sandy Beazley	FHWA-CFLHD	Environmental Team Lead	Reviewer
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Ryan Stone	USFS	Forest Engineer, UWCNF	Partner, Reviewer
Zinnia Wilson	USFS	Trails, Wilderness, and Dispersed Rec Program Manager, Salt Lake Ranger District, UWCNF	Partner, Reviewer
Paul Cowley	USFS	Natural Resources and Planning Staff Officer, UWCNF	Partner, Reviewer
Bethany Nickison	USFS	Environmental Coordinator, UWCNF	Partner, Reviewer
Charles Rosier	USFS	Lands and Permits Program Manager, UWCNF	Partner, Reviewer
Nancy Brunswick	USFS	Regional Landscape Architect, USFS Region 4	Partner, Reviewer
Sierra Sampson	USFS	Forest Botanist, UWCNF	Partner, Reviewer
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Name	Organization / Agency	Title	Role
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