

8 CONCEPTUAL RESTORATION PLANS

Three conceptual restoration scenarios and a “do nothing” scenario were developed for the focal study area, based upon the suite of options and analyses in Chapter 7. The conceptual restoration scenarios address the two overarching goals of the project: restoring ecological processes and functions and facilitating an appropriate balance between the human use and the natural values of the site. Each scenario is intended to address some or all of the project’s objectives. The scenarios were assembled to embody a diverse range of concepts and are not intended to be mutually exclusive. The individual concepts shown in each scenario are modular and could be transferred to other scenarios.

Each conceptual restoration scenario description has three elements:

- ▶ A narrative description that includes rationale, relationship to objectives, and implementation issues.
- ▶ An overall plan graphically depicting the scenario’s components.
- ▶ An associated exhibit highlighting various aspects of the scenario through images and text.

8.1 SCENARIO 1

8.1.1 RATIONALE

The scientific and engineering rationale for Scenario 1 is based on restoring hydrologic and geomorphic function and connectivity at road and pedestrian causeway crossings of the swales in the focal study area. Restoring these functions and connectivity would assist in improving wetland function and associated processes. Additional detail regarding rationale for the various elements of this scenario is provided in Chapter 7.

8.1.2 DESCRIPTION

The Scenario 1 restoration concept (Exhibits 8-1 and 8-2) involves the removal of culverts and associated fill at both road and pedestrian causeway crossings of the swales. These areas would be revegetated and bridges and boardwalks would be constructed across the swales. By removing these impediments to surface and groundwater connectivity, the hydrologic function and geomorphic processes that shape these wetland features would be improved within the constraints of the existing recreational facilities, primarily the parking lots and access roads. Scenario 1 also includes replacement of the sewer line crossing of Tallac Creek with a siphon. The lowering of the sewer line crossing, which currently acts as a grade control, should provide enhanced wetland function within Swale 1 and the western portion of Swale 2 and may also encourage development of lagoonal features. A log fence and planting screen would guide pedestrian access from the eastern parking lot to a raised boardwalk for beach access. The replacement of the pedestrian causeways with a raised boardwalk would reduce the trampling of sensitive beach ridge meadow and wet swale habitats. The boardwalk would also

incorporate interpretive overlooks to provide educational information to the public. Scenario 1 does not include a swale deepening element.

8.1.3 RELATIONSHIP TO OBJECTIVES

The primary objectives of Scenario 1 is to restore hydrologic function and physical processes to the greatest extent possible in adversely affected swales while minimizing changes to existing recreational access facilities. This scenario partially addresses the goal of restoring ecological processes and functions, but effectively addresses the goal of facilitating an appropriate balance between the human use and the natural values of the site. The boardwalk and interpretive overlooks would enhance educational and interpretive opportunities. The effects on improving water quality issues of this scenario are probably minimal, because this scenario would not greatly reduce impervious area.

8.1.4 IMPLEMENTATION ISSUES

Implementation issues associated with Scenario 1 include construction methods and permitting requirements. Construction challenges associated with this scenario are minimal, but will include maintaining recreational access during the construction season which also coincides with the summer period of high recreational activity. It likely that implementation of this scenario could be completed within one construction season. Special construction methods that include comprehensive best management practices (BMPs) would be required to avoid or minimize adverse effects on surrounding resources. Anticipated federal environmental laws and regulations that may apply to and/or be necessary for implementation of Scenario 1 include the following:

- ▶ California Environmental Quality Act (CEQA): California Public Resources Code Section 21000, et seq. This California law requires the preparation of Environmental Impact Reports (EIRs) and other environmental documentation. An EIR must be prepared if a project may result in significant environmental impacts. Under certain circumstances, a Mitigated Negative Declaration (MND) may be prepared instead of an EIR.
- ▶ National Environmental Policy Act (NEPA): 42 U.S. Code, Section 4321 et seq. The purpose of this act is to promote efforts to prevent or eliminate damage to the environment resulting from federal actions. It establishes policies and goals for environmental protection as well as the Council on Environmental Quality (CEQ). NEPA requires Environmental Impact Statements for major federal actions that significantly affect the human environment, including state or local projects that involve federal funding or that require federal permits. A Finding of No Significant Impact (FONSI) can be adopted if no significant effects remain after mitigation.
- ▶ National Historic Preservation Act (NHPA): 16 U.S. Code, Section 470 et seq. The purpose of this act is to preserve prehistoric, historic, and cultural properties as they are a valuable part of the Nation's heritage. It provides measures by which all levels of government can help preserve these resources as well as several modes of

implementation. It also establishes the National Register of Historic Places (NRHP). This act is important to the NEPA process because impacts to resources listed on, or eligible for, the NRHP must be considered. If resources are adversely affected, a consultation process is required.

- ▶ Clean Water Act: Sections 401, 404, and others within 33 U.S. Code, Section 1251 et seq. The goal of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 401 of the Act requires a certification that certain actions, such as wetland fill in compliance with other CWA requirements, do not diminish water quality. Section 404 of the CWA requires a permit for placement of fill in waters of the U.S. and adjacent wetlands. In most circumstances in California, the U.S. Army Corps of Engineers has permit authority. Other sections of the CWA provide the authority for requirements of an Regional Water Quality Control Board Section 401 certification for National Pollution Discharge Elimination System permits and Stormwater Pollution Prevention Plans.
- ▶ Endangered Species Act (ESA): 16 U.S. Code, Section 1531 et seq. This act is intended to provide for the protection of endangered and threatened species and the habitats upon which they depend. The act provides policies for listing of endangered and threatened species. The explicit policy of the act is that all federal departments and agencies shall seek to conserve endangered and threatened species. The U.S. Fish and Wildlife Service (USFWS) is the lead federal agency for the ESA. The ESA mandates that federal agencies consult with the USFWS when take of endangered or threatened species or their critical habitats may occur.

In addition, state environmental laws and regulations may also apply if there are any state or local project elements included in the final restoration plan (e.g., removal and replacement of the sewer line). State environmental laws and regulations that may be required include the following:

- ▶ California Environmental Quality Act (CEQA): California Public Resources Code Section 21000, et seq. This California law requires the preparation of Environmental Impact Reports (EIRs) and other environmental documentation. An EIR must be prepared if a project may result in significant environmental impacts. Under certain circumstances, a Mitigated Negative Declaration (MND) may be prepared instead of an EIR.
- ▶ Streambed Alteration Agreement: California Fish and Game Code, Section 1602. The purpose of a Streambed Alteration Agreement is to ensure that actions affecting streams, rivers, or lakes do not adversely affect fish and wildlife resources, or when adverse effects cannot be avoided, ensure that the effects are mitigated to the extent feasible. California Department of Fish and Game (DFG) has the authority to approve Streambed Alteration Agreements.

- ▶ California Endangered Species Act (CESA): California Fish and Game Code, Section 2060 et seq. The intent of this act is to foster the protection of state-listed endangered and threatened species. It provides policies for listing endangered or threatened species. Substantial changes were enacted in 1997 and 1998, including species take provisions and the sunset of Fish and Game Code 2090, the state consultation process. A Section 2081 incidental take permit must be secured if take of state-listed species would occur. EIRs are required to discuss impacts to state-listed endangered or threatened species. A lead agency must consult with DFG in preparing an EIR as to the impacts, if any, a project may have on the continued existence of any endangered or threatened species.

8.2 SCENARIO 2

8.2.1 RATIONALE

The rationale for Scenario 2 is based on restoration and enhancement of natural features and removal and reconstruction of infrastructure and other human-made features to restore natural processes and functions and improve wildlife habitat values. Additional detail regarding rationale for various elements of this scenario is provided in Chapter 7.

8.2.2 DESCRIPTION

Scenario 2 (Exhibits 8-3 through 8-4) emphasizes opportunities to improve wildlife habitat value of the focal study area. In this scenario the existing parking lots and associated access roads and fill would be removed and recontoured to match adjacent elevations and revegetated with appropriate native species. Pedestrian causeways would be replaced with a raised boardwalk to guide pedestrian access across the nearshore swales to Baldwin Beach and minimize disturbance to sensitive plant communities. Approximately one foot of sediment would be excavated from the bottom of Swale 1 to enhance wetland function during dry years. The inundation layer projected at lake elevation 6,224 feet (NGVD) shows that this scenario would significantly increase the area inundated in the swales as compared to Scenario 1 (Exhibit 8-3). Complete restoration of connectivity in Swale 1 would require an additional excavation beyond one foot in some places. Other components to restore physical processes include the removal of the riprap structure on the mouth of Tallac Creek and the restoration of barrier beach function at the mouth of Taylor Creek by ceasing manipulation.

A new parking lot would be constructed on higher capability land near the existing kiosk and would incorporate infiltration planters to capture parking lot runoff and pollutants. The remaining portion of the access road from the new parking lot to the boardwalk would be decommissioned and replaced with decomposed granite paving to provide semi-permeable surfaces for increased infiltration. This corridor would serve as hiking trail to beach and provide access for maintenance vehicles, if needed. The fill in Swale 4 would be removed and a new bridge would be constructed at this location to restore hydrologic connectivity.

This scenario envisions removal of the sewer line and rerouting it along the upland edge of Tallac Marsh to SR 89. The existing facilities could be replaced by freestanding bathroom units that do not require a sewer connection. The scenario also proposes the elimination of horse grazing on the Baldwin Allotment and the removal of associated fences to reduce the adverse affects related to livestock grazing (Chapter 4).

Two important management elements in this scenario include lodgepole pine and aspen stand management. Removing some of the dead lodgepole pines and managing for a more structurally diverse, open stand would improve the site's aesthetic and enhance wildlife habitat. Aspen groves would be managed to enhance stand structure and regeneration. In particular, the system of volunteer trails within the aspen stand would be decompacted, recontoured, and revegetated to decrease sediment-laden runoff from entering the adjacent wetland and stream. The final element proposes the plugging of the drainage ditch in Taylor meadow by filling the southern end to impede flow. By impeding the flow, this area should remain wetter for longer periods during dry years.

8.2.3 RELATIONSHIP TO OBJECTIVES

Scenario 2 substantially addresses the goal of restoring ecological processes and functions and facilitates to a greater extent than Scenario 1, an appropriate balance between the human use and the natural values of the site. The effects on improving water quality issues of this scenario could be considerable because this scenario substantially reduces impervious areas and associated BMPs to increase infiltration.

8.2.4 IMPLEMENTATION ISSUES

Implementation issues of this scenario are significantly greater than Scenario 1 and may be relatively costly due primarily to the sewer line and parking lot relocation and the grading of Swale 1. It is unlikely that implementation of this scenario could be completed within one construction season due to the extensive construction activities required and the relatively short construction season. Construction methods that require the use of comprehensive BMPs and anticipated environmental laws and regulations that may apply to this scenario would be similar to Scenario 1.

8.3 SCENARIO 3

8.3.1 RATIONALE

The scientific and engineering rationale for Scenario 3 is based on restoring and/or reconfiguring recreational amenities and parking lots to more effectively integrate them into the sensitive landscape, avoiding and minimizing adverse effects on wetland, lagoon, and beach processes. Additional detail regarding rationale for various elements of this scenario is provided in Chapter 7.

8.3.2 DESCRIPTION

Scenario 3 (Exhibits 8-5 and 8-6) emphasizes recreational opportunities, while continuing to seek to minimize their impact on wetland function and processes. In this scenario, the western parking lot and associated fill would be removed and replaced with a wetland interpretive garden. This area could be managed by the Forest Service in collaboration with the Washoe Tribe to provide an educational and interpretive facility. In addition, this scenario envisions a cooperative effort with the Washoe Tribe to incorporate traditional gathering and tending practices into riparian and meadow management.

The section of the access road associated with the western parking lot would be removed along with any fill, and recontoured to match adjacent elevations. The eastern parking lot would be removed and replaced with loop drive to allow for the drop off of people and kayaks. The existing pedestrian causeways would be removed along with any associated fill to restore wetland function in Swale 1. A new bridge would guide pedestrian access to Baldwin Beach and protect sensitive plant communities from trampling. Along the edge of the loop drive, a lagoon feature would be created where the parking lot is removed and incorporate interpretive signage. As with Scenario 2, the sewer line would be removed and rerouted along the upland edge of Tallac Marsh. The existing bathrooms and pump station would be removed and replaced with freestanding units. This scenario also incorporates the excavation of Swale 1 as described in Scenario 2. Additional bike paths and hiking trails would be constructed that incorporate overlooks and raised boardwalks in wetland areas. This new system of trails would enhance public access and increase educational and interpretive opportunities. A new bridge would be constructed over Tallac Creek. A bike trail extension would be built along the western upland edge. A crossing of Tallac Creek also contributes to any future efforts to expand a bike trail further north. A new parking lot would be constructed in an upland area that incorporates infiltration planters to reduce runoff and pollution of the adjacent meadow. To restore wetland function of Swale 4, the asphalt and fill would be removed and a new bridge would provide access across the wetland feature. While this scenario emphasizes public access opportunities, it still facilitates an appropriate balance between the human use and the natural values of the site.

8.3.3 RELATIONSHIP TO OBJECTIVES

Scenario 3 substantially addresses the goal of restoring ecological processes and functions and facilitates to a greater extent than Scenario 2 an appropriate balance between the human use and the natural values of the site. Scenario 3 focuses on providing significantly improved recreational and interpretive function to the site and places additional emphasis on education of the Washoe tribe culture. The effects on improving water quality issues of this scenario would likely be significant, because this scenario substantially reduces impervious areas and includes associated BMPs to increase infiltration, in similarity to Scenario 2.

8.3.4 IMPLEMENTATION ISSUES

Due to the size and quantity of project elements, Scenario 3 would probably be the most costly scenario to implement, but it is probable that it could be implemented within two construction seasons. Construction methods and environmental compliance and permitting requirements would be similar those described under Scenario 1.

8.4 SCENARIO 4

8.4.1 RATIONALE

Scenario 4 is the “Do Nothing” scenario. With the exception of identifying existing conditions, there was no scientific or engineering rationale used in the development of this scenario. It is presented to provide a baseline comparison for the other scenarios.

8.4.2 DESCRIPTION

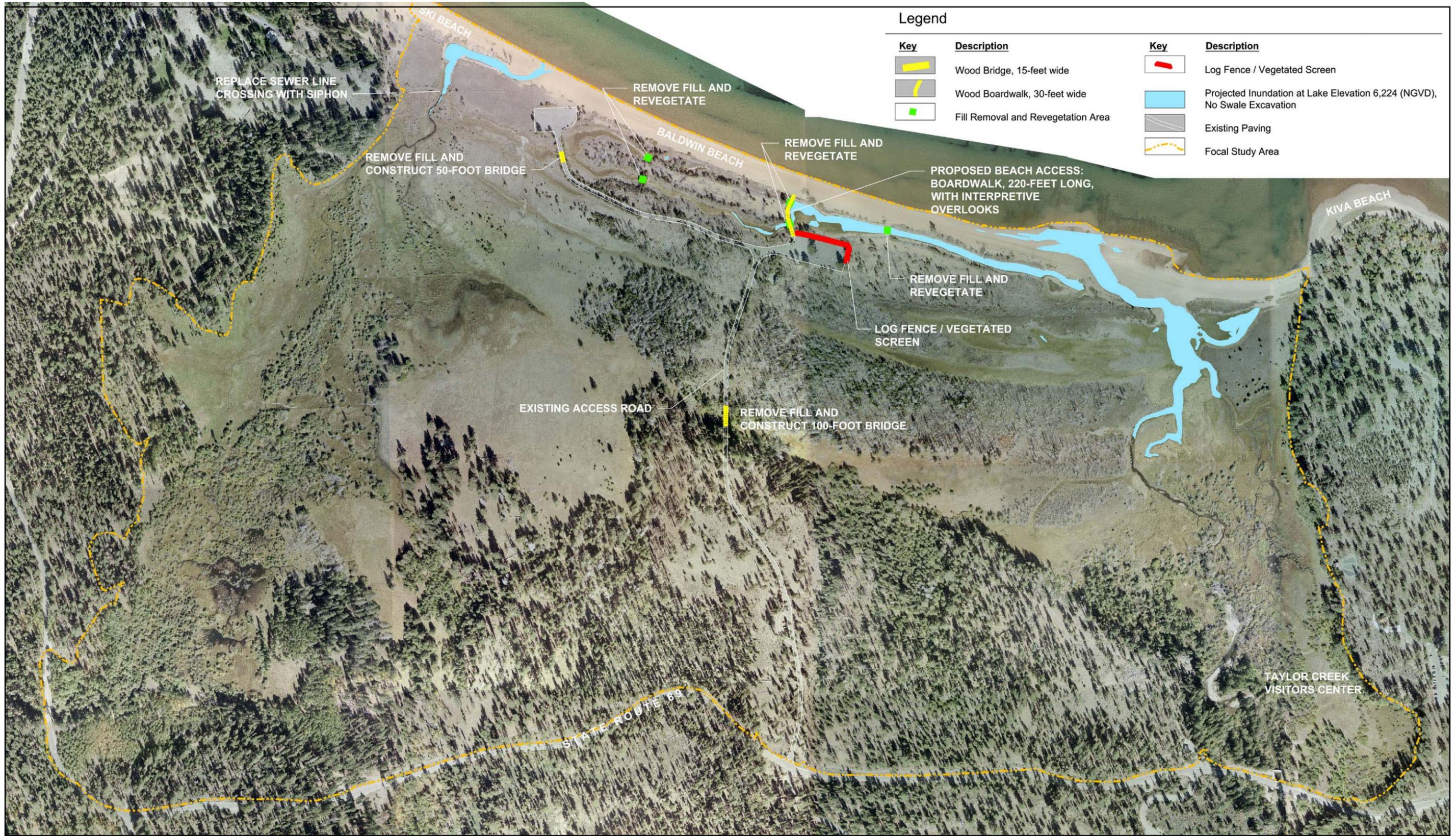
The Do Nothing scenario does not propose any restoration or improvement elements. Current conditions, trends, and natural processes/ process alterations in the watershed would remain. As the analyses in Chapters 2 through 7 have described, the conditions of the focal study area wetland complex have been affected by the last century and a half of human use. The construction of roads, parking lots, and beach access trails, and the associated filling of wetlands; the recreational use of the site by thousands of people each year; the construction of a sewer line across the meadow; and over a hundred years of grazing by domestic animals have each had consequences for ecological structure and function. Under this scenario, natural processes and the conditions and activities that have resulted in the current altered state of the ecosystem would continue. Process alteration and ecosystem degradation trends that could get worse over time may include the following: constriction and filling of swales caused by roads; barrier beach process alterations resulting from managed releases from Fallen Leaf Lake; hydrologic and geomorphic alterations caused by the STPUD sewer pipe; compaction, erosion, and channel widening resulting from grazing; water quality degradation resulting from impervious surfaces; and potential increased invasive species introduction and wildlife movement impediments caused by roads and other human made structures and activities.

8.4.3 RELATIONSHIP TO OBJECTIVES

Scenario 4 is the Do Nothing scenario and, therefore, does not achieve any of the goals or objectives.

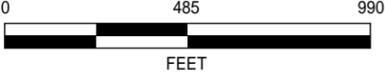
8.4.4 IMPLEMENTATION ISSUES

Because the Do Nothing scenario does not propose construction activities, there are no implementation issues to address. Current operations and maintenance requirements would still be required.



Aerial Photograph: October 9, 2003

Scenario 1



Scenario 1

- Minimal impacts to existing recreational use
- Remove fill and culverts and replace with bridges to restore surface water connectivity
- Build raised boardwalk to direct beach access and protect beach ridge meadow and wet swale habitat
- Use fencing and plantings to screen eastern parking lot and to guide pedestrian access to the boardwalk
- Replace sewer line crossing of Tallac Creek with a siphon and remove concrete sill/grade control structure



Undersized culverts will be removed



Boardwalks will provide pedestrian access to beach while protecting sensitive habitats



Visitor access to Baldwin Beach will remain at existing levels, but impacts to resources will be reduced



Bridges will replace undersized culverts and restore surface water connectivity

Scenario 2

- Maximize wildlife habitat through wetland enhancement, infrastructure removal, minimization of impacts associated with public access, and the elimination of grazing
- Remove existing parking lots, associated access roads and fill, and revegetate
- Remove culverts and fill at existing pedestrian causeways, revegetate, and replace with raised boardwalk to guide pedestrian access to Baldwin Beach
- Excavate approximately one foot of sediment from Swale 1 to reconnect swales and enhance wetland function in dry years
- Cease manipulation to restore barrier beach function at the mouth of Taylor Creek
- Construct new parking lot in the upland, that incorporates infiltration planters
- Eliminate horse grazing and remove associated fences
- Reroute sewer line south to SR 89 along upland edge and remove existing pump station and restroom facilities; replace restrooms with freestanding units



This scenario improves wetland function and enhances habitat for both aquatic and terrestrial wildlife



U.S. Forest Service, August 2, 1959

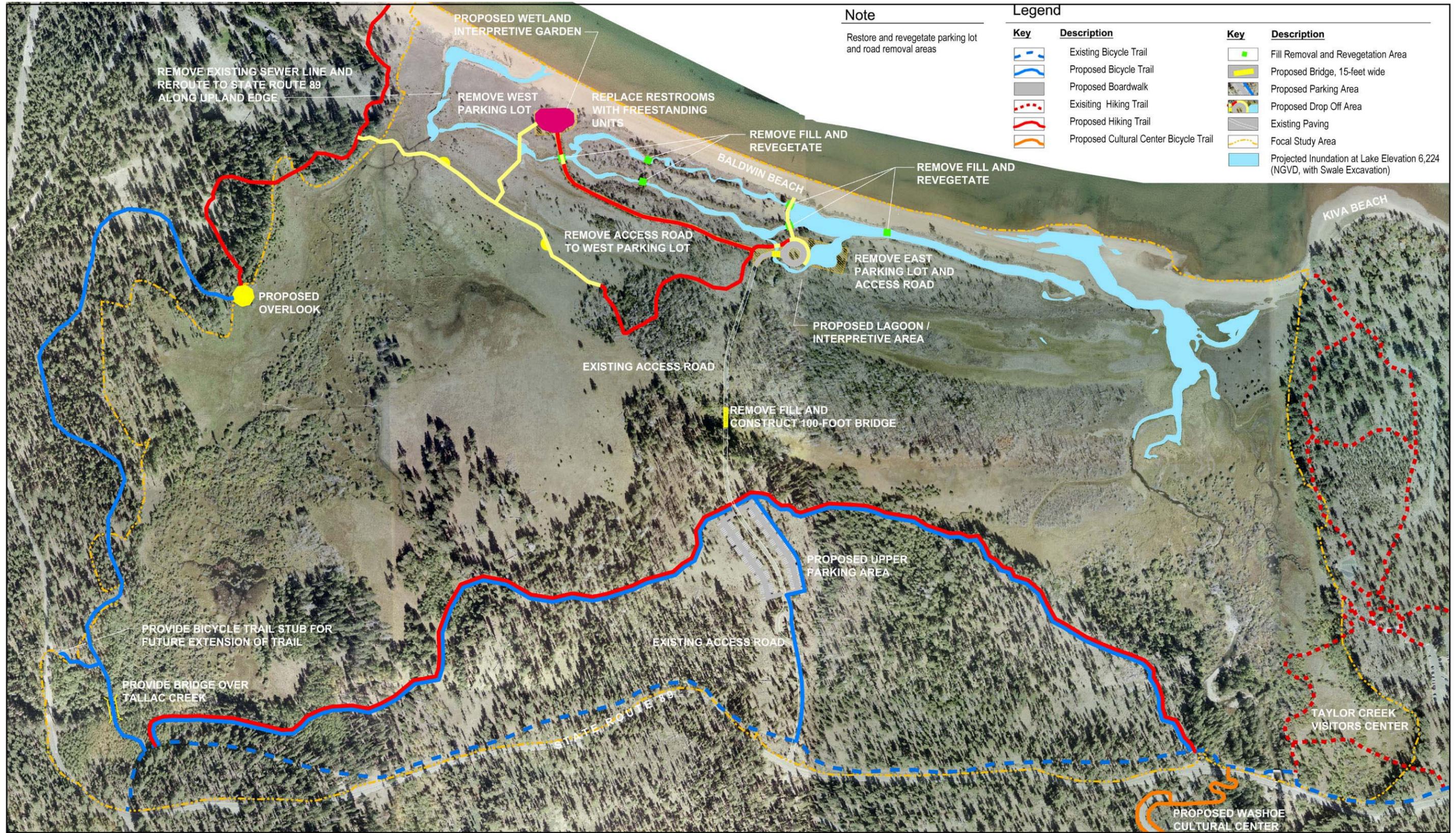
Swales in August 1959; Lake Elevation 6,226.9 (NGVD)



Dry swale in summer of 2004

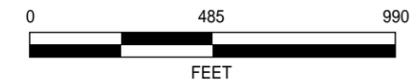


Excavation of swales would sustain lagoon for longer periods during dry years



Aerial Photograph: October 9, 2003

Scenario 3



Scenario 3

- Optimize recreational access and public use while minimizing impacts to wetland function
- Remove western parking lot and fill and create a wetland interpretive garden; could be a cooperative endeavor with Washoe Tribe
- Remove eastern parking lot and replace with loop drive to allow drop off of people and kayaks
- Create a lagoon feature along the edge of the new loop drive and incorporate interpretive signage
- Remove pedestrian causeways and associated fill, revegetate, and construct new bridge
- Construct additional bike paths and hiking trails that incorporate overlooks and raised boardwalks in wetland areas
- Construct new parking lot in upland, incorporate infiltration planters
- Pursue cooperative effort with Washoe Tribe to incorporate traditional gathering and tending practices



Create wetland interpretive garden focused on wetland plants and cultural uses

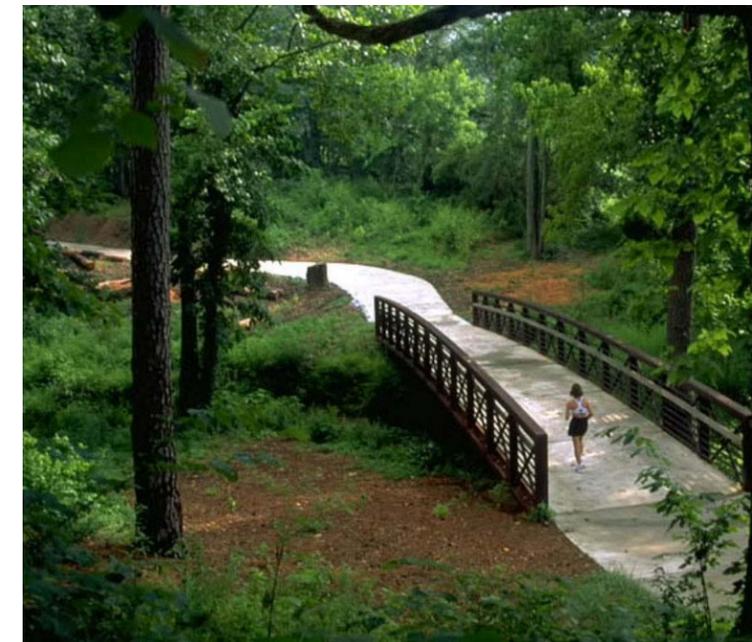


Susan Stratton, 2001

Support Washoe collection of traditional plant materials for basket weaving and other uses



Additional bike and hiking trails will enhance recreational and interpretive opportunities



Bridges over swale and creek crossings will enhance surface water connectivity