

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 BACKGROUND

The proposed Meeks Bay Restoration Project (project) encompasses approximately 74 acres of Lake Tahoe shoreline and upland areas surrounding Meeks Creek, which historically included a stream channel, wetland, lagoon, and barrier beach. Historical development along Meeks Bay displaced wetland and lagoon habitat, modified the remaining stream channel, created conditions conducive to aquatic invasive species (AIS), and accelerated pollutant delivery into Lake Tahoe. This historic development included construction of Meeks Bay Marina, which involved excavation, filling, dredging, and installation of sheet pile bulk heads, a boat ramp, and approximately 120 boat slips within the original stream channel and lagoon.

The project area is a popular summer recreation site providing opportunities for camping, boating, picnicking, swimming, and beach use. The USDA Forest Service, Lake Tahoe Basin Management Unit (LTBMU or USDA Forest Service) acquired the project area in 1974. It is within the homeland of the Washoe Tribe, which manages the Meeks Bay Resort on the north side of the project area through a special use permit with the USDA Forest Service. The Washoe Tribe is also leading the restoration of Meeks Meadow upstream of the project area. The south side of the project area is managed by Tahoe Recreation, a private company that operates outdoor recreation facilities and related hospitality services, under a special use permit from the USDA Forest Service.

Management actions are necessary to protect resources and move the project area toward desired conditions while continuing to support sustainable recreation opportunities and achieve the project purpose described in Section 1.2, "Purpose, Need, and Project Objectives," in Chapter 1, "Introduction." LTBMU developed the proposed Meeks Bay Restoration Project to restore the Meeks Creek channel, wetlands, lagoon, and barrier beach; improve other environmental conditions; and provide for sustainable recreation. The project involves removal of Meeks Bay Marina; restoration of Meeks Creek and associated wetland/lagoon habitat; continued management of AIS; replacement of the State Route (SR) 89 bridge, reconfiguration or construction of pedestrian and vehicle circulation and parking areas, and campgrounds; installation of utility infrastructure and best management practices (BMPs), shoreline stabilization, habitat enhancement, aquatic organism passage improvements; flood flow conveyance improvements, resource protection features; and other associated improvements. It also involves the potential for new recreation facilities, such as a pier, to offset the loss of motorized boating access with the removal of the marina. These actions as part of the project would fulfill the need and project objectives listed in Section 1.2.

In September 2018, LTBMU, the Tahoe Regional Planning Agency (TRPA), and the Lahontan Regional Water Quality Control Board (Lahontan RWQCB) initiated public scoping for a joint EIS/EIS/EIR. During the scoping period, 123 comment letters were submitted, many of which identified issues and concerns with the proposed action. Since that time, the planning team has led a stakeholder and public engagement process to refine the proposed action and develop project alternatives. The process involved 1) an initial stakeholder assessment, 2) creation of a representative stakeholder forum that met multiple times to provide input into the development of alternatives, and 3) a series of public workshops during which members of the public provided input into the development of the proposed action and alternatives. The result was development of four action alternatives carried forward for analysis in this joint EIS/EIS/EIR.

2.2 LOCATION

The Meeks Bay Restoration Project area is located on the west shore of Lake Tahoe in El Dorado County, California. The project area is approximately 74 acres and extends from approximately 50 feet upstream of SR 89 in the east to the Lake Tahoe shorezone in the west (Figure 2-1). The project area encompasses recreation facilities including Meeks Bay Marina, Meeks Bay Resort, and Meeks Campground.

2.3 OVERVIEW OF THE ALTERNATIVES

NEPA, TRPA, and CEQA require the evaluation of alternatives in an EIS/EIS/EIR. The alternatives described in this chapter comply with these requirements as mandated in Section 1502.14 of the Council on Environmental Quality Regulations for Implementing NEPA, Section 15126.6 of the State CEQA Guidelines, Article VII(a)(3) of the Tahoe Regional Planning Compact, and Section 3.7 of the TRPA Code of Ordinances. Each alternative is potentially feasible, based on relevant economic, environmental, social, technological, and legal factors. In general, the evaluation of alternatives is intended to provide decision-makers and the public with an understanding of the potential tradeoffs among different approaches to achieve the purpose, need, and objectives of the project.

The lead agencies, in collaboration with stakeholders and interested members of the public, developed four action alternatives, which are evaluated along with a no action alternative in this EIS/EIS/EIR. Each of the action alternatives includes different combinations of design features intended to achieve the project purpose, need, and objectives while minimizing adverse effects. The alternatives listed below are evaluated in this EIS/EIS/EIR. Table 2-1 provides a summary of the features of each alternative, and additional detail is included in Sections 2.5 through 2.8 of this chapter. Alternative 4 is the preferred alternative that is proposed for adoption by the lead agencies. It constitutes the "proposed action" for purposes of NEPA, and the "proposed project" that is evaluated pursuant to CEQA and TRPA.

- ▶ Alternative 1 – Restoration with Boating Pier. This alternative includes full restoration of the creek and lagoon and installation of a pier to provide motorized boat access. It includes replacement of the SR 89 bridge, relocation of two motel-style cabins, and other changes to facilities while not substantially changing the extent of any existing land uses.
- ▶ Alternative 2 – Restoration with Pedestrian Pier. This alternative includes full restoration of the creek and lagoon and installation of a shorter pier to provide pedestrian access. It includes replacement of the SR 89 bridge and changes to upland facilities while not substantially changing the extent of any existing land uses.
- ▶ Alternative 3 – Restoration with No Pier. This alternative includes full restoration of the creek and lagoon with no pier. It includes replacement of the SR 89 bridge, non-motorized lake access features, and changes to upland facilities including expanded campgrounds and parking.
- ▶ Alternative 4 – Preferred Alternative. This alternative is proposed for adoption by the lead agencies. It includes full restoration of the creek and lagoon with no pier. It includes replacement of the SR 89 bridge, non-motorized lake access features, and changes to upland facilities including expanded parking and the relocation of two motel-style cabins.
- ▶ No Action Alternative. This alternative reflects future conditions with current facilities and management approaches if the proposed project is not adopted.

Table 2-1 Key Features of Each Alternative

Alternative Feature	Alternative 1 Restoration with Boating Pier	Alternative 2 Restoration with Pedestrian Pier	Alternative 3 Restoration with No Pier	Alternative 4 Preferred Alternative	No Action Alternative
Restoration	Remove marina infrastructure and restore creek, lagoon, and barrier beach.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	No restoration, marina remains
Pier	Centrally located pier to accommodate boat access	Centrally located pedestrian pier with no motorized boat access	No pier	No pier	No pier
Campgrounds	Reconfigured campgrounds with up to 50% of sites providing alternative camping, such as yurts or camping cabins. <ul style="list-style-type: none">▶ 36 sites at Meeks Bay Resort campground▶ 36–42 sites at the Meeks Bay campground	Same as Alternative 1	Reconfigured campgrounds with up to 50% of sites providing alternative camping, such as yurts or camping cabins. <ul style="list-style-type: none">▶ 41–46 sites at Meeks Bay Resort campground▶ 42–52 sites at the Meeks Bay campground	Same as Alternative 1	No change at either of the campgrounds: <ul style="list-style-type: none">▶ 36 sites at Meeks Bay Resort campground▶ 40 sites at the Meeks Bay campground
Parking	No change	Reconfigured with no change in the number of parking spaces	Relocated parking with up to 14 additional spaces	Reconfigured parking with up to additional 14 spaces	No change
Paddlecraft infrastructure	Paddlecraft storage rack	Same as Alternative 1	Accessible non-motorized launch platform and storage rack	Same as Alternative 3	None
SR 89 bridge	Replace SR 89 bridge with a longer span bridge of an appropriate length to accommodate the creek's flow and provide terrestrial and aquatic organism passage. The bridge would include either a multi-use path or sidewalks and bike lanes Add a terrestrial wildlife undercrossing.	Replace SR 89 bridge with a longer span bridge of an appropriate length to accommodate the creek's flow and provide terrestrial and aquatic organism passage. Add a terrestrial wildlife undercrossing. Construct a separate multi-use path just east of the road bridge. Add a wildlife undercrossing.	Same as Alternative 2	Same as Alternative 1	No change
Fish management structure	Construct fish management structure between 50 feet upstream of the SR 89 bridge and new pedestrian bridge to manage fish passage upstream of the lake.	Similar to Alternative 1	Similar to Alternative 1	Similar to Alternative 1	No change
Day-use areas	Reconfigure and slightly expand day-use areas	Similar to Alternative 1	Similar to Alternative 1	Similar to Alternative 1	No change
Multi-use path	Create multi-use path along SR 89 with a spur loop through the project area with a new bridge	Similar to Alternative 1	Similar to Alternative 1	Similar to Alternative 1	None
Cabin relocation	Remove two motel-style cabins near the beach and replace them with new cabins farther from the beach	No change	No change	Same as Alternative 1	No change
Shoreline stabilization	Replace existing shoreline protection in front of and north of cabins	Replace existing shoreline protection north of cabins	Same as Alternative 2	Same as Alternative 1	No change
AIS control	Implement ongoing AIS control	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Habitat enhancement	Add nest/perch structures and Tahoe Yellow Cress protection	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None
Interpretive features	Add interpretative path and features	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	No change

Source: Compiled by Ascent Environmental in 2022.



Source: adapted by Ascent Environmental in 2020.

Figure 2-1 Meeks Bay Restoration Project Area

2.4 NO ACTION ALTERNATIVE

The No Action Alternative represents the future conditions if the project is not implemented (Figure 2-2). Under this alternative, there would be no restoration and the marina would remain in place, with a boat ramp and approximately 120 slips. Currently, some marina infrastructure, including the floating platforms and slips, have been removed from the marina to facilitate management actions. With the No Action Alternative, this infrastructure could be reinstalled, in coordination with ongoing AIS control measures. Under the No Action Alternative, the marina would continue to operate as it had in the past. The marina would be operational during navigable, high lake levels and would not be operational during periods of low lake levels. Upland features would remain in their current configuration, which includes 76 campsites in two campgrounds and two day-use areas. The No Action Alternative would continue to implement ongoing AIS control measures, such as bottom barrier treatments within the marina. Other activities that could occur under this alternative would be retrofits to the marina for health and safety purposes (e.g., if sheet piling is unsafe) and typical maintenance activities. No other resource enhancement measures would be implemented.

Under existing conditions, Meeks Creek is degraded and lacks the wetland, lagoon, and barrier beach habitat that historically existed in the project area. A barrier to fish passage exists at the SR 89 bridge, which prevents native and game fish species from accessing the upper watershed. These degraded conditions would continue and may worsen under the no action alternative.

2.5 ELEMENTS COMMON TO THE ACTION ALTERNATIVES

2.5.1 Restoration of Meeks Creek and Lagoon

All four action alternatives would involve removal of the marina and boat launch infrastructure to allow for full restoration of Meeks Creek, lagoon, and barrier beach along the reach of the creek from SR 89 to Lake Tahoe. To accomplish restoration goals, the existing marina infrastructure, including the concrete boat launch, steel and concrete retaining walls that form the perimeter of the marina, boulder riprap, marina office, and other ancillary infrastructure both above- and below-ground would be entirely removed.

Restoration would occur upstream of and within the footprint of the existing marina infrastructure. To accommodate full restoration of Meeks Creek, the parking area adjacent to the boat ramp on the north side of the marina would be removed. All four action alternatives would replace lost parking with relocated parking in the northern portion of Meeks Bay (see discussion on parking, below). Upon removal of Meeks Bay Marina, the natural stream channel, floodplain, lagoon, and barrier beach of Meeks Creek would be restored. Anthropogenic fill surrounding Meeks Creek in the vicinity of the marina would be removed or regraded as necessary to recreate a shallow lagoon and to restore channel and floodplain topography along Meeks Creek from SR 89 to Lake Tahoe. Before removal or regrading of fill, soil would be tested to confirm there are no chemical contaminants consistent with federal requirements outlined in Section 3.10, "Public Safety and Hazards." Marina removal and restoration would require substantial earth moving and grading, preliminarily estimated from the conceptual design as 30,000 cubic yards of excavation and 32,000 cubic yards of fill placement (Balance Hydrologics 2021). Lagoon soil containing AIS particles would be over-excavated and removed from site to a sufficient depth to prevent propagation of AIS. Following grading, the channel banks and lagoon would be revegetated with emergent lagoon and riparian plant species native to the Lake Tahoe Basin. Figure 2-3 shows a conceptual restoration plan, including a conceptual alignment for a proposed bicycle and pedestrian crossing (described in Section 2.5.4). Additional restoration design and engineering would occur to establish detailed design parameters. The restoration design would be closely coordinated with the design of the SR 89 bridge, which would also supports achieving restoration goals.

No Action Plan

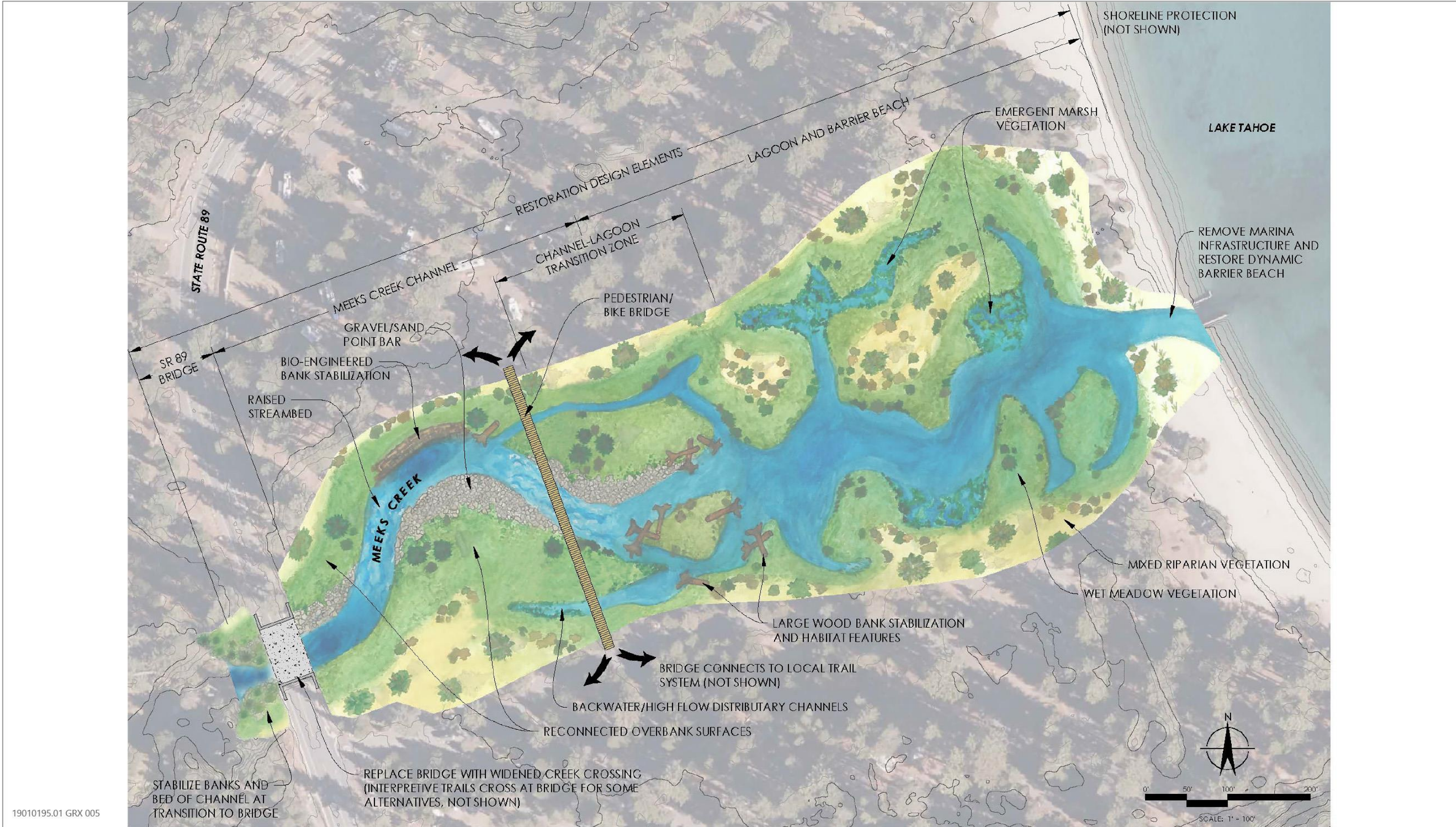
Legend

- Day Use
- Beach
- Camping
- Shore Improvements
- Restoration
- Parking
- Roads
- New Bike Path
- Existing Bike Path
- Combined Road/Bike Path
- Interpretive Trail
- Buildings
- Vehicular Bridge



Source: Image produced and provided by Design Workshop in 2021.

Figure 2-2 No Action Alternative Conceptual Plan



Source: Image produced and provided by Balance Hydrologics, Inc. in 2021.

Figure 2-3 Meeks Bay Conceptual Restoration Design

The restored channel would be designed such that the restored creek and lagoon would not increase the extent or frequency of flooding on adjacent areas outside of the restored floodplain. Riparian areas and floodplain surfaces would include microtopographic features (hummocks and depressions), large woody debris roughness features, as well as backwater channels, oxbow features, and multiple distributary channels to promote habitat complexity and vegetation diversity. Channel bed material would consist of natural materials to allow a limited amount of mobilization during high flows while maintaining bed elevation, blend with the surrounding landscape, and control depths and velocities that would allow fish passage. The channel bed would include various and appropriately spaced bedforms (i.e., pools and riffles) that promote habitat complexity. Upper bank stabilization would be provided by bio-engineered treatments selected for consistency with the surrounding landscape. Rock stabilization would be limited.

The area containing the existing marina would be filled with clean gravel and sand substrate to an elevation consistent with the inferred pre-marina elevation of the lagoon bottom and be graded to a range of elevations to support a mix of natural obligate wetland and riparian vegetation. Once restored, lagoon waters would naturally interact with the backshore of Lake Tahoe and the elevation of the lagoon bottom would support the long-term stability of the upstream channel under the range of possible lake levels. The restored mouth of Meeks Creek would allow natural lateral migration, and the sand bar at the mouth of Meeks Creek would be allowed to form and breach naturally.

The project would be observed post construction by USFS consistent with permit requirements to make sure vegetation is established and project elements function as intended.

2.5.2 State Route 89 Bridge Replacement

Under the four action alternatives, the existing SR 89 bridge over Meeks Creek would be replaced to improve the structural integrity, flood flow conveyance, aquatic organism passage, and geomorphic conditions. Under Alternatives 1 and 4 the bridge would be widened to accommodate a multi-use path, and under Alternatives 2 and 3 a separate bicycle and pedestrian bridge to accommodate a second multi-use path and would be constructed adjacent to the east side of the SR 89 bridge.

The existing SR 89 bridge was built in 1928 and consists of two 8-foot-high by 12-foot-wide concrete box culverts (Swanson H+G 2006). Channel incision on the downstream side of the bridge has created an approximately 4-foot-high vertical drop that is a barrier to fish passage. Meeks Creek on the upstream side of the bridge is generally vertically stable because the box culvert provides grade control and has limited incision from progressing from downstream of the bridge to upstream areas. Installation of the bridge and historical land use on the upstream side of the bridge, however, has disturbed portions of the meadow, which continues to adjust in response to the disturbance. The bridge has also provided scour protection for several utility crossings. The existing bridge is considered able to convey the entire 100-year flood—estimated as 1,000 cfs by Swanson H+G (2006)—but creates a hydraulic bottleneck such that the bridge causes backwater in the meadow for approximately 700 feet upstream (this distance would be less for a smaller flood) and accelerated, erosive flows downstream. The current width of the bridge, as well as the vertical separator between the two box culverts, limits the transport of large woody debris. Beavers have leveraged the constriction created by the bridge in the past and have built dams within and immediately upstream of the box culverts.

The existing bridge would be replaced with a natural substrate crossing and would include design elements to control the grade at the bridge. Early conceptual designs (i.e., Swanson H+G 2006) showed a clear span crossing, but the design has not been finalized and detailed design for the bridge has not been completed.

The bridge railings would be constructed of stone or painted molded concrete that closely resembles the existing stone railings. A small under-bridge structure would allow small animals to cross SR 89 underneath the bridge.

Minor grading would be completed on the upstream side of the bridge, but only to the extent that it is required for the grading to conform with the new bridge, maintain grade control, and improve the crossing and lagoon on the downstream side.

2.5.3 Resource Enhancement

FISH MANAGEMENT STRUCTURE

A fish management structure would be constructed in the creek channel near the SR 89 bridge, trail bridge, or in the channel between the SR 89 and trail bridges. The fish management structure would consist of a weir or similar in-channel structure that could be adjusted to block or allow the movement of fish. This structure would be managed to prevent the movement of non-native fish species into the upper watershed in order to protect and support the recovery of native fish species in the upper watershed.

AQUATIC INVASIVE SPECIES CONTROL

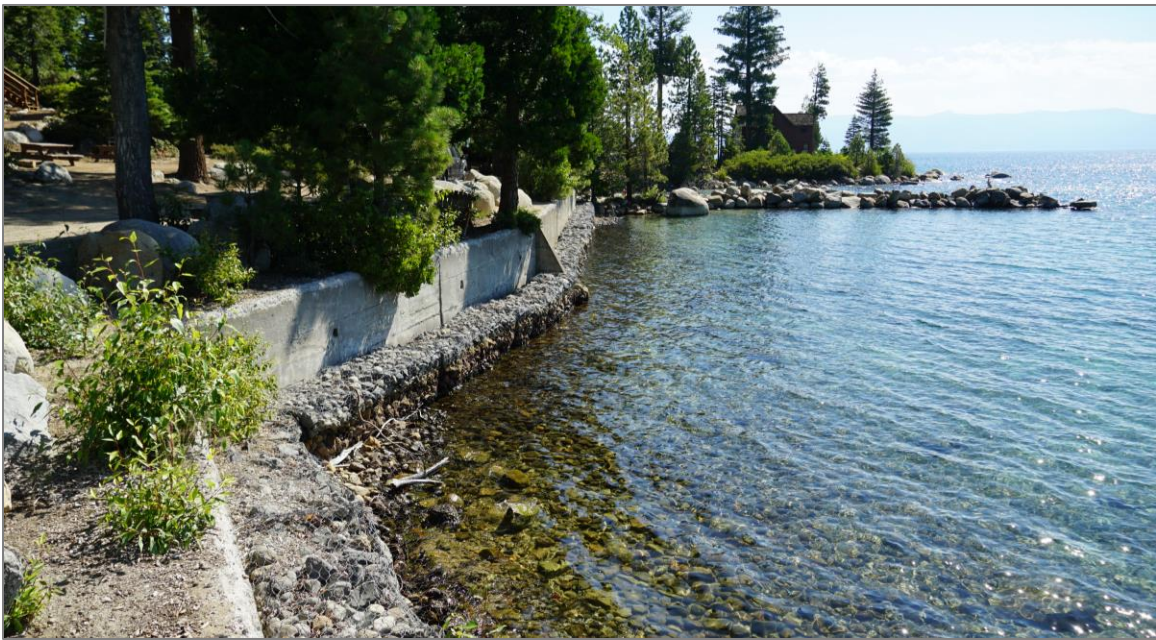
AIS have been introduced into the Meeks Creek watershed ecosystem primarily through operation of the Meeks Bay Marina and associated boat access. The Meeks Bay Marina is a partially enclosed structure that reduces water circulation, resulting in elevated water temperatures and poor water quality from a lack of mixing with open water. These characteristics have created optimal habitat for non-native warmwater invasive fish, American bullfrog, and invasive aquatic plants such as Eurasian milfoil. When boats visit or launch, they serve as vectors for the spread of AIS species to other parts of the lake.

An ongoing AIS control project is already occurring within the Meeks Bay Marina with the objective of AIS eradication before the start of restoration activities. This is being accomplished through manual control mechanisms such as the placement of bottom barrier mats to smother AIS. Additional AIS control measures would be implemented before and during construction of restoration features to prevent the spread of AIS during construction and reduce the risk of AIS re-establishment after construction. RPMs for invasive species control are summarized in Appendix A.

It is anticipated that the habitat for warmwater fish and bullfrogs would be reduced after restoration of the lagoon, however there may be a need to provide ongoing control of AIS (e.g., warmwater fish, American bullfrogs, aquatic invasive weeds) from the proposed project area using manual (chemical free) methods. Manual methods of aquatic invasive species removal could include bottom barriers and diver-assisted hand pulling of weeds, and electro-shocking and netting of bull frogs and warmwater fish.

SHORELINE STABILIZATION

Reconstructed shoreline stabilization features are proposed in the northern portion of the project area. The existing rock gabion wall and concrete structures (Figure 2-4) would be removed, and the shoreline would be stabilized through a combination of natural-appearing erosion prevention measures such as boulders and native vegetation. The shoreline stabilization would accommodate natural littoral processes and beach sand movement to the extent feasible while providing enough stabilization to allow the continued use of the dirt access road to the Meeks Bay Resort cabins and Kehlet House in the north end of Meeks Bay. The stabilization features would be designed to be stable over the full range of water fluctuation levels in Lake Tahoe while avoiding accelerated erosion near the structures.



Source: Photograph taken by Design Workshop in 2020.

Figure 2-4 Gabion Wall Proposed for Removal

RESOURCE PROTECTION BARRIERS

Tahoe yellow cress (TYC) is designated as a sensitive plant by the USDA Forest Service, a threshold indicator species by TRPA and is listed as endangered in California under the California Endangered Species Act (CESA). TYC occurs only on the sandy beaches of Lake Tahoe, growing on coarse and sandy soils of active beaches, stream inlets, beach dunes and backshore depressions, generally within a few feet of the water table. Suitable habitat for TYC exists within the project area along the beaches near the creek outlet (Figure 2-5). Because of the heavy recreation use of the beaches and the associated threat to TYC from trampling or crushing by beachgoers, resource protection barriers and interpretive information would be installed to protect the species where it is at risk of trampling. Protective barriers would include natural materials such as vegetation screening, downed logs, and boulders, or manufactured materials such as exclusion fencing to direct people away from TYC.



Source: Ascent Environmental 2020.

Figure 2-5 Tahoe Yellow Cress

WILDLIFE ENHANCEMENT STRUCTURES

Wildlife enhancement features would be installed in the project area to improve habitat conditions for native species. These would include nesting and perch structures for waterfowl, which are a group of bird species designated by TRPA as special interest and known to occur on beaches at Lake Tahoe; bat boxes to provide a safe environment for bats to roost and raise their young; and willow plantings in select locations to reduce erosion and generate habitat for native species that depend on riparian habitat.

WATER QUALITY INFRASTRUCTURE

Permanent BMP features would include a suite of specially designed erosion and sedimentation control features that assist in preventing sediment-laden runoff from entering Lake Tahoe. BMPs would be installed at all parking lot locations, both existing and new; near restrooms; at the campsites, specifically the yurts and cabins; and along roadways and any other paved surfaces. BMPs may include, but would not be limited to: infiltration trenches, swales, pervious pavement, infiltration basins, permanent barriers to protect unpaved areas from vehicle damage, and aeration of compacted soils in high-traffic areas. BMP designs would be consistent with the TRPA BMP Handbook (TRPA 2014).

2.5.4 Upland Recreation Facilities

PADDLECRAFT AND SWIM AREA MANAGEMENT

A paddlecraft storage rack or lockers would be placed in the southern portion of the project area, set back from the beach, screened from views from Lake Tahoe and located near the day-use area for easy access by beachgoers. It would provide a temporary secure storage option near the beach for kayaks and stand-up paddleboards. Figure 2-6 shows some potential design options that could be considered for the paddlecraft storage. Placement of storage facilities would be hidden from view from Lake Tahoe.



Source: Open source photos assembled by Ascent in 2021.

Figure 2-6 Representative Photographs of Paddlecraft Storage

The action alternatives would continue to provide designated swim areas along the beach north and south of Meeks Creek. The designated swim areas would be demarcated with swim buoys. The use of paddlecraft, like kayaks and paddleboards, would be prohibited from use in these areas. The designated swim areas would not encompass the entire beach areas so that there would be sufficient room for paddlecraft to launch onto the lake outside of the swim areas.

DAY USE

The existing day-use areas consist of forested areas containing picnic tables and grills adjacent to the beach (Figure 2-7). Those in the northern and southern parts of the project area would be reconfigured and/or expanded to various degrees under each of the four action alternatives. The northern day-use area located within the boundary of Meeks Creek Resort would be expanded to occupy some of the space formerly dedicated to the marina, resort, and day use parking, and would be enhanced with additional picnic sites. The day-use area in the southern part of the project area would be expanded and reconfigured to varying degrees under each of the alternatives. With each action alternative, the day-use areas would be larger, with better accessibility and additional picnic tables. Large group grills would be provided that could be used for events, but no additional small individual grills would be included, and existing grills would be removed to reduce wildfire risk and associated litter.



Source: Photograph taken by Design Workshop in 2020.

Figure 2-7 Existing Day-Use Area at Meeks Bay Resort

INTERPRETATION

Interpretive opportunities would be installed along the restored reach of Meeks Creek to highlight the restored condition of the creek, the history of Meeks Bay, Washoe Tribe cultural heritage, or other appropriate natural or cultural history themes relevant to the site. Interpretive features could include signs, kiosks, interpretive panels, interactive displays, and/or a self-guided nature trail. The USDA Forest Service would develop interpretive content and identify specific locations and designs of interpretive elements as part of the final design for the restoration features.

2.5.5 Other Common Features

PARKING

Parking in the southern part of the project area would vary by alternative (see the description of alternatives in Sections 2.6 through 2.8, below), but parking in the northern part would be relocated and reconfigured under all four action alternatives, retaining the existing number of parking spaces (a total of approximately 300 spaces). Parking at the Meeks Bay Resort consists of approximately 300 total parking spaces interspersed throughout the resort including formal paved parking areas, dispersed parking areas along access roads, parking associated with cabins, and approximately 50 informal parking spaces on unpaved areas adjacent to the marina that has provided boat trailer parking. Designated parking in the Meeks Bay Resort would be located in areas surrounding the general store and cabins. The existing, unpaved parking spaces would be restored to natural conditions and or paved to current standards and the new spaces would be constructed with water quality BMPs.

UTILITY INFRASTRUCTURE

Utility infrastructure, including water, sewer, electric, and communication facilities that would impede restoration or be adversely affected by it, would be upgraded or relocated, either above or below ground. An existing Tahoe City Public Utility District (TCPUD) sewer line crosses Meeks Creek. This line would be protected by burying it at a sufficient depth, encasing it in concrete, and/or relocating it and attaching it to the replaced SR 89 bridge or a new trail bridge.

Powerlines inside the restoration project footprint would be relocated. The USDA Forest Service water line that crosses Meeks Creek at SR 89 would be relocated to below the scour limits of the restored Meeks Creek channel.

2.6 ALTERNATIVE 1 - RESTORATION WITH BOATING PIER

Alternative 1 would include removal of the marina; restoration of the creek, lagoon, and barrier beach; and implementation of all other features described in Section 2.5, "Elements Common to the Action Alternatives." This section describes those elements of Alternative 1 that are not the same for all alternatives.

2.6.1 Alternative 1 Boating Pier

To partially offset the loss of boating access at the marina, this alternative would include a 300-foot-long boating pier (Figure 2-8). This pier would allow boaters to temporarily dock and access the beach and facilities in the project area, but it would not accommodate recreational launching or long-term mooring of motorized boats. The pier would be located near the center of Meeks Bay, north of the creek. It would be approximately 300 feet long to reach a lakebed elevation of 6,217 feet Lake Tahoe Datum (LTD), which would allow for motorized boat access during typical low water conditions. The pier would be a fixed (not floating) design supported by steel pilings with a composite, wood, or metal decking. It would be a medium tan color that blends into the background view of the beach. At the landward end of the pier, a universally accessible walkway would connect the pier to nearby day use and parking areas.

The pier would be 10 feet wide and include a 20-foot-wide pierhead along the most lakeward 30 feet of the pier (Figure 2-9). The pierhead would include one boatlift capable of supporting a 29-foot-long emergency services boat. The boat lift and adjacent portions of the pierhead would be closed to public access with a locking gate, while the remainder of the pier would be publicly accessible. Electrical lines would be affixed to the pier and hidden from view. They would power the boat lift and necessary safety and navigation lighting. No fuel pumps or tanks, or other utility infrastructure would be included on the pier. A water taxi is not proposed as part of the project, but the project does not preclude the use of a water taxi that temporarily docks at the pier. The existing swim area in the vicinity of the pier would be modified to create two swim areas on either side of the pier.

2.6.2 Alternative 1 Campgrounds

With Alternative 1, the Meeks Bay Resort Campground, on the north side, would remain similar to its current condition. Minor improvements may occur, which could include repair or repaving of existing roads and parking spaces and minor roadway and parking space realignments to improve vehicle access. Selective plantings; signage; and placement of boulders, bollards, or other barriers could be used to provide additional privacy, separation of sites, and to direct parking away from unauthorized areas. The existing parking spurs and electrical hookups would continue to accommodate RV camping.

The Meeks Bay Campground, on the south side of the project area, would be reconfigured to provide additional privacy between campsites. The total number of campsites would be slightly increased or decreased as needed to accommodate an improved layout, from the current 40 sites to 36–42 sites. Improvements to the campground would include repair or repaving of existing roads and parking spaces, as well as selective plantings, barriers, and signage to provide additional privacy, separation of sites, and to direct parking away from unauthorized areas. Electrical hookups would not be provided, shorter campsite parking spur lengths, and smaller turning radiuses would discourage large RVs from use of this campground, while maintaining access for emergency vehicles.

Over time, some campsites in both campgrounds could be replaced with alternative camping facilities such as yurts, tent cabins, or hard sided cabins to provide a greater diversity of camping options. The cabins or yurts would replace campsites and would not increase capacity. These sites may include electrical hookups, but would not include water or sewage hookups, dedicated restrooms, or cooking facilities. The exact number of alternative camping facilities has not been determined, but they would not exceed 50 percent of the total number of campsites.

2.6.3 Alternative 1 Parking and Circulation

Overall, parking capacity at Meeks Bay Resort (300 spaces) and south of Meeks Creek near the day-use area (76 spaces) would remain the same as under existing conditions. Reconfiguration or improvements would be made to the existing parking areas for resource protection and to achieve more efficient use of the area. See discussion under "Parking" in Section 2.5.5, "Other Common Features," and in the first paragraph under Section 2.6, "Alternative 1 – Restoration with Boating Pier."

All action alternatives would result in circulation improvements to reduce the number of internal roadways and reduce the potential for conflicts between vehicles and pedestrians/bicyclists.

Two multi-use paths would be constructed to provide bicycle and pedestrian connectivity through the project area (see Figure 2-8). The paths would connect with the existing Tahoe Trail in the northern portion of the project area, where they would diverge and provide two routes for access through the project area, converging again in the southern portion of the project area. The trail would then connect to a proposed section of the Tahoe Trail multi-use path along SR 89, consistent with the SR 89 Corridor Management Plan (TRPA et al. 2020).

The western multi-use path would be a primary route along SR 89, providing convenient through access for bicyclists and pedestrians. It would be a minimum of 10 feet wide and would be designed based on completion of a West Shore Trail Feasibility Study. Under Alternative 1, this route would cross Meeks Creek on a widened SR 89 bridge and would likely be used by through bikers traveling along the west shore, which would reduce the amount of bicycle traffic moving through the internal portions of the project area.

The eastern multi-use path would be a spur loop that would pass through the center of the project area and across the restored Meeks Creek via a multi-use trail bridge located approximately 450 feet east of the SR 89 bridge. This spur loop would provide lower speed access for bicycles and pedestrians traveling through the project area or accessing the project area from the Tahoe Trail. In the southern part of the project area, this path would provide access between the day-use area and adjacent beach. The spur loop would be managed for low-speed use and through traffic would be directed to the multi-use path along SR 89. This multi-use path would connect to the pier on the north side of the project area, then direct users inland to a crossing of the restored creek, then direct users back along the beach on the south side of the project area. This alignment would result in a longer multi-use path through the project area than under the other alternatives.

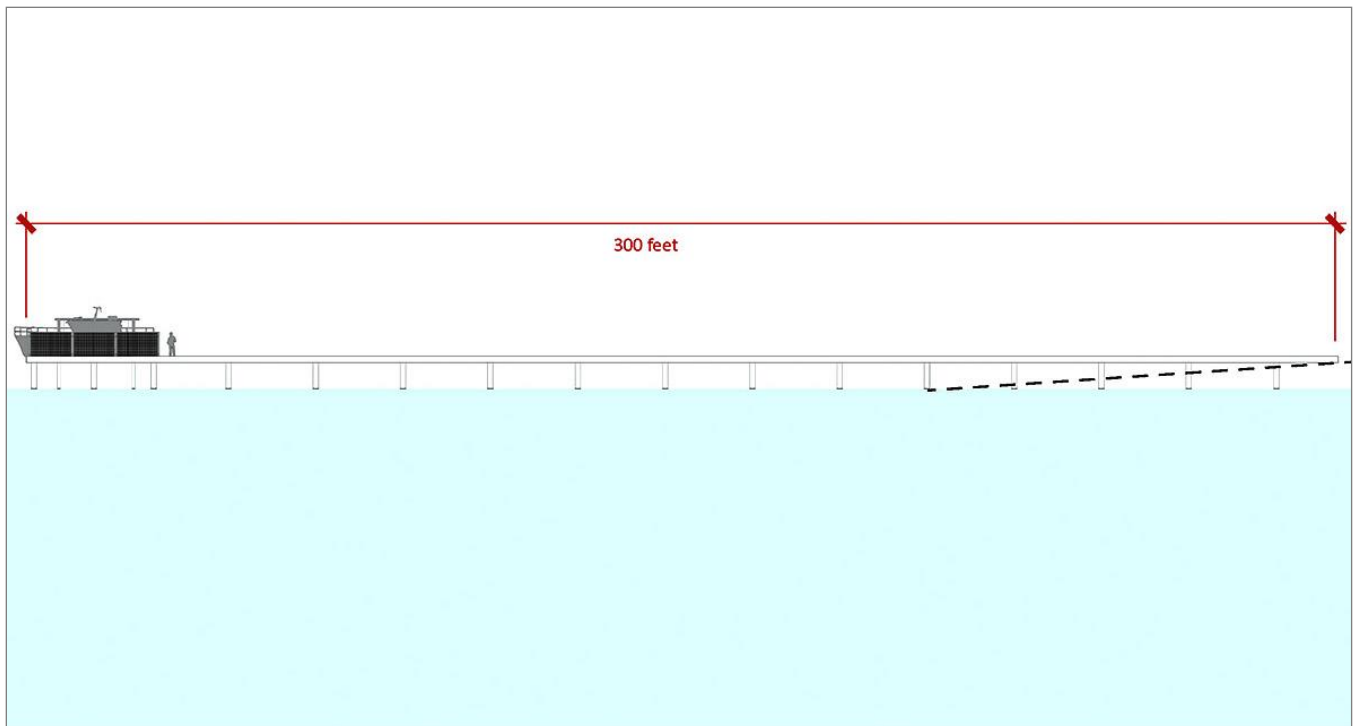
A multi-use trail bridge would be located approximately 450 feet east of the SR 89 bridge and upstream of the restored lagoon. This trail bridge would be designed to support emergency or administrative vehicle access. The bridge, as well as any portion of the multi-use path within the restored floodplain, would be elevated to allow for the conveyance of flood flows across the entire floodplain. Various design options including a bridge spanning the entire restoration area, or boardwalks connecting to one or more bridges, could be used to provide for floodplain flow conveyance. The bridge would span the entire creek channel (i.e., no abutments on the bank or support piers in channel) and be above the FEMA 100-year flood elevation. The bridge would be designed with sufficient capacity so that the velocity of water moving under the bridge does not exceed the flow velocity in adjacent reaches upstream or downstream.

The southern entrance to the Meeks Bay Recreation Area would accommodate bicycle and pedestrian access from SR 89 and connect with other portions of the multi-use path within the project area. New bicycle racks would be installed near both day-use areas to accommodate cyclists accessing the project area via the proposed Tahoe Trail multi-use path.

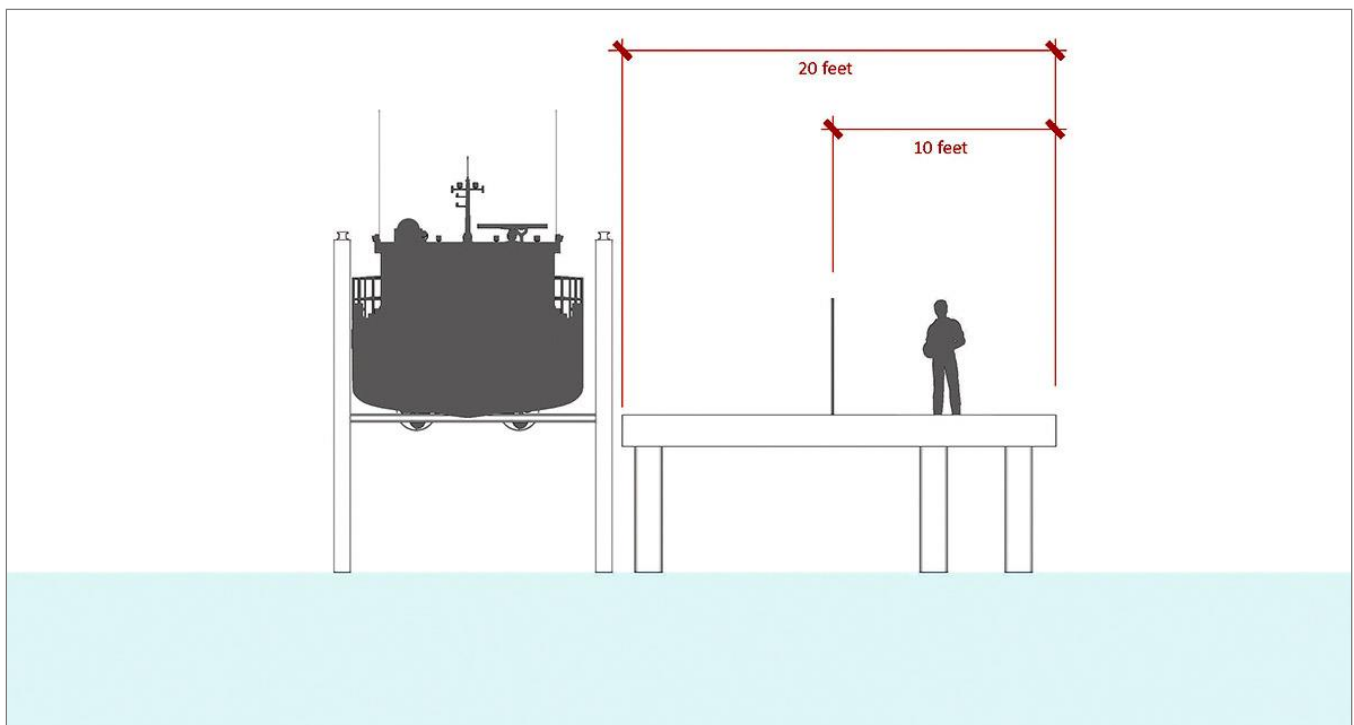
2.6.4 Alternative 1 Cabin Relocation

To expand the useable beach space on the north end of the bay and improve natural shoreline conditions, this alternative would relocate the two motel-style cabin units in the Meeks Bay Resort farther inland and replace them with smaller cabin units while maintaining the existing overnight visitor capacity





Source: Ascent Environmental 2022.



Source: Ascent Environmental 2022.

Figure 2-9 Diagram of Alternative 1 Boating Pier

2.7 ALTERNATIVE 2 - RESTORATION WITH PEDESTRIAN PIER

As with Alternative 1, this alternative would involve removal of the marina and full restoration of the creek, lagoon, and barrier beach (Figure 2-10). Alternative 2 would include an approximately 100-foot-long pedestrian pier, which would provide recreational access to the lake for visitors in the project area. The pedestrian pier would not provide access for motorized boats. This alternative would also include features common to all the action alternatives, as described in Section 2.5, above.

2.7.1 Alternative 2 Pedestrian Pier

The pedestrian pier would be located near the center of Meeks Bay, north of the creek in the same location as the boating pier included in Alternative 1. It would be approximately 100 feet long and 10 feet wide to provide recreational access for swimming, paddlecraft, fishing, and sightseeing during normal lake levels (Figure 2-11). It could be a fixed or floating pier design. For purposes of this analysis, it is assumed here to be a floating pier with fixed steel pilings and a floating composite or metal pier deck that could slide up and down on the pilings as lake levels change. It would be a medium tan color to blend into the background views of the beach or dark to medium grey color, consistent with TRPA design standards. At the landward end of the pier, a universally accessible walkway would connect the pier to nearby day use and parking areas. The pier would not include a pierhead, boatlift, electrical service, lighting, or other utility infrastructure. No fuel pumps or tanks, or other utility infrastructure would be included on the pier. A water taxi is not proposed as part of the project and a water taxi, like other motorized boats, would not be able to dock at the pier. The existing swim area in the vicinity of the pier would be modified to create two swim areas on either side of the pier.

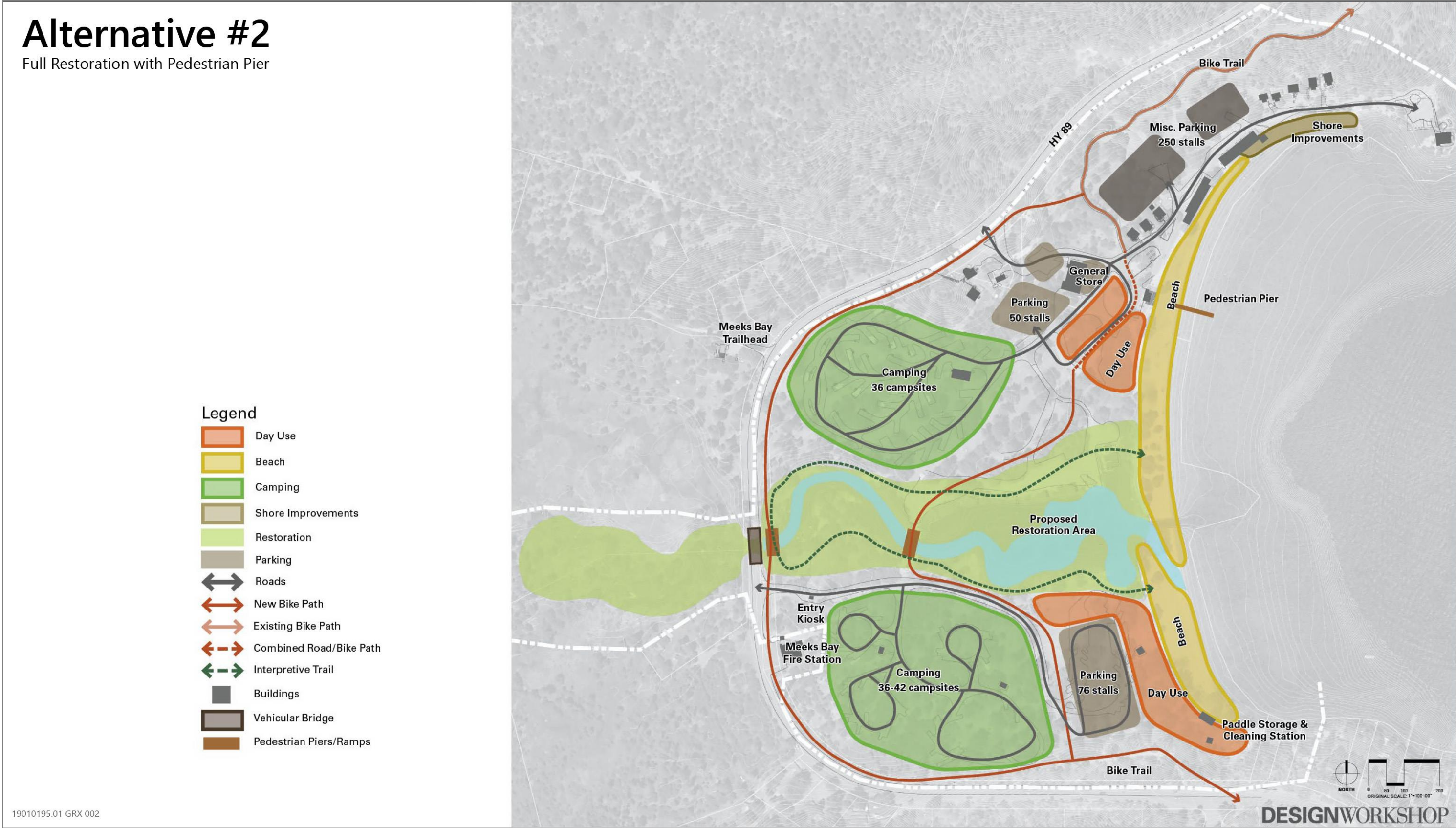
2.7.2 Alternative 2 Campgrounds

With Alternative 2, the campgrounds would be the same as described above for Alternative 1.

2.7.3 Parking and Circulation

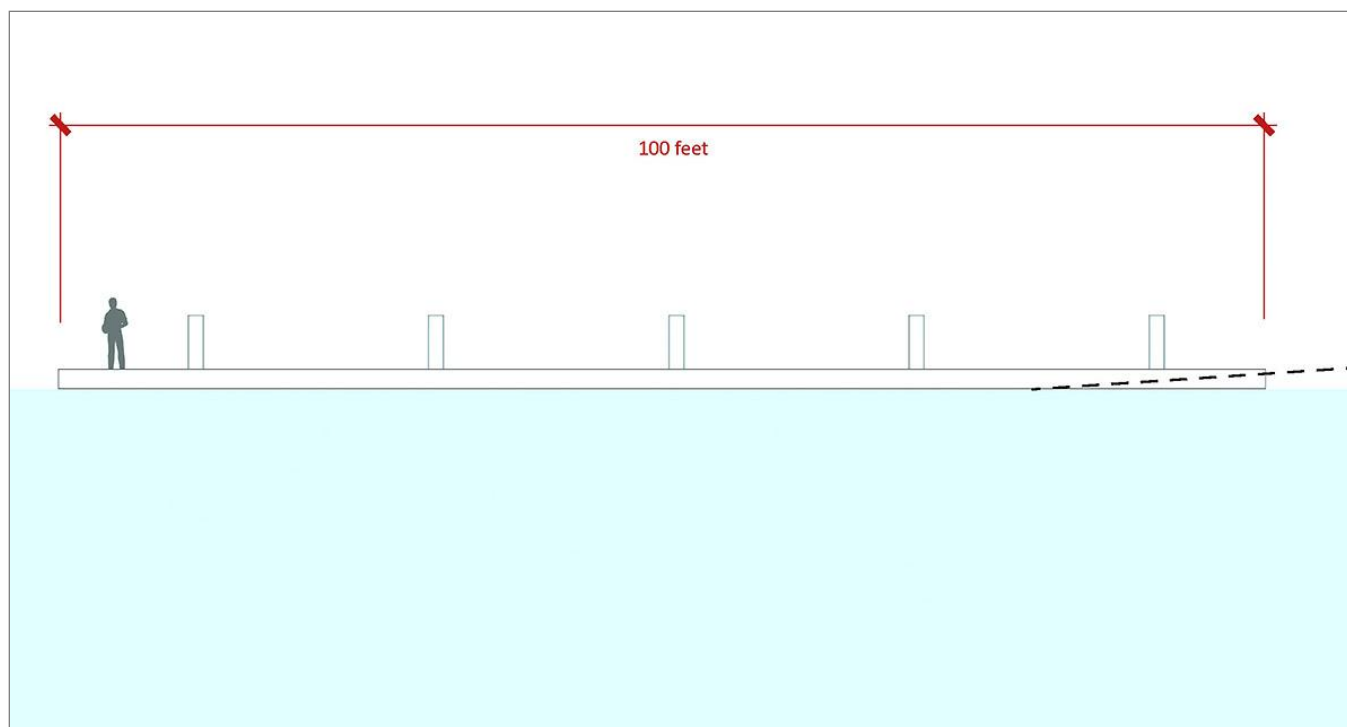
Parking and circulation improvements under Alternative 2 would be similar to Alternative 1. Overall, parking capacity at Meeks Bay Resort (300 spaces) and south of Meeks Creek (76 spaces) would remain the same as under existing conditions. Reconfiguration or improvements would be made to the existing parking areas for resource protection and efficient use of the area. See discussion under "Parking" in Section 2.5.5, "Other Common Features," and in the first paragraph under Section 2.6, "Alternative 1 – Restoration with Boating Pier."

Rather than a trail bridge connected to the SR 89 bridge, this alternative would include two multi-use trail bridges. One bridge would provide direct access for cyclists and pedestrians that choose to travel close to the highway and bypass Meeks Bay Resort and Meeks Bay Campground (note that this path and bridge would be separate from and adjacent to the SR 89 bridge). The second trail bridge would be located approximately 450 feet east of the SR 89 bridge as described above under Section 2.6.3, "Parking and Circulation." This trail bridge would be part of a multi-use spur loop through the project area that would seek to balance access to the lake with an efficient route through the project area. This multi-use path would connect to the day-use area near the pier on the north side of the project area, then direct users inland to a crossing of the restored creek, then direct users between the parking area and campground through the south side of the project area. This alignment would result in a shorter multi-use path through the project area than under Alternative 1. All alternatives would result in circulation improvements to reduce the number of internal roadways and reduce the potential for vehicle and pedestrian/bicycle conflicts.

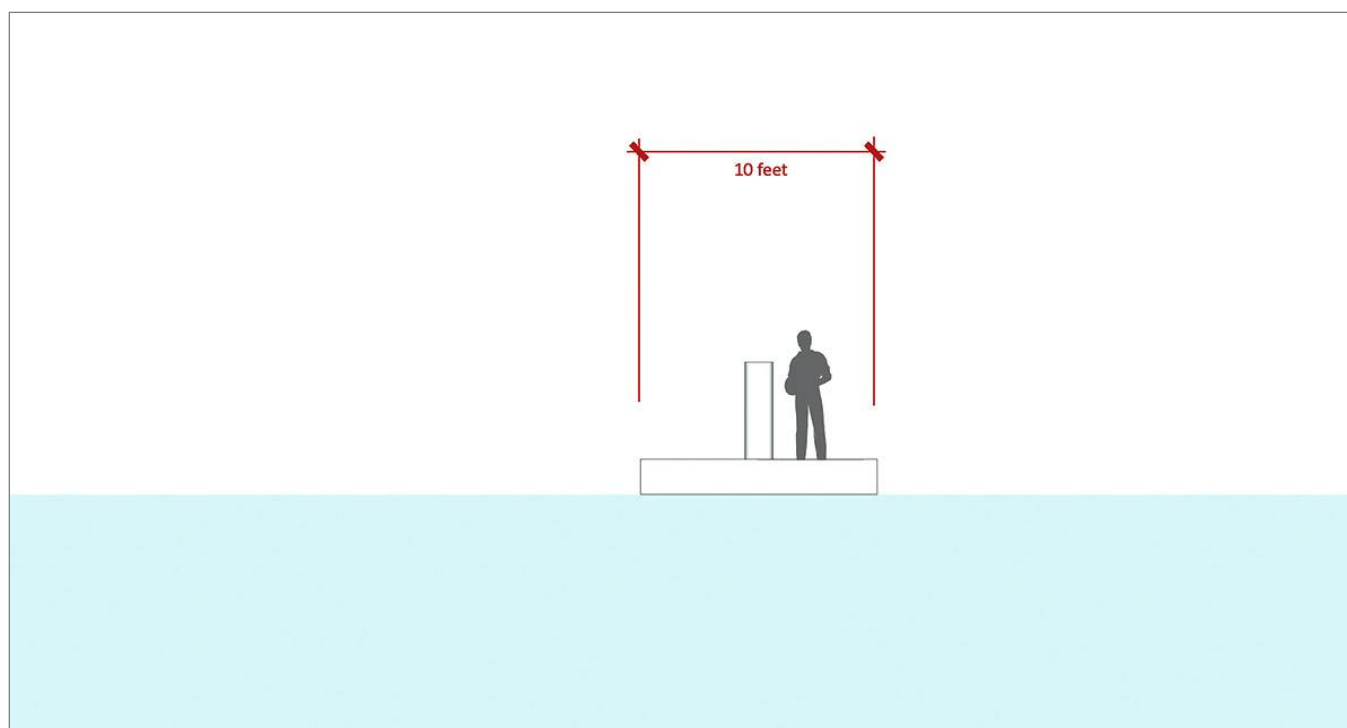


Source: Image produced and provided by Design Workshop in 2021.

Figure 2-10 Alternative 2 – Restoration with Pedestrian Pier Conceptual Plan



Source: Ascent Environmental 2022.



Source: Ascent Environmental 2022

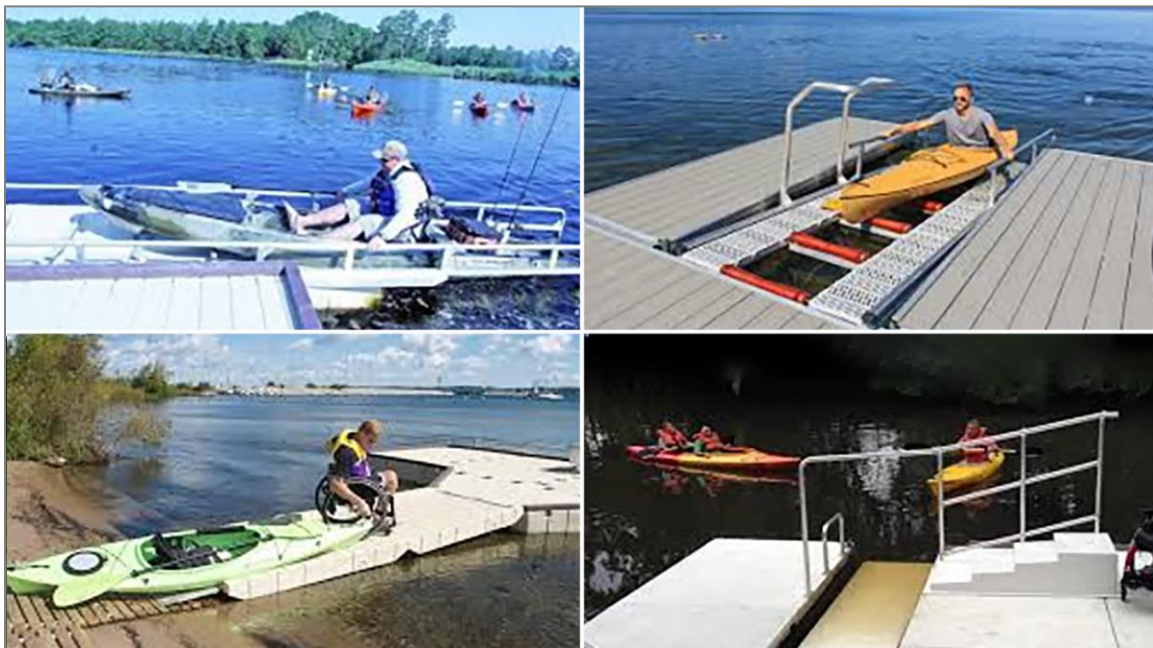
Figure 2-11 Diagram of Alternative 2 Pedestrian Pier

2.8 ALTERNATIVE 3 - RESTORATION WITH NO PIER

As with Alternatives 1 and 2, this alternative would involve removal of the marina and full restoration of the creek, lagoon, and barrier beach. Alternative 3 would not include a pier but would include a small universally accessible paddlecraft launch structure on the south end of the bay (Figure 2-12). This alternative would relocate the parking on the south end of the project area and expand parking capacity by 14 spaces. It would also include upland features common to all the action alternatives, as described above under Section 2.5.

2.8.1 Alternative 3 Paddlecraft Launch

Alternative 3 would include a non-motorized launch platform or ramp in the southern portion of the project area. The facility would include a floating platform or dock of up to 30 feet in length that could move with lake level fluctuations and be relocated if needed to accommodate access during periods of low lake level or during winter months. It would include a ramp for paddlecraft launching. It could include handrails along the launch ramp, but otherwise would not include features extending above the floating platform/dock. The launch facility would be medium tan or grey color that blends into the surroundings. Access to the launch would be provided by a universally accessible path. Representative photographs of similar paddlecraft launch facilities are shown in Figure 2-13.



Source: Open source photos assembled by Ascent in 2021.

Figure 2-13 Representative Photographs of Paddlecraft Launch Facilities

Alternative #3

Full Restoration with No Pier

Legend

- Day Use
- Beach
- Camping
- Shore Improvements
- Restoration
- Parking
- Roads
- New Bike Path
- Existing Bike Path
- Combined Road/Bike Path
- Interpretive Trail
- Buildings
- Vehicular Bridge
- Pedestrian Piers/Ramps



Source: Image produced and provided by Design Workshop in 2021.

Figure 2-12 Alternative 3 – Restoration with No Pier Conceptual Plan

2.8.2 Alternative 3 Campgrounds

With Alternative 3, the Meeks Bay Resort and Meeks Bay campgrounds would be expanded and reconfigured. The Meeks Bay Resort Campground would be expanded from 36 sites to 41–46 sites (an increase of up to 10 sites) and the Meeks Bay Campground would be expanded from 40 sites to 42–52 sites (an increase of up to 12 sites), for a total increase of 7–22 campsites in the project area. Both campgrounds would be expanded to the east to include areas that are currently parking lots, access roads, informal parking, and open space. The Meeks Bay Campground would also be partially relocated away from SR 89 in the southwest corner of the project area to reduce noise in the campground. The campsites would be reconfigured to provide additional space between campsites and selective plantings could be included to provide increased privacy and visual screening between campsites. Like Alternatives 1 and 2, the electrical hookups and layout of Meeks Bay Resort Campground would continue to support RV camping and the Meeks Bay Campground would not accommodate large RVs. As with Alternatives 1 and 2 up to 50 percent of the sites could be converted into alternative camping facilities.

2.8.3 Alternative 3 Parking and Circulation

Overall, parking capacity would be increased by 14 spaces. At Meeks Bay Resort, parking capacity would remain the same as under existing conditions (300 spaces). Reconfiguration or improvements would be made to the existing parking areas at the resort for resource protection and efficient use of the area. See discussion under “Parking” in Section 2.5.5, “Other Common Features,” and in the first paragraph under Section 2.6, “Alternative 1 – Restoration with Boating Pier.”

On the south side of the project area, parking would be expanded by 14 spaces to include a total of 80 stalls in a new parking area near the entrance to the Meeks Bay campground in the southwest corner of the project area. The relocation of the parking area would provide a visual and noise buffer between SR 89 and the campground and provide a more direct connection between the campground and the beach by removing the intervening parking area. A drop off area near the beach and day-use area would be provided, which would include up to 10 accessible parking spaces.

Like Alternative 2, this alternative would include a multi-use path along SR 89 that crosses Meeks Creek on a separate trail bridge adjacent to the SR 89 bridge and a multi-use spur loop through the project area that would seek to provide an efficient route through the project area. Alternative 3 would include two trail bridges like those discussed above for Alternative 2. This multi-use path would pass through the day-use area on the north side of the project area, then connect to a crossing of the restored creek, then direct users directly through the expanded campground on the south side of the project area. This alignment would result in a shorter multi-use path through the project area than under the other alternatives.

2.9 ALTERNATIVE 4 - PREFERRED ALTERNATIVE

Alternative 4 is the preferred alternative that is proposed for adoption by the lead agencies. This alternative serves as the “project” for purposes of CEQA. Alternative 4 was developed by the lead agencies after review of the other action alternatives and consideration of public and agency feedback on Alternatives 1, 2, and 3. It includes a combination of features from Alternatives 1, 2, and 3 that lead agencies believe would most effectively achieve the objectives of the project, while minimizing adverse effects.

As with Alternatives 1, 2, and 3, this alternative would involve removal of the marina and full restoration of the creek, lagoon, and barrier beach (Figure 2-14). Like Alternative 3, it would not include a pier but would include a small universally accessible paddlecraft launch structure on the south end of the bay. As with Alternative 1, this alternative would relocate the two motel style cabin units in Meeks Bay Resort farther inland and replace them with three smaller cabin units while maintaining the existing overnight visitor capacity. This alternative would not relocate the parking on the south end of the project area, but it would expand parking capacity by 14 spaces. It would also include replacement of the SR 89 bridge and upland features common to all the action alternatives, as described above in Section 2.5.

2.9.1 Alternative 4 Campgrounds

With Alternative 4, improvements at the campgrounds would be similar to Alternatives 1 and 2. The Meeks Bay Resort Campground, on the north side of the project area, would remain similar to its current condition with minor improvements as described under Alternative 1. The Meeks Bay Campground, on the south side of the project area would be reconfigured to provide additional privacy between campsites. The total number of campsites in this campground would be slightly increased or decreased as needed to accommodate an improved layout, from the current 40 sites to 36–42 sites. Like Alternative 1, some campsites in both campgrounds could be replaced with alternative camping facilities such as yurts, tent cabins, or hard sided cabins to provide a greater diversity of camping options. The exact number of alternative camping facilities has not been determined, but they would not exceed 50 percent of the total number of campsites.

2.9.2 Alternative 4 Parking and Circulation

Like Alternative 3, overall parking capacity under Alternative 4 would be increased by 14 spaces. At Meeks Bay Resort, parking capacity would remain the same as under existing conditions (300 spaces). Reconfiguration or improvements would be made to the existing parking areas at the resort for resource protection and efficient use of the area. See discussion under “Parking” in Section 2.5.5, “Other Common Features,” and in the first paragraph under Section 2.6, “Alternative 1 – Restoration with Boating Pier.” On the south side of the project area, parking would be expanded to include 90 stalls in the existing parking lot between the campground and day-use area.

Like Alternative 1, this alternative would include a multi-use path along SR 89 that would cross Meeks Creek on a new, wider SR 89 bridge as well as a trail bridge located approximately 450 feet east of the SR 89 bridge. Similar to the other action alternatives, Alternative 4 would include a multi-use spur loop through the project area that would seek to balance access to the lake with an efficient route through the project area. This multi-use path would be located west of the day-use area on the north side of the project area, then direct users inland to a crossing of the restored creek, then direct users between the parking area and campground through the south side of the project area. This alignment would result in a shorter multi-use path through the project area than under Alternative 1 but a longer route than under Alternative 3.

2.10 CONSTRUCTION

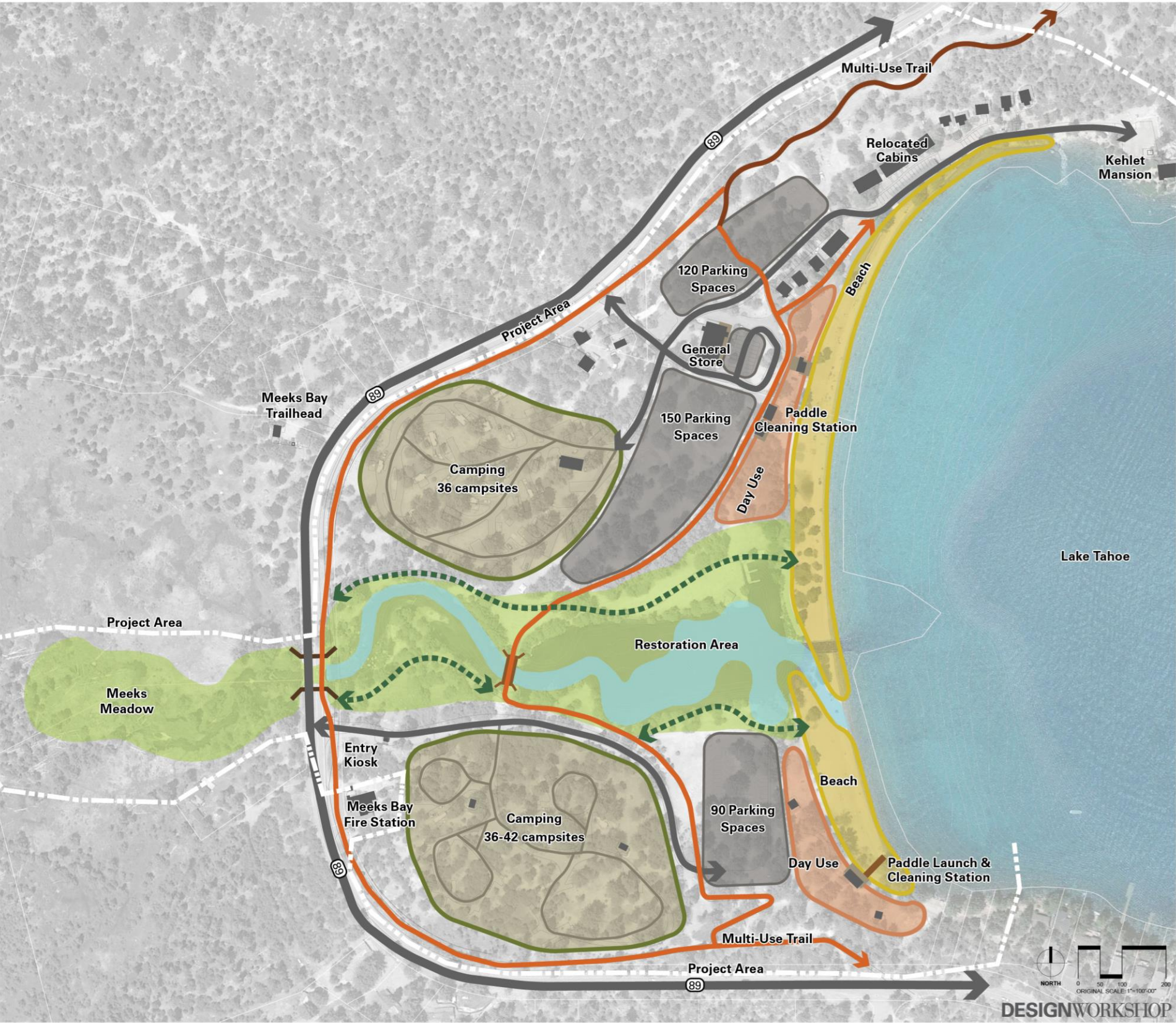
Construction activities for all of the project components would be reviewed and approved, as required, under TRPA’s Code of Ordinances, Lahontan RWQCB requirements, and US Army Corps of Engineers permit requirements, which would include preparation and implementation of a Stormwater Pollution Prevention Plan. TRPA “Standard Conditions of Approval for Grading Projects” includes standards such as temporary BMPs, equipment idling times, erosion control requirements, lighting standards, and landscaping specifications. In addition, the action alternatives would incorporate the following construction techniques and practices.

The features of the project would be constructed in phases over multiple years based on funding availability. Construction of some project components could begin as early as 2024 with completion of all components anticipated by 2035 subject to funding availability. Construction activities would be phased such that recreation features removed to accommodate restoration would be replaced during the same construction phase, to minimize the temporary loss of recreation features. Active construction areas would be temporarily closed to public access for one or more construction season. All excavation, filling, or other disturbance of the soil would be limited to the May 1–October 15 timeframe unless a TRPA grading season extension is issued for the project. In-channel restoration work would generally occur in late summer or early fall when water levels in Meeks Creek are lowest. Access to portions of the project area would be temporarily closed during periods of active construction.

Preferred Alternative

Legend

- Day Use
- Beach
- Camping
- Parking
- Restoration
- Roads
- New Multi-Use Path
- Existing Multi-Use Path
- Interpretive Trail
- Buildings
- Vehicular Bridge
- Pedestrian Bridge



Source: Image produced and provided by Design Workshop in 2021

Figure 2-14 Alternative 4 – Preferred Alternative

2.10.1 Restoration of Meeks Creek and Removal of Meeks Bay Marina

The marina removal and restoration of Meeks Creek and lagoon would include substantial grading within the existing creek and marina areas. Soil from the banks and nearby upland areas would be placed in the dredged marina to recreate a shallow lagoon. Native wetland and riparian vegetation would be re-established throughout the restoration area.

Before removal of the marina, a temporary impervious barrier, or barriers, would be placed near the mouth of Meeks Creek to separate the restoration area from Lake Tahoe. During construction, the flow of the creek would be diverted via a temporary diversion dam constructed upstream of the affected areas. The creek's flow would be captured in pipes and diverted into Lake Tahoe downstream of the project area by gravity flow. Pumping for construction site dewatering in the creek channel and lagoon may also be required; in such cases, pumping could occur continuously for several days during daytime construction hours. Water pumped from excavation activities would contain suspended sediments and other solids. The suspended sediments would not be discharged into Meeks Creek, Lake Tahoe, wetlands (as defined by the U.S. Army Corps of Engineers), or storm drains. Water pumped from the construction area would be pumped into trucks and/or disposed of within temporary infiltration basins or dispersed through sprinklers or similar methods. The specific construction equipment required is not known at this time, but would likely include a loader, dozer/tractor, scraper, excavator, backhoe, grader, pump, generator, and trucks (haul and passenger).

2.10.2 State Route 89 Bridge Replacement

Construction of a new SR 89 bridge and removal of the existing bridge spanning Meeks Creek would require diversion of creek flows and dewatering or water diversion for construction activities that would encounter groundwater, including installation of the bridge structure and/or footings, and utility replacement and protection. The type of equipment required for constructing the SR 89 Bridge Replacement would likely include a loader, cement truck, pile driver, excavator, backhoe, pump, generator, crane, and trucks (haul and passenger).

Water pumped from excavation activities would contain suspended sediments and other solids, which would not be discharged into Meeks Creek, Lake Tahoe, wetlands, or storm drains. Dewatering discharge or any accumulated storm water runoff that contains elevated levels of regulated constituents, including suspended sediment, would be pumped into trucks and disposed offsite at a permitted waste disposal facility, or infiltrated into upland portions of the project area. Construction BMPs would be installed, in accordance with all permits and Caltrans requirements. Construction work within Meeks Creek is anticipated to take several weeks and would be completed during one construction season, primarily during off peak times (i.e., weekdays after Labor Day or before Memorial Day weekends). Construction activities could occur for 24 hours per day in order to reduce the total construction period.

Replacement of the bridge over Meeks Creek could require periods of reduced lane widths, lane closures, full closure to traffic, and limited nighttime work on the existing bridge. Emergency vehicle access and emergency evacuation routes would be maintained during the construction period by either: 1) constructing the trail bridge downstream of the SR 89 bridge first and diverting emergency vehicles and evacuating vehicles across the trail bridge, 2) constructing the bridge in halves to maintain one operational lane at all times, or 3) constructing a temporary bridge on the upstream (west) or downstream (east) side of the existing bridge to provide continuous emergency vehicle access and an emergency evacuation route. Traffic control and safety measures would be required during replacement of the SR 89 bridge to minimize lane closures, provide emergency and evacuation access, and minimize travel delays and would include temporary signage, lane width reductions, and reduced speeds. The traffic management plan would specify how emergency services would continue to be provided during temporary lane closures. The traffic management plan would also require and identify public outreach efforts, such as notifying emergency service providers and other affected public agencies and members of the public of any planned lane or road closures and reduced lane widths. These traffic control and safety measures and strategies would be incorporated into the traffic management plan and implemented in conformance with Caltrans, county, and other applicable standards as they apply to each stage of construction. Agencies consulted during preparation and approval of a traffic management plan would include USDA Forest Service, Caltrans, and El Dorado County.

2.10.3 Trail Bridge

A new multi-use bridge would be constructed across Meeks Creek channel downstream of SR 89 and upstream of the restored lagoon. The bridge could be constructed at the same time as the creek restoration, or separately after restoration is complete. If constructed concurrent with the restoration, all in-channel work would occur while the creek is diverted, as described above. If constructed separately from the restoration, diversion of creek flows and dewatering or water diversion for construction activities may be required. As described above, water pumped from the active construction area would be pumped into trucks and disposed offsite or infiltrated in appropriate portions of the project area. The type of equipment required for constructing the trail bridge would likely include a loader, cement truck, pile driver, excavator, backhoe, pump, generator, crane, and trucks (haul and passenger).

2.10.4 Shoreline Stabilization

Existing rock gabion and concrete shoreline stabilization structures would be removed and replaced with shoreline protective structures comprised on boulders and native vegetation. Shoreline structure removal and construction would occur from onshore. Construction of these features would occur when lake levels are low enough to allow for the isolation of the construction area from Lake Tahoe. Specific construction BMPs would be identified in the Stormwater Pollution Prevention Plan and would be adhered to during construction to prevent sediment discharge into Lake Tahoe. Replacement of the shoreline stabilization structures would likely require use of a loader, excavator, backhoe, crane, and trucks (haul and passenger).

2.10.5 Construction of Upland Recreation Facilities and Other Features of the Action Alternatives

Construction of upland recreation facilities and other features common to each of the action alternatives, such as the multi-use path, parking, utility infrastructure, and any reconfiguration of campgrounds could require soil disturbing activities (e.g., grading), limited excavation (i.e., digging less than six feet deep), removal of existing paved areas, and paving. Installation of features such as bike storage, interpretive signage, paddlecraft storage, paddlecraft launch (Alternatives 3 and 4 only), and day-use facilities (e.g., picnic tables) would result in minimal ground disturbance.

2.10.6 Construction of Boating Pier or Pedestrian Pier (Alternatives 1 and 2)

For either of the piers proposed by Alternatives 1 and 2, the pier would be constructed by a floating or amphibious barge during the winter season (October to May). The barge would launch from one of the nearby boat launch locations. The type of barge to be used would depend on the water level in the lake at the time of construction. During high water, a floating barge can be used; however, during low water years, the amphibious barge would be needed to access the portions of the pier nearest to the beach. Both types of barges are currently docked on Lake Tahoe and available for commercial service. Amphibious barges can be driven out of the lake to refuel equipment. For floating barges, fuel must be transferred in containers for refueling on the lake. All barges would carry an appropriately sized spill containment kit (Ragan, pers. comm., 2017).

Piles would be installed by either pile driving or drilling. If drilling were to be required for pile installation a caisson would be used to isolate the drilling site and protect water quality. A caisson is a watertight retaining structure used to isolate the work area during pier construction. With a caisson, the water can be pumped out to create a dry environment. Piles in Lake Tahoe are typically driven 6-8 feet into the lake bottom (Ragan, pers. comm., 2017). Turbidity curtains would only be used during pile installation if necessary to minimize water quality impacts from suspended sediment. A turbidity curtain is a floating barrier consisting of relatively impervious fabric, used to prevent fine and coarse suspended sediment transport away from areas of water-based construction activities, in this case the driving of the pier piles.

2.10.7 Construction Staging Areas

Construction staging areas for all action alternatives would be necessary to store project-related construction equipment and materials. A containment and spill contingency plan and BMPs for storage activities would be incorporated into the construction contracts and project specifications to ensure that there are no permanent environmental effects related to the storage of these materials and equipment. Construction staging areas would be located within the project area and would be located in paved areas or previously disturbed areas outside of the restoration areas, or in portions of the restoration area that will be disturbed during construction.

2.11 OPERATIONS

With implementation of each of the action alternatives, the north and south sides of Meeks Bay would continue to be managed by permittees under special use permit from the USDA Forest Service. Day-to-day operations at the campgrounds would be conducted by campground hosts and permittees.

For Alternative 1, the boating pier would be managed to limit the duration of passenger drop off and pick-up times to allow multiple motorized watercraft to access the pier throughout the day. Boating pier access would be managed through USDA Forest Service staff or permittee monitoring, signage and designated tie off locations. For Alternative 2, the pedestrian pier would be managed to prevent motorized watercraft access to the pier through USDA Forest Service or permittee monitoring and signage.

The USDA Forest Service would oversee resource management activities, including operating the fish management structure, adjusting TYC protective features, and maintaining wildlife habitat enhancement structures.

2.12 ALTERNATIVES CONSIDERED BUT NOT EVALUATED FURTHER

Several alternatives or components thereof were considered but eliminated from further study because of the potential for environmental impacts, the infeasibility of the proposals, the inability to achieve the project objectives, or input during the public engagement and stakeholder process. These alternatives or alternative elements include the following:

2.12.1 Small-scale Marina Alternative

An alternative was developed, considered, and discussed at public workshops that involved a smaller-scale marina adjacent to, and separated from, a partially restored creek and lagoon. This marina would include a boat ramp and up to 40 slips in the location of the existing Meeks Bay Marina. It would maintain the existing boat ramp and allow boaters to launch and moor motorized boats at the marina. The partial marina alternative would provide overnight campers and visitors a place to moor and launch their boats during their visit and would provide a small number of users with long-term moorings. The smaller marina would be maintained through regular dredging to a sufficient depth to allow boats to moor and access the facility during periods of low water levels in Lake Tahoe. The marina would be separated from the shallower restored lagoon by a sheet pile bulkhead. A new entrance to the marina would be dredged through the beach, which would be separated from the restored barrier beach by sheet pile. The area available for the restored lagoon would be reduced by approximately 50 percent to provide space for the marina.

The small-scale marina alternative was dismissed from further analysis because it would not adequately meet the purpose and need for the project. Specifically, the purpose of this project is to move the Meeks Creek ecosystem downstream of SR 89 to a more natural condition where geomorphic and hydrologic processes support a functioning ecosystem while continuing to support sustainable recreation opportunities. Retention of even a small marina would substantially reduce the area available for, and the benefits of, the restoration. Additionally, ongoing maintenance and operation of the marina would require ongoing dredging activities and long-term AIS control; both activities which would compromise restoration to a natural ecosystem condition. Consequently, the objectives for the project

would not be met because the project would not be able to move toward the desired condition in the purpose statement.

In addition, the construction and operation of the marina would require a substantial expenditure of public funds. Because of the small size of the marina (no more than 40 slips), mooring rental fees and launch fees would not cover the cost of operating or constructing a marina. As a result, the alternative would not be economically feasible, and would require a substantial ongoing investment of public funds.

2.12.2 Boat Ramp Alternatives

At the beginning of the scoping period, the lead agencies proposed an alternative that included a publicly accessible boat ramp at the southern end of Meeks Bay. This location was dismissed from further review due to strong public opposition, as well as anticipated environmental effects related to tree removal, scenic degradation, displacement of popular beach and swimming opportunities, and traffic and circulation impacts that would result from introducing vehicles and boat trailers into the area.

Other locations were considered during the stakeholder and public alternative development process. A boat ramp near the center of Meeks Bay was proposed, but not evaluated further because it could not be permitted under the TRPA Code of ordinances, which prohibits new shoreline structures in Stream Mouth Protection Zones. A central ramp would also divide the beaches, introducing vehicles and boat traffic. A boat ramp on the northern end of Meeks Bay was also considered but dismissed because the existing resort buildings and topography would not provide sufficient space for boat trailer access and maneuvering, and it would result in many of the same environmental effects as the southern location. Maintaining the current location of the existing boat ramp in Meeks Creek was also considered. This location was dismissed from further review because it would require similar construction, dredging, and encroachment into the lagoon as the small-scale marina; and it would not meet the purpose and objectives for the project for the same reasons as the small-scale marina alternative.