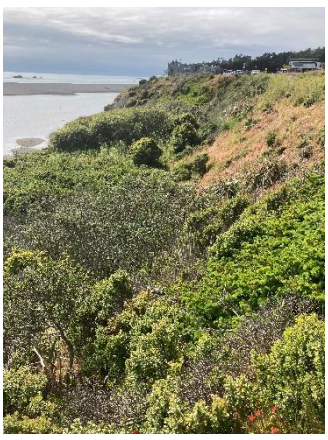
Mill Bend Preserve Conservation Plan

Redwood Coast Land Conservancy

Gualala, California

August 2022



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Acknowledgements

We acknowledge, honor, and make visible that the Mill Bend Preserve is part of the ancestral lands of the Yokaya, Bokeya, and Kashia Pomo.

The protection of and planning for Mill Bend Preserve has been the work of hundreds of community volunteers and donors, and many organizations. The following had a leading role in developing a vision for how to steward the Preserve, and how to share it with the community.

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The Allemall Foundation
California Coastal Commission
California Native Plant Society
California Natural Resources Agency
Friends of Gualala River
Gualala Arts Center
Gualala River Watershed Council
Madrone Audubon Society
Mendocino Coast Audubon Society
Mendocino Land Trust
NOAA Fisheries
Resources Legacy Fund
US Fish and Wildlife Service

Executive Summary

The Mill Bend Preserve encompasses 113 acres at the mouth of the Gualala River, spanning Mendocino and Sonoma Counties in coastal northern California. Purchased in 2021 by the Redwood Coast Land Conservancy (RCLC), these lands are now protected in perpetuity. This Conservation Plan describes the ecological and cultural resources of the site, identifies its stewardship needs and restoration opportunities, and provides guidance for welcoming public access onto the site while sustaining healthy natural systems. The plan concludes with implementation guidance, including a general timeline, potential funding opportunities, and regulatory compliance strategy.

The site is rich in ecological resources; it encompasses a portion of the Gualala River estuary as well as adjacent forested uplands. Habitats present include redwood, bishop pine, and riparian alder forests; willow thickets; native and non-native coastal scrub habitats; patches of non-native grassland; emergent wetlands; and the aquatic habitat of the estuary, including submerged aquatic vegetation beds. These habitats are recovering from historic disturbance, and have significant invasive plant populations, but also support diverse native plant and animal life. Key animal species of concern for management include steelhead trout and coho salmon; California red-legged frog; bird life of the estuary; river otters; mountain lion; and many others. Rare plants are also present. Important management needs include supporting climate change resilience, managing invasive species, planning public access to minimize impacts to sensitive resources, and restoring areas degraded by historic lumber mills.

A conceptual plan for restoration of the upland remnant mill site has been developed, including removal of asphalt, concrete, and invasive species, and revegetation to facilitate establishment of native coastal prairie, scrub, and bishop pine habitat. In the estuary, salmonid habitat enhancement needs include creating accessible refuge elements for juvenile fish and more complex channel and wetland habitat in general. Additional opportunities for restoration exist throughout the site.

Public access designs include approximately 2 miles of new trails, boardwalks through wetland and riparian areas, restrooms, and picnic areas. Trails would connect to and extend the existing California Coastal Trail and provides accessible routes where appropriate. More detailed designs have been developed for an initial phase of access to the estuary, improving the access road and parking and creating a boardwalk through willow wetlands. Interpretive signage, and other modes of community engagement such as guided walks, are also planned.

Ongoing stewardship of the Preserve will also entail protecting sensitive species during disturbance, controlling the spread of pathogens and invasive species, facilitating climate change resilience, and managing fire hazards to improve safety at the site and in the neighborhood.

Implementing these efforts will require significant regulatory compliance work and fundraising. Multiple agencies have jurisdiction over aspects of this sensitive environment, particularly with respect to aquatic and riparian resources, the coastal setting, and special-status species. These same sensitive resources may also open avenues for funding Preserve restoration and stewardship, with many grant opportunities available for coastal access development, fisheries restoration, and wetland protection.

View north, towards the Gualala River mouth and the town of Gualala, from wetlands of the Mill Bend Preserve.

1 Introduction

The Mill Bend Preserve encompasses 113 acres at the mouth of the Gualala River, spanning Mendocino and Sonoma Counties in coastal northern California. Purchased in 2021 by the Redwood Coast Land Conservancy (RCLC), these lands are now protected in perpetuity. This Conservation Plan describes the ecological and cultural resources of the site, identifies its stewardship needs and restoration opportunities, and provides guidance for welcoming public access onto the site while sustaining healthy forests, wetlands, and estuarine life.

The Preserve is situated at a meeting place in several senses, lending the site richness and importance in both ecological and human terms. The Gualala River mingles with the Pacific Ocean here, and the forested uplands of the coastal terrace touch the low-lying wetlands and aquatic realm of the estuary. These natural transition zones support high biodiversity. For centuries, the lands of three bands of native Pomo people have also come together here, with the Bokeya (now associated with the Manchester Band) living from the river north, the Yokaya just south of the river and up into the coastal

hills, and the Kashia (now associated with the Kashia Band of Stewarts Point) occupying lands from the river south. All were drawn to this place with its abundance of water and life. It was the Pomo who gave this location the name *qh awala-li,* "water coming down place," later altered to Gualala by the Spanish.

Mill Bend is also a study in change. In the late 1800s, the landscape was transformed dramatically by the rise of the commercial timber industry. Mill operations turned the dense forests of the area into valued building material. Almost all of the local old-growth redwood was removed in just a few decades. Over time, the forest regenerated, continuing to support the timber industry and the town that grew up around it. Mill operations were built in three locations on the Preserve, replaced twice after fires and finally closed in 1968.

Today, this land at the final meander of the Gualala River is still recovering from intensive human modification. Although it is dramatically different from what it was 200 years ago, Mill Bend remains a place of ecological richness, scenic beauty, and importance to both local residents and visitors from other regions. This document is RCLC's plan for its stewardship.

1.1 Regional Setting and Conservation Values

The Mill Bend Preserve lies mostly in Mendocino County, on the north side of the river, but extends across the estuary into Sonoma County to the south. It abuts the town of Gualala to the north, Gualala Arts Center to the east, and Sonoma County regional parklands to the west and south (Figure 1.1). The Preserve is also divided by the region's major travel artery, Highway 1, running north-south.

The Preserve's key conservation values are driven by location that includes most of the river estuary and span of elevation zones, links the communities of Gualala and Sea Ranch, and dramatically borders Mendocino and Sonoma counties:

- **Salmonid habitat and other aquatic resources.** The Gualala River estuary is of critical importance for steelhead and coho salmon protection and recovery in the region, especially as rearing habitat for juveniles. It also supports a wide array of other fish, birds, and other wildlife. The Gualala River as a whole, with its associated aquifer, provide a primary water source for the people and businesses of the region.
- **Habitat and species diversity.** The range of elevations, from forested uplands recovering from past logging to bishop pine stands of exposed coastal slopes, to alder forests lining the river and regularly flooded willow wetlands along the estuary edge, provides for a diversity of plant and animal species.
- **Accessibility and connectivity for recreation.** Mill Bend's location immediately adjacent to the town of Gualala, and Sea Ranch and Gualala Point Regional Park to the south, make it highly valuable for recreation, highly visible to locals and travelers alike, and important as a link in a route for pedestrians and cyclists traveling along the coast, part of the California Coastal Trail vision. The estuary access provides beach and small watercraft recreational opportunities for residents and visitors to explore and enjoy the estuary and lower river reach.

1.2 Vision for Preserve Stewardship and Use

RCLC envisions Mill Bend as a preserve that supports flourishing native biodiversity and resilient natural systems, where visitors can experience and learn from the diversity of the Gualala River estuary, and from the site's history of change. As a mostly volunteer-run organization committed to science, environmental resource values, and community service, RCLC aims to use effective, efficient stewardship methods, based on a deep understanding of the site. For RCLC, restoration means facilitating the Preserve's inherent natural resilience and potential for recovery. RCLC also envisions a community of visitors and volunteers who care for the land, and who experience the Preserve in a range of ways that protect its plant and animal life, its water resources, and its cultural resources.

1.3 Plan Purpose and Goals

This plan is intended to guide stewardship and both short- and long-range planning for restoration activities and public access offerings on the Preserve. The plan is designed for use by RCLC staff and volunteers. It can be used as a reference guide to the Preserve's features and ecological conditions, a resource for identifying the next projects to take on, and a handbook for ongoing stewardship.

The document begins with an overview of the context for Preserve management, including relevant regulatory agencies and policies that may facilitate or constrain potential land use on the site, regional plans that relate to it, and Mill Bend's physical setting and infrastructure. The key biological and cultural resources are described to set the stage for stewardship guidance, with detailed reports provided as appendices. Then, the plan moves to the future vision for the Preserve. The three central elements of this vision are restoration of highly disturbed areas including the upland mill site; enhancement of critical ecological functions in the estuary; and providing public access in ways that support the site's living systems. Overviews of these elements are provided, with detailed plans and design reports provided as exhibits and appendices. This is followed by objectives and measures to protect cultural resources and biological resources, manage invasive species and pathogens, undertake further restoration, and adapt to the potential for fire on the land. Finally, implementation guidance is provided, with regulatory compliance strategy, potential funding sources, and a generalized schedule of activities.

RCLC's overarching goals for Preserve management are to:

- Enhance habitat conditions in the estuary to support more robust salmonid populations.
- Restore native habitat to the upland mill site and other disturbed portions of the property.
- Protect and restore the site's biodiversity and ecological functions.
- Provide opportunities for diverse visitors to enjoy, learn from, and appreciate the site, in ways that are compatible with resource protection.

1.4 Plan Development Process

RCLC began engaging with conservation agencies and conducting community outreach about the site in 2017, when the property came up for sale, to gauge interest and resource considerations for making the site a Preserve. Outreach included several public forums and many meetings and site tours. The property was formally acquired by RCLC in early 2021, with funding predominantly from the State

Coastal Conservancy, California Natural Resources Agency, and the US Fish and Wildlife Service, and acquisition support from the Allemall Foundation, Mendocino Land Trust, Sonoma Land Trust, Sonoma County Regional Parks, Friends of Gualala River, Gualala Arts Center, and many other donors and stakeholders. RCLC continued engaging local residents and supporters with a public outreach forum and online survey in August 2020, collecting input on goals and priorities for the site.

RCLC and PCI site visit, September 2020.

Formal work on the Conservation Plan, funded by the Coastal Conservancy, also began in late summer 2020, with PCI conducting site visits and interviews with RCLC staff to understand the group's goals and existing knowledge of site opportunities and constraints.

PCI and subcontractor ALTA Archaeological Consulting conducted biological and cultural resource site analyses in 2020-2021 to inform public access planning. Historical photos and aerial imagery were reviewed to develop an understanding of past land use. PCI's engineering team conducted supplemental site surveys to support restoration and public access planning.

Once key resource considerations were better understood, work on drafting the three focal Plan elements was begun. PCI conducted additional site visits and interviews with representatives of agencies including California Department of Fish and Wildlife (CDFW), California Coastal Commission (CCC), Caltrans, and Sonoma County Regional Parks. A conceptual restoration plan for the highly disturbed upland mill site was drafted in fall 2020, and revised based on RCLC input. Public access planning entailed development of three draft alternative conceptual plans, and revision of these based on discussion and direction from RCLC.

In January 2021, PCI presented the draft public access concepts to a Technical Working Group of resource agency representatives and local experts in park and preserve planning, including the agencies above as well as the Coastal Conservancy, US Army Corps of Engineers, Mendocino County Planning Department, and the North Coast Regional Water Quality Control Board. The Technical Working Group provided input on pedestrian movement options in constrained locations; regulatory needs; approach to protecting sensitive resources and appropriate intensity of recreational development; amenity accessibility; and safety and emergency access.

Project findings (i.e., resources present, protection needs and enhancement opportunities, as well as the public access concepts themselves) were brought to a public meeting and a local stakeholder meeting, both in April 2021, to explain site considerations, opportunities and constraints, and to garner early-stage feedback.

To assist RCLC in selecting a preferred alternative, PCI also prepared a matrix comparing each of the key elements of the public access options on the bases of potential for resource impacts; regulatory compliance level of effort; cost to implement; level of ongoing maintenance needs; and flooding vulnerability. In September 2021, the concept design and supporting memo for RCLC's selected alternative was completed and is Appendix C to this plan.

In July 2021, OPAC Consulting Engineers (OPAC) offered to analyze alternative routes and evaluate structure types for a pedestrian crossing of China Gulch. This study was conducted in coordination with PCI and in consideration of the Preserve conservation plan, yet was not part of the PCI effort. The analysis and evaluation included two rounds of consultation with agency staff from Caltrans headquarters and Districts 1 and 4, the California Coastal Commission, Mendocino County, and the State Coastal Conservancy. A final report, including preliminary bridge design and cost estimates, was completed in January 2022 and is Appendix K to this plan.

RCLC selected the estuary access element of the public access program for PCI to develop 30% design. The estuary access includes roadway improvements from State Route 1 to the estuary gravel bar gate, a boardwalk trail, a trail leading to the upland part of the Preserve, improved vehicle parking with accessible spaces, a seasonal restroom, and surfaced area designated for a kayak rental concession. The preliminary design set is Exhibit 2 of this plan.

An evaluation of estuary habitat conditions and opportunities for enhancement was prepared in spring 2022, based on site assessments, review of agency-identified salmonid habitat priorities and other background information, and consultation with regional experts in estuary conditions. The estuary enhancement memorandum is Appendix F to this plan.

The Conservation Plan document itself was prepared in spring and summer 2022, and brings together all of the preceding elements, with guidance on implementation and stewardship. The final Mill Bend Preserve Conservation Plan will be shared with agency partners, stakeholders, and the community in September 2022.

As RCLC moves this plan into action, new information, changing conditions, and emerging opportunities and constraints will certainly arise, and lessons learned will accumulate. RCLC will review the Conservation Plan every five years and make updates as warranted by experience and needed to anticipate future changes.

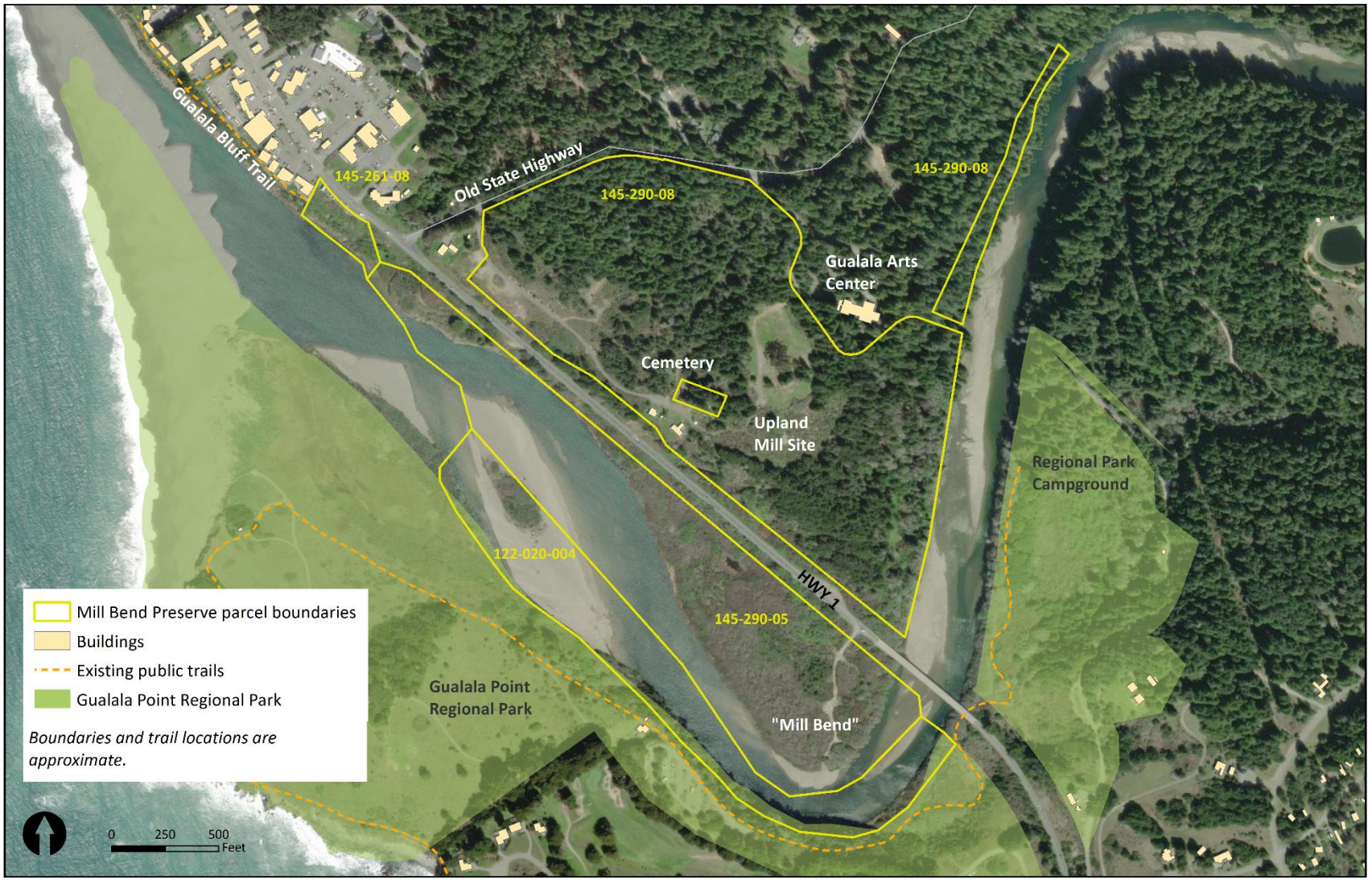


Figure 1.1. Mill Bend Preserve Map

2 Planning Context

2.1 Parcel Descriptions and Land Use

The Preserve comprises four parcels that lie to the east and west of Highway 1 in Mendocino and Sonoma counties (Figure 1.1). A historic cemetery, two small single-family residences, and the site of the third, most recent lumber mill are located on the main portion of the 60-acre parcel that is east of Highway 1. A narrow strip of 3 acres, part of this same parcel but separated from the rest by the original Highway 1 remnant right-of-way, extends upstream to the next bend in the river along the historic mill railroad alignment on the steep riverbank. The main 41-acre parcel to the west of Highway 1 consists primarily of coastal willow wetlands within a sharp bend of the river (the "mill bend" that gives the property its name) and a narrow band of steep bank habitat along the estuary. A 2-acre parcel continues along the steep riverbank to the north, and adjoining the town of Gualala. The Sonoma County parcel encompasses the south and west sides of the estuary, downstream of the Highway 1 bridge.

All parcels are located in the Coastal Zone. Land use for these parcels is guided by the Mendocino County General Plan, Coastal Element and the Sonoma County Local Coastal Plan. The California Coastal Commission retains jurisdiction for parcels west of the highway, and the parcels east of the highway fall under Mendocino County jurisdiction. Although the property is now protected for conservation purposes, county zoning reflects that it was previously intended for a variety of uses; the table below lists parcels, their approximate extents, and current zoning.

Table 1. Mill Bend Preserve Parcels

Parcel	Acres (approx.)	Location	Zoning
Mendocino County			
145-290-05	40.6	West of Highway 1, main portion and estuary access	Remote residential, 20 acre lots
145-261-08	1.5	West of highway, north of China Gulch	Gualala Village Mixed Use District
145-290-08	57.0	Between Highway 1 and Gualala Arts Center	Gualala Planned Development
	2.6	Narrow strip along river and east of Gualala Arts Center	
Sonoma County			
122-020-004	18.0	Estuary	Public Facilities District in Coastal Zone, Riparian Corridor 100' setback, Scenic Resources, Valley Oak Habitat[1]

[1] Although Sonoma County zoning designates this parcel as Valley Oak Habitat, no valley oak habitat is actually present; the designation appears to be in error.

2.2 Covenants

This property was acquired with grant funding predominantly from the California State Coastal Conservancy, US Fish and Wildlife Service, and the California Natural Resources Agency. These grants were made to support habitat protection and enhancement, as well as passive recreational access and environmental education and research to the extent consistent with habitat protection. The State Coastal Conservancy and California Natural Resources Agency retain covenants over the property, which clearly affirm the priority of habitat conservation, with passive public recreational access a secondary value to the extent it does not conflict with resource protection:

Restrictive Covenants

a. The Property was acquired by Landowner pursuant to the Grants for the purposes of protection and restoration of wetland habitat and, to the extent not inconsistent with these purposes, for open space, passive recreational public access, and environmental education and research; no use of the Property inconsistent with these purposes is permitted.

b. Unless otherwise expressly identified in this Agreement, all development rights in the Property that are inconsistent with the acquisition purposes are extinguished.

c. Without the written permission of the Executive Officer of the Conservancy and Resources Agency Landowner shall not use or allow use of any portion of the Property for mitigation (in other words, to compensate for adverse changes to the environment elsewhere). Unless the Executive Officer otherwise approves, all funds generated in connection with any authorized or allowable mitigation on the real property shall be promptly remitted to the Conservancy.

d. The Property, or any portion thereof, may not be used as security for any debt.

e. The Property (including any portion of it or any interest in it) may not be sold or transferred without the written approval of the Conservancy and Resources Agency

Affirmative Covenants:

a. Landowner shall operate, manage, and maintain the Property consistent with the acquisition purposes.

b. If access for the public ever needs to change location, scope, or scale, Landowner will seek consent from the Conservancy and Resources Agency.

c. The two existing structures may be maintained, improved, or replaced within their respective building envelopes for use as an environmental education and research facility.

d. Obligations for operation and maintenance of the Property may be abandoned only upon the written approval of the Resources Agency and the Conservancy and only for good cause. Good cause includes, but is not limited to, natural disasters that destroy the property. Good cause shall not include more expedient or economically beneficial development. Responsibilities to maintain and operate the Burdened Property in accordance with this deed runs with the land.

The USFWS grant further requires that "the property be managed in perpetuity to protect coastal wetlands resources and the species that depend upon them including Coho salmon, steelhead trout, California red-legged frog, tri-colored blackbird, bank swallow, western pond turtle, northern spotted owl, marbled murrelet and Roderick's fritillary."

2.3 Adjacent Ownership and Land Uses

The Preserve is adjacent to the town of Gualala to the north, with a Highway 1 parking lot along the bluff used by downtown visitors in a small but bustling commercial district. A California Coastal Trail segment (Gualala Bluff Trail, approximately 0.2 mile) leads from the northern Preserve edge, behind local businesses, along the blufftop with scenic views of the river's mouth. See Section 2.4 for further discussion of the CCT.

Gualala Bluff Trail.

To the west, south, and east across the Gualala River from the Preserve is Sonoma County's Gualala Point Regional Park, which includes a 26-site campground in the forest at the river's edge, and 2.9 miles of trails along the coastal bluffs, above the river, and leading to the community of Sea Ranch to the south. These include a segment of the California Coastal Trail.

The Gualala Arts Center lies adjacent to the Preserve to the east. The east parking lot on the Mill Bend property is used by the Gualala Arts Center for as overflow for special events, with permission from RCLC. The Gualala Arts Center also maintains a small network of trails leading down toward and along the river, connecting with the old railroad alignment on Mill Bend property along the riverbank.

Other land uses in close proximity include Highway 1 and Caltrans right-of-way; residential areas of Gualala and Sea Ranch; Gualala River Redwood Park, a private campground with over 100 sites, immediately upstream of the Preserve; and timberlands owned by Gualala Redwood Timber, LLC. Approximately 5 miles inland, extensive forested lands protected by The Conservation Fund include the Gualala River Forest (14,000 acres) and the Buckeye Forest (nearly 20,000 acres). These lands are being managed for timber, carbon sequestration, and restoration of coho salmon habitat (The Conservation Fund 2014). See Figure 2.1.

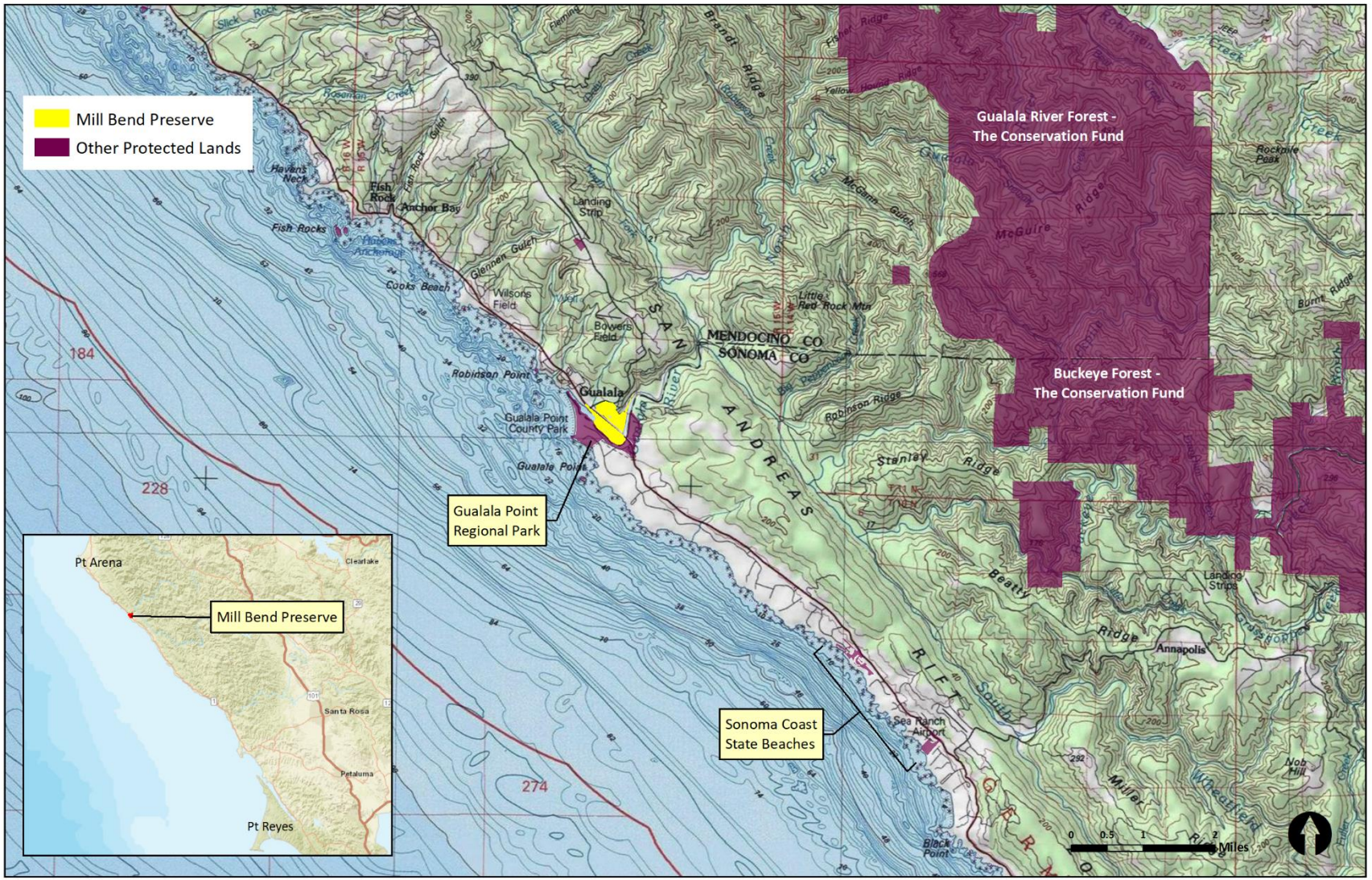


Figure 2.1. Regional Context

2.4 Related Local Plans

California Coastal Trail

The California Coastal Trail (CCT) is a network of trails being developed along the California coast that will eventually provide the opportunity to walk and bicycle the entire length of the state, from Oregon to Mexico (1,230 miles). Approximately 70% of the trail is completed to date. State and federal agencies are working with local entities to add segments to this network over time. The California Coastal Conservancy (2022) explains:

> "[T]he CCT is designed to make the coast more accessible, foster appreciation and stewardship of the scenic and natural resources of the coast, provide recreational opportunities, and encourage non-motorized transportation. The CCT system is developed as close to the ocean as possible, and where feasible, within sight, sound and smell of the ocean. The CCT is considered a braided network, meaning there can be parallel routes that accommodate different experiences, such as a sandy beach route for beach visitors, a bluff top dirt hiking path providing scenic views, and a paved path for bikers, wheelchair users, and people needing firmer footing."

The opportunity to bridge a gap in the CCT through Gualala and across the Gualala River was one of the factors motivating the conservation purchase of the Mill Bend property. The existing Bluff Trail segment to the north, like the Mill Bend Preserve, is a collaboration of RCLC and the Coastal Conservancy. It is a short, scenic segment readily accessible to downtown Gualala visitors for viewing the estuary and the bird and aquatic life often found there. The next segment of CCT to the north is about two miles up the coast, on another RCLC property at Cook's Beach. To the south, Gualala Regional Park contains multiple segments designated as part of the CCT, including a beach route and bluff trails. To the south these connect to 4 additional miles of CCT, along the bluffs at Sea Ranch.

Downtown Gualala Streetscape Design Plan

The Downtown Gualala Streetscape Design Plan, led by Caltrans District 1 and the Mendocino Council of Governments, aims to improve pedestrian and bike travel, improve traffic flow, improve visual character with landscape and hardscape features, and reduce conflicts between motorized and non-motorized users. The purview of the plan begins just south of Center Street, adjacent to the Preserve's north end, and extends approximately 0.4 miles north into downtown. The design and public input process is ongoing, with construction intended to occur in fall 2025. Sidewalk and crosswalk improvements adjacent to the Preserve's northern end are likely and will help improve safe access to and extending the CCT through the Preserve.

2.5 Applicable County, State, and Federal Regulations

Many of the natural resources present on the Mill Bend site are regulated by federal, state, regional, and county agencies. Any activities that may affect resources under these agencies' jurisdiction may require consultation and/or permitting from them. The information gathered in this Conservation Plan can be used as a starting point to guide and support future regulatory compliance efforts. Appendix I provides a matrix of potential regulatory involvement by project component.

Local Regulations

Mendocino County General Plan

The Mendocino County General Plan (General Plan; Mendocino County 2009) is a blueprint for how land is used in the upland and coastal areas of the county. Policies set forth in the General Plan guide decisions about conservation of resources within the County and surrounding environs. The Resource Management Element addresses biological resources and ecological systems, including terrestrial, freshwater, and marine resources. It also addresses water resources, which include watershed, water supply, and water quality. The Development Element discusses land use, community character that addresses cultural resources and community areas, infrastructure that addresses parks and recreation, and safety-related issues around fire protection, flooding, and seismicity. The principles in the General Plan provide the basis for the goals and policies included in the Mendocino County General Plan. They reflect key issues such as stewardship of County resources, planning for growth, and efficient and equitable provision of public services. These principles can be categorized as follows:

- Conservation of Mendocino County's natural resources, farmland, forest land, and open spaces
- Protection of the county's natural, scenic, recreational, historic, and archaeological resources
- Development of compatibility between human activity and environmental resources
- Commitment to the health and well-being of all its residents

The Mendocino County General Plan identifies the Mill Bend area ("Gualala River Bridge") as an area intended for natural resource protection and public access, calling for potential development of a Gualala Bluff Trail (now partially completed); fish and wildlife habitat management; limited parking for public fishing; and access for crafts such as canoes, rowboats, and other small boats. The policy also calls for development of a management plan for the site prior to development of public access facilities. The Plan calls for a Gualala River Trail, on the north side of the river, from Highway 1 to the east boundary of the Gualala Arts Center property, to provide pedestrian access to the river for fishing, swimming, and hiking.

Sonoma County General Plan

The Sonoma County General Plan is the blueprint for land use in unincorporated Sonoma County (Sonoma County 2008). It includes maps that show where agricultural, residential, commercial and other land uses will be located, and a series of policies that guide future decisions about growth, development and conservation of resources. The General Plan provides the basis for development while maintaining the quality of life that Sonoma County residents value. It was adopted in September 2008 and amended in August 2016. The County of Sonoma is currently working to update the General Plan.

The Sonoma County General Plan identifies the Gualala River Waterway Trail as part of a countywide trail system to be developed over time. The trail envisioned follows the river from the Sonoma/Mendocino County line (i.e., the Mill Bend vicinity) upstream to Stewart's Point Road (i.e., roughly 10 miles to the south). It also calls for a Sonoma Coast Trail extending from Black Point (in the Sea Ranch) south to the Estero Americano, as part of the CCT.

Mendocino County Coastal Element / Sonoma County Local Coastal Plan

Mendocino County developed the Coastal Element of the General Plan in 1985 (Mendocino County 1985) and revised in several times in 1988 through 1991. The Coastal Element was adopted as an element of the Mendocino County General to provide specific details associated with development in the coastal zone and specifically addresses habitats and natural resources, agriculture, forestry and soils resources, visual resources, archaeological resources, shoreline access and trail systems, recreation and visitor serving facilities, and transportation and public services/utilities. The Coastal Element specifies the appropriate location, type, and scale of new or changed uses of land and water and the conservation and use of coastal resources. The entire Mill Bend Preserve is located in the coastal zone. Areas west of Highway 1 are within the California Coastal Commission retained jurisdiction, while lands east of the highway fall within Mendocino County's jurisdiction in terms of authorizing and permitting development activities.

The Sonoma County Local Coastal Plan (LCP) serves as an important planning document in managing the conservation and development of the county's coastal regions. The current Local Coastal Plan was written in 1981 and amended in 2001. Permit Sonoma staff and consultants are currently in the process of updating the plan.

A critical element of management within the coastal zone is the identification and protection of environmentally sensitive areas within the Preserve. The Coastal Act defines an "environmentally sensitive habitat area" (ESHA) as: "Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Section 30107.5).

There are three important elements to the definition of ESHA. First, a geographic area can be designated ESHA either because of the presence of individual species of plants or animals or because of the presence of a particular habitat. Second, in order for an area to be designated as ESHA, the species or habitat must be either rare or it must be especially valuable. Finally, the area must be easily disturbed or degraded by human activities. The Mendocino County Local Coastal Plan (Mendocino County 1991) and California Coastal Act (Public Resources Code Section 30107.5) provides special protections for areas designated as ESHAs.

The specific definition of ESHAs varies slightly between the California Coastal Act and the Mendocino County Coastal Element/LCP. The CCC (2013) notes that identification of ESHAs may be guided by authoritative resources on the presence of sensitive species and habitats, including:

- The list of rare, threatened or endangered species prepared under the California or Federal Endangered Species Act,
- The list of "fully protected species" by CDFW, and CDFW "species of special concern" if they are ranked as imperiled globally or in California (rank G2 or S2 or rarer).
- Plants with California Rare Plant Ranking of 1 or 2 (ranking designated by the California Native Plant Society and CDFW), and
- The CDFW List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database. [Note that CDFW (2022a) provides a more current list of sensitive natural communities.]

Other environmentally sensitive habitat areas also found within the Mill Bend property include the following categories:

- *Wetlands:* Lands that may be covered periodically or permanently with shallow water, including saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.
- *Rare or Endangered Plant and Wildlife Habitat:*

  Special Plant Habitat. The approximate location of rare, or endangered or threatened plant species identified by the California Department of Fish and Game, the U. S. Fish and Wildlife Service or as designated by the California Native Plant Society as found in the Inventory of Rare and Endangered Vascular Plants of California (1984)[2]."

  Special Wildlife Habitat. The approximate location of animal species considered to be threatened, rare, endangered, or protected by the California Department of Fish and Game, or the U.S. Fish and Wildlife Service are shown on the land use maps.

- *Riparian Habitats:* Riparian habitats and wetlands are distinctly different in the Coastal Zone. A riparian habitat is an area of riparian vegetation, and this vegetation is an association of plant species that grows adjacent to freshwater watercourses, including perennial and intermittent streams, lakes, and other bodies of freshwater.
- *Streams, Rivers, and Anadromous Fish Habitat:* Streams, Rivers, and Anadromous Fish habitats are defined as a stream or a river that a natural watercourse as designated by a solid line or dash and three dots symbol shown on the United States Geological Survey map most recently published, or any well-defined channel with distinguishable bed and bank that shows evidence of having contained flowing water as indicated by scour or deposit of rock, sand, gravel, soil, or debris. Freshwater streams used as migration corridor or spawning or nursery habitat by fish, such as salmon and steelhead trout, which live most of their adult lives in saltwater.
- *Coastal Marine Ecosystem:* Coastal Marine Ecosystem habitats are defined as the area and its environs containing a delicately balanced environmental system which provides a suitable habitat for local indigenous and migrating species, including all life forms in the tidal zones seaward. The Coastal Marine Ecosystem also is recognized to contain and provide valuable food resources, economic opportunities, and aesthetic value to shore-side establishments, residents and the public in general.

Table 2. Potential ESHAs within the Preserve

ESHA Type	Location within Preserve
Streams, Rivers, and Anadromous Fish Habitat	Gualala River - habitat for anadromous steelhead, coho salmon
Coastal Marine Ecosystem	Gualala River Estuary

[2] "The CNDDB provides location information for known occurrences of rare plants."

ESHA Type	Location within Preserve
Riparian Habitat	Areas supporting willow thicket, alder forest
Wetlands	Areas supporting marsh or estuarine habitat, and seasonally wet swales within the redwood forest
Special Plant Habitat	Areas supporting swamp harebell and coastal bluff morning glory
Special Wildlife Habitat	Areas of suitable habitat for the following special-status wildlife habitat: California giant salamander, foothill yellow-legged frog, California red-legged frog, red-bellied newt, western pond turtle, bats, and Sonoma tree vole

State and Federal Regulations

Environmental Quality Acts

The California Environmental Quality Act (CEQA) was passed in 1970 to institute a statewide policy of environmental protection. Projects undertaken, funded, or requiring a permit by a state or local public agency must comply with CEQA. The primary purposes of CEQA are to inform decision-makers and the public about the potential environmental impacts of the proposed activities, identify ways that environmental damage can be avoided or significantly reduced, require changes in projects through the use of alternatives or mitigation measures when feasible, and disclose to the public the reasons why a project was approved if significant environmental effects are determined.

Development activities (e.g., construction of new trails) and some proposed restoration work may require CEQA compliance, while other activities may be exempt from the provisions of CEQA based on the project type, project size, and potential project environmental impact. The CEQA Lead Agency will have to determine which development activities are subject to CEQA and which are exempt based on the type of and the location of proposed development activities. To be a CEQA Lead Agency, the public agency must have discretionary authority over the proposed project.

Similarly, the National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and analyzing reasonable alternatives to those actions. NEPA review is not necessary unless project activities are undertaken, permitted, or funded by a federal agency. For activities utilizing a federal Clean Water Act Section 404 Nationwide Permit from the U.S. Army Corps of Engineers, NEPA review is already complete.

Water Quality Control Board, North Coast Region

Under the Porter-Cologne Water Quality Act, the North Coast Regional Water Quality Control Board (NCRWQCB) is authorized to regulate discharge and fill within waters of the State including wetlands, saltwater marshes, non-tidal-marshes, and vernal pools/seasonal wetlands. Through this process the NCRWQCB issues a Water Quality Certification or a Waste Discharge Requirement (WDR) depending on the location of the proposed work. Future projects on the Preserve will require consultation with the NCRWQCB and issuance of a permit if work is proposed in any wetland or other waters of the State.

California Department of Fish and Wildlife/California Department of Fish and Game Code

The California Department of Fish and Wildlife (CDFW) is responsible for managing, conserving, and protecting the state's biological resources including fish, wildlife, and plants. Under the California Fish and Game Code, CDFW must be notified when work is proposed in a creek, river, or lake that would divert or obstruct flows or change the bed, channel, or bank. CDFW requires a Lake or Streambed Alteration (LSA) agreement when a project will have the potential to adversely affect existing fish or wildlife resources and an Incidental Take Permit for potential impacts on special-status plant and wildlife species. Acquisition of an LSA requires compliance with CEQA. Future projects on the Preserve will require consultation with CDFW and issuance of a permit, if work is proposed in any aquatic resources or where native species would derive benefit.

Jurisdictional Wetlands and Other Waters, Waters of the U.S., Waters of the State

Some wetlands and other waters (e.g., streams, rivers) are within the jurisdiction of state and federal agencies and are managed according to the regulations in the federal and state Clean Water Acts. Wetlands and other waters include a variety of both permanent and ephemeral aquatic features. Regulations and policies that protect aquatic habitats have been enacted by a number of government agencies. Wetlands and waters typically fall under the jurisdiction of the U.S. Army Corps of Engineers, North Coast Regional Water Quality Control Board, California Department of Fish and Wildlife, and/or county planning departments.

The following table provides a summary of the federal agencies that may regulate activities in waters of the U.S. on the Preserve and within the Gualala River:

Table 3. Federal Agencies Potentially Involved in Regulating Waters of the U.S.

Agency	Regulation	Authority	Potential Preserve Element
U.S. Army Corps of Engineers	Clean Water Act, Section 404	Regulates placement of dredged or fill material into waters of the U.S.	Trails and Public Access, Estuary Enhancements
	Rivers and Harbors Act of 1899, Section 10	Regulates work in navigable waters of the U.S.	Estuary Enhancement
National Marine Fisheries Service	Fish and Wildlife Coordination Act	Reviews/comments on Federal actions that affect waters, including Section 404 permit applications	Trails and Public Access, Estuary Enhancements
	Federal Endangered Species Act	U.S. Army Corps must consult with NMFS if a listed marine species or habitat are present on the site	Estuary Enhancements
U.S. Fish and Wildlife Service	Fish and Wildlife Coordination Act	Reviews/comments on Federal actions that affect waters, including Section 404 permit applications	Trails and Public Access, Estuary Enhancements
	Federal Endangered Species Act	U.S. Army Corps must consult with FWS if listed species or habitat is present on site	Trails and Public Access, Estuary Enhancements

Historic Resource Registries

Historic resource registries provide official acknowledgement of the value of historic and archaeologic resources, and can be valuable in securing their protection. The National Register of Historic Places is the official list of the nation's historic places worthy of preservation. Authorized by the National Historic Places Act of 1966 and administered by the National Park Service, the NRHP is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archaeological resources. To be eligible for recognition on the register, the property must be "associated with an important historic context," among other criteria. The California Register of Historical Resources is a similar state-level resource. There are several potentially historic resources present on the Preserve. Appendix B includes a detailed discussion of the historic resources on the Preserve and describes next steps to study or protect the resources, if needed.

California Public Resources Code

Several sections of the California Public Resources Code (PRC) protect cultural resources and PRC Section 5097.5 protects vertebrate paleontological sites located on public land. Under Section 5097.5, no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site (including fossilized footprints), inscriptions made by human agency, rock art, or any other archaeological, paleontological, or historical feature situated on public lands, except with the express permission of the public agency that has jurisdiction over the lands.

PRC Section 5097.98 states that if Native American human remains are identified within a project area, the landowner must work with the Native American Most Likely Descendant as identified by the California Native American Heritage Commission (NAHC) to develop a plan for the treatment or disposition of the human remains and any items associated with Native American burials with appropriate dignity. California Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from a location other than a dedicated cemetery. Section 30244 of the PRC requires reasonable mitigation for impacts on paleontological and archaeological resources that occur as a result of development on public lands.

3 Physical Setting

The 113-acre Preserve is located along the coastal terrace at the southern end of Mendocino County and northern part of Sonoma County, encompassing a 1.5-mile reach of the Gualala River near the river mouth (see Figure 1). It lies west of the San Andreas Fault by approximately 1.5 miles, separated from it, and the main branches of the Gualala River, by coastal hills. Three lumber mills operated on the property from the mid-1800s to the 1960s. The first two mill sites were located just west of what is now the Highway 1, on the north and south ends of the property, facing and in the estuary. Buildings at both of these mills were destroyed by fires. The third and final mill was located upland in the center of the property, above the current Highway 1 alignment. Extensive residential settlements for mill workers were also present. The entire site has undergone dramatic ecological alterations, including clearcutting, leveling, filling, and intensive development. In many places native vegetation has re-grown, but current forest and riparian conditions are significantly different from what likely existed prior to mill uses.

3.1 Terrain

The site ranges from near sea level in the estuary to approximately 140' elevation in the northeast of the property. The upland, north-central portion of the site has relatively level terrain, which then drops down at moderate to steep slopes to the floodplain terrace encompassed by the last bend in the river. The lower portion of the site, within the bend of the river, is mostly at or below 20' in elevation and floods regularly. Channel bed elevations within the estuary are well below sea level and range from -2' to -15'. The deepest and most persistent pool within the estuary is located at the base of the cliff across from the Mill Bend floodplain. Gravel bar locations and heights within the estuary evolve over time during high winter flows.

The steepest portions of the site occur along the banks of the estuary, near the upstream and downstream edges of the Preserve. At the downstream end, there is only a narrow sliver of land between the highway and the estuary, and the bank drops sharply, posing a constraint for public access in that area. At the upstream end, the forested slopes are also steep, and landslides are present across the old railroad alignment that is used as a pedestrian trail (known as the River Rail Trail).

A number of alterations to the site's natural terrain are evident, where grading occurred historically for mill sites and associated operations, and infrastructure development. Highway 1 cuts through the elevated terrace of the northern portion of the site and crosses a tall earthen fill at the bottom of China Gulch, leaving steep side slopes along the road. Through the southeastern part of the site, the highway is elevated above the adjacent low-lying floodplain before crossing Gualala River on a bridge. One pond is present just west of the highway and a swale is present along the base of the highway embankment. Terraces for road or railroad travel were cut historically into the steep slopes at the upstream and downstream ends of the site, and are still evident today. Along the upstream portion of the property, an oval depression is present above the river level. Each of the mill locations themselves was likely to have been cleared and leveled. Grading is evident at the upland mill site east of the highway, where extensive areas are leveled, compacted, and paved. On the south hillside just below the upland mill core site, the stability of accumulated vegetative debris requires review prior to any trail construction.

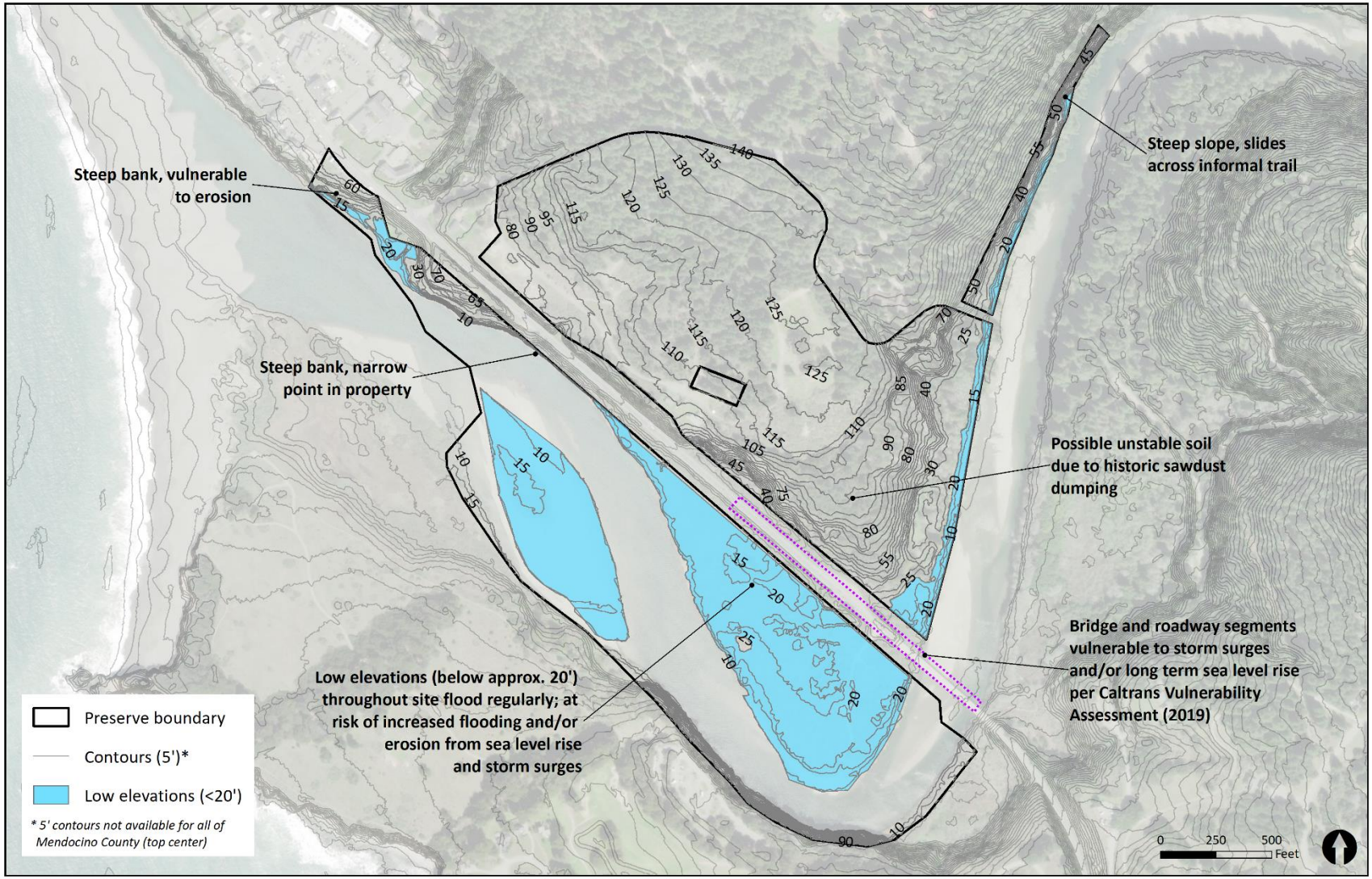


Figure 3.1. Terrain and Areas Vulnerable to Flooding and Erosion

3.2 Hydrology and Streamflows

The Mill Bend Preserve includes a 0.7-mile reach of the Gualala River estuary and associated wetlands; a short segment of China Gulch, a small perennial tributary; and several small freshwater wetland features (see Figure 3.2).

Lower end of estuary, with bar forming barrier to ocean; just downstream of Mill Bend Preserve.

The estuary is considered a bar-built estuary/lagoon system. Seasonal variations in streamflow and ocean dynamics drive river mouth conditions, with the estuary having an occasionally open connection to the ocean in the winter and spring (typically) then closed off by a barrier sand bar in the summer and fall. After significant rainfall and runoff, the estuary's sand bar breaches and remains open throughout high flow periods. Tidal action aids the inlet scour process, and during the open-mouth period the water quality and depths change with daily tidal fluctuations and storm flows. As winter storm flows subside, waves build up the barrier beach using sand migrating along the shoreline. After the sand bar closure in late spring or early summer, the main source of water to the estuary is freshwater. The freshwater inflow converts the lagoon to a freshwater body except in the lower estuary near the river mouth where saline waters migrate through the sand bar. In the deeper pools within Mill Bend saline and brackish water pockets get trapped at depths creating a stratified water column.

Water quality conditions and habitat quality for salmonids in the estuary is dependent upon the freshwater inflows from the upper watershed. In a multi-agency 2003 watershed assessment (NCWAP 2003, pp. 3-5 - 3-6), the authors concluded that "based on existing water rights, land use data, and observations by CDFG staff during their stream field surveys conducted from June – November 2001, current water diversions within the watershed do not appear to significantly affect streamflows, but most actual diversions or resulting streamflow reductions have not been recorded. Current low-flow constraints in the Gualala River will most likely prohibit future additional SWRCB appropriative water allocations. However, higher use of the rights allocated to the Sea Ranch and North Gualala Water Company is expected in the future. Unregulated water rights or illegal extraction of water may, at times, have an adverse impact on fish habitat and should be monitored." Extreme drought cycles will exacerbate any impacts water extractions have on summer streamflows in the upper watershed's tributaries and the mainstem.

China Gulch, a perennial stream, flows briefly through the northwestern corner of the Preserve. The stream originates approximately a mile northeast below Old Stage Road. It runs through forested and rural residential land before reaching Old Stage Road near Highway 1, flowing through a culvert in the Highway 1 embankment, and then through a narrow portion of the Preserve before entering the estuary at the Preserve's downstream end.

The wetlands within the Preserve include a large willow thicket in the last bend of the river, which typically floods at least annually, and narrower bands of emergent marsh along the water's edge. Several small wetland swales occur in the upland redwood forest. See Section 6.1, Habitats, for further discussion.

China Gulch, where it flows into the estuary.

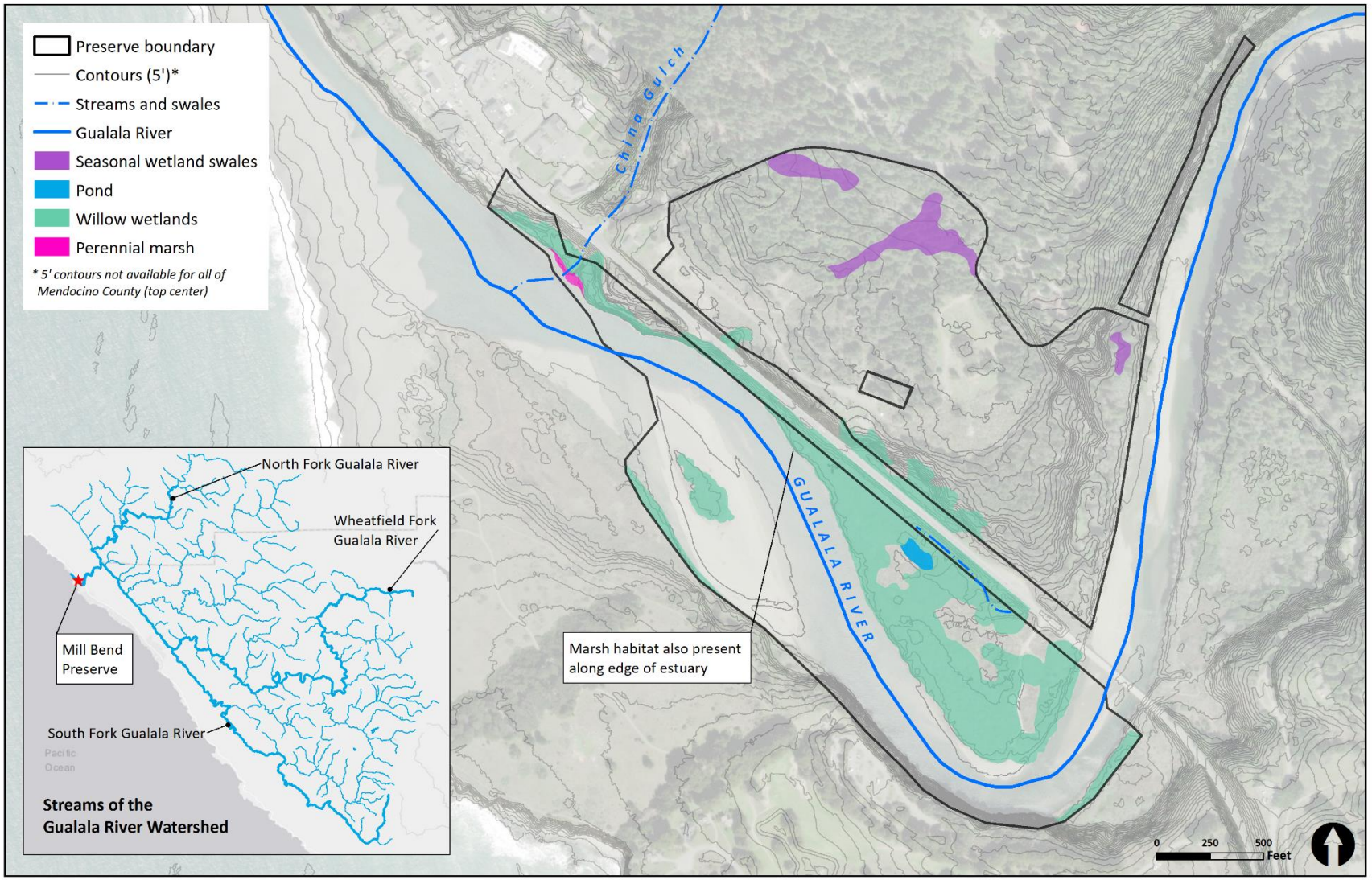


Figure 3.2. Hydrology

Water Quality

Water quality in the Gualala River estuary is influenced by upstream land uses, ranging from residential development to roads, timber operations, and expanding vineyard development, as well as runoff quality from the immediately adjacent roads and downtown Gualala. The watershed's steep slopes, unstable geology, and high precipitation increase its vulnerability to erosion from human land uses. Loss of riparian canopy cover in the upper watershed is also likely to contribute to elevated water temperatures and decreased volume of large wood delivery. Contaminants in the estuary accumulate particularly during periods of low freshwater inflow and closure of the sand bar at the river's mouth. The river is considered impaired by the NCRWQCB for the following contaminants:

- Sedimentation/siltation throughout river
- Elevated temperatures throughout except the Little North Fork Gualala River and its tributaries

A NCRWQCB (2013) progress report indicated that progress had been made toward sediment reduction and habitat improvement targets, but that additional work was needed.

Solvents, petroleum, and metals have been detected in groundwater sampling in the vicinity of the estuary and (NCRWQCB 2005) and efforts to address these contaminants are ongoing.

Recent research has brought one important pollutant from vehicle tires to light. The microplastic 6PPD is added to most vehicle tires to prevent wear from ozone exposure. However, exposure to ozone causes the chemical to convert to 6PPD-quinone, which is highly toxic to salmonids, especially coho (Tian et al. 2020, Dunagan 2021). Stormwater outfalls into the estuary and stormwater runoff from the bridge are likely to contain this toxin. State and federal agencies are searching for solutions. Further study is needed to determine whether this contaminant is present at levels that pose a concern in the estuary. If so, strategically located filtration systems may be helpful in ameliorating the contamination.

Estuary Conditions

While there is no direct evidence documenting pre-logging and development morphology of the Gualala estuary (i.e., channel depths, wetland elevations and extents, gravel bar locations, etc.), it is reasonable to assume that the early land use practices contributed to rapid changes in the estuary. Photos from the late 1800s and early 1900s hint at a wider, deeper middle estuary with the main channel located where the large, stable gravel bar is currently located. However, a review of aerial photographs by ECORP and Kamman (2005) indicated no notable changes in the physical setting and character of the estuary since 1930 other than natural seasonal variations in water level, vegetation extent, and sand bar dynamics. These findings likely indicate that the estuary is in a state of dynamic equilibrium with respect to sediment input and output.

Extensive study of the Gualala River estuary to document hydrodynamic and biotic conditions (ECORP and Kamman 2005) indicated that the bar-built estuary is functioning normally for this type of system in northern California; water quality and habitat conditions varied in response to river flow and whether the bar was open or closed. The study concluded that:

> "The estuary appears to be in good biotic condition based upon hydrology, water quality, fish population and benthic invertebrate community conditions…Steelhead rearing capacity in the coastal estuary is generally good for pre-smolt and smolt steelhead under existing conditions. However, additional deep pool habitat, and increased cool water inflow would increase summer thermal refugia…Field observations suggest that predation on aquatic species by mammals and birds are high throughout the late spring through summer period. The effect of this predation on juvenile steelhead population within the estuary is unknown." (p. 117-120)

However, with respect to physical habitat features important to salmonids, based on PCI's 2021 study, conditions are limiting. Although there are patches of high-quality habitats, the size, extent, and diversity of habitats is likely significantly reduced from historic conditions. There is a dearth of large wood accumulations in the estuary. Juvenile salmonids, especially coho salmon juveniles, tend to prefer large wood shelter elements and have been found to congregate in log jams in local estuaries. The floodplains are likely higher today than their historical elevations, reducing the frequency of inundation and accessibility during smaller storm events and lower lagoon levels. The extensive featureless gravel bars and shallow channels in the upper estuary provide little to no value for salmonids or other native species that depend on these riverine habitats. See 6.2, Fish and Wildlife, for additional detail on salmonids.

3.3 Climate

The Gualala area's current climate is generally mild, buffered by proximity to the ocean. Temperatures rarely fall below freezing or rise above the 80s (°F) and daily fluctuation is relatively narrow compared to inland areas. Average low temperatures range from the upper 30s (°F) in winter to low 50s (°F) in summer, and high temperatures range from the upper 50s (°F) in winter to the upper 60s (°F) in summer. Precipitation averages 50" per year, and frequent fog adds moisture and reduces evapotranspiration rates. The moderating influence of the ocean is likely to help buffer the ongoing effects of climate change, but the region is still beginning to experience the effects of increasing temperature and more variable weather patterns, as well as sea level rise.

Changing Temperature and Precipitation

The following changes in climate are forecast for the Gualala area (Cal Adapt 2022) by mid-century:

- Annual average maximum and minimum temperatures are predicted to increase by an average of 3-4°F.
- Extreme heat days, with temperatures over 88°F, are forecast to increase from an average of 8 days per year (from 1961-1990) to 18 days.
- Annual precipitation is predicted to increase by an average of 0.2 inch by mid-century. However, this is forecast to occur in more variable patterns, with both longer periods of drought and more frequent extreme rainfall events.
- Fog production may be affected by changes to wind-driven coastal upwelling along the coast (Chornesky et al. 2015), but this remains a subject of study. Changes to fog and cloud cover could affect Mill Bend plant communities significantly.

- The frequency and severity of wildfire is influenced by many factors beyond climate change, but researchers anticipate an increased risk of wildfire, with more extreme fire events, for Gualala as throughout most of California.

Climate changes will have a cascade of effects on Mill Bend's plant communities, wildlife, and aquatic resources, and on the people who visit and steward the Preserve. See Section 6.5 for further discussion.

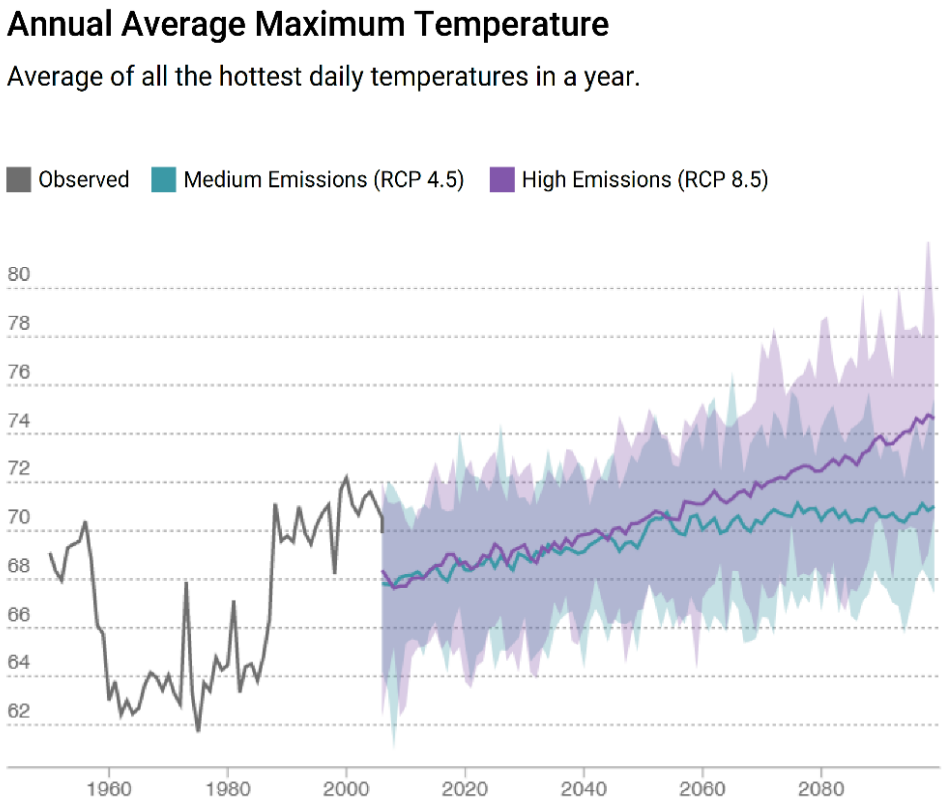


Figure 3.3. Projected Average Annual Maximum Temperature for Gualala Area *(Cal-Adapt 2022)*

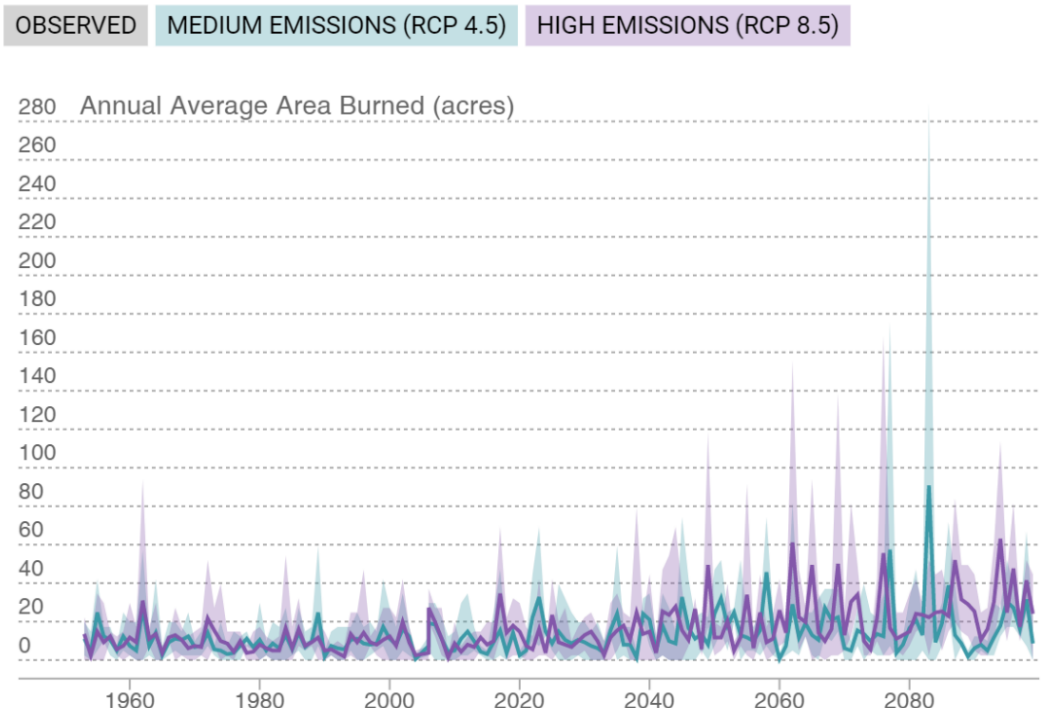


Figure 3.4. Forecast Average Annual Area Burned, Gualala, CA *(Cal-Adapt 2022)*

Sea Level Rise

In the coming century, California will continue to experience sea level rise due to climate change. Sea level has risen by an average of 0.08 inches per year over the last century and, by the end of this century, could rise by an average of 2 inches per year (CCC 2020). In San Francisco, sea levels are predicted to rise by 0.6 – 1.1 feet by 2050 (Griggs et al. 2017) and is likely to rise 3-4 feet by the end of the century (Caltrans 2019).

Most of the low-lying, willow-dominated Mill Bend Preserve lies at approximately 10'-20' in elevation and currently, it typically floods once or more annually. More frequent and deeper inundation is likely with sea level rise. Increased storm surges, in combination with king tide cycles, are also likely to result in more frequent or longer inundation. Caltrans' Climate Change Vulnerability Assessment (2019) identifies the highway bridge and adjacent road segment to the north as vulnerable to storm surges of 1.6' or greater, and to long-term sea level rise of 9' or more.

The National Research Council (2012) reports that the incidence of extreme water heights (>4.6' above mean sea level) in the San Francisco Bay area is forecast to increase from about 9 hours per decade for the recent historical period (1961–1999) to hundreds of hours per decade by 2050 and several thousand hours per decade by 2100.

3.4 Soils

Soil qualities can be important drivers of biological resource conditions. For example, soil types can strongly influence plant community composition, plant development, wetland potential, and erosion potential, which in turn can affect vegetation and aquatic habitat conditions. The Mill Bend Preserve includes areas of relatively intact soils, as well as areas that appear to have been highly disturbed by lumber mill and associated development and operations, and other extractive and infrastructure uses. Soil maps for the region provide general information about soil types present, but generally do not provide information about human alterations to those types.

Mapped Soil Types

According to Natural Resource Conservation Service (NRCS 2022) maps, most areas supporting conifer forest on the site are underlain by Bruhel-Shinglemill complex soils (See Figure 3.3). Bruhel and Shinglemill soils occur on marine terraces. They are very deep and formed from sandstone and marine sediments. Bruhel soil is well-draining but Shinglemill soil is not. The surface layer of Shinglemill soil is typically covered with a mat of litter which can be 2 inches deep. These intermixed soil types typically support bishop pine (*Pinus muricata)* and annual and perennial grasses (NRCS 2006); this is true of the Mill Bend Preserve.

The areas to the northeast of the mill site are mapped as Quinliven-Ferncreek complex soils. These are very deep, moderately well-draining soils derived from marine sediments. Typically, they support redwood, Douglas-fir, and bishop pine (NRCS 2006, 2022). At Mill Bend, this type supports primarily redwood forest.

The slopes southeast of the upland mill center site are mapped as Dystropepts. These are soils derived from sandstone or shale that occur on side slopes of marine terraces. They are shallow or moderately deep to bedrock, well-draining, and typically support a mixture of grasses, shrubs, grand fir, Douglas-fir, and redwood (where protected from salt spray) (NRCS 2006). On the Mill Bend Preserve, these areas primarily support bishop pine-dominated forest.

The lower “Mill Bend” area is mapped as Tropaquept soils (NRCS 2022). Tropaquepts are very deep, very poorly draining soils found on marine terraces near drainageways or in shallow depressions. They have been found to support pygmy cypress and Labrador tea in some areas and perennial grasses, sedges, and wax myrtle at other sites (NRCS 2006). On the Preserve, these areas primarily support willow thickets.

The riparian area immediately along the river is mapped as coastal beach sediments, formed from deposition of gravel and sand via tidal action (NRCS 2006). This soil type is typically unvegetated; on the Mill Bend Preserve the mapped area includes sparsely vegetated gravel bars, narrow wetland fringes, and aquatic areas including some stands of submerged aquatic vegetation, as well as some redwood and alder forest immediately along the river.

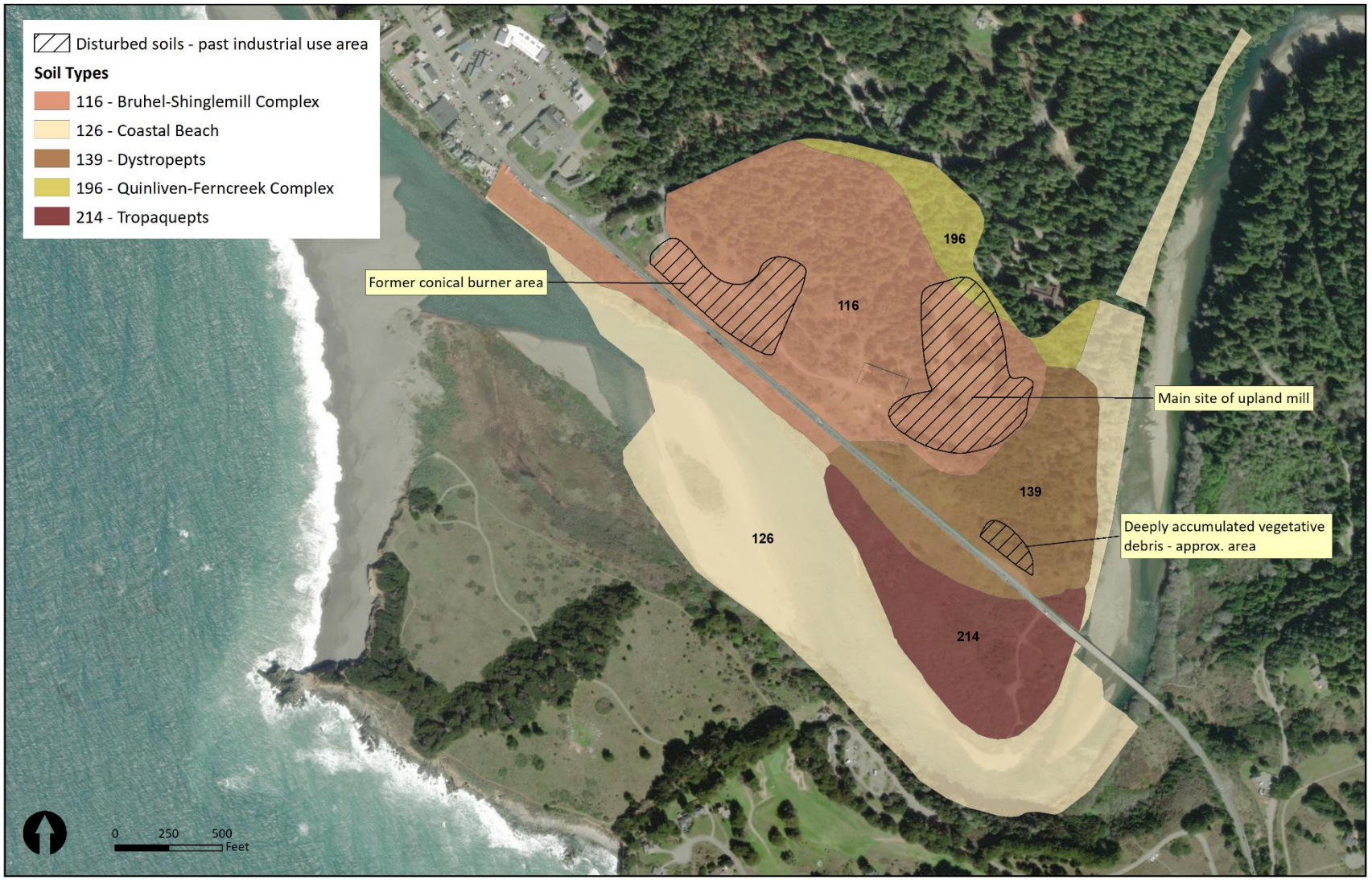


Figure 3.5. Soil Types and Areas of Disturbed Soils from Past Industrial Uses (Sources: NRCS 2022, SHN 2019 a, b)

Potential Soil Contaminants

Portions of the Preserve have potential soil contamination from the past use of the upland site for a lumber mill (see Figure 3.5). Soil and groundwater conditions were analyzed by SHN (2019 a, b). Their study determined that low levels of some contaminants (metals and hydrocarbons) are present, but these are mostly below residential California Health and Human Safety Limits (CHHSLs). Some metals were present above residential CHHSLs, but they may represent background levels, not site-specific contamination. SHN concluded that surface grading for trails does not warrant any special protective measures or further study. If deeper subsurface ground disturbance is planned, SHN recommends pre-characterization of soil and groundwater for worker protection and potential disposal of soil, as well as study of background concentrations. See further discussion in 7.1, Mill Site Restoration.

Table 4. Locations of Potential Soil Contamination and Proposed Uses, Based on SHN (2019 a, b)

Location	Potential Contamination Source	Proposed Use
Upland mill site (coyote brush area)	Mill operations – main site	Restored forest or grassland
West parking area near Old Stage Road entrance	Mill operations – conical burner (used to burn wood waste)	Parking, trail, picnic, screening plantings
East parking area near Gualala Arts Center	Mill operations – main site	Improved parking, plantings
Upslope of Hwy 1 pullout opposite Mill Bend	Mill operations – possible woodchip dump	Ongoing use of pullout, potential trail

3.5 Viewshed

The site is located in a highly visible location and designated scenic corridor. The Preserve forms the viewshed for the heavily-traveled stretch of Highway 1 that passes through it, and is a major component of the view from adjacent Gualala Point Regional Park and the town of Gualala. The estuary and its abundant bird life, sand bars, willow thickets, and forested slopes are the most visible elements; developed areas and the two existing buildings are relatively out of view due to terrain and vegetation. Views from the property are spectacular, encompassing the ever-changing estuary and river mouth, Pacific Ocean, Gualala River, and surrounding area. Protecting or improving these views is an important consideration in Preserve planning.

4 Infrastructure and Existing Uses

While the Mill Bend Preserve has only been recently acquired by RCLC, the property has been used and enjoyed by the public as a place to walk and access the river for decades or more. There are multiple long-standing access points, parking areas, informal and formal trails in use. RCLC has installed additional elements to manage and facilitate use of the site. Existing infrastructure on the site includes roads, parking areas, gates, fencing, two buildings, utility lines, the River Rail Trail below the Gualala Arts Center, and signage (See Figure 4.1). Existing Infrastructure on the Preserve for remnants of the upland mill site and current RCLC infrastructure.

The highway bisects the property, with a Caltrans right-of-way of approximately 75 feet on each side. Currently, vehicle access onto the upland Preserve is from Old State Highway/Old Stage Road just east of Highway 1 or from the Gualala Art Center off of Gualala River Road, and at the lower Mill Bend area via the road leading from the highway just north of the bridge to the gravel bar gate. All of these access roads are gravel, with some segments of dirt. Public access plans include improvement to the estuary access road and upland access roads, and parking improvements. Parking on the Preserve is currently available outside and inside the Old Stage Road (upland west) entrance and along the estuary access road; both of these are informal dirt lots. The upland east parking area is used by RCLC for maintenance staging and special events and by the Gualala Arts Center for special event overflow parking. Informal parking for the Preserve also occurs at the north end of the Preserve, on the west side of Highway 1 at the Caltrans pull-out, which offers easy access to estuary and ocean views. This lot accommodates approximately 26 vehicles (W-Trans 2022, Appendix D) but is used primarily by downtown visitors. Near the south end of the site, visitors use informal parking at the east-side Caltrans highway pullout across from the estuary access road. This location is adjacent to an informal trail leading north along the river. This Caltrans property is also used by some visitors to the Preserve estuary access, who choose to cross Highway 1 without crosswalk or crossing sign protection. The pullout accommodates approximately 7 vehicles (W-Trans 2022, Appendix D).

Locked gates are present at the upland and estuary access locations to regulate vehicular use. The upland west gate currently remains locked except when RCLC staff or designated volunteers are present. Two gates control vehicles at the estuary access. The upper gate is just below the Highway 1 encroachment and is opened and closed daily by Sonoma County Regional Parks staff to allow vehicle access to the current parking areas. The lower gate, below the parking areas, controls vehicle access to the gravel bar and remains closed most of the time except as directed by RCLC staff, the kayak rental concessionaire, and emergency services. Fencing on the site is limited to occasional remnant segments from prior uses. Recently restored wooden picket fencing is present surrounding the historic cemetery site, which is an inholding within the Preserve.

Two small buildings are present; these were originally part of the third lumber mill and have been used as residences after the mill closed in the 1960's. One is dilapidated condition and is used to store maintenance equipment and materials. The other building is currently used as the RCLC office for meetings, event staging, and temporary research or worker housing. Maintenance, renovation, or replacement of these buildings and the associated outbuildings is planned as part of the public access improvement program.

RCLC has installed signage at Preserve entrances, including the estuary access, the Highway 1 pullout across from Center Street, on the bluff south of China Gulch, and at the upland west and east gates. These signs include the name and ownership of the property, its status as protected for conservation, information about appropriate and safe visitor activities, and gate open hours (at the estuary access).

The public use trails on the Mill Bend Preserve include informal trails along the estuary edge on the north end of the site that connect to the Gualala Bluff Trail; informal trails along the edge of the property parallel to Old Stage Road; the upland west and east access roads and two connecting footpaths on remnant mill roads; informal trails leading north along the river from the Highway 1 bridge;

and the formal trail on the old mill railroad alignment that extends up and downstream along the river and is connected to the Gualala Art Center hillside trails (a.k.a. River Rail Trail).

Adventure Rents presently operates a kayak rental concession at the estuary access under annual permit from RCLC. Adventure Rents contributes to RCLC maintenance of the access and furnishes a seasonal toilet for public use.

Some unauthorized camping activity occurs at the estuary access, at the cypress knoll on the bluff south of China Gulch, on the south-facing hillside above the river, and along the riverbank. Vehicles have been abandoned on Preserve property. RCLC engages county Sheriff and California Highway Patrol for assistance, when needed. Removal of visitor and vagrant debris, and garbage dumps is an ongoing maintenance burden at the Preserve.

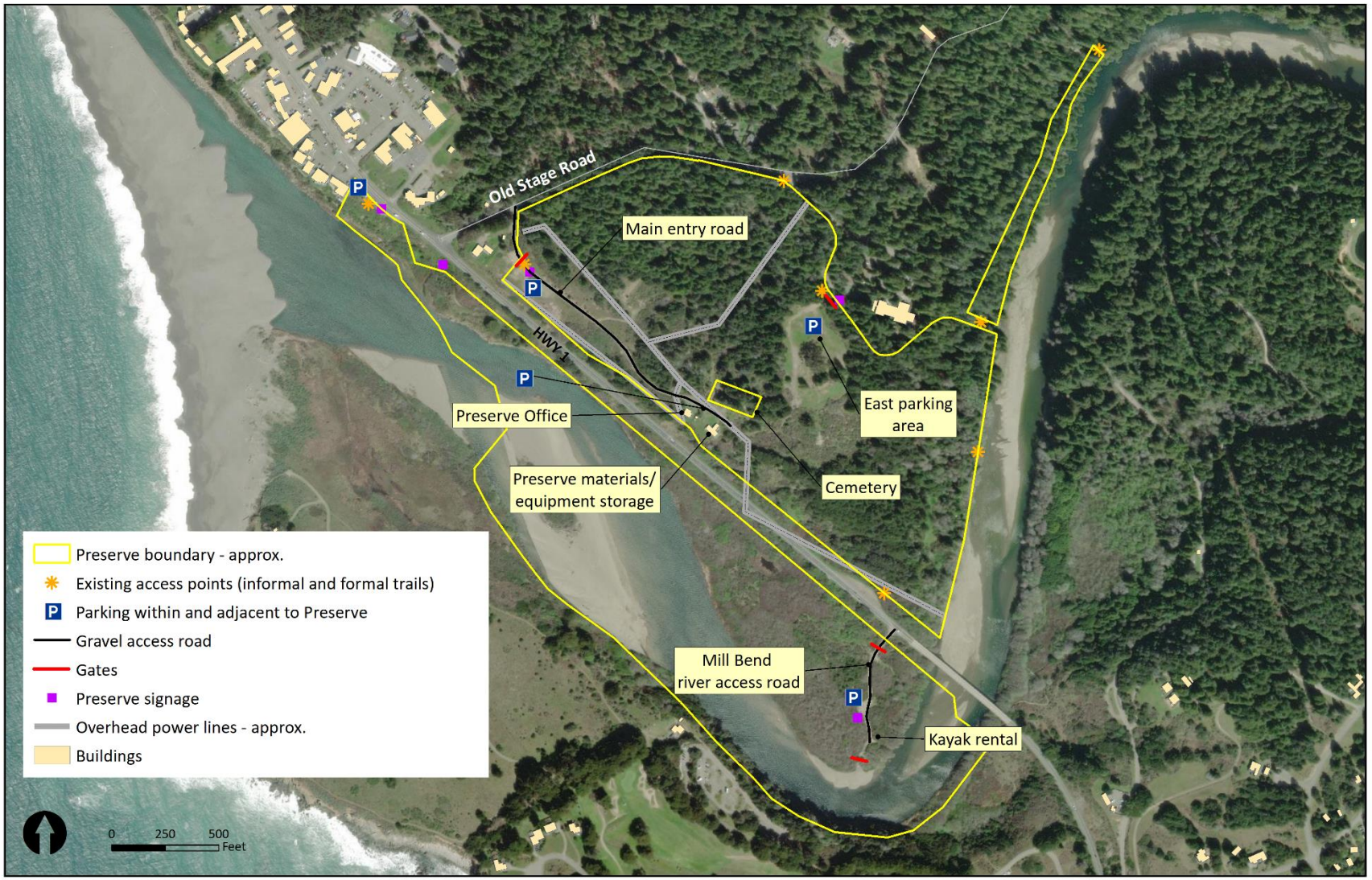


Figure 4.1. Existing Infrastructure on the Preserve

Aerial view from 1950s of the lumber mill and residential area on land now part of the Mill Bend Preserve.

5 Cultural Resources

Archaeologists have evaluated the Mill Bend site numerous times over the years given the region's long history of use and settlement by Native American people. Subconsultant ALTA Archaeological Consulting prepared a cultural resources inventory for the site that presents recent and past findings at the site (Appendix B). Since the mid-1800s, the property has also been the site of several lumber mill operations, with major operations established both west and east of what is now Highway 1. Six historic-era cultural resources were identified, including remnants of historic mill operations and associated development, as well as the Gualala Cemetery. The resource areas are extensive and overlap with areas proposed for public uses and restoration, especially because less-pristine areas were generally preferred for public access development to minimize natural resource impacts. ALTA concluded that if areas with cultural resources cannot be avoided, "then a formal evaluation of the site is merited…to determine its eligibility for listing on the CRHR (California Register of Historic Resources)" (Appendix B, page 25). The historic features appear unlikely to have sufficient integrity to be eligible for the California or national historic

registers, but the formal evaluation would be needed to make a regulatory determination. A brief overview is presented below; see Appendix B for detail.

5.1 Native American History and Tribal Consultation

Native Americans have lived in what is now California since long before written history of the area began. The earliest documented human occupation in California, between 12,000-8,000 years ago, was a time of variable climate, rising sea levels, and other broad scale environmental change[3]. People lived in small, highly mobile groups, moving through broad geographic areas and leaving relatively few archaeological remains. Archaeological sites dating to this period are rare but a small number of sites from this period have been identified in Northern California.

As climate stabilized from 8,000-1,500 years ago, people gradually became more sedentary, new groups entered the area, and regional cultural distinctions developed. Populations increased, and groups moved into new areas to make use of a more diverse range of resources. Beginning around 500 B.C., mobility decreased and subsistence strategies shifted to focus on intensive processing and storage. Numerous small villages and the beginnings of a more stationary society and economy developed.

From 1,500-200 years ago, social complexity further developed. Settlement patterns included large centrally based villages where political leaders resided, associated hamlets, and specialized activity areas. Innovations associated with the period include the bow and arrow, small corner-notched points, and a diversity of beads and ornaments. Many independent bands of Pomo Indians occupied the lands of what is now Mendocino, Sonoma, and Lake counties.

The Central Pomo occupied what is now southern Mendocino County in an irregular band, from the coast to about 40 miles inland, just east of the Russian River. The Preserve is located within the territory of the coastal Central Pomo, called *bó·ya* ("westerners") by themselves and surrounding tribal groups. Because the *bó·ya* occupied the diverse "ecological staircase" of coastal Mendocino County, they had access to ocean resources such as fish, shellfish, seaweed, and kelp, as well as interior resources such as acorns, freshwater fish, and game. Settlements included a mixture of permanent and seasonal camps, with a seasonal camp at the Gualala river mouth, and a permanent village on the headwaters of the Gualala River North Fork (Doherty, undated). ALTA did not find any physical remnants of settlements on the Mill Bend Preserve.

The first regular contact between the native people of the Mendocino coast and non-indigenous people occurred between Russian traders and Kashia Pomo in the early 1800s (Martin 2020). Soon after, California became part of the Mexican Republic. As Mexican and European people settled in the region, Pomo people were enslaved, exposed to fatal disease, cut off from resources they relied on, and forced to move away from their homelands. From 1857-1860, reservations were established at Fort Bragg and Round Valley for the internment of native people. Later, reservations were established inland of Stewarts Point, and in the Manchester/Point Arena area.

[3] This section drawn from ALTA's 2021 report (Appendix B) except where other sources are noted.

Today, Pomo tribes of the region are represented by the Manchester Band of Pomo Indians of the Manchester-Point Arena Rancheria, to the north, and the Kashia Band of Pomo Indians of the Stewarts Point Rancheria, to the south. Many tribal members continue to live in the region and the Mendocino/Sonoma coastal region remains a central part of tribal life.

In the preparation of the cultural resources evaluation for this project, ALTA submitted a sacred lands request to the Native American Heritage Commission (NAHC) and received a response stating that the sacred lands search was negative. A tribal outreach letter was sent to all native American groups identified by the NAHC to notify them about the conservation planning project and to solicit their input. No reply was received from any of the tribes consulted as part of this outreach effort. See Appendix B for detail. Subsequent to the initial tribal outreach, a Kashia representative was present during a stakeholder outreach meeting on public access alternatives.

5.2 Logging History

European homesteaders began arriving in the area after the first Mexican land grant in 1844, and Americans began settling the lands around Gualala as early as 1857. With the growth of San Francisco came a high demand for lumber that spurred establishment of lumber mills at the mouths of the major rivers along the coast. The first mill on the Gualala River was built in 1862 on the northeast shore of the estuary, at the northwest corner of the property near the mouth of China Gulch. Chinese immigrants formed a significant part of the work force for the early mill and established housing in the ravine. A railroad was also built along the right bank of the Gualala River and a ferry connected the north and south banks (ALTA 2021). All three can be seen in the photo at right.

First mill site, railroad along bank, and ferry.

Around 1903 a new mill was built on the flat upstream of the first mill, in the area that is now known as Mill Bend. This mill was significantly larger than the first, with several ancillary structures on the floodplain and crib wall structures within the estuary (see photo below). This mill burned to the ground on September 13, 1906. A smaller mill was rebuilt in the same location in 1919 and was operational until it too burned down in 1947 (ALTA 2021). The mill site was then moved to higher ground north of the flat into its final, upland location.

Remnants of the late 1800s and early 1900s mill-period structures are still present in the estuary, with the crib walls most predominant and visible. After the mills burned, the railroad materials (ties and rails) were removed and any remaining structures were razed. The estuary site was essentially abandoned and allowed to revegetate. Primary land uses in the late 1900s and early 2000s in the estuary and lands immediately adjacent have been recreational, and include fishing, boating, and camping.

Second mill site, with crib wall structures in estuary.

Mill operations continued at the upland site until 1968. The combination of industrial lumber mill development of saw shops, timber laydown and lumber storage areas, warehousing and trucking areas, mill waste disposal, and worker housing encompassed much of the upland portion of what is now the Preserve. The buildings were removed between 1968 and 1972 (ALTA 2021), but some remnants such as leveled pads remain. Land uses after the last lumber mill included timber harvests, disposal of construction debris and junk vehicles, dumping of other debris, timber employee and rental housing of the two remaining buildings.

In conjunction with the mill operations, starting in the late 1800s, rail lines were constructed along the east side of the estuary and right bank of the river to transport lumber and equipment. These remained in use until the 1930s. Remnants of these lines include "discontinuous segments of grade with no ballast, ties, or rails" (ALTA 2021, p. 19).

5.3 Cemetery

There is a one-acre inholding within the upland portion of the Preserve consisting of a historical cemetery dating from the late 1800s, serving the Gualala community. The cemetery is on a separate legal parcel and is not part of this conservation plan. However, the MBPCP supports access to the cemetery site and the cemetery provides historical context and interest to Preserve visitors. Local volunteers work to maintain the cemetery and coordinate with RCLC for access. A minimum of 55 graves are present; these were interred between 1877 and 1995 (Martin 2020, ALTA 2021 citing Van Bueren 2009); Van Bueren further notes that "Although no graves dating to the first two decades of town development are present, the burials of poorer townsfolk may have featured wood markers that have not survived." Ongoing historic restoration and preservation efforts to date have documented a minimum of 79 burials and found evidence indicating the likelihood of additional discoveries within the cemetery fence line. ALTA determined that this resource is mostly likely eligible for the CRHR. ALTA also advised that "Unidentified graves may be present outside the dedicated cemetery and development

within 50 feet of the eastern and northern sides of the cemetery should be avoided. Roadways along the western and southern boundaries [have] been in place for a long time and it [is] unlikely that unmarked graves are present within this zone" (ALTA 2021 p. 19).

Historic cemetery in inholding within Preserve.

6 Biological Resources

Habitats on the Preserve are primarily comprised of redwood, bishop pine, and alder forests; willow thickets; native and non-native coastal scrub habitats; patches of non-native grassland; emergent wetlands; and the aquatic habitat of the estuary, including submerged aquatic vegetation beds. The Preserve's vegetation is strongly shaped by topography, soils, and seasonal flooding due to river and tidal fluctuations. Vegetation types and qualities present also reflect the site's history as a lumber mill and timber harvest location. Based on historic photos, most or all of the woody vegetation on the site was cut at one or more points in the site's history; several fires also took place. The habitats on the site today represent varying stages of recovery from those disturbances.

Information here is a summary of resources present; see Appendix A for additional detail.

6.1 Vegetation

The table below lists vegetation types present, and is followed by descriptions of each type's plant species composition, wildlife resources, and other key qualities, based on PCI's field surveys. Figure 6.1 provides a map of vegetation types. For discussion of invasive species, see Biological Resources Stewardship/Invasive Management section.

Table 5. Vegetation Types on the Preserve

Community Type	Vegetation Type[4]	Vegetation Alliances Present	Sensitivity[5]	CDFW Rank[6]
Forest	Redwood Forest	*Sequoia sempervirens* Alliance	Y	G3S3
	Bishop Pine Forest	*Pinus muricata* Alliance	Y	G3?S3?
	Alder Forest	*Alnus rubra* Alliance	Y	G4S4
Shrub-dominated	Coyote Brush Scrub	*Baccharis pilularis* Alliance	N	G5S5
	Non-native Scrub	*Genista monspessulana, Foeniculum vulgare, Cortaderia jubata* Semi-Natural Alliances	N	NA

[4] Vegetation types and alliances based on classification system used by the Sonoma Veg Map (Sonoma Ag + Open Space 2013; mapping also covered most of Mill Bend Preserve) and Manual of California Vegetation (Sawyer et al. 2009), with refinements for this site by PCI.

[5] Sensitivity based on federal (U.S. Army Corps of Engineers; Section 404), state (CDFW), and local (Mendocino County) regulations. Alliances ranked S1, S2, or S3 are considered "sensitive natural communities" by CDFW (CDFW 2022a). Non-native alliances (a.k.a. Semi-natural stands) are not ranked.

[6] Based on CDFW (2022). "G" indicates conservation priority at the global level, and "S" refers to the state level. 1 = critically imperiled; 2 = imperiled; 3 = vulnerable; 4 = apparently secure; 5 = secure. "?" indicates the need for further study. NR = not ranked. See *Environmentally Sensitive Habitat Areas*, for Coastal Commission designation of sensitive habitat types.

Community Type	Vegetation Type[4]	Vegetation Alliances Present	Sensitivity[5]	CDFW Rank[6]
	Willow Thickets	*Salix lucida ssp. lasiandra* Alliance	y	G4S3
		Salix lasiolepis, *S. hookeriana, S. sitchensis* Alliances	y	G4S4, G4S3, G4S3?
Herbaceous	Emergent Marsh	*Scirpus microcarpus* Alliance	y	G4S2
		Schoenoplectus californicus Alliance	y	GNRS3S4
	Submerged Aquatic Vegetation	*Ruppia (cirrhosa, maritima)* Alliance	y	G4?S2
	Native and Non-native Grasslands	*Avena* spp. – *Bromus* spp. Semi-natural Alliance	N	NA
		Lolium perenne Semi-natural Alliance	N	NA
		Danthonia californica Alliance	Y	GNR S3

Redwood Forest

Redwood (*Sequoia sempervirens*) forest is found in the northeastern part of the Preserve at the upper elevations, and along the Gualala River upstream of the bridge. The redwoods are co-dominant with Douglas-fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis),* and bishop pine (*Pinus muricata)* with a lower tier of hardwood trees such as tan oak (*Lithocarpus densiflorus*) and California bay (*Umbellularia californica*). There is a diverse understory of native shrubs and forbs in most locations. Several locations in the northern portion of the site, and along the river, encompass gentle swales or shallow basins with wetland species including sedges (*Carex* spp.) and special-status fringed cornlily (*Veratrum fimbriatum*) and swamp harebell (*Campanula californica*). In forest openings, non-native invasive species of high concern are abundant, including French broom (*Genista monspessulana*), jubata grass (*Cortaderia jubata*), and English ivy (*Hedera helix*).

Redwood forest on Preserve, with diverse native understory including fringed cornlily.

Redwood forest on the Preserve are second- and third-growth trees; the largest are along the river. Some very large old-growth stumps are still evident on the site; these are up to approximately 8' in diameter. These typically showed evidence of historic fire scarring. Seedlings and saplings are also abundant on the site. Throughout the redwood forests, downed wood is relatively abundant, in part a remnant of the logging history; in some locations there are dense piles of logs, limiting understory development. Some tanoaks were dead or dying back, which may indicate the presence of infection with *Phytophthora ramorum* (i.e., the pathogen that causes Sudden Oak Death). Informal walking trails are abundant through the redwood forest, especially along Old Stage Road and Gualala Road. Several trash and toxic waste deposits were observed near Gualala Road; RCLC is working to remove these.

Overall, habitat quality in the recovering redwood forest on the site is relatively high in the less-disturbed areas that support a diverse understory of native vegetation, but moderate in openings where invasive plants are abundant. Key management needs in this habitat include:

- Controlling invasive species in forest openings and near rare plant populations
- Protecting wetland swales from ground disturbance
- Protection of wildlife values by limiting fragmentation and human presence
- Protecting rare plant species populations from disturbance such as informal trail uses, and potentially facilitating their expansion; and
- Managing dumping and informal trail creation.

Bishop Pine Forest

Bishop pine forest on the Preserve occurs in a mid-elevation band between the low-lying willow and riparian areas, and the redwood forest dominant at upper elevations. Bishop pine can be dominant or co-dominant in the tree canopy with grand fir, Douglas-fir, and redwood.

The shrub and herbaceous layer in the bishop pine forest on the site ranges from sparse to continuous, depending on the tree canopy's density and is a mixture of native and non-native shrubs and herbs including California blackberry (*Rubus ursinus*), salal (*Gaultheria shallon*), coyote brush (*Baccharis pilularis*), coffeeberry (*Frangula californica*), and native ferns. Highly invasive French broom, jubata grass, and Himalayan blackberry (*Rubus armeniacus*) are also present.

Bishop pine forest on Preserve.

Bishop pine forests have several notable ecological traits and emerging forest health considerations relevant to the Mill Bend site and Conservation Plan process. Bishop pine is a serotinous species, with pinecones typically opened by fire. As a result, bishop pine forest often occurs as relatively even-aged forest. It is also a relatively short-lived tree, typically reaching the end of its life cycle between 80-100 years. Many stands along the northern Sonoma County and Mendocino County coast are in sharp decline, with large swaths of standing dead trees visible in many locations along Highway 1, though not at Mill Bend itself. According to Giusti (2014), in the years following World War II, there were several fires along the coast of Sonoma and Mendocino, resulting in many even-aged stands of these trees which are now nearing the end of their typical lifespan. A wide array of insect and fungal pathogens is present on bishop pines in the region as well. Disease and insect issues are further exacerbated by the lack of recent fire (limiting regeneration) and potentially by presence of Monterey pine (*P. radiata*), an introduced species commonly infected with the same pathogens and insects.

At the Mill Bend site, bishop pine forest does not show the signs of dramatic dieback visible nearby at sites such as Salt Point State Park to the south. Foliage generally appears healthy. The forest at Mill Bend is likely to be approximately 60 years old or younger, based on photos showing the site clear cut in the 1950s, suggesting it may be somewhat younger than nearby forests undergoing rapid decline.

Overall habitat quality of the Mill Bend bishop pine forest is moderate due to its highly disturbed history, resulting in an understory dominated by non-native species in many places. Key management considerations in this habitat include:

- Pest and disease problems, which are extensive in the region but not yet evident on the site, as well as signs of natural stand decline due to age.
- Natural regeneration or lack thereof, for this fire-dependent species.
- Restoration of bishop pine forest to highly disturbed upland mill areas or other areas where natural regeneration is limited over time.
- Managing fire hazards to structures and public safety relating to the forest.
- Protection of wildlife resources, including bird nesting, during any vegetation management.
- Ongoing habitat disruption and slash accumulation from PG&E maintenance activities in overhead electrical power line rights-of-way through the bishop pine forest.

Alder Forest

Red alder (*Alnus rubra*) groves occur along the floodplain of the Gualala River, primarily north of the Highway 1 bridge. Other tree species found growing within the riparian forest include California bay, Oregon ash (*Fraxinus latifolia*), coastal willow (*Salix hookeriana*), Sitka willow (*S. sitchensis),* and arroyo willow (*S. lasiolepis*). The understory is well-developed and dominated by a mixture of native and non-native shrubs and herbs such as salmonberry (*Rubus spectabilis*), California blackberry, and stinging nettle (*Urtica dioica* subsp. *gracilis)*, and invasive Himalayan blackberry and, in some areas, Cape ivy (*Delairea odorata*). Several swales and depressions are present within the alder forest, parallel to the river; these support dense stands of slough sedge and scattered corn lily. A narrow sliver of alder forest

is present between the willow thicket and the river just south of the bridge; this understory is highly invaded, perhaps reflecting that area's particular history of site uses and alterations.

Narrow fringe of alder forest along river, south of Highway 1 bridge.

Overall habitat quality is moderate to high in the alder forests on the site. The narrow band of forest along the Mill Bend area is more highly invaded with non-native species, while the more extensive upstream portion has an understory dominated by natives. Key management considerations for alder forest are:

- Invasive species in understory, and limited native understory diversity in the Mill Bend area.
- Protection of rich wildlife resources including movement opportunities to and from river, structural habitat diversity, bird foraging and nesting resources.
- Long-term changes related to climate change and sea level rise.

Coyote brush scrub, north end of Preserve, between estuary and Highway 1.

Coyote Brush Scrub

Coyote brush scrub occurs on the site as a variable mixture of species, often in locations of high historic disturbance. It is present along roadsides, river access trails (where old mill roads once occurred), coastal bluffs, and within forest clearings. In addition to coyote brush, co-dominant shrubs present are coffeeberry, thimbleberry, California and Himalayan blackberry, wax myrtle, and twinberry. Where present, the herbaceous layer was a diverse mix of native species including cow parsnip (*Heracleum maximum),* western sword fern, and gray rush (*Juncus patens*) with non-natives (poison hemlock, teasel [*Dipsacus fullonum]*, velvet grass [*Holcus lanatus]*, and annual grasses). Two notable species occur at the edge of disturbed coyote brush habitat at the old

mill site: a few individuals of a species of limited distribution, Point Reyes ceanothus (*Ceanothus gloriosus* var. *gloriosus*), and a small stand of what appears to be the rare taxon coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*); see *Special-status Plants* for further discussion.

Invasive jubata grass and ice plant (*Carpobrotus* spp.) are common in the scrub community along the coastal bluffs, while French broom and fennel (*Foeniculum vulgare*) are abundant in the coyote brush stand at the old mill site. Along the coastal bluff south of China Gulch, in narrow bands where terrain is very steep and rocky, coastal scrub gives way to limited areas of coastal bluff scrub, with scattered shrubs of coyote brush and lupine (*Lupinus* spp.), some jubata grass, patches of native forbs including dudleya (*Dudleya cymosa*), Wight's paintbrush (*Castilleja wightii*), and California poppy (*Eschscholzia californica*), and non-native annual grasses.

This pioneering plant community supports a high proportion of invasive species in most locations due to its early successional role, so habitat quality is low to moderate. However, it still supports significant plant diversity, including species of limited distribution or rare ranking at habitat edges. Key management considerations in these scrub habitat areas are:

- Managing invasive species.
- Facilitating native plant species diversity, including rare plant species.
- Protecting wildlife, including nesting birds, during invasive removal.

Non-native Scrub

A suite of highly invasive shrubs and jubata grass occurs in several areas of intensive past disturbance in the central portion of the site. This vegetation type is most extensive around the old mill site where remnants of concrete and asphalt are present, indicators of the high levels of past ground disturbance that favor these species' establishment. French broom, fennel, and jubata grass are abundant in these areas, forming dense stands in some areas and scattered stands within weedy grassland in others. Scotch broom (*Cytisus scoparius*) is also present at lower abundance. At the edges of these stands, native grasses and forbs are sometimes present, including patches of Douglas iris (*Iris douglasiana*) at the edges of the mill site.

Non-native scrub, including French broom and jubata grass, at the upland mill site.

Key management considerations in non-native scrub are:

- Removal of invasive species and restoration to an array of appropriate native habitat types. See Mill Site Restoration section.
- Preventing the spread of invasive species from these disturbed sites into more intact habitat.
- Protecting wildlife, including nesting birds, during invasive removal.

Willow Thickets and Gravel Bars

Willow thickets inhabit much of the site's floodplains, including a dense, extensive stand in the Mill Bend area and more limited stands along the edges of the alder and conifer forests and gravel bars of the Gualala River. Most of these stands are shrubby in nature, dominated by mixtures of arroyo willow, Sitka willow, and coastal willow. The taller, more tree-like shining willow *(Salix lasiandra var. lasiandra)* is present occasionally and forms a stand along a linear swale parallel to the highway, within the Mill Bend area. In the densest willow stands, no understory is present. At stand edges, non-native species such as annual grasses, teasel, Himalayan blackberry, and periwinkle are common. Some of the more open willow stands along the river's edge support native wetland species, including creeping spikerush (*Eleocharis macrostachya*), small-fruited bulrush (*Scirpus microcarpus*), dotted smartweed (*Persicaria punctata*), and water parsley (*Oenanthe sarmentosa*) within their understory. Near China Gulch, a relatively open stand of Sitka willow mixed with Oregon ash is densely infested with English ivy. Overall habitat quality is relatively high within the dense thickets of native willows, and moderate in the more open, invaded stands. Key management considerations are:

Willow thicket and gravel bar (disturbed by unauthorized vehicle use), Mill Bend area.

- Invasive species management.
- Protection of wildlife species, including nesting birds and woodrats, during invasive species removal or other ground or vegetation disturbance.

Sparsely vegetated gravel bars occur adjacent to the willow thickets and elsewhere along the river. These support a mixture of native and non-native, disturbance-tolerant species such as tall flatsedge (*Cyperus eragrostis*) and sneezeweed (*Helenium puberulum*), and non-native mustard (*Brassica spp.*), prostrate knotweed (*Polygonum aviculare*), dock (*Rumex* spp.), hyssop loosestrife (*Lythrum*

hyssopifolia), and Mexican tea (*Dysphania ambrosioides*). Until recently, unauthorized visitors frequently drove vehicles on the Mill Bend gravel bars, damaging vegetation. RCLC has installed a gate that has mostly ended this practice. Habitat quality is moderate in this relatively weedy community. Key management considerations for willow thickets are:

- Ongoing management of vehicle uses.
- Management of invasive species at stand edges.

Emergent Marsh

Emergent marsh occurs in small patches along the estuary edge, becoming best developed on the small flat at the mouth of China Gulch. Species present reflect a mixture of freshwater to brackish conditions. California bulrush (*Schoenoplectus californicus*) grows at the water's edge; just above it in elevation are small-fruited bulrush, slough sedge, creeping spikerush, silver weed cinquefoil (*Potentilla anserina*), and rush (*Juncus* spp.). These species create a dense swath of native herbaceous vegetation. However, non-native invasive yellow flag iris (*Iris pseudacorus*) also occupies a patch of this area, and non-native pennyroyal (*Mentha pulegium*) and grass species are present at marsh edges. At the edges of a small pond in the Mill Bend area, cattail (*Typha* sp.) is reported to be present (Warner 2019). Access to survey the pond area was limited by the dense growth of willows surrounding it.

Emergent marsh near the mouth of China Gulch.

Overall, habitat quality in the marsh locations is moderate; their extent is limited on the site, and they support robust native vegetation but also patches and edges of invasive species. Key management considerations are:

- Controlling informal public access through these areas
- Monitoring for shifts related to sea level rise and shifting water conditions.
- Possible opportunities to expand this habitat type in conjunction with salmonid habitat restoration.

Submerged Aquatic Vegetation Beds

Wigeongrass in the estuary.

Submerged aquatic vegetation (SAV) occurs along the estuary within the Preserve. Limited areas of wigeongrass (*Ruppia cirrhosa*) were observed by PCI at the water's edge in the vicinity of China Gulch. Extensive stands of wigeongrass, as well as patches of sago pondweed (*Stuckenia pectinata*), have been reported in the Gualala River estuary by others (Baye 2017, 2021). Wigeongrass can grow as an annual or perennial, with a rhizome shallowly anchored in wet substrate. Both species are adapted to conditions in the variable fresh to brackish conditions of this estuary, and to the sandy and gravelly substrates present. These species, with their threadlike submerged stems and foliage, can be hard to detect depending on water conditions, growing underwater initially and then expanding into extensive floating mats in late summer. They form highly valuable habitat elements for native fish and waterfowl; see *Fish and Wildlife* discussion. Key management considerations in this sensitive habitat include:

- Possible shifts in location and species composition relating to climate change and sea level rise
- Preventing any disturbance to river substrate that might threaten SAV persistence (e.g., from unauthorized recreational activity, estuary enhancement efforts).

Grassland

Grassland occurs in disturbed areas historically used for mill activities on the site, and in the east parking area shared with the Gualala Arts Center. Most of the grassland present is dominated by non-native perennial species; sparse remnants of native perennial grasses are present in some locations.

Non-native grassland in a depression along the river, upstream of Highway 1.

The highly altered old mill sites supports non-native, disturbance-tolerant species including Italian ryegrass (*Lolium perenne*), Kentucky bluegrass (*Poa pratensis*), oats (*Avena spp.*), hairy oat grass (*Rytidosperma penicillatum*) and ruderal forbs. Invasive capeweed (*Arctotheca prostrata*) forms extensive mats around the east parking area and mill site edges. Native species occur in limited patches or at low abundance. California oatgrass (*Danthonia californica*) is present at low cover in many locations, especially at the edge of coastal scrub patches. Small patches of purple needlegrass (*Stipa pulchra*) are present at the old mill site, as is a population of Pacific false bindweed (*Calystegia purpurata*; see *Special-status Plant* section for discussion). A stand of non-native perennial grasses is present in a depression along the river, which appears to have been cleared and used for mill purposes historically. Italian ryegrass and velvet grass dominate in this area; horsetail, rushes, and creeping spikerush are present at low cover at the edges of the stand, indicating seasonally moist conditions.

Key management considerations in the grassland areas of the site are:

- Restoration of portions of the old mill site to native grassland and other native vegetation types; see Mill Site Restoration.
- Preventing the spread of invasives including capeweed and hairy oat grass into more intact habitat.
- Protecting special-status Pacific false bindweed stands.
- Periodic, well-timed mowing of the east parking area will reduce weed competition with native vegetation and enable seed collection for native plant propagation.

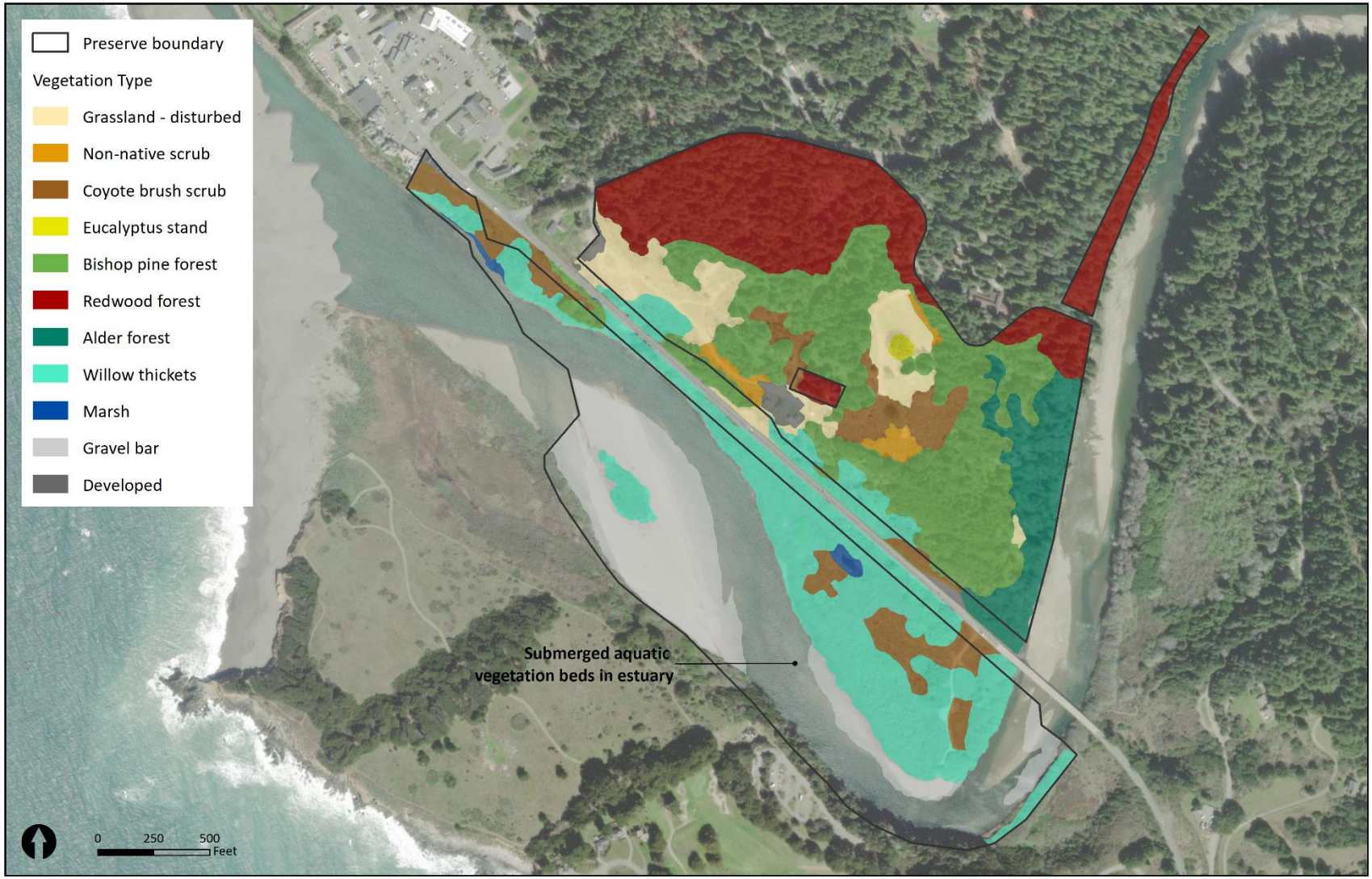


Figure 6.1. Vegetation Types *(Sources: Sonoma Veg Map 2013, PCI surveys)*

6.2 Fish and Wildlife

The Gualala River watershed has long been recognized as an important system for steelhead and coho salmon and other native freshwater and estuarine species and the estuary and coastal lagoon conditions of the lower watershed provide critical habitat for them. The estuary provides an important migration route for adult and juvenile salmonids and critical rearing habitat in the form of shelter, food, and a mix of sea and freshwater that allows fish to transition from freshwater to the ocean and vice versa. Submerged aquatic vegetation growing in the estuary is particularly valuable for fish; this vegetation provides cover for fish and habitat for microorganisms that fish feed on.

The most recent biological surveys of the Gualala River estuary and lower river were completed in 2002 and 2003 to document the distribution and abundance of salmonids (ECORP 2005). In 2002, the primary species captured included steelhead, threespine stickleback, and Pacific staghorn sculpin. A small number of coastrange sculpin, Gualala roach, surf perch, Pacific herring, and starry flounder were also captured. In 2003, four additional species were captured including one coho salmon, one Pacific lamprey and prickly and riffle sculpin, but no surf smelt. During PCI's field surveys of the project site, small young-of-year steelhead were observed upstream of the Highway 1 bridge in shallow pools along the river's edge. An adult steelhead was found dead in the river in May 2021. See 6.5, Special-status Wildlife, for further discussion of salmonids.

Dead steelhead found in the estuary, May 2021.

The estuary also supports a diversity of birds, mammals, and other wildlife. The river and adjacent wetland and riparian habitats provide seasonal habitat for coastal-dependent migratory birds, wintering habitat for shorebirds and waterfowl, and valuable habitat for year-round waterfowl and riparian species. PCI observed a variety of birds within the estuary including belted kingfisher, California brown pelican, Canada goose, common merganser, common raven, greater yellowlegs, double-crested cormorant, great blue heron, green heron, killdeer, osprey, red-tailed hawk, sora, Swainson's thrush, western gull, and Wilson's warbler. Others have observed bald eagle, osprey, and peregrine falcon all foraging in the estuary and lower river. Adjacent riparian areas dominated by willow supported black phoebe, orange-crowned warbler, song sparrow, spotted towhee, Steller's jay,

and Wilson's warbler. Well-developed riparian thickets provide suitable nesting habitat and cover for additional bird species as well.

Within the estuary and adjacent riparian habitats, mammal species are also common. Otters are frequently present, with groups of otters seen foraging for fish and crustaceans near the China Gulch area on multiple occasions. Riparian thickets outside of the path of high flows provide habitat for dusky-footed woodrat; several nests were observed along the lower estuary under a canopy of dense willow. Raccoon and black-tailed deer tracks were also observed along the edge of the river.

Above: Common mergansers. Below: River otter.

Potential and documented habitat for special-status and common amphibians and reptiles is also present in the estuary and adjacent riparian and upland habitats; see *Special-status Animals* below for additional species information. There is a small pond on the Preserve where California red-legged frog egg masses were observed in 2009. This pond likely represents a key breeding site for frogs occupying the lower estuary and protection of the potential breeding pond is of concern by California Department of Fish and Wildlife. In shallow river sections upstream of Highway 1, suitable habitat for foothill yellow-legged frogs is present. This stream-dwelling species has been reported across the river near the Sonoma County Regional Parks campground. Special-status California giant

salamander and red-bellied newt may also breed in the river and use uplands habitats during the non-breeding season; these species are reported nearby and California giant salamander have been observed on site by an RCLC intern. The river also provides habitat for western pond turtles. This species may bask along the riverbanks and nest in adjacent riparian and upland habitats; it is feasible that it may also use the small perennial pond. Pond turtles have been reported across the river near the Regional Parks campground. Additional common herpetofauna also occur within the Mill Bend project site; a garter snake and Sierran treefrog tadpoles have been documented in China Gulch.

Beyond the river and adjacent riparian and wetland habitats, the Mill Bend project site supports a mosaic of upland plant communities. Small wetlands are present in the uplands in depressions and swales. The site has a long history of disturbance and the upland plant communities are in recovery, but these habitats provide nesting and foraging opportunities, cover, and movement corridors for native wildlife. Upland birds observed by PCI include Anna's hummingbird, brown creeper, California towhee, chestnut-backed chickadee, common bushtit, common raven, dark-eyed junco, house finch, Pacific wren, pileated woodpecker, song sparrow, spotted towhee, Steller's jay, turkey vulture, and white-crowned sparrow. The project site supports a small stand of eucalyptus trees in an area surrounded by disturbance. These non-native trees provide some value for wildlife, especially birds, and the trunks are lined with sap wells of native sapsucker woodpeckers. There is some potential for these trees to serve as an overwintering site for monarch butterflies; see 6.5, Special-status Fish and Wildlife.

Dense forest habitats in Mendocino County are known to support special-status northern spotted owl; the Mill Bend project site is located adjacent to known territories, but currently mapped territories do not extend into the site (CDFW 2022a). However, given the close proximity to established territories and the large territory size of this species, spotted owls may occasionally forage and roost within the native forested habitat on the site. Dusky-footed woodrats are the primary prey species for the northern spotted owl; see below.

The forested and adjacent upland habitats provide escape, cover, migration corridors, and nesting sites for a number of mammals. Mammals observed by PCI in the uplands included western gray squirrel, dusky-footed woodrat, and black-tailed deer. Several large woodrat nests were observed under the forest canopy. Game trails are present throughout the upland forests, indicating high wildlife traffic. Scat of black-tailed deer was observed along the game trails. RCLC reports mountain lion are common in the forest. The diversity of the forested habitats and their proximity to aquatic habitats also provides excellent foraging and roosting habitat for bats, including several special-status species. No bats were observed by PCI, but nocturnal surveys were not completed.

On the forest floor, woody debris piles and layers of duff provide potential habitat for amphibians. No amphibian species were observed by PCI, but may include Ensatina, California slender salamander, arboreal salamander, and Sierran treefrog. Treefrogs may breed in the small wetlands and drainages. As noted above, special-status California giant salamander and red-bellied newt may use the forest understory during the non-breeding season. Coast Range fence lizards were seen in open sunny locations. Alligator lizards and garter snakes are also amongst the reptile fauna found on the Preserve. Invertebrates are common – banana slugs and common buckeye, painted lady, and western tiger swallowtail butterflies were observed by PCI within the project site. Old snags and downed wood provide additional habitats components for native wildlife.

Painted lady butterfly.

6.3 Sensitive Communities

Most of the site is considered sensitive habitat because it supports vegetation types considered rare by California Department of Fish and Wildlife; supports wetland, riparian, freshwater aquatic or estuarine habitat considered sensitive by multiple agencies; and/or it supports special-status plant or wildlife species. The sensitive communities are all considered environmentally sensitive habitat areas (ESHAs) in the Coastal Zone and are subject to additional regulatory requirements for any public access or preserve activities that occur within them. The only portions of the site that are not considered sensitive in these ways are the highly disturbed areas around the upland mill operations (i.e., upland entrance area; area around existing buildings; east parking area; and upland mill site itself). See Figure 6.2. Key sensitive resources include the following.

- **River and estuary habitat.** The Gualala River estuary supports anadromous steelhead and potentially coho salmon. Any Preserve features that affect drainages, wetlands, riparian habitat, or water resources on the site will need careful planning to avoid impacts to these special-status species. Public access features have been designed to avoid impacts, but measures to protect habitat during construction will be needed.

- **Wetland habitat.** In addition to estuarine wetlands, the site supports seasonal freshwater wetland swales in the redwood forest (see rare plant habitat below). Public access has been sited to avoid these areas, but limited crossings are planned.
- **Submerged aquatic vegetation.** Beds of aquatic vegetation occur in the estuary; these are considered a sensitive vegetation type and provide important food and shelter for fish, birds, and other estuarine fauna. Submerged aquatic vegetation beds should be protected or enhanced in estuary habitat restoration work.

Wetland habitat on low terrace near China Gulch.

- **Riparian areas – willow thickets and alder forests.**
    - Limited segments of trail are proposed through willow and alder riparian habitat which is seasonally flooded. These trail segments have been sited to be very short in extent and only used where no other option exists for a key pedestrian connection (e.g., seasonal trail crossing under Highway 1 near the bridge). Footprints for these segments will be minimized, and boardwalk will be used to reduce impacts to hydrology, soils, and wildlife use. The seasonal undercrossing will use the existing informal alignment to the extent possible, and will use only native surface for trail tread.
    - A pedestrian bridge is proposed across China Gulch near its confluence with the Gualala River. Any alteration of flow, armoring of stream or riverbanks, or removal/shading of riparian vegetation would pose a concern for habitat health and regulatory compliance, so designs will be developed to avoid or minimize such impacts.
    - Existing unauthorized trails to the estuary through wetland areas will be decommissioned. Having a clear, well-defined trail system will help deter future formation of social trails. Educational information will also help alert visitors to the importance of staying on trails.

- **Sensitive forest types.** Redwood and bishop pine forest occur throughout the uplands of the site. Although these types are in recovery from clearcutting and other intensive historic disturbance, they are still considered sensitive and support significant biodiversity and other ecological values. Public access amenities planned in these areas are designed to have a low footprint, and opportunities for forest restoration are an integral part of the Conservation Plan.

See 6.4, Special-status Plants, below for discussion of additional areas of sensitivity based on special-status plant occurrences. See 2.5 for discussion of Environmentally Sensitive Habitat Areas.

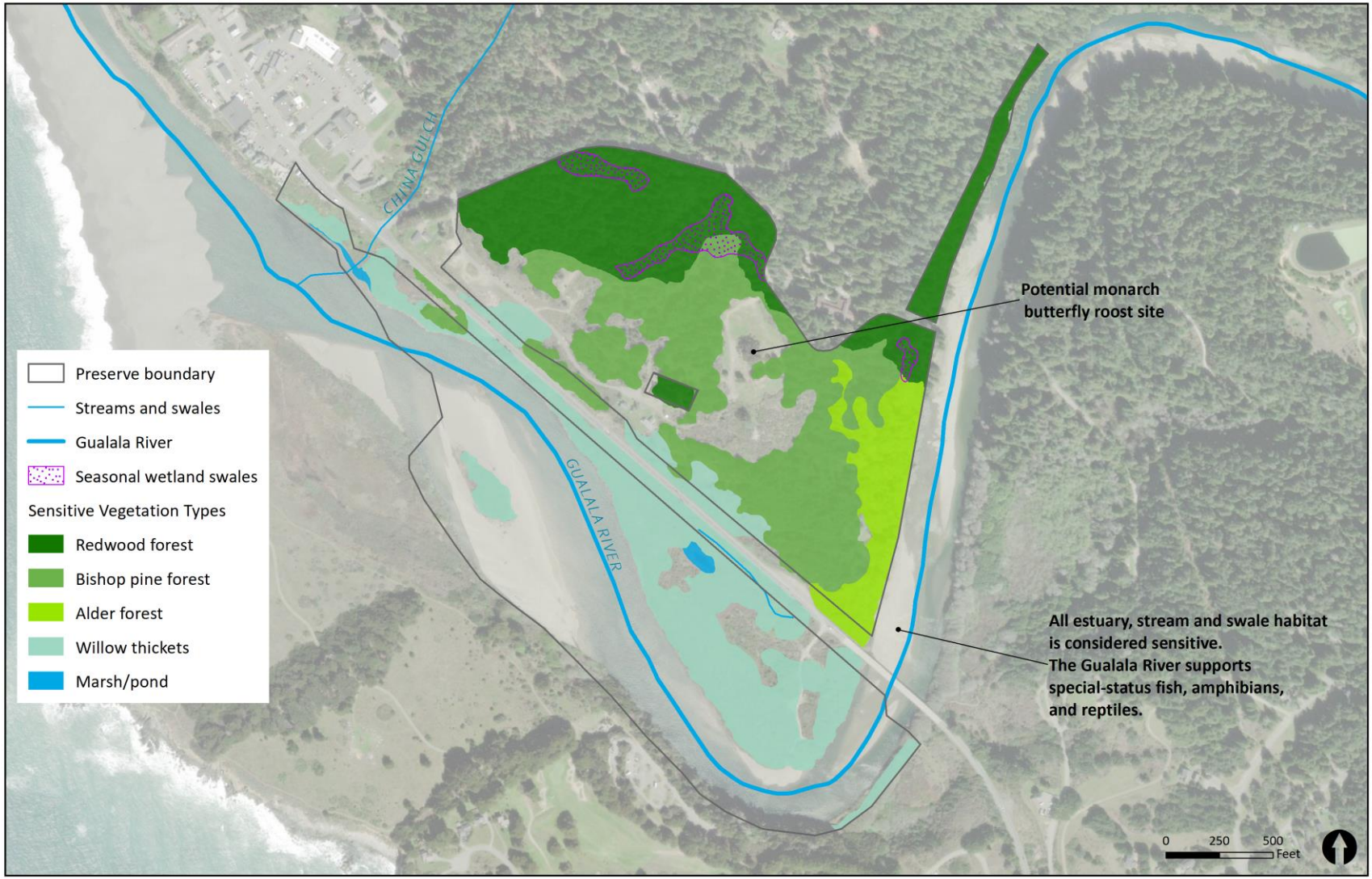


Figure 6.2. Sensitive Habitat *(Sources: PCI 2021 surveys, Sonoma Veg Map 2017, WRA 2009).*

6.4 Special-status Plants

Two special-status plant taxa, and two species of limited distribution, were observed on the site by PCI; some of these stands are in proximity to planned trails or other public uses. See the table below, and following descriptions. As detailed planning proceeds, rare plant mapping should be reviewed and a resource specialist should be involved in planning avoidance and protection measures. See PCI's Biological Resources report for full information on special-status plants.

Table 6. Special-status Plant Taxa Observed by PCI on Mill Bend Preserve

Common Name	Latin Name	Habitat Type on Preserve	Preserve Zone[7]
coastal bluff morning glory	*Calystegia purpurata* ssp. *saxicola*	coyote brush scrub, grassland	Mill Site Zone, Town Zone
fringed corn lily	*Veratrum fimbriatum*	redwood forest	North Forest Zone, Mill Site Zone
Point Reyes ceanothus	*Ceanothus gloriosus* var. *gloriosus*	coyote brush scrub	Mill Site Zone
swamp harebell	*Campanula californica*	redwood forest	North Forest Zone

Swamp Harebell

(*Campanula californica*), California Rare Plant Rank (CRPR) 1B.2 [8]

Swamp harebell is a perennial rhizomatous herb in the bellflower family (*Campanulaceae*) that usually blooms between June and October. It has a pale blue, bell-shaped corolla and creeping stems. It is endemic to California, ranging from Marin to Mendocino County, and occurs in seasonally moist settings within closed-cone coniferous forest, coastal prairie, and North Coast coniferous forest. It is sometimes associated with disturbed areas such as slides,

Swamp harebell.

[7] See Exhibit 1, Public Access Concept Plan, for zone locations.

[8] California Rare Plant Ranks (CRPR) are determined by the California Native Plant Society and CA Department of Fish and Wildlife. Rank 1B.2 = rare, threatened, or endangered in California and elsewhere; moderately threatened in CA. 4.3 = plants of limited distribution, not very threatened in CA.

power line corridors, ditches, and timber harvest areas.

Three small patches of swamp harebell were observed growing at the Mill Bend site, often associated with fringed cornlily. Other native species associated with these stands were redwood sorrel, wild ginger, California blackberry, western sword fern, lady fern, rushes (*Juncus* sp.), slough sedge, hedge nettle, and bedstraw (*Galium* sp.). There were also several invasive non-native species adjacent to the stands, including English ivy, forget-me-not (*Myosotis latifolia*), French broom, and bentgrass (*Agrostis stolonifera*).

Coastal Bluff Morning Glory

(*Calystegia purpurata ssp. saxicola*), CRPR 1B.2

Coastal bluff morning glory is a perennial herb that usually blooms from April to September. It is a member of the morning-glory family (*Convolvulaceae*), with a trailing, low-growing habit and showy white or cream to purple flowers. Its leaves are ovate-triangular to kidney-shaped, with the sinus generally closed and the tip rounded to notched. It occurs in coastal scrub, dunes, and North Coast coniferous forest from Marin to Mendocino County. This subspecies has a close relative that is not rare, *Calystegia purpurata* ssp. *purpurata*, which has an overlapping but wider distribution, from Mendocino County to Ventura County. *Calystegia purpurata* subspecies are known to intergrade.

Coastal bluff morning glory occurs in several locations on the upland mill site and other disturbed coastal scrub locations. Taxonomy for this stand is unclear; it appears to intergrade with the common subspecies. The population appears to thrive in relatively open areas with disturbed, compacted soil. Trail alignments, parking area native landscaping, and a native grass meadow area are proposed overlapping or near some of these stands.

Coastal bluff morning glory.

Fringed Cornlily

(*Veratrum fimbriatum*), CRPR 4.3

Fringed cornlily is a perennial monocot that grows from a thick rhizome. It is in the false-hellebore family (*Melanthiaceae*) and usually blooms between July and September. The inflorescence contains many showy white, fringed flowers. Several large (20-50 cm) lanceolate leaves grow at the base of the erect stem and are known to contain toxic alkaloids. Fringed corn lilies are endemic to Sonoma and Mendocino counties. They occur in seasonally wet settings in coastal scrub, meadows, and coniferous forest.

The fringed corn lily population at the Mill Bend Preserve occurs at several locations. Swamp harebell grows among some of the fringed corn lily patches.

Fringed cornlily.

Point Reyes Ceanothus

(*Ceanothus gloriosus* var. *gloriosus*), CRPR 4.3

Point Reyes ceanothus is an evergreen shrub in the buckthorn family (*Rhamnaceae*); it usually blooms between March and May. It has a mat- to mound-like habit, with stems occasionally rooting at nodes. It has small, brittle, toothed leaves and clusters of small violet-blue flowers. This species occurs in sandy locations in coastal scrub, dunes, or bluff habitat and closed-cone pine forest, from Marin to Mendocino County.

PCI observed several individuals of *Ceanothus gloriosus* var. *gloriosus*, however exact numbers were hard to discern for this sprawling species within a patch of approximately 40 square feet.

Point Reyes ceanothus.

6.5 Special-status Fish and Wildlife

Based on PCI's 2021 Biological Assessment (Appendix A), numerous special-status fish and wildlife species have been documented within the Preserve or have high potential to occur, as listed below. For species of greatest conservation concern and greatest likelihood to occur on the Preserve, descriptions and information on occurrence within the Preserve follow. See Appendix A for further information.

Fish

- Coho salmon - central California coast ESU (*Oncorhynchus kisutch*, FE, SE[9])
- Steelhead - Northern California DPS (*Oncorhynchus mykiss irideus*, FT)
- Gualala roach (*Lavinia symmetricus parvipinnis*, SSC)
- Pacific lamprey (*Entosphenus tridentatus*, SSC)

Amphibians

- California giant salamander (*Dicamptodon ensatus*, SSC)
- California red-legged frog (*Rana draytonii,* FT, SSC)
- Foothill yellow-legged frog (*Rana boylii*, SSC)
- Red-bellied newt (*Taricha rivularis*, SSC)

Reptiles

- Western pond turtle (*Emys marmorata*, SSC)

Mammals

- Mountain lion (*Puma concolor*, designated as a "specially protected mammal in California")
- Townsend's big-eared bat (*Corynorhinus townsendii*, SSC)

Birds

- Birds of Conservation Concern or on Watch Lists: Wrentit (*Chamaea fasciata*), Allen's hummingbird (*Selasphorus sasin*, BCC), Osprey (*Pandion haliaetus*, WL), bald eagle (*Haliaeetus leucocepahalus,* SE, FP*), peregrine falcon (Falco peregrinus anatum,* SE, FP*)*

Additional species with moderate potential to occur:

- Monarch butterfly (*Danaus plexippus*, candidate for ESA listing)
- Northern spotted owl (*Strix occidentalis caurina*, FT, ST, SSC)
- Olive-sided flycatcher (*Contopus cooperi*, SSC, WL)
- Sonoma tree vole (*Arborimus pomo*, SSC)
- Birds of Conservation Concern or on Watch Lists: Cooper's hawk (*Accipiter cooperii*, WL), Sharp-shinned hawk (*Accipiter striatus*, WL)

[9] Listing Status: FE-federally listed as endangered, FT-federally listed as threatened, BCC-Bird of Conservation Concern, ST- State listed as threatened, SE-State listed as endangered, Candidate ST-State candidate to be listed as threatened under CESA, FP-State of California fully-protected species, SSC-California Species of Special Concern, and WL-Watch List

Fish

Coho Salmon and Steelhead Trout

Historically, both coho salmon and steelhead were abundant in the Gualala River watershed. Coho salmon are currently thought to persist within the watershed, though at very low numbers (NMFS 2012) and there is no known viable population remaining (CDFW 2002). No systematic census has been recently conducted to quantify coho numbers in the watershed. The target for recovery of the coho population is 6,200 spawning adults.

Steelhead have persisted in the watershed, but below historic levels, and National Marine Fisheries Service (2016) reports that the population is either self-sustaining or possibly declining. There has been no recent watershed-wide census of spawning steelhead adults or juveniles to provide a quantitative estimate of current abundance and population vitality. The spawner abundance target is 7,900 adults (NMFS 2016).

Salmonids appear to be utilizing the Gualala estuary during rearing and outmigration. In 2002 and 2003 ECORP (2005) found steelhead to be fairly abundant in the estuary from late spring through fall. The total number of steelhead captured during each year was 5,126 in 2002, and 4,468 in 2003. By contrast, just one coho (assumed outmigrant) was captured late spring of 2003. High numbers of steelhead young-of-the-year utilize the upper estuary, especially in the summer and fall, while 1+ year old steelhead are more commonly found in the middle and lower estuary in the summer and fall. In December 2020, an eDNA sampling study in the estuary detected coho DNA at two locations (O'Neal 2021).

See Section 3.2, Estuary Conditions, for discussion of salmonid habitat conditions.

Gualala Roach

The Gualala roach is a small minnow endemic to the Gualala River and its tributaries. Gualala roach adults are 50-80 mm in length. Habitat requirements for this species are not well known, but they are warm water-adapted species. They are opportunistic omnivores and generally benthic feeders. Spawning typically occurs in March through early July as water temperatures warm. Spawning occurs in riffles over small rock substrates.

ECORP (2005) collected Gualala roach in 2002 and 2003 in fairly large numbers. They are the dominant fish species in the South and Wheatfield forks and headwater streams (Moyle et al. 2015). They are only found in small numbers in the estuary. Gualala roach populations have been increasing within the watershed, most likely a result of increasing water temperatures associated with deforestation (Moyle 2015).

Pacific Lamprey

The Pacific lamprey is an anadromous, parasitic species with a slender, elongated body and sucking mouth parts. Pacific lamprey inhabit freshwater streams, estuaries, and nearby ocean areas. Adults live up to two years in the ocean before moving back upstream into their natal streams to spawn. Spawning occurs in late spring through the end of summer. Typically, they die after spawning. Lamprey larvae burrow into the substrate and filter feed until moving downstream and beginning their parasitic phase.

Larvae live in freshwater for five to seven years in their larval form before metamorphosing into the adult stage.

Pacific lamprey have been documented in the Gualala River watershed. ECORP (2005) collected one lamprey in the estuary in 2003. Higgins (1997) notes Pacific lamprey were documented in the lower South Fork in 1991 where suitable spawning habitat is present. No additional references are available for the Pacific lamprey in the watershed.

Birds

Northern Spotted Owl

Northern spotted owls are an uncommon, permanent resident of dense forest habitats in northern California and oak and oak-conifer habitats in southern California. This nocturnal species requires dense, multi-layered canopy cover for roosting sites. Spotted owls feed upon a variety of small mammals, birds, and large arthropods, but dusky-footed woodrats comprise the bulk of their diet. Nest sites include tree or snag cavities or broken tops of large trees. The spotted owl has experienced a population decline due to the loss and degradation of existing mature and old growth forests and, most recently, the establishment of barred owls in the west. The barred owl is a species native to eastern North America, but one that has been expanding its range westward. Barred owls are larger and more aggressive than spotted owls and can displace, disrupt nesting of, and compete directly with spotted owls.

Northern spotted owls occur throughout the Gualala River watershed and the Mill Bend Preserve is adjacent to known territories. Some of these territories do not have current observations or may be inactive, but still support potential owl habitat. There are no mapped territories overlapping the Preserve. The nearest spotted owl activity center[10] and confirmed nest site is located less than a mile from the Preserve, where the last positive nest confirmation was reported in 2015. Given the current habitat composition and level of existing public use, spotted owls are not likely to nest within the Preserve. However, owls may forage within the site; their native prey, dusky-footed woodrat, is present. Roosting may occur as well. Owls may nest in the adjacent forests within close proximity to the site.

Amphibians

California Giant Salamander

Giant salamanders, endemic to California, occur in wet coastal forests near permanent and semi-permanent streams and springs. This species is one of the largest terrestrial salamanders in North America. Breeding occurs mostly in spring, but sometimes fall. Eggs are laid in water and larvae transform into land dwelling salamanders with lungs at around 18 to 24 months. They consume a wide variety of animals from small invertebrates to salamanders, rodents, and lizard. Habitat alteration is the primary threat to this species.

California giant salamanders are known from reported occurrences in the Gualala River watershed, including in China Gulch. No salamanders were observed by PCI during a reconnaissance-level survey of the site in September 2020, but an RCLC intern reported a recent observation. Salamanders may use the

[10] The activity center is defined as central location where owls may roost or nest.

river for breeding, and upland habitats during the non-breeding season. California giant salamanders have a high likelihood of occurrence along the Gualala River within the Mill Bend Preserve.

Foothill Yellow-legged Frog

The foothill yellow-legged frog is found in or near partly shaded rocky streams. Egg masses are attached to the downstream side of rocks and gravel in shallow, slow, or moderate-sized streams. Adults eat aquatic and terrestrial invertebrates, and tadpoles graze along rocky stream bottoms on algae and diatoms. Primary threats to this species include water management practices, non-native predators, pesticides, recreational activities along streams, habitat loss, and disease.

Foothill yellow-legged frog (photo not taken at Mill Bend Preserve).

Foothill yellow-legged frogs are reported to occur in the Gualala River watershed. PCI completed a reconnaissance-level survey of the site in September 2020. No frogs were observed, but suitable habitat was noted for this species, especially upstream of the highway. Foothill yellow-legged frogs have a high likelihood of occurrence along the Gualala River within the Mill Bend Preserve. See 6.2, Fish and Wildlife, for additional information.

California Red-legged Frog

The California red-legged frog is the largest native frog in the western U.S. with females reaching up to 5¼ inches in length and males being slightly smaller. They are most common in marshes, streams, lakes, reservoirs, ponds, and other water sources with plant cover. Breeding occurs in deep, slow-moving waters with dense shrubby or emergent vegetation. Floating egg masses are attached to emergent

California red-legged frog (photo not taken at Mill Bend Preserve).

vegetation near the water's surface. During the non-breeding season, California red-legged frogs can remain at the breeding site or move into surrounding non-breeding habitats. Primary threats to this species include loss and degradation of habitat and non-native predators.

California red-legged frogs are reported to occur in the Gualala River watershed and have been documented within the Preserve, via both direct detections and environmental DNA sampling (WRA 2009, O'Neal 2021). The Preserve supports suitable breeding and non-breeding habitat; frogs may use the river, riparian, wetland, and upland habitat for movement, foraging, and cover. See 6.2, Fish and Wildlife, above for more information.

Red-bellied Newt

Red-bellied newts, endemic to California, are stocky, medium-sized salamanders of coastal woodlands and redwood forests. Breeding occurs in stream and rivers. Clusters of eggs are attached to rocks and roots within a stream. Adults are terrestrial during the non-breeding season. They consume a variety of invertebrates. Impacts to streams and vehicular mortality are the primary threats to this species.

Red-bellied newts are known from reported historic occurrences in the Gualala River watershed. Newts may use the river for breeding and upland habitat during the non-breeding season. Red-bellied newts have a high likelihood of occurrence along the Gualala River within the Mill Bend Preserve.

Reptiles

Western Pond Turtle

Western pond turtles are the only native turtle in Northern California. Pond turtles can reach up to 8½ inches in length and are typically found in or near permanent or semi-permanent water sources with basking sites, such as emergent logs, rocks, mud banks, or mats of aquatic vegetation, for thermoregulation. Underwater retreats are also required for predator avoidance. Nesting sites of this species have been found up to 1,300 feet or more from aquatic habitat. Pond turtles declined across their range due to commercial hunting during the late 1800s and early 1900s when they were harvested for use in soups and stews. Continued threats to this species include loss and degradation of habitat and widespread introduction of non-native predators including bullfrogs and fish.

Western pond turtle (photo not taken on Preserve).

Western pond turtles are known from reported occurrences in the Gualala River watershed. Turtles may bask and forage along the river and use open (non-forested) uplands for nesting. Pond turtles

have a high likelihood of occurrence along the Gualala River and adjacent uplands within the Mill Bend Preserve.

Invertebrates

Monarch Butterfly

The monarch butterfly is a large butterfly easily recognized by its black, orange and white wing pattern. In the western U.S., monarchs have historically aggregated in fall and winter across the Pacific coast from Mendocino County south to Baja California. In recent years, this range has contracted and they have rarely been seen at the northern and southern extremes of their range (Pelton et al. 2016). Along the California coast, forested groves have provided microclimate conditions for butterflies to survive through winter. These include low elevation forests within 1.5 miles of the coast with good solar radiation exposure and wind shelter. Wintering sites are typically dominated by eucalyptus. Monarchs begin to arrive at overwintering sites in fall. They cluster in dense groups on tree branches and trunks. They have limited activity in the winter, restricted to occasional sunning, rehydrating, and nectaring. They disperse after breeding in early spring. Adults nectar on a range of blooming native plants.

The Preserve is at the extreme northern end of the historic overwintering range of monarch butterflies. No overwintering clusters have been documented within the Preserve, but potentially suitable overwintering habitat is present. There is a small cluster of eucalyptus trees in the central upland portion of the site, within the east parking area that was previously part of the upland mill area. This cluster of trees is fairly small, but provides some shelter from predominant winds and good solar radiation exposure. However, a wind gap in the canopy to the south limits its potential habitat quality for monarchs. See 7.5, Restoration, regarding potential monarch habitat improvement.

Eucalyptus stand adjacent to east parking area; potential monarch habitat.

Mammals

Sonoma Tree Vole

Sonoma tree voles occur in coniferous forest in humid areas of northwestern California. They are largely nocturnal. Their home range generally consists of one to several Douglas fir trees, whose needles are

their primary food source. Needle resin ducts are removed before eating and are often used to line the nest cup. Nests are typically constructed from 6 to 150 feet above ground, preferably in tall trees. The primary predators of voles are spotted owls, saw-whet owls, and possibly raccoons.

Sonoma tree voles are reported to occur in the Gualala River watershed. Marginally suitable habitat is present within the Preserve. The Preserve supports some stands of mature Douglas-fir that could be used by this species. Sonoma tree voles have a low to moderate likelihood of occurrence within the Mill Bend Preserve.

Townsend's Big-Eared Bat

Townsend's big-eared bats occur in low to mid-elevation mesic habitats throughout California including riparian, mixed forest, coniferous forest, prairies, and agricultural lands. They use edge habitat for foraging. Roosting sites include caves, mines, tunnels, buildings, and other man-made structures. Mating typically occurs in winter with young born in May or June.

Townsend's big-eared bat are reported to occur in the Gualala River watershed. Bats may forage over the site and roost in buildings and limited trees. Townsend's big-eared bats have a high likelihood of occurrence within the Mill Bend Preserve.

Mountain Lion

Mountain lions are a large, solitary, long-tailed cat native to the Americas. They inhabit a wide range of habitats and can be found anywhere there is sufficient cover for hunting and available prey. Adult home range is typically over 150 square miles for males and 25-60 square miles for females. Females den in rock overhangs, dense vegetation, shallow caves or anywhere else that provides enough shelter for kittens. Juveniles disperse from their mother's home range at 12-18 months of age, often traveling hundreds of miles to find a territory of their own. Mountain lions are active during both day and night, but are most likely to hunt between dusk and dawn, particularly in areas with larger human populations. Their main prey is deer, but they will also eat smaller animals such as skunks, rabbits, raccoons and insects.

Mountain lions have been nearly eradicated from the eastern United States due to hunting and loss of habitat. Populations in much of the western United States appear relatively stable, but research indicates a lack of genetic diversity in parts of California that poses a serious threat to those populations' survival. Habitat fragmentation and loss are the drivers of genetic decline, and are the most serious threats to this species in Sonoma and Mendocino Counties as well. The protection and preservation of large open spaces and of wildlife corridors connecting large areas of undeveloped lands is critical for the long-term health and survival of mountain lions.

RCLC has observed mountain lions present on the Preserve. The Preserve is adjacent to extensive undeveloped, forested lands and it likely plays a valuable role in mountain lion movement. The property provides hunting and resting habitat as well as water sources. The addition of recreational trails and increased human activity within the property will likely have some degree of deterrent effect on mountain lions. Research indicates that human activity, including recreational trail use and speech, often results in mountain lions avoiding an area or minimizing time in an area. Retaining some habitats without fragmentation by trails will help support mountain lion persistence here.

6.6 Effects of Climate Change and Sea Level Rise

Climate change will influence every aspect of Mill Bend's living systems over time, but the site has potential for relative resilience to many of these impacts. In addition to its moderate climate, tempered by proximity to the ocean, the site's relatively intact native habitats, spanning a topographic gradient from tidal marsh to redwood and pine forest, its water resources, and its connectivity to adjacent natural habitats, are also valuable resources for adaptation. However, increasing temperature is still likely to stress plant and wildlife populations, especially sensitive species like salmonids and amphibians. Heat and more frequent drought may alter composition and regeneration of plant communities like redwood forest, and may foster disease and pest outbreaks that could damage pine forest. More variable and extreme rainfall and patterns are likely to affect many species and processes, from natural regeneration of trees to salmonid reproduction. Changes in seasonal timing of food resources, and extreme weather events, will affect wildlife species. Wildfire is forecast to become more likely, especially as forests experience greater drought stress and potential pest outbreaks.

Each of the natural communities of the Preserve has different sensitivity and resilience to climate change. This section identifies climate stresses and potential resulting changes to each of Mill Bend's habitats as well as key species. Figure 6.3 provides a visual summary of the outlook for each of these. Section 7.6 addresses management actions to support the Preserve's climate resilience.

Redwood Forest

Redwood forests are particularly sensitive to changes in climate and precipitation but are relatively resilient to fire. Their ability to establish in new areas is somewhat limited by low seed longevity and viability (Thorne et al. 2016). At the Mill Bend Preserve, redwoods are in the middle of their California range and are within the moist and moderating influence of the coast. Redwoods at the Preserve, therefore, may be more protected from climate change compared to more southern and eastern populations. However, the relatively diverse native herbaceous understory present in the redwood forest, including special-status swamp harebell and fringed corn lily, is likely vulnerable to increased water stress, with many invasive species nearby that can tolerate those conditions better. Over time, the redwood stands at low elevation along the upstream portion of the river may be vulnerable to hydrologic change due to flooding with sea level rise and increased storm surges.

Bishop Pine Forest

At Mill Bend, bishop pine forest is towards the northern end of its California range, which may indicate its relative security here as temperatures drive general northward shift of habitat zones. However, many insect and fungal pathogens are present in bishop pine stands within the region and these species may increase with a changing temperature and precipitation patterns (Sturrock et al. 2011). Increasing droughts have also been found to increase tree mortality and pathogen susceptibility for this species (Taylor et al. 2020). Other populations of bishop pine in Mendocino and Sonoma counties have been found to be in steady decline due to the factors previously mentioned (Lee et al. 2019). Also, this species is a relatively short-lived tree that usually depends on fire for seed germination. If no fire occurs on the site or is suppressed for public safety reasons, regeneration may be limited and this type could shift to a scrub-dominated habitat.

Alder Groves and Willow Thickets

At Mill Bend, red alder groves and most willow species are within the middle of their Californian range. However, these riparian trees are sensitive to changes in temperature, precipitation, and fire, and have a short reproductive lifespan (Thorne et al. 2016). These habitats occupy low elevations and, over time, are vulnerable to increased flooding from sea level rise, increased storm surges, or other hydrologic changes. Given relatively steep terrain above the low river terrace, space for upslope migration is limited. Reduction in these habitats would diminish habitat for the many bird species that forage and nest here. Hydrologic changes could also threaten amphibians of these and other moist habitats of the site, including California red-legged frog and red-bellied newt.

Coyote Brush and Non-native Scrub

Coyote brush is relatively resilient to drought stress and at the Mill Bend site, coyote bush is towards the northern end of its Californian range, suggesting this type will be relatively resilient to climate stresses. In general, shrubby species are likely to be favored in many settings in California relative to forest and woodland types. The rare coastal bluff morning glory and Point Reyes ceanothus found here appear relatively resilient to disturbance. However, native understory species and other native shrub associates that need moister conditions are vulnerable to temperature and water shifts.

The non-native scrub that occurs in the most disturbed locations on the Preserve is highly resilient to stress and disturbance, and has potential to spread and invade the understory of adjacent vegetation types (e.g. redwood, bishop pine forest).

Grasslands

Most of the Preserve's grasslands are dominated by non-native species and occur in disturbed areas. These habitats are relatively resilient to drought stresses and variable rainfall. Similar to non-native scrub, these species may expand into the understories of adjacent vegetation types as climate warms.

Estuary Habitats

Sea level rise (SLR) is predicted to have a significant impact on estuaries, especially those constrained to their current configuration by development and flood control infrastructure. The Mill Bend site contains relatively few of these human-made constraints. Its floodplain is undeveloped and has a range of elevations with generally good habitat connectivity. Thus the Preserve provides valuable SLR resiliency protection. Using NOAA SLR mapping, with 16" of sea level rise it is forecasted that the channel edge through the Preserve will be flooded with greater frequency, during storms and high tides. Salinity extents and concentrations may shift upstream and vary seasonally from current conditions. These changes would alter salmonid habitat and plant communities within the estuary and its floodplains, though not necessarily negatively. With 55" of sea level rise, these changes and inundation patterns would extend further upstream and landward.

Predicted changes in hydrologic patterns will lead to more dramatic and extreme fluctuations in rainfall, streamflow, and air temperatures. For the estuary, key habitat resiliency considerations are:

- More variable and more extreme rainfall and flow events, resulting in greater need for high flow refugia habitat for salmonids, California red-legged frog, and other fish and amphibians.
- More frequent and intense droughts, resulting in reduced freshwater inflow and shifts in high

salinity zones, which could alter habitat viability for sensitive species at specific life stages in the Mill Bend area.

- Diminished wetland habitat currently on narrow benches, as well as low-lying willow, redwood and alder stands, from rising sea level and/or salinity.
- Increased water temperatures, especially during low-flow, drought conditions, stressing salmonids and other native aquatic species that may already be constrained by summer temperatures.
- Improved floodplain accessibility for salmonids and emergent wetland extents due to rising sea levels.
- Submerged aquatic vegetation beds, which occur within the estuary, can persist in a range of temperature and salinity conditions, but species composition may shift and more extreme flow events could alter the distribution of this habitat.

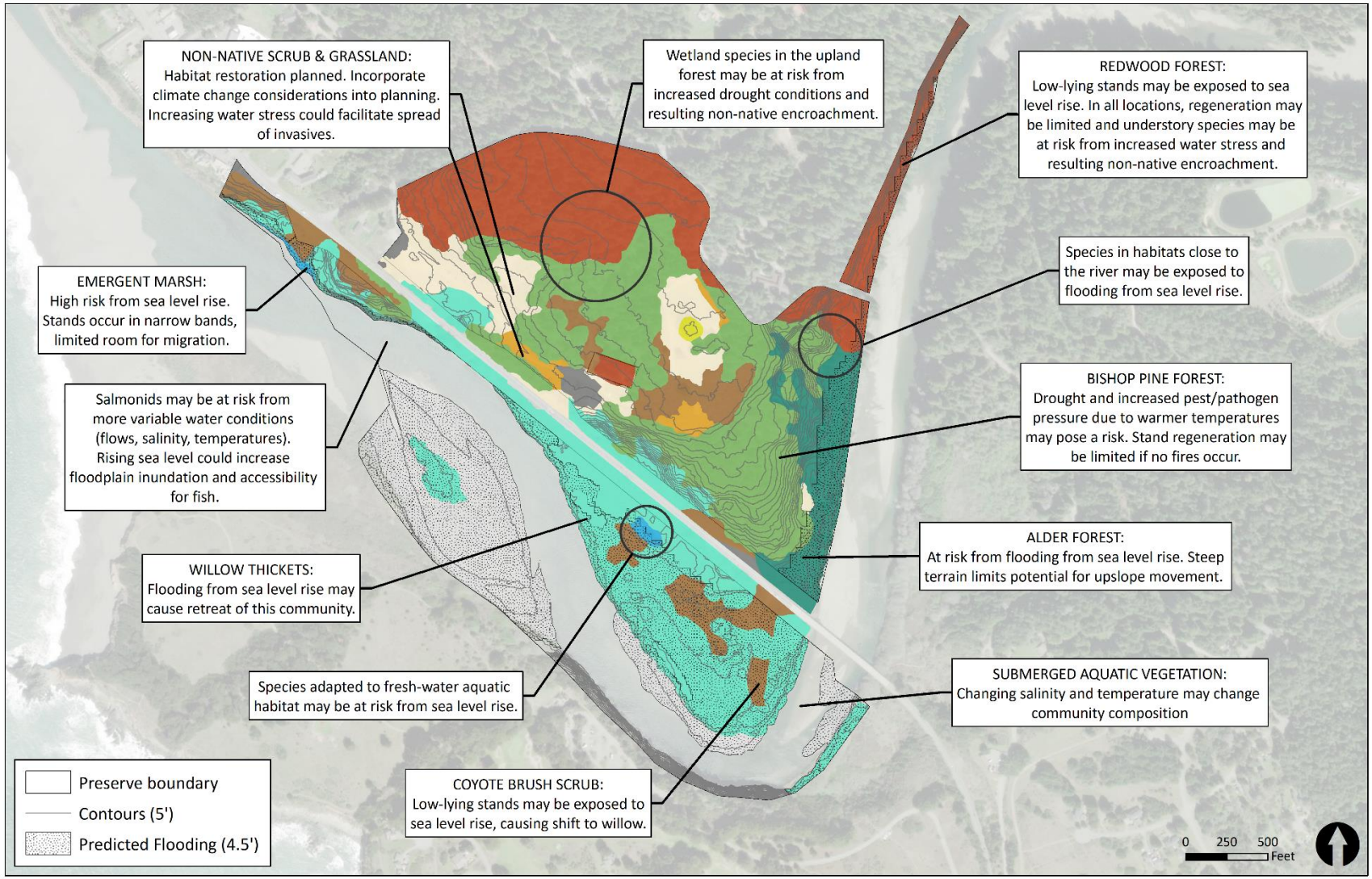


Figure 6.3. Climate Change Vulnerability for Habitats and Key Special-status Species *(Sources: Sonoma Veg Map, PCI).*

7 Future Vision

Many elements of RCLC's vision for a diverse, resilient, accessible preserve are already in place. The acquisition, with protection in perpetuity for conservation values, provides the foundation for a lasting contribution to the ecological health of, and human connection to, the Gualala estuary landscape. RCLC has fostered engagement between the local community – from board members to partner agencies, regular trail users to kayakers and bird watchers, neighboring businesses and non-profits – and the land, water, and life of the Preserve. Still, there is significant work ahead to realize the Preserve's full potential. Restoring highly degraded portions of the land and estuary; developing thoughtful public access that expands opportunities while protecting and enhancing sensitive areas; managing the interacting everyday needs of plants, wildlife, and human users; and supporting the site's resilience to changing environmental conditions are all now part of the work that lies ahead.

This section addresses each of these elements, identifying objectives and actionable steps to take toward each. For focal elements of upland mill site restoration, public access, and estuary enhancement, greater detail is provided in the exhibits and appendices sections.

Mill restoration site, outlined in green; existing conditions. Upland east parking area adjacent to north.

7.1 Mill Site Restoration

The conceptual plan for restoration of the core area of the upland mill site is presented in Exhibit 3; the accompanying design memo is Appendix E. This section provides a brief summary of objectives and actions for the mill site restoration effort.

The upland mill site is currently the most highly disturbed part of the Preserve, with the most diminished biodiversity and ecological function. Developing a conceptual plan for restoration of the core of this site has been a central goal for site stewardship. This area, where the last of the historic mills operated from 1948 through 1968, currently consists of approximately 4 acres of leveled terrain with remnant asphalt and concrete. It supports large invasive plant populations and limited native vegetation. (Although PCI's conceptual design and this memo are limited to the mill site core, similar but less intensive restoration is planned elsewhere on the Preserve as well; see discussion in Biological Resources Stewardship and Figure 7.7, below.)

The goal of restoration for the upland mill core area is to facilitate the recovery of this highly disturbed setting to resilient, self-sustaining habitat that supports native biodiversity of native plants, which in turn provide an array of benefits including improved wildlife habitat, improved groundwater recharge and filtration of runoff, and reduced spread of invasive species spread to other nearby locations. Restoration will support the site's climate resilience by improving habitat function and repairing a gap in the existing vegetation gradient from coastal wetlands to upland forest. Restoration will also increase the site's carbon sequestration potential, and offers an opportunity to engage with and educate the public about the site's history and ecological recovery. In conjunction with habitat restoration at the mill site, two Preserve facilities will be incorporated into the existing disturbed footprint: a small corporation yard where vehicles and materials for stewardship can be stored or staged, and a native plant propagation area, where RCLC will grow plants for use on the site.

One important consideration in this restoration plan is the potential soil contamination present in the area from historic mill uses. The mill site restoration plan has been designed to limit soil disturbance to only what is needed to enable the establishment of native vegetation. Most of the proposed work – asphalt removal, invasive plant removal, and planting – will occur within the upper 12-18" of soil and will not require large-scale soil movement. Concrete wall removal and ripping of subsoil, if needed, may entail deeper excavation. PCI consulted with Roland Rueber (Rueber pers. comm. 2021), professional geologist and author of the reports, about mill site restoration plans and applicable measures. Rueber indicated that for removal of asphalt, concrete and invasive plants, and planting, with excavation to depths of 12-18", the only special protection measures needed would be dust control and limiting direct skin contact with soil (e.g., working with gloves, washing up after work is complete). Deeper removal of concrete walls and ripping of underlying subsoils was not discussed in detail. As project planning progresses and depth of proposed excavation is refined, additional consultation with SHN or another geotechnical consultant should be undertaken to confirm the appropriate measures needed to address soil contamination issues.

Objectives – Mill Site Restoration

Restoring diverse, self-sustaining native habitat to this site will require addressing the extensive soil disturbance, remnant concrete and asphalt, and invasive species removal. Objectives for the work are:

A. Remove asphalt, concrete, and other rubble where that will improve conditions for native vegetation establishment, and for groundwater infiltration.
B. Limit the depth and extent of soil disturbance to only what is necessary to establish native vegetation, to reduce costs and to avoid the need for additional study of potential soil conditions at depth.
C. Remove top priority invasive species (broom, fennel, and jubata grass) as well as vinca and cape weed.
D. Plant diverse suites of site-appropriate, climate change-resilient native species to facilitate development of bishop pine forest, coastal scrub, and coastal grassland habitats.
E. Expand existing populations of rare plants (coastal bluff morning glory and Point Reyes ceanothus) in conjunction with revegetation, and improve potential habitat for monarch butterflies.
F. Plan revegetation layout to facilitate future trail development and educational opportunities for visitors to see each of the vegetation types restored.
G. Protect cultural resources, including the cemetery, from project impacts.
H. Conduct ongoing maintenance and monitoring of the site to ensure invasive removal and native establishment is successful.
I. Incorporate a native plant propagation area and corporation yard into the site.

Actions – Mill Site Restoration

Implementation of the mill site restoration plan will entail some additional internal planning and research, development of a detailed final plan, and ensuring that the necessary resources are in place to both implement and ensure long-term success.

MIL-1. Complete background investigations, internal decision-making, and fundraising

- Conduct a determination of the project area's eligibility for listing on the National Register of Historic Places or the California Register of Historic Resources.
- Finalize desired phasing approach and project extent.
- Seek funding and other resources needed to complete design, regulatory compliance, and implementation.

MIL-2. Develop detailed mill site restoration plan

- Plan for three rounds of design development (e.g., 65%, 90%, and 100%).
- Develop detailed design, including final extents of work, access and staging, final trail and corporation yard locations, plant quantities and planting details, and technical specifications.
- Identify locations for disposal or reuse of concrete and base rock, and disposal of asphalt.
- Based on final disturbance depths and extents, confirm appropriate protective measures for soil disturbance with a geotechnical consultant.

MIL-3. Prepare for implementation

- Concurrent with final design, above, seek implementation funding.
- Concurrent with final design, initiate project permitting and regulatory compliance:
  - Consult with Mendocino County to determine if a Coastal Development Permit is needed and what CEQA compliance might be required.

- Consult with California Department of Fish and Wildlife to ensure that coastal bluff morning glory protection/enhancement measures are sufficient and determine permits necessary to collect seed and propagate plants.
- Consult with the State Historic Preservation Officer depending upon results of the site evaluation.
- If needed based on historic resource findings, consult with the State Historic Preservation Officer on protection measures.

- Begin plant propagation, including rare species.
- Identify volunteer, staff, youth work training groups, or other contracted resources for construction, revegetation installation, and ongoing maintenance and monitoring.
- Inform the public and key stakeholders of the planned work and schedule, and identify measures needed to close off access to the site while work is in process.

See Appendix E for details of implementation and ongoing maintenance and monitoring schedule.

Implementing all the elements described in the plan in one coordinated effort would likely be cost-efficient. However, if funding for the entire effort at once is not available, undertaking selected pieces of the project over time, as labor or funding resources make possible, could also be effective. One phasing approach that could be effective might be:

Phase 1 - Manual removal of invasive species occurrences in coastal scrub areas with limited invasive cover, with limited replanting of herbaceous perennials or other species not requiring irrigation.

Phase 2 – Removal of invasive species from areas of extensive cover, with motorized equipment, and large-scale planting with irrigation.

View of lower estuary, looking southwest, with Gualala Point Regional Park in background.

7.2 Estuary Habitat Enhancement

Appendix F provides PCI's analysis of conditions on the Preserve for salmonids, and identification of restoration and enhancement opportunities. This section provides a brief overview of objectives and actions for that effort.

The estuary and its critical ecological resources form the focal point of the Preserve. It is a dynamic, ecologically rich environment where fresh and marine waters mix, and wildlife takes advantage of the unique, highly productive habitats this mixing creates. The Gualala River estuary provides high-priority habitat for federally listed steelhead and coho salmon and an array of habitats for birds, mammals, and other fish and aquatic species. Like the upland portions of the Preserve, it has been altered by the last 160 years of resource-extraction-focused land uses both on site and in the upper watershed.

Steelhead continue to persist in the watershed, but the population is well below historic levels, and may still be declining. Very few coho have been observed in the watershed in recent decades; a remnant population continues to persist in the North Fork Gualala River. Recovery of the coho population to sustainable numbers is a long-term goal for state and federal agencies, as well as many in the local community. Limiting conditions for salmonids within the estuary include a lack of large wood for shelter, reduced wetland acreage, minimal access to the existing floodplain wetlands, and simplification of channel features (e.g. insufficient and shallow pools and broad, flat gravel bars). To date, an initial evaluation of enhancement opportunities on the Mill Bend Preserve has been conducted, identifying the types and potential locations for salmonid habitat enhancement projects. It serves as the starting point for development of a more detailed and complete enhancement plan and site-specific designs.

The increased habitat diversity created by features targeted to salmonids will also benefit other aquatic species that utilize the Preserve, including foothill yellow-legged frog and western pond turtle. Projects that provide refuge from high flows and high velocities, create sheltered deep-water zones, provide complex habitat for predator avoidance, and improve foraging areas will benefit all special status wildlife.

Objectives - Estuary Habitat Enhancement

Given the current physical conditions in the Gualala estuary and the needs of juvenile salmonids, top priority enhancement objectives are to:

A. Create and maintain diverse and accessible refuge elements, such as wood structures, alcoves, pools, and wetlands, along the channel and gravel bar edges.
B. Re-establish larger features (e.g., engineered log jams) that work with the geomorphic processes (i.e., hydrology, tides, sediment transport dynamics, large woody debris delivery) to recreate complex channel and wetland habitats.

The following are potential habitat enhancement projects to address these objectives:

- In the upper estuary, above the Highway 1 bridge, reconfigure channel cross section geometry using large engineered log jams to improve sediment storage (increase gravel bar height and stability), promote vegetation establishment, trap wood, and build pools with complex cover elements.

- Install engineered log jams around the large mid-channel bar in the south-west edge of the Preserve to promote channel scour, fine sediment deposition, and vegetation establishment on the bar top. At this lower estuary bar the hydraulic structures would need to be placed at both the upstream and downstream ends of the bar to work with tidal and river currents.
- Remove legacy sediment from floodplains to increase areal extent of emergent habitat activated during winter high flows and lagoon backwater conditions to increase shallow edge habitat. This could take the form of removing sections of berms, creating a secondary channel through Mill Bend flat, or excavating alcoves and/or wetland benches in the Mill Bend flat.
- Improve instream and emergent habitat value with large wood to provide cover for rearing salmonids. This includes the China Gulch tributary channel and small emergent marsh floodplain at its mouth.
- Establish native riparian vegetation on new emergent gravel bars and wetlands to provide food supply, velocity refugia, and shading to reduce solar warming.

Any proposed project would need to avoid impacting existing perennial submerged aquatic vegetation (SAV) beds, mature riparian trees, or high functioning emergent marsh. Partnership and coordination with Sonoma County Regional Parks (SCRP) will be required for nearly all habitat enhancement work within the estuary given the property ownership lines, implementation access approaches, and overlapping public use and safety concerns.

Actions – Estuary Habitat Enhancement

EST-1. Develop a comprehensive Habitat Enhancement Plan.

- Document existing conditions
- Identify site-specific opportunities
- Prepare graphic illustrations of conceptual alternatives
- Conduct assessments of water depths, water quality, geomorphic processes, and habitat conditions

To rehabilitate the Gualala River's estuary to its full potential for salmon and other native wildlife, a comprehensive Habitat Enhancement Plan is needed. The goal of the Plan would be to provide a road map for agencies and the landowners (RCLC and SCRP) to improve the extent and diversity of habitats, and address the physical condition changes that have occurred in the estuary as a result of the last 160 years of resource extraction and impacts in the watershed. The existing conditions and site-specific opportunities to enhance or re-create in-channel and off-channel complex habitat would be documented and described. To graphically illustrate the range of opportunities, conceptual design alternatives would be developed, drawn up, and included as part of the Plan. Contemporary site assessments and monitoring of water depths, water quality, geomorphic processes, and habitat conditions would inform site designs and functional objectives.

EST-2. Prepare Phase 1 design and implement.

A phased approach to implementing the plan would be required due to costs, logistics, permitting requirements, and funding availability. For example, based on current understanding of conditions and salmonid needs, we expect a Phase 1 project might include:

- four to six engineered log jams on the upper estuary gravel bars
- large wood habitat structures along the banks

- biotechnical approaches to establish willow on the gravel bars.
- Develop and implement a regulatory compliance strategy to complete the necessary CEQA compliance and secure the permits needed to implement the enhancement project.

Another example project for a design and implementation phase might be to excavate a high-flow swale and alcove/emergent wetland complex into the Mill Bend flat. This wetland complex would function at different water surface elevations and significantly increase the site's emergent wetland extent and native plant diversity. The proposed boardwalk could be placed along the edge of the wetland and alcove, providing abundant opportunities for education and wildlife observation.

EST-3. Prepare additional enhancement designs and implement.

Over time, as funding resources are available and as guided by findings of Phase 1 efforts, subsequent habitat enhancement design and implementation phases can be completed.

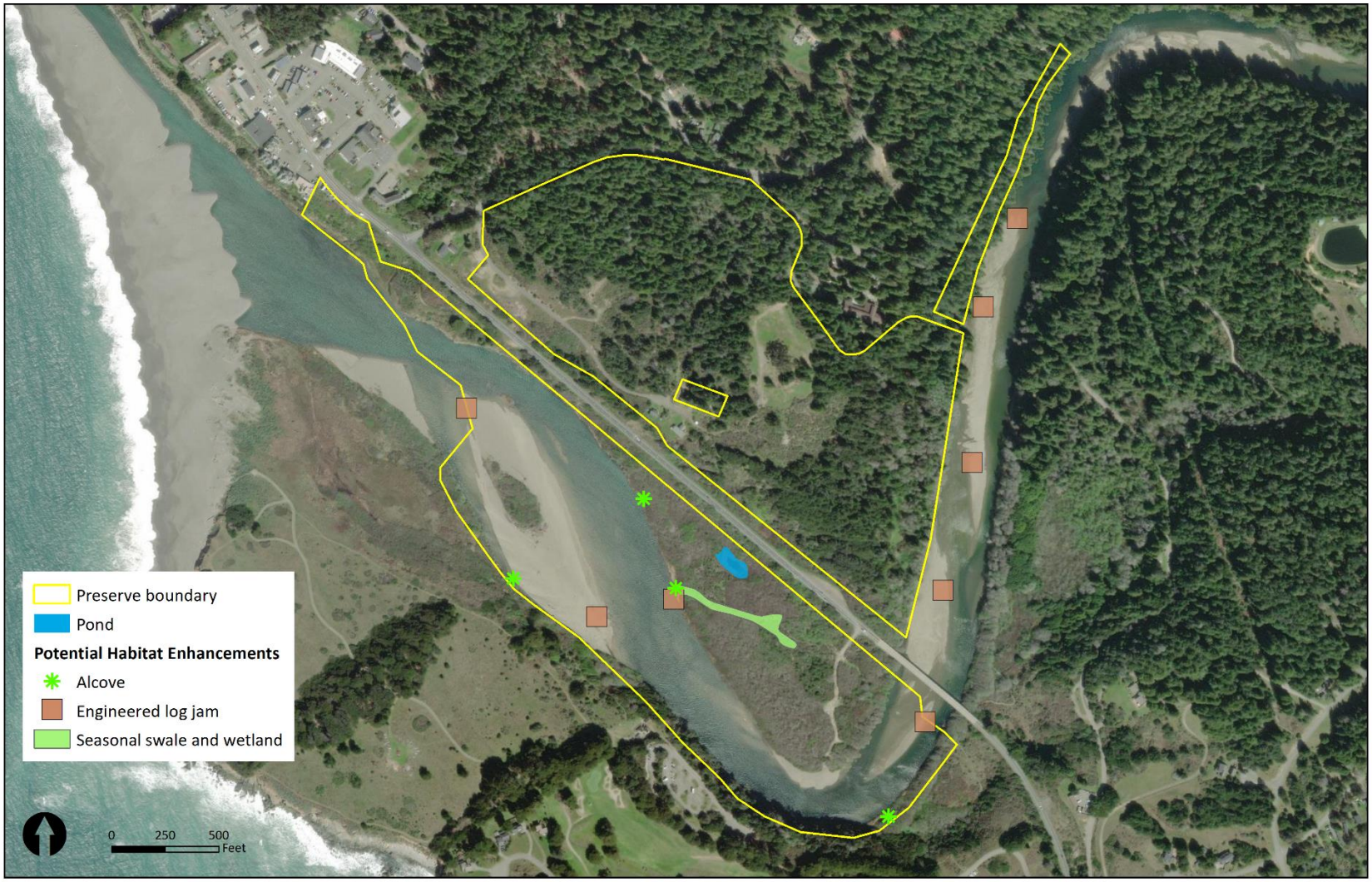


Figure 7.1. Schematic of a Range of Project Types and Example Potential Locations for Habitat Enhancement in the Gualala Estuary*. See Public Access plans (Exhibit 1) for illustration of proposed boardwalk near wetland feature shown in Mill Bend area.*

Gualala River adjacent to the upstream end of Preserve, a popular location for wading and other aquatic recreation.

7.3 Public Access

This section provides a brief summary of objectives and actions for developing public access to the site. See the following for more detail:

Exhibit A - conceptual design for public access for the site as a whole

- *Appendix C - design memo and cost estimate.*[11]
- *Appendix D - analysis of traffic impacts*
- *Appendix K - China Gulch pedestrian crossing analysis*

Exhibit B - 30% design for an initial phase of public access, to the Mill Bend parcel.

Facilitating public access to coastal landscapes is a central element of RCLC's mission, and a significant driver for the Mill Bend property purchase and protection. Its location on and above the estuary, in a highly visible, well-traveled location in Gualala and adjacent to a popular regional park, further elevates the value of offering public access and the need for managing it. The site also offers the potential to span a gap in the California Coastal Trail, contributing to the long-term vision of a walkable, bikable route the full length of the California coast. At the same time, the site's unique location also poses challenges and constraints to developing ADA-accessible trails and site access, and its many natural and historic resources require consideration in access planning. Another essential consideration is that

[11] This memo was prepared prior to development of 30% designs, so for detail on 30% designs, see Exhibit B.

public access offerings must be within this mostly-volunteer organization's ability to fund, manage, and maintain effectively. Climate change and sea level rise are also key concerns, especially for work in the low-lying parts of the Preserve. The conceptual public access plans, estuary access 30% design plans, and China Gulch alternatives analysis take each of these into consideration. Protection of resources is the highest priority on this site; public access locations have been selected to ensure they do not impair the diversity and abundance of wildlife here, or the range of sensitive vegetation. (See Section 2.2 for the restrictive covenants placed on Preserve by the State Coastal Conservancy and California Natural Resources Agency, funders of Preserve acquisition.)

Public Uses and Access Elements

The Preserve will offer a set of passive recreational activities opportunities that include hiking, running, general sightseeing and wildlife viewing (primarily birds, otters, and other estuary wildlife) and environmental education activities. No active recreation (structured individual or team activity that requires the use of special facilities, courses, fields, or equipment) will be offered on the Preserve. Commercial camping and horseback riding will be prohibited. Biking to the Preserve will be encouraged, with bike parking provided at trailheads, but will be allowed on roadways only, not on trails. Dogs will not be allowed on the most ecologically sensitive parts of the site and otherwise will remain on leash.

Planned public access facilities include trailheads, pedestrian trails, vehicle parking areas, restrooms, picnic areas, vista points, a kayak launch, an accessible interpretive trail loop, and a center for education, research, and/or museum uses. All proposed public access elements are intended to take advantage of old roads, railroad grades, social trails or other existing disturbed areas to minimize the extent of new disturbance. Design standards for public access elements conform with Mendocino County, California Building Code, and the U.S. Access Board's Final Guidelines for Outdoor Developed Areas (36 CFR Part 1191). See Exhibit A and Appendix J.

The design of public access elements will incorporate climate change considerations. For example, the 30% design for the Mill Bend estuary access incorporates an elevated boardwalk to accommodate higher frequency of flooding, and uses materials that can withstand frequent winter inundation.

Priorities for Access Development

Two elements of the public access concept plan have been selected as initial priorities: the Mill Bend estuary access (30% design developed; see Exhibit B) and a California Coastal Trail Extension (CCTX) route, based on trails identified in the concept plan. See Figure 7.2. RCLC is in process of seeking funding for these two projects.

- The **Mill Bend estuary access** improvements include the access road and Highway 1 encroachment, emergency vehicle access and turnaround, standard and accessible vehicle parking, an accessible boardwalk leading to a seating area for nature observation or quiet contemplation, and a pedestrian trail connection to a seasonal crossing under the highway bridge.
- The **CCTX** would begin and end on the estuary side of the highway, but would travel primarily through the upland parcel and will meet accessible trail guidelines. At the north end, the trail would connect to the Gualala Bluff Trail, and cross the highway via a crosswalk planned as part

of Caltrans' Gualala Downtown Streetscape Enhancement Project. The CCTX route would follow planned trails along the bluff top, enabling direct connections to other upland trails and visitor destinations (e.g., the upland forest accessible interpretive trail loop, historic Gualala Cemetery, Gualala Arts Center, and River Rail Trail). The CCTX would then descend through the forest toward the river, leading under the highway via a seasonal trail below the bridge and ending at the Mill Bend estuary access road and parking. The trail would also connect to the existing Highway 1 pullout parking on the east side, providing a route to the estuary access that would avoid crossing the highway vehicle lanes. Two options are shown between the corner of Old Stage Road and the Preserve upland west parking lot; one travels parallel to Highway 1 and climbs the slope between the road and parking; the other travels along Old Stage Road and turns in to the main Preserve entrance.

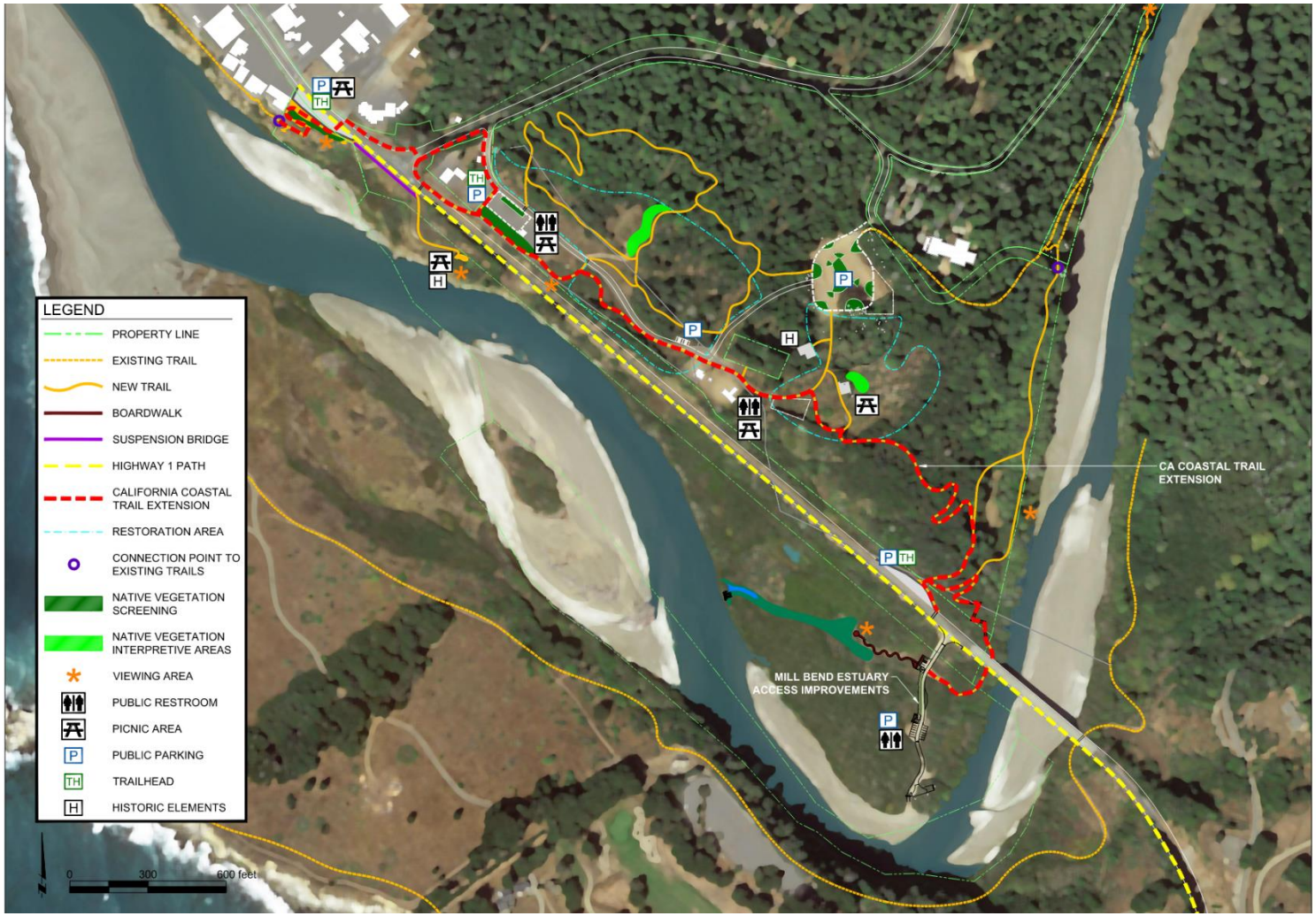


Figure 7.2. Overview of Planned Public Access Elements. *Proposed initial elements are Coastal Trail Extension (red dotted line) and Mill Bend estuary access improvements. See Exhibits 1 and 2 for detail.*

Objectives – Public Access

A. Protect and enhance the Preserve's biological and cultural resources.
B. Facilitate responsible enjoyment of the site's special qualities where compatible with resource conservation goals.
C. Provide safe opportunities for pedestrians to visit both sides of the Preserve (east and west of the highway).
D. Support linkages to the California Coastal Trail: connect to Gualala Bluff Trail to north, and facilitate connection to Sonoma County Regional Parks trail to the south.
E. Provide for a range of low-impact access and recreational activities to accommodate a wide array of visitors of all abilities, with ADA compliant facilities.
F. Plan for low-maintenance, long-lasting facilities.
G. Plan to accommodate climate change and sea level rise.
H. Use materials that blend into the natural landscape and designs that do not distract from the Preserve's scenic qualities.
I. Provide varied opportunities to learn about and contribute to the Preserve and its resources.
J. Manage ongoing public uses to ensure that recreational activities remain aligned with resource protection.
K. Plan for access that regulatory agencies can readily approve.

Actions – Developing Public Access

All of the major public access elements identified will require additional design and planning. Key steps in that process are outlined below. See Section 8.1, Regulatory Compliance, for additional guidance on meeting CEQA and permitting requirements.

ACC-1. Implement Mill Bend estuary access elements: complete design, planning, permitting, and construction.

- Seek funding and other resources needed to complete final design and regulatory compliance.
- Continue to coordinate design with design of estuary enhancement elements.
- Coordinate with Caltrans to plan work within the highway right-of-way and acquire an encroachment permit.
- Plan for three further rounds of design development (e.g., 65%, 90%, and 100%).
- Develop detailed design, including final extents of work, access and staging, final trail locations, materials, erosion control, plant quantities and planting details, technical specifications, interpretive signage design and content, and construction cost estimate.
- Concurrent with final design, seek implementation funding.
- Concurrent with final design, initiate project permitting and regulatory compliance (see Section 8.1, Regulatory Compliance, for detail):
  - Prepare applications for a Coastal Development Permit, Lake or Streambed Alteration Agreement, 401 Water Quality certification, and 404 CWA permit as needed based on the project designs.
  - Prepare a Caltrans application for an Encroachment Permit.
  - Conduct consultation regarding tribal resources and historic resources.

- Prepare materials necessary for federal and California Endangered Species Act consultation.
- Coordinate with CEQA Lead Agency and complete the necessary CEQA documentation as guided by the CEQA Lead Agency.
- Conduct community and agency outreach.

- Inform the public and key stakeholders of the planned work and schedule, and identify measures needed to close off access to the site while work is in process.
- See Exhibit 2 and Appendix C for information on project construction.

ACC-2. *Implement California Coastal Trail Extension route: complete design, planning, permitting, and construction.*

- Seek funding and other resources needed to complete final design and regulatory compliance.
- Consult with Caltrans and Mendocino County to plan potential encroachments into road rights-of-way, and to coordinate with crosswalk and sidewalk planning.
- Plan for four rounds of design development (e.g., 30%, 65%, 90%, and 100%).
- Complete detailed analysis of trail slopes and layout, accessibility, and appropriate trail surfaces and design elements.
- Develop detailed design, including final extents of work, access and staging, final trail locations, materials, erosion control, plant quantities and planting details, technical specifications, and interpretive signage design and content, and construction cost estimate.
- Concurrent with final design, seek implementation funding.
- Concurrent with final design, initiate project permitting and regulatory compliance (see Section 8.1, Regulatory Compliance, for detail):
  - Prepare applications for a Coastal Development Permit, Lake or Streambed Alteration Agreement, 401 Water Quality certification, and 404 CWA permit as needed based on the project designs.
  - Prepare a sea-level rise adaptation strategy.
  - Prepare Caltrans and Mendocino County applications for roadway Encroachment Permits.
  - Conduct consultation regarding tribal resources and historic resources.
  - Prepare materials necessary for federal and California Endangered Species Act consultation.
  - Coordinate with CEQA Lead Agency and complete the necessary CEQA documentation as guided by the CEQA Lead Agency.
  - Conduct necessary public and agency outreach.
- See Exhibit 2 and Appendix C for information on project construction.

ACC-3. *Complete background investigations for other public access elements.*

As design proceeds on other elements of public access for the site, further study may be needed in the following areas, depending on specific access components and their locations.

- Safety and emergency access - including Highway 1 safety, fire safety, emergency vehicle access, and evacuation options.
- Utilities - connections to electrical, water, wastewater, and communications systems.

- Property boundaries - boundaries shown are based on county GIS databases only, and need field confirmation.
- Geotechnical considerations – review needed for China Gulch pedestrian bridge and other elements including paving, walls, foundations and slope stability.
- Visual resources assessment – design in the Coastal Zone may require specific design elements to satisfy permit requirements and a visual resource assessment.
- National Register of Historic Places eligibility – further evaluation of the historic resources on the Preserve would be needed as part of the permit packages for the Army Corps of Engineers.
- Climate Adaptation Plan – evaluation of the public access elements and the alterations needed to accommodate climate change and sea level rise, as part of the Coastal Development Permit.
- Based on findings and funding availability, select next access element for implementation.

Actions – Trail Design, Construction, and Maintenance

TRL-1. *For new trail development, select routes, methods, and surfaces that protect native habitats, prevent erosion, allow for easy maintenance, and provide an enjoyable and safe experience to all users*

- Consult with a trail designer and vegetation ecologist on the design, layout, construction, and prescribed maintenance procedures of any new trail. Topography, vegetation, drainage patterns, and soil type will influence trail type and alignment and should be carefully considered. Construct trails to minimize visual and natural resource impacts.
- Design trails for the intended use with appropriate widths and clearance heights; see Table 6 below.
- Design trails to avoid steep slopes. Trails on steep slopes contribute to erosion and sedimentation problems. The most desirable trail gradients are 5% or less. In naturally steep portions of the Preserve, maintain grades between 5-12% for the trail's running slope. Steeper slopes should be introduced for short durations and incorporate steps or switchbacks.
- Follow Best Management Practices to manage potential erosion and flow concentration associated with trail construction and maintenance; see *Trail Best Management Practices* figures (7.3, 7.4) below (Marin RCD 2007).
- Outslope trails to allow water to sheet across it naturally; see Figure 7.3. Outsloping means sloping the trail surface in the same direction as the slope on which it is located. Focused storm water causes erosion. Trails that are outsloped allow the water to flow over the trail and spread out, infiltrating into the adjacent vegetated slope. Trails that are insloped (i.e., the trail surface is sloped in the opposite direction of the slope on which it is located) focus storm water and typically involve culverts which will increase erosion potential and maintenance. Cross slopes should be between 2-5% depending upon surface type.
- Implement cross drainage techniques to quickly move water off the trails. These include water bars, rolling dips, swales and culverts. Consult with a design professional when implementing cross drainage techniques, to ensure the appropriate method, spacing, and installation techniques are used.

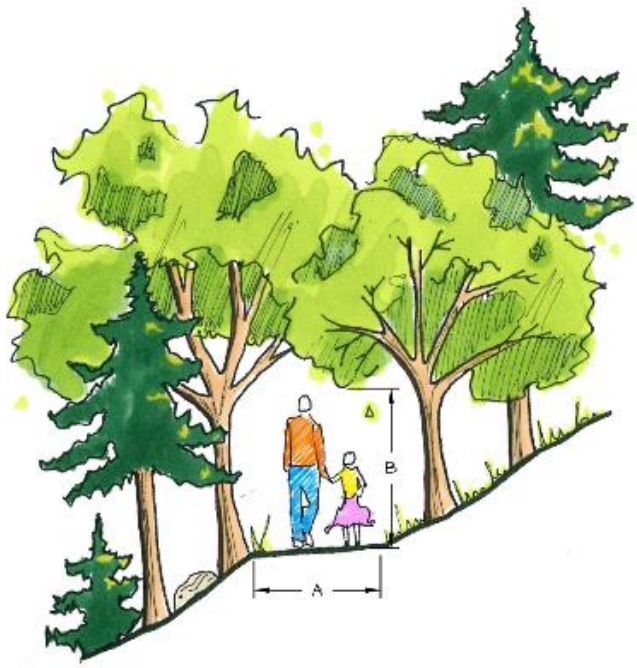
- Water bars are earthen barriers angled across a trail to divert surface flow off a trail and thereby reduce focused flows and velocities. Water bars are useful on steep slopes; see Figure 7.4.
- Rolling dips are a reverse in the trail grade, usually a short dip followed by a rise, that forces water off the trail. This accomplishes the same effect as a water bar but will last longer due to the gentle dip and rise of the trail grade; see Figure 7.5.

- Minimize the amount of soil disturbance and avoid trail alignments in seeps or wet areas. When planning trails visit the site in the wettest months to see drainage patterns and seeps. Where these areas must be crossed, boardwalks may be appropriate.
- Construct during the dry months when ground is not saturated. Install temporary erosion control measures such as wattles before construction begins and remove once the site has been stabilized with native vegetation or other method.
- Maintain vegetated filter strips at the base of slopes and along trails to allow surface water to slow down and for sediment to be retained.
- Avoid using heavy equipment where possible to limit ground disturbance.
- Obtain necessary permits and contract with an experienced trail contractor.

Table 7. Typical Trail Widths and Clearances

(See illustration below for key dimensions.)

Trail Type	Width (A)	Height (B)
Internal Preserve	10’ max.	15’ max.
Accessible Trail	4’ min.	8’ max.
Single track trail through sensitive areas	2’ min.	8’ max.



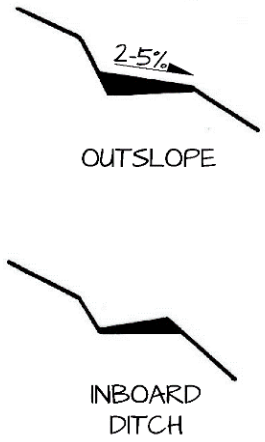


Figure 7.3. Trail Outsloping

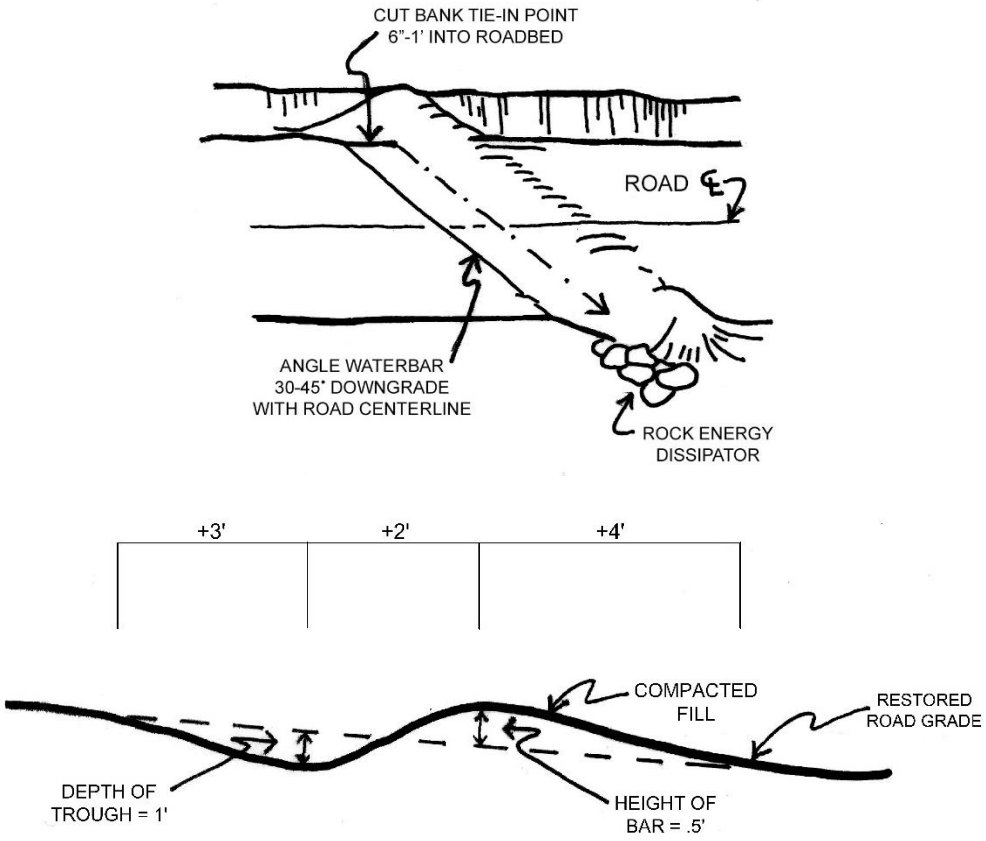


Figure 7.4. Plan View (top) and Cross Section (bottom) of a Waterbar

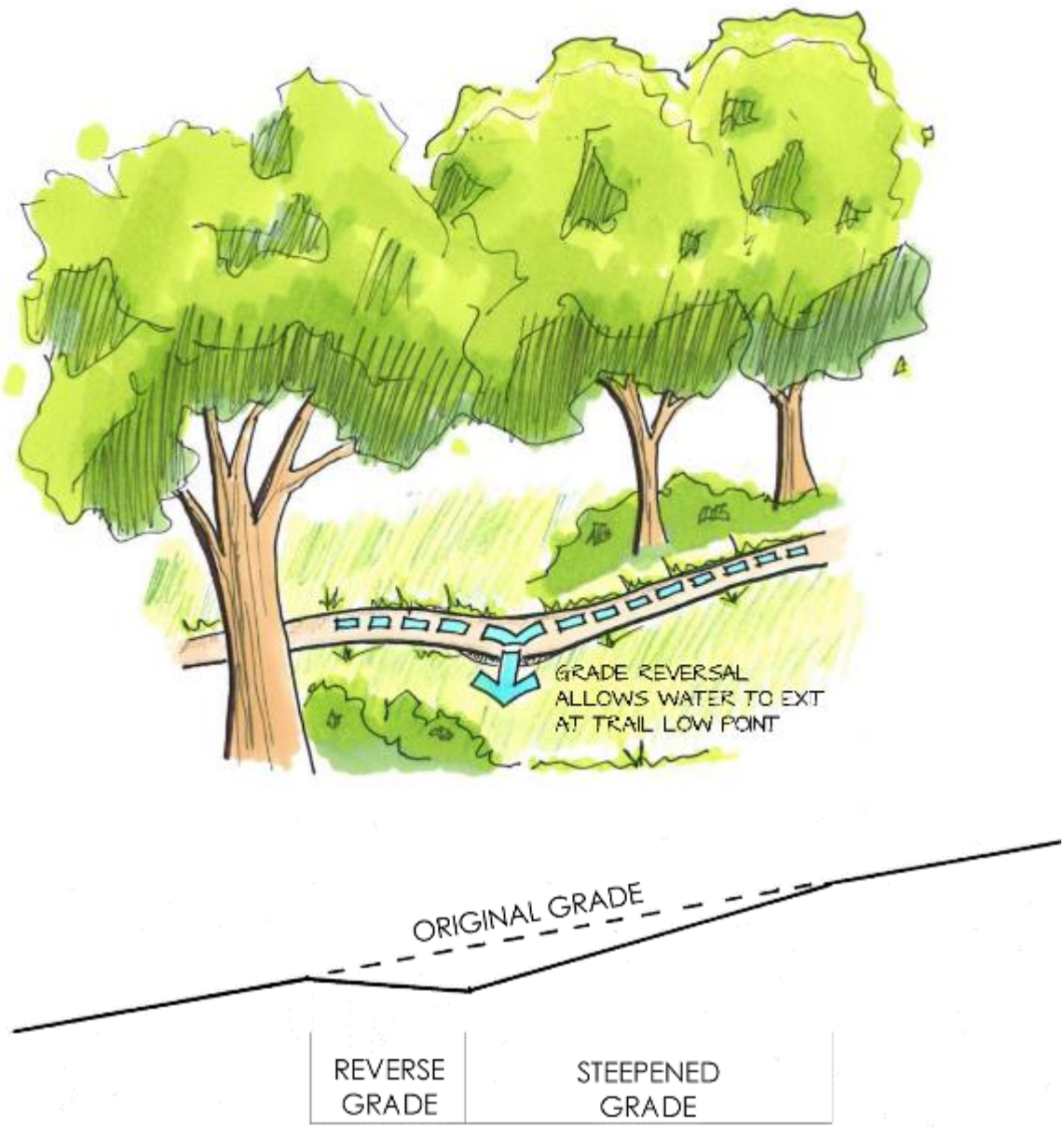


Figure 7.5. Rolling Dip Schematic

Actions – Managing Public Uses

MNG-1. Protect sensitive resources with appropriate usage policies.

- Bicycling: Provide bike racks at each Preserve access. Prohibit bicycling within the Preserve.
- Dogs:
  - Allow dogs on leash in developed access features of the Preserve and at the gravel bar. Prohibit dogs in all other areas of the Preserve.
  - Require dogs to be on leash at all times.
- Prohibit night-time uses except for occasional docent-led evening walks.
- Prohibit equestrian use of Preserve trails.
- Prohibit fires and smoking on the Preserve.
- Convey these policies clearly to users through signage, community events, and direct contact with staff or volunteer patrol members.
- On an approximately weekly basis, conduct patrols by staff or trained volunteers to identify unauthorized uses (e.g., informal trail creation, camping, dumping), as well as safety hazards and maintenance needs in public use areas, and address promptly.
- Monitor for impacts of public uses over time, and adjust usage policies as needed to protect resources.
- See Section 7.5, Habitat Protection, for additional measures to protect natural resources in public access design and implementation.

MNG-2. Maintain safe and clean public access facilities.

With increased human presence and use of the Preserve, the control and management of trash will need attention. Trash can be a major source of soil and water contamination and can be detrimental to wildlife. Improperly disposed of trash can also degrade a visitor's experience to the Preserve. Trash collection and removal will need to be part of regular Preserve management.

- Install and maintain trash receptacles at trailheads. If additional trash cans are needed, place at Preserve entrances and not within the Preserve interior. Provide receptacles for both recyclables and non-recyclables, or sort trash off site. All receptacles should be specifically designed to keep wildlife out of the trash and from tipping them over. Trash should be removed from the receptacles on a regular basis to avoid overflow.
- Maintain a pack-in, pack-out policy for visitors. Install signage at all entrances and trailhead locations to inform visitors of the importance of keeping the Preserve free of trash. Provide contact information in the event of illegal dumping at any location within or adjacent to the Preserve.
- Install dog waste bag dispensers and trash cans only on the upland portion of the site. Educate visitors of the importance of keeping the Preserve free of pet waste.
- Educate the trail-user community in park stewardship and encourage the collection of litter on the trail network (e.g., "leave no trace").
- On an approximately weekly basis or as needed, conduct regular maintenance of restrooms and trash receptacles.
- On an approximately quarterly basis, review Preserve roads, trails, boardwalks, signage, drainage structures, and buildings to identify repair needs.

- Mow or trim vegetation along trails to allow for comfortable passage, typically twice per year in spring and early summer. See Fuel Reduction section.
- Cooperate with county public health agencies, Sonoma County Regional Parks, and Regional Water Quality Control Board to provide signage alerting estuary visitors when toxic algal blooms, which pose a danger to pets and humans, may be present.
- During flooding or wet weather, seasonal closure of trails may be required. During flood events this may result in the complete closure of the Mill Bend estuary access.
- See also 7.7, Fire Management for measures to reduce fire hazard.

MNG-3. Provide clear, informative signage and maps to guide visitors.

Signage on the Preserve will be important to improve the visitor experience, enhance safety, and protect natural resources by directing people to stay on designated trails. A standardized sign system will help create a cohesive and consistent brand for the Preserve. Signs should not overwhelm the natural beauty of the Preserve or otherwise detract from trail users' experience. Signs will require routine inspection and maintenance to ensure that they are in good condition.

- Provide directional signage to the Preserve along Highway 1 in locations including the existing Caltrans pullout at town, near the Old Stage Road Intersection, the entrance to the Mill Bend estuary access, and the Caltrans pullout across from the estuary access. Also provide directional signage at the upland west entrance off Old Stage Road.
- Install entry signage at the parking areas to welcome visitors to the Preserve and provide a sense of arrival. At trailheads, provide an information kiosk with Preserve rules and a map of the trail network, additional access points, and emergency exits.
- Provide interpretative signage at trailheads and suitable waypoints, with an overview of the natural and scenic resources and regional significance of the Preserve. Nature trail signs will educate visitors about the native plants and restoration efforts near the trailhead and waypoint signs can identify location-specific resources.
- Install directional signs at trail intersections and secondary Preserve entrances to assist visitors with wayfinding. These should be relatively small signs that provide information on direction, trail segment lengths and difficulty, and allowable uses.
- Boundary signs may be needed at Preserve boundaries with private property and trail ends.

MNG-4. Provide an array of interpretive, educational, and volunteer opportunities to engage the community in learning about and helping care for the Preserve.

- Provide information via multiple methods such as interpretive signage; guided walks; kayak outings; field trip opportunities for local students; citizen science efforts such as Gualala River Stream Team, wildlife or bird counts, or native plant inventories; volunteer trail maintenance or guide opportunities; volunteer patrol; and internships.
- Collaborate with other entities in the region doing relevant work to protect, understand, and appreciate coastal resources, to host events such as educational talks, citizen science efforts, volunteer stewardship, and landscape art displays or workshops. Potential partners include California Native Plant Society – Dorothy King Young Chapter, Mendocino Coast Audubon Society, Friends of the Gualala River, Gualala River Watershed Council, Bodega

Marine Lab, Sonoma County Regional Parks, the Gualala Arts Center, Mendocino Land Trust, and Sonoma Land Trust.

- Potential topics for interpretive signage and educational events may include:
  - Key fish and wildlife of the Preserve
    - Gualala roach, occurring only in this watershed
    - Steelhead and coho, historic declines and current restoration efforts
    - Bird life of the estuary, willow thickets, and redwood forest; and habitat structure qualities
  - Estuary ecology and dynamics, climate change and sea level rise
  - Native American history and relationship to the land and estuary
  - Logging history, mill sites, railroad lines, and mill worker history
  - Recovery of the site from historic disturbance, via natural successional processes and human intervention; ecosystem resilience; searching for signs of the distant past (e.g. large redwood stumps in alluvial stands)
  - Mill Bend plants, their ethnobotanical uses, and applications for the home garden
  - Geologic history of the region, faulting

RCLC volunteers have begun drafting interpretive materials for a nature walk near the main entrance, incorporating several of these themes.

MNG-5. *Manage unauthorized public uses and informal trails to protect public safety and natural resources.*

A number of informal trails occur on the Preserve. Some of these are poorly aligned, too steep for the grade, and cross through sensitive habitats. In addition to creating visual impacts and fragmenting native habitats, over time, these trails can result in erosion problems, establishment of illegal encampments, limit natural regeneration and wildlife usage, and create confusion in wayfinding for Preserve visitors. There are also signs of unauthorized camping and dumping. These activities could result in serious impacts to habitat quality, water quality, and public safety.

- Decommission unauthorized trails. Methods may include installing signage indicating habitat restoration is underway; blocking trails with downed logs or plantings of native thicket- or bramble-forming plants; and/or more in-depth restoration of trail tread with decompaction and native plantings. Key trails to decommission include:
  - trails leading to the estuary from the Caltrans parking lot across from Center Street; these are steep and cross sensitive wetland habitat. These will be replaced by a new trail leading to the Gualala Bluff Trail and a picnic/overlook location. See Exhibit A.
  - trail along the periphery of the upland redwood forest, parallel to Old Stage Road. This will be replaced by a new accessible loop trail through the forest.
  - multiple trails leading from the Caltrans pullout north of the Gualala River bridge. Several trails lead up the steep slope to the northwest, and toward the river. Consolidating these into designated trails at appropriate grades will reduce habitat impacts and likelihood of unauthorized camping.
- Monitor for the establishment of new unauthorized trails during routine patrols and take appropriate actions to discourage use and restore disturbed areas.

- Monitor for unauthorized camping and coordinate with local law enforcement to resolve trespassing.

7.4 Cultural Resources Protection

The Mill Bend site has a long history of human use. Indigenous people who were the first inhabitants of this region left little trace on the land, but many of their descendants continue to live in the area. The Manchester Band and Kashia Band of Pomo are both active in the area, and maintain strong ties to coastal lands such as Mill Bend Preserve. There are more visible traces of history from the late 1800s forward, but these are mostly limited to signs of ground disturbance from the historic mill operations, mill railroad, and millworker residential area. In some cases, these represent highly degraded settings, and ecological restoration is now planned. Existing alignments for old railroad or other vehicle access routes have in some cases been chosen for renovated or new trails to reduce impacts to more pristine environments. ALTA (2021) found that these historic resources are of limited integrity, but no formal evaluation of the site's eligibility for listing on the California Register of Historic Places has been conducted. If the site is deemed eligible for the National or State Register of Historic Places, public access and restoration planning must maintain the listing status. As ground-disturbing activities on the Preserve proceed, RCLC will continue to reach out to the Pomo bands and continue to honor their ancestral and contemporary connections to the place. Preparing the site for public access also has the benefit of providing opportunities for public education and engagement about the Preserve's history.

See Appendix B for the full findings of the cultural resources evaluation prepared by ALTA (2021).

Objectives – Cultural Resource Protection

A. Preserve and maintain historic resources identified by the cultural resources assessment and the eligibility assessment.
B. Provide opportunities for the public to learn about the site's cultural history, including indigenous people, European-American settlement, and the logging and timber industry.
C. Develop a working relationship with local Pomo bands and provide an ongoing avenue for engagement, input, and collaboration.

Actions – Cultural Resource Protection

CUL-1. Conduct further evaluation of historic resources.

- Conduct a formal evaluation of the site's eligibility for listing on the California Register of Historic Resources or National Register of Historic Places and design all activities to account for the findings in the evaluation. See Appendix B for detail.

CUL-2. Develop and provide educational information about the site's history.

- Provide Preserve visitors with educational and interpretive information about the site's history, through educational signage, docent-led tours, and events addressing topics such as:
  - History of the Pomo of this region, their culture and interactions with the land. Develop this material in collaboration with local tribal representatives.

  - In conjunction with planned boardwalk in the Mill Bend estuary access project: provide interpretation around the history of the second mill site and operations on the estuary, and how they altered the landscape; aquatic, terrestrial, and avian life of the estuary; and hydrology of the estuary and sea level rise.
  - Near the Preserve entry: information on the Chinese and others who lived and worked at the mill operations.
  - Incorporated into the upland mill site restoration work: information about mill operations at that location, clearcutting of the forest, and forest recovery (both natural and human-assisted).
  - Near the cemetery: information about early history of the town of Gualala.
- Investigate development of a museum to house, interpret, and display historical and archaeological artifacts as an adjunct to an on-site research and education facility. A museum would be a long-term project requiring extensive community and institutional involvement, and dedicated capital and operational funding.

CUL-3. Implement ongoing protection measures.

- Avoid work within identified cultural resource sites. No project-related activities should occur within this zone including any ground disturbance, equipment operations, staging or storage of materials.
- Avoid development within 50 feet of the eastern and northern sides of the cemetery (ALTA 2021). Unidentified graves may be present outside the dedicated cemetery. The presence of unmarked graves within this zone is unlikely, since roadways along the cemetery boundaries have been in place for a long time.
- Educate Preserve staff, volunteers, and contractors of the potential for encountering cultural and tribal resources and train them on the appropriate communication and discovery protocols.
- If previously unidentified cultural resources are encountered during project implementation, stop work in the area and contact an affiliated Tribal representative and a qualified professional archaeologist to evaluate the situation and develop a process to move the project forward. RCLC will be required to follow the necessary protocol developed by the Tribal representative and the professional archaeologist. Project personnel must not collect cultural resources.
- If human remains are encountered, all work will stop in the immediate vicinity and the work crew will notify the County Coroner and a qualified archaeologist immediately so that an evaluation can be performed. If the coroner determines the remains are Native American, the Native American Heritage Commission will be contacted by the Coroner so that a “Most Likely Descendant” can be designated and further recommendations regarding treatment of the remains provided.

7.5 Biological Resources Stewardship

Natural resource management of Mill Bend will focus on preserving and restoring natural habitats, conserving native biodiversity, and protecting ecological processes and rare species. Balancing public access with those goals is a central consideration. Achieving this balance will require planning public

access to minimize resource impacts in sensitive communities, monitoring changes to the Preserve where impacts may occur, and adjusting management strategies over time to incorporate new information. Current and future effects from climate change (e.g. sea level rise, increasing temperatures) will also be important to consider. This section identifies the key biological resource management objectives for the Preserve, and steps to advance them.

Habitat Protection

Objectives

A. Maintain habitat values for native fish, wildlife and plants throughout the site, with structurally diverse, species-rich, resilient natural communities.
B. Minimize habitat fragmentation; protect or improve habitat connectivity.
C. Minimize the impact of human activity and presence on wildlife.
D. Protect native plant and wildlife communities during implementation of stewardship efforts and during construction of public access facilities.

Actions

HAB-1. Plan, design and monitor to protect overall habitat quality on the Preserve.

- Locate new trails, roads, and other Preserve infrastructure in existing disturbed areas to the extent feasible, and leave large swaths of each habitat type undisturbed by development or human activity.
- Avoid placing trails and other Preserve infrastructure in sensitive habitat areas. However, much of the site is considered sensitive. If some trails or other infrastructure cannot be placed outside of sensitive areas, plan to minimize and/or mitigate for impacts, in consultation with regulatory agencies and a qualified biologist. Potential minimization measures include use of elevated boardwalks for trails through wetland or riparian settings, and railings to prevent users from straying off the boardwalk into habitat, and disturbing the minimal amount of area needed to implement the project. Potential mitigation opportunities include enhancement of existing habitat through invasive species eradication and native planting.
- See Section 7.3 for user policies to protect wildlife: Require dogs to be on leash in developed areas of the Preserve for public safety. Prohibit dogs in undeveloped areas of the Preserve to avoid impacts to birds, otters, California red-legged frog and other amphibians and reptiles, and other Preserve species. Provide clear signage on these policies that explains their rationale.
- Minimize removal of native vegetation during preserve development. Where removal is unavoidable, salvage plants or propagules for replanting as appropriate.
- Minimize the use of fences, which can obstruct wildlife movement. No fencing is currently planned.
- Protect biological resources during construction activities including public access improvement projects and habitat enhancement efforts.
  - Develop wildlife species protection procedures for construction activities; this will include project-specific species protection measures and preconstruction surveys, construction monitoring, and reporting. Focal wildlife species include California giant salamander, foothill yellow-legged frog, California red-legged frog, red-bellied newt, western pond turtle, bats, Sonoma tree vole, and monarch butterfly.

  - Develop aquatic resource protection and dewatering plans for any instream work, including a set of procedures for isolating the construction site, relocating aquatic species, and restoring the site after instream work.
  - Protect submerged aquatic vegetation during estuary enhancement efforts.
  - As feasible, work outside of the critical breeding bird period (February 15 through August 31) for any public access improvement projects or habitat enhancement efforts. If work must be completed during the nesting season, complete preconstruction breeding bird surveys in accordance with protocols development by a qualified biologist.
  - During the roosting season, conduct bat surveys prior to the trimming or removal of trees, or alterations to Preserve buildings. Should roosting bats be detected, a qualified biologist will make recommendations for avoiding impacts. Avoidance measures may include postponing removal of trees, snags, buildings, or other structures supporting bats; and establishing buffers around roost sites.
- Monitor recreational impacts on habitat and, as needed, use signage, native planting, or similar methods to encourage visitors to stay on trails, especially in fragile habitats.

HAB-2. Protect and restore redwood forest habitat.

- Minimize fragmentation of this relatively intact habitat and its diverse understory from trails or other uses.
- Remove key invasive plants occurrences at forest openings and edges, and near rare plant stands.
- Monitor rare plant populations (fringed corn lily, swamp harebell) annually, recording approximate extent and noting indicators of plant health and regeneration status. See also Restoration section regarding opportunities to expand populations.
- Monitor for and promptly address any dumping of waste and informal trail creation; area along Old Stage Road is of particular concern.
- Over the long term, monitor for changes driven by climate and sea level rise (in low-lying areas), such as changing understory species composition or hydrologic stress to mature trees. If changes occur, facilitate the spread of appropriate native species (e.g., via plantings or protecting natural regeneration; species may include grand fir, Douglas fir; willow or alder in low-lying areas) into the area and control invasive species.

HAB-3. Protect and restore bishop pine forest habitat.

- Remove invasive species in the understory.
- Restore bishop pine forest, with a diverse palette of species, to disturbed locations including the upland mill site and near the main entrance, as part of potential Caltrans mitigation effort. Include native understory species in these efforts.
- Consider increased risk of fire in this vegetation type when planning structures and other public access elements.
- Monitor population for signs of senescence due to age, disease, or pathogens. Protect public safety by removing trees that pose a falling hazard to visitors, as well as trees that pose a fire hazard to nearby structures.
- Monitor for signs of regeneration or lack thereof. If little regeneration occurs and stand is declining, facilitate the spread of appropriate native species into the area (depending on

climate conditions and the cause of decline, this may include plantings of bishop pine and/or protective natural regeneration of grand fir, coastal scrub grasses and shrubs) and control invasive species spread.

- Coordinate with PG&E to provide input on PG&E vegetation management below power lines, to help protect habitat quality.

HAB-4. Protect and restore scrub habitats.

- Protect rare species – such as coastal bluff morning glory and Point Reyes ceanothus – from disturbance including Preserve developments and trampling.
- Conduct large-scale removal of non-native scrub and restoration of native coastal scrub at the upland mill site; see Exhibit B. In other native-dominated stands, remove invasive shrubs and vines in smaller stands, targeting areas with native understory species. Increase native understory diversity with plantings of native perennials in targeted locations.
- Remove non-native scrub throughout the Preserve where it occurs. High priority locations include near high quality native habitats, around public use areas at the Preserve entrance, and other locations that pose a heightened fire hazard/ignition risk.

HAB-5. Protect and restore riparian habitats (alder and willow stands).

- Remove invasive species in alder understory and at edges of willow stands.
- Retain most of the large willow stand on the Mill Bend estuary access unfragmented by trails. Retain dense willow cover for birds and to discourage public access to the California red-legged frog pond.
- Monitor stands for signs of senescence due to climate stresses such as sea level rise and other hydrologic changes. If changes are observed, facilitate the spread of appropriate native species into the area (e.g., willow, wetland species, gravel bar species) and control the spread of invasive species into the area.

HAB-6. Protect and restore wetland and aquatic habitat.

- Control public access to wetland areas. Informal trails currently lead to the China Gulch wetland area. Decommission these in conjunction with formal trail development connecting to the Bluff Trail and crossing China Gulch. Provide opportunities for views of the habitat from new trail, and include signage explaining sensitivity of habitat in those access projects.
- Remove invasive wetland species including yellow flag iris, and replant with plugs of appropriate native wetland perennials.
- Assess potential opportunities to restore expanded marsh habitat in conjunction with estuary enhancement work.
- Monitor stands for signs of habitat loss due to sea level rise and other hydrologic changes.
- Prevent disturbance to submerged aquatic vegetation (SAV) beds from boat launching activities. Incorporate SAV bed protection into estuary enhancement work.

HAB-7. Restore grassland habitat.

- Conduct restoration of non-native grassland at the upland mill location, converting to native grassland or scrub. Restore non-native grassland near preserve entry to bishop pine habitat.

HAB-8. Protect and restore special-status plant populations.

- Carefully remove invasive species adjacent to special-status plant populations, if possible, without disturbing the populations. Work should be guided by an experienced botanist.
- Ensure that special-status plants are not damaged during Preserve maintenance, invasive species management, or habitat restoration. Maintain a map of populations that is readily available to the RCLC stewardship team.
- Avoid establishing new trails or other Preserve development in areas occupied by swamp harebell; provide at least a 50' buffer from the stands. Consider undertaking an effort to expand the population into additional suitable areas (e.g., via seed collection, propagation and outplanting in other moist locations within redwood understory, guided by an experienced botanist or restoration ecologist).
- For coastal bluff morning glory, consider further analysis of the population by a *Calystegia* expert to better understand its classification and rarity. Unless established otherwise, treat all stands as sensitive and incorporate protection and/or salvage and restoration plans into the mill site restoration and trails plan, children's play area plan, east parking lot plan, and knoll trail plan. Plans should be designed to maintain or increase the population, and should be developed by an experienced botanist or restoration ecologist.
- Monitor rare plant populations annually to review their population extent and health, and identify any stewardship needs.
- Some locations were not accessible for botanical survey in 2021 (i.e., steep cliffs, areas of dense brush). If any preserve developments are proposed in such areas, consult with a botanist to plan further botanical surveys. If any special-status plant species are found in areas proposed for development, adjust project plans to avoid impact to the populations.

HAB-9. Protect and support the expansion of special-status wildlife populations.

See Section 7.2, Estuary Habitat Enhancement, for salmonid enhancement measures, and Section 7.5 for Invasive Animal Management.

- California red-legged frog: With a qualified biologist leading the work, monitor population annually if feasible. If population declines are observed, further study may be needed to identify causes and to identify any opportunities for improving conditions.
- Avoid construction impacts to special-status species with pre-construction surveys, construction monitoring, and protective measures as directed by a qualified biologist:
  - Bats and Sonoma Tree Voles: For work involving tree removal, conduct preconstruction surveys and construction monitoring.
  - Salmonids: For estuary enhancement construction, implement protective measures as directed by project permits. These are likely to include measures to sweep and exclude fish prior to any instream work, construction-period monitoring, appropriate placement of refueling locations and refueling techniques, equipment checks to identify and repair leaks, and erosion control Best Management Practices.
  - Northern Spotted Owl: Conduct preconstruction breeding bird surveys and construction monitoring, and protection of dusky-footed woodrats (primary prey source) and their nests. If any nesting occurrences are documented within 0.25 mile of the Preserve in the future, additional measures may be needed to meet agency requirements.

- Amphibians (California red-legged frog, foothill yellow-legged frog, California giant salamander) and Western Pond Turtle: Plan trail locations, trail design, and access points to avoid impacts to these species. For construction in riparian and wetland settings, use protection methods including preconstruction surveys, construction monitoring, measures designed to keep amphibians out of the work area and relocate those encountered during construction, appropriate fueling locations and techniques, equipment checks, and implementation of erosion control BMPs).

Contaminant and Pathogen Control

Potential pathogens of concern on the Preserve include *Phytophthora* species; insect and fungal pathogens of bishop pine; and chytrid (a fungus associated with aquatic environments and amphibians). For educational resources on these pathogens, see California Oak Mortality Task Force (2022); UC IPM (2022) and Harvey and Agne (2021); and CDFW (2016).

Potential contaminants include herbicides, if they are used for invasive management; fuel from vehicles or other equipment used on site; debris dumped in the Preserve; and other road runoff contaminants such as microplastics and their derivatives. All of these pathogens and contaminants are abundant in the region, and have high potential to (or in some cases, will inevitably) be brought into, and/or spread, throughout the site. Taking measures to limit these will reduce stressors to Mill Bend plant, wildlife, and aquatic systems.

Objectives

A. Minimize the potential for transport of contaminants and pathogens into the Preserve, and limit their movement within the Preserve.

Actions

CPC-1. Prevent the spread of pathogens through training Preserve volunteers, careful use of imported materials, and monitoring.

- Train Preserve staff or volunteers working within aquatic habitat about chytrid and other fungal diseases impacting amphibian populations to prevent the introduction and/or spread of pathogens throughout the Preserve. Decontamination protocols in accordance with current CDFW guidance (see CDFW 2016) will be followed prior to and immediately following work within aquatic features in the Preserve.
- For plantings on site, use nursery stock from nurseries following current best management practices for the prevention of plant pathogen spread. Inspect stock at the point of purchase for symptoms of *Phytophthora* infection. Alternatively, direct seed with propagules collected on site, or propagate container stock on site, following best practices to ensure that no potential pathogens are introduced through soil, containers, or other materials. Collect seed only from locations with no signs of plant disease.
- Monitor for signs of plant disease, especially *Phytophthora ramorum* in bays and tanoaks, and pitch canker and needle blight in bishop pine. For areas of suspected infection by *Phytophthora*, consider closing seasonally to the public to limit spread in wet weather. Preserve staff and contractors working within woodlands will be trained about Sudden Oak Death host species, disease transmission, and preventive measures necessary to minimize

the spread of the pathogen, *Phytophthora ramorum*. The following best management practices will be exercised to the greatest extent feasible:

- Equipment will be cleaned in a 10 percent bleach solution, or similar solution, before working in oak woodlands. All equipment that will contact the ground and/or plants will be cleaned, such as boots, tires, saws, shovels, etc.
- Pruning oaks and other host plants will be avoided or minimized in wet weather, and work within oak woodlands will occur in the dry season to the greatest extent feasible.
- Infected trees within a broader infected area that are downed or do not pose a safety hazard can be left on site. Removal of a tree should only occur if it is the only infected individual in an otherwise uninfected area. Removal will occur in dry weather only, personnel will take all preventative measures to prevent the spread within and outside of the Preserve, and the removed tree will be taken off site to an approved dump site.

CPC-2. *Prevent contamination of Preserve soil and water through trainings, careful handling of potentially hazardous materials, and litter prevention.*

- Train Preserve staff and volunteers who will handle potential contaminants in spill prevention and containment, particularly for work near wetlands and other sensitive natural resources.
- Pesticides, herbicides, and other potentially hazardous chemicals will be used by qualified persons, and only where non-chemical methods are not feasible.
- Fueling equipment will occur within developed areas on impermeable surfaces where spill prevention measures can be deployed immediately. Refueling of equipment will occur at least 100 feet away from sensitive resources and will be on tarps, truck beds, or other impermeable surfaces that will contain any spillage. Absorbent material will be kept on site and spills will be cleaned up immediately.
- Provide and maintain trash receptacles at main parking locations for visitors. Monitor for dumping and littering, especially near areas accessible from the road, including Old Stage Road, or other areas where unauthorized camping occurs. Remove waste promptly.

Invasive Plant Management

Appendix H presents RCLC's invasive plant management plan; this section provides only a brief overview and supplemental guidance, including preventive and follow-up measures.

The Preserve, because of its intensive uses and disturbance historically, hosts many populations of invasive plants. Invasive populations are densest in areas where ground disturbance was most intensive, including footprints of the upland mill site and associated facilities, and along road and railroad alignments, but occur at low density throughout most of the site. The cut slopes along the highway, within the Caltrans right-of-way, also support extensive invasive populations.

RCLC has been working to manage these populations since 2021, and has prepared a draft plan describing goals, methods, priority species, an annual schedule for treatment, and a map of treatment zones. RCLC's overarching goals for invasive plant management on the Preserve are to conserve the site's native plant and wildlife populations, and to allow for public access to areas which are currently

densely populated with invasives. Manual, mechanical, cultural (e.g., targeted livestock grazing) and biological (e.g., planting with competitive natives) methods will be the primary methods used. Herbicide will only be used as a last resort.

To complement invasive species removal measures, preventing their spread into and throughout the Preserve is critical. Similarly, following invasive species removal efforts with measures to encourage native species regeneration and spread is essential to long-term success.

Objectives

In conjunction with invasive removal measures described in Appendix H:

A. Prevent the spread of invasive species on the site.
B. Facilitate diverse native species to replace invasives and prevent recolonization by weedy species.
C. Track control efforts and outcomes to help gauge progress and identify any management adjustments needed for success.

Actions

IPM-1. Prevent the spread of invasives on the Preserve via vehicles, equipment, and ground disturbance.

- Prevent the spread of invasive plants via vehicles and equipment. To the extent feasible, ensure vehicle tires, undercarriages, or any other parts that may collect plant debris are clear of plant matter before taking vehicles off established roads. When mowing in areas with invasive species, mow prior to seed development if possible, and clean vehicles/equipment before moving into uninfested areas. Monitor these areas of vehicle/mower use for invasive species spread. Coordinate with Caltrans to prevent the spread of weeds along road rights-of-way.
- Limit ground-disturbing activities in extent and duration. For habitat restoration work, keep the disturbance footprint to only what is needed to remove foreign materials (asphalt, concrete) and invasive plants. When ground alteration occurs, revegetate promptly with an appropriate suite of native species, monitor location for invasive species establishment, and take remedial action as needed.

IPM-2. Remove high priority invasive species and facilitate native species in their place.

- See Appendix H for detailed management methods.
- Use of controlled grazing by goats or other livestock is being considered on the site. If carefully managed, this can be a useful tool for reducing aboveground portions of invasive plants, to be followed with other treatments to remove or kill rootstocks. If grazing is used, ensure that animals do not bring invasive species into the site; they do not move invasive seed within the site; and that native plants are protected from damage.
- In invasive removal areas where native regeneration is limited, plant with robust, easily established native species appropriate to the setting. Example species include:
  - Shrubs, vines: Coyote brush, coffee berry, snowberry, honeysuckle
  - Perennial grasses and rushes: California fescue, California oatgrass, tufted hairgrass, purple needlegrass, red fescue, common rush
  - Perennial herbs: Douglas iris, yarrow, mugwort, hedge nettle, Pacific aster

- Map invasive plant locations and treatment areas using large-scale printed maps and records or using online mapping tools such as Calflora, Calflora Weed Manager, or California Invasive Plant Council's Weed Mapper tools.

The table below summarizes priority invasive species for control on the Preserve, based on RCLC findings, with general information on impacts and management strategies. These species spread rapidly, can invade relatively intact habitats, and have significant ecological impacts including suppressing native species, reducing wildlife habitat quality, encroaching on trails and views for visitors, increasing fire hazard, and altering soil conditions and habitat structure. Figure 7.6 shows locations of significant stands observed by PCI during general site surveys in 2021. See Appendix H for full management strategy.

Table 8. Priority Invasive Species on the Preserve and Management Guidance

RCLC Priority Level	Species	Lifeform	How it Spreads	Key Impacts at Mill Bend
Priority 1	**Fennel (*Foeniculum vulgare*)**	Perennial forb	Seed	Outcompetes native scrub and grassland species, alters habitat structure
	Seed longevity is moderate (3-4 years). Remove extensive stands with motorized equipment, or by cutting close to ground and then spot treating with herbicide as directed by a PCA. For individual plants, hand digging is effective but labor-intensive because mature plants have a very large, deep root that is very difficult to remove. Cutting the root 3-6" inches below ground and following up with repeated cuttings can be effective. Small plants may be able to be pulled when soil is moist. Follow-up manual or chemical treatment of seedlings until seedbank depleted.			
	French and Scotch Broom (*Genista monspessulana, Cytisus scoparius*)	Shrub, nitrogen-fixing	Seed	Outcompetes native scrub and grassland species; alters habitat structure; increases nitrogen availability in soil; increases fire hazard; encroaches on trails
	Seed is long-lived (decades). Preventing seed production and dispersal is high priority. Where seedbank is already present, note that some studies show that seed germination may be prevented if buried deeper than 4". Plants have a deep taproot; remove to prevent resprouting. Remove extensive stands with motorized equipment, or mowing followed by herbicide treatment as directed by a PCA. Other treatment options for extensive stands include repeated mowing over time, cutting to the ground in spring and cutting resprouts in late summer. Mowing can also be followed by herbicide treatment in fall. Followup treatment will be needed until the seedbank is depleted. Scotch broom also present and has similar management needs.			
	Jubata Grass (*Cortaderia jubata*)	Perennial grass	Seed, short rhizomes	Outcompetes native scrub and grassland species; alters habitat structure
	Jubata grass establishes well in bare soil but poorly where competing with other perennial grasses or sedges. Seed longevity is short (6 months). Remove extensive stands with motorized equipment (small excavator, backhoe). Individual plants can be removed by hand digging – remove entire root crown and top section of roots. Dispose of in landfill or turn clumps upside down to expose to air and sun to kill; the latter may be difficult in mild coastal setting, requires monitoring.			

RCLC Priority Level	Species	Lifeform	How it Spreads	Key Impacts at Mill Bend
Priority 2	**Cape (German) Ivy (*Delairea odorata*)**	Vine	Vegetative from stolons, root and stem fragments; limited seed regeneration	Creates dense mats outcompeting understory and seedling species in alder forest and moist scrub settings.
	Manual or mechanical control. May be difficult to remove without disturbance to native vegetation. Loosen soil with small rake or fork to tease entire roots out. Where few natives occur, stems can be cut at ground level and rolled back, exposing new sprouts for treatment.			
	Cape Weed (*Arctotheca prostrata*)	Vine	Vegetative from stolons, root fragments	Outcompetes native grassland and scrub species.
	Hand or careful mechanical removal is recommended. Avoid breaking tubers and runners. Ensure that any method does not result in spread of these plant parts.			
	English ivy (*Hedera helix*)	Vine	Vegetative from stolons, root fragments, seed	Kills mature plants including trees, suppresses germination of native understory species.
	Manual removal of runners; dig out rootstock. For runners that climb into trees and can't be pulled down, cut and leave in place to die.			
	Licorice Plant (*Helichrysum petiolare*)	Shrub	Vegetative from stem fragments, seed	Can form dense stands that outcompete native species.
	Hand removal of plant; dig out roots with caution to avoid impacts to natives. Identified by RCLC as significant concern.			
	Vinca (*Vinca major*)	Vine	Vegetative from stolons, root fragments	Outcompetes native understory species.
	Plant parts break easily, resulting in potential dispersal. Roots are shallow, generally within the top 6” of soil. Hand or careful mechanical removal is recommended. Any fragments of stems, root nodes, or stolons left behind may resprout. Ensure that any method does not result in spread of these plant parts.			

RCLC Priority Level	Species	Lifeform	How it Spreads	Key Impacts at Mill Bend
Priority 3	**Perennials and Woody Species**			
	Cotoneaster (*Cotoneaster*)	Shrub	Seed	Outcompetes native scrub species
	Foxglove (*Digitalis purpurea*)	Perennial herb	Seed	Outcompetes natives in moist riparian settings.
	Himalayan blackberry (*Rubus armeniacus*)	Vine	Vegetative from stolons, seed	Outcompetes native riparian species, alters habitat structure
	Iceplant (*Carpobrotus edulis*)	Perennial herb	Stolons	Creates dense mats, alters soil conditions, prevents natural dune movement.
	Pride of Madeira (*Echium candicans*)	Shrub	Seed	Outcompetes native bluff scrub species, alters habitat structure.
	Teasel (*Dipsacus* spp.)	Biennial herb	Seed	Outcompetes native wetland species, reduces wildlife habitat quality
	Yellow flag iris (*Iris pseudacorus*)	Bulb	Vegetative from stolons, root fragments	Creates dense stands that outcompete native wetland species.
	Annuals			
	Thistles (*Cirsium vulgare, Carduus pycnocephalus*)		Seed	Outcompetes natives in disturbed areas.
	Forget-me-not (*Myosotis latifolia*)		Seed	Outcompetes native herbs of redwood understory.
	Oblong spurge (*Euphorbia oblongata*)		Seed	Outcompetes natives in disturbed areas.

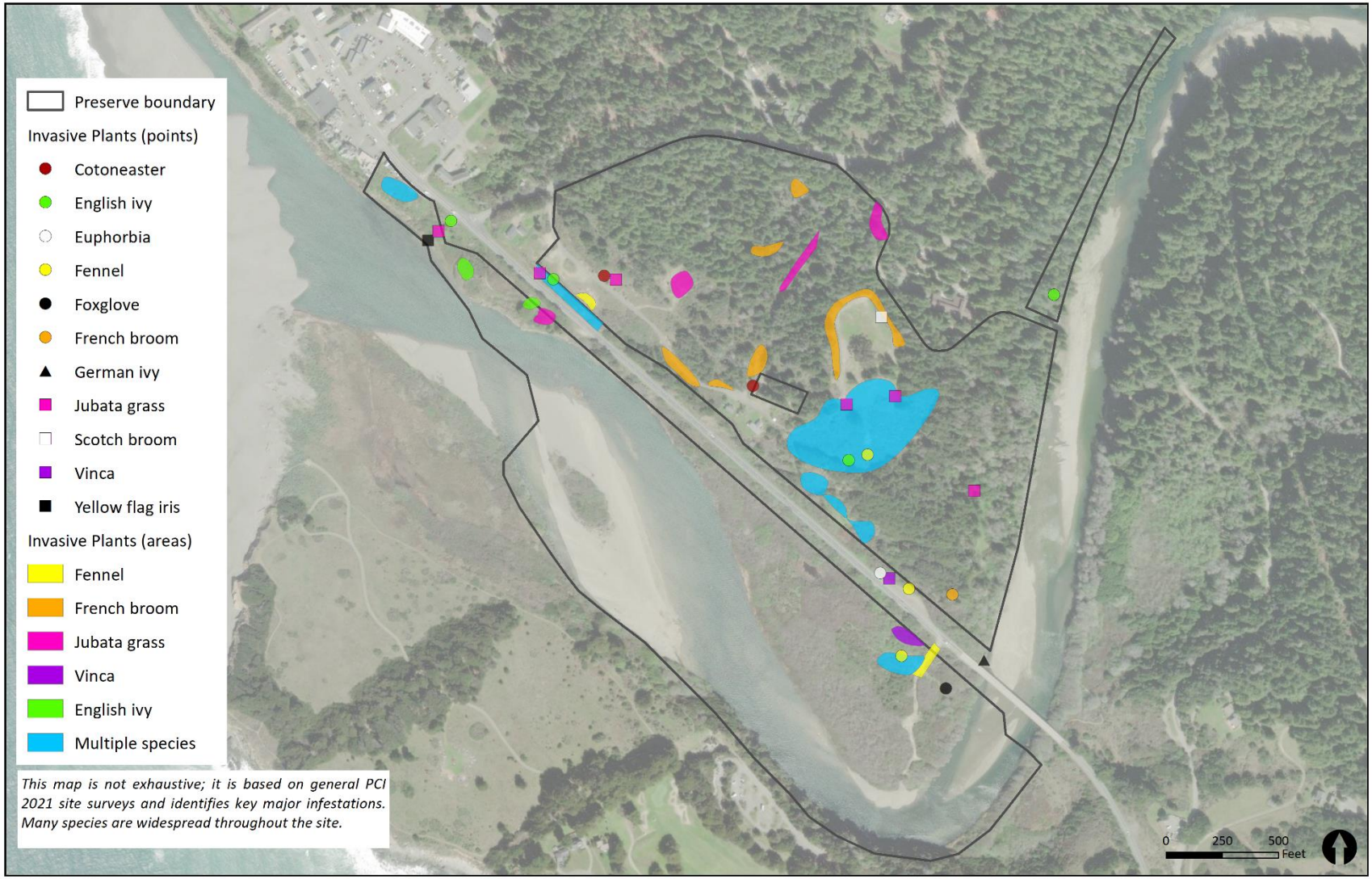


Figure 7.6. Invasive Plant Species Occurrences for Management *(Source: PCI surveys, 2021).*

Invasive Animal Management

There are a number of non-native animal species present in the Preserve area, but two are of particular concern due to their potential impacts on special-status salmonids and California red-legged frog: New Zealand mud snails (NZMS) and American bullfrog. Neither have been observed by PCI on site or reported by others to date, but NZMS are reported from the Garcia River (USGS 2022) and bullfrogs are known from many locations on the Mendocino-Sonoma coast.

NZMS are small (4-6 mm) snails with a gray to brown shell. CDFW (2022b) reports that NZMS inhabit a wide variety of substrates and vegetation in fresh and brackish water. They are tolerant of turbidity, siltation, salinity, warm temperatures, and short periods of desiccation. They attach readily to boots, clothing, watercraft, and vegetation and are spread through recreational activities, fishing, and boating. They can rapidly create dense populations and outcompete populations of aquatic insects that are the preferred food of native fish, potentially reducing salmonid health and survivorship.

American bullfrogs are large frogs introduced from the eastern US that have voracious appetites and will consume almost anything they can swallow. Due to their large size, overlapping habitat preferences, and competition for food and space, American bullfrogs have been implicated in the decline of the California red-legged frog. Bullfrogs are also a vector for a devastating amphibian disease, Bd, an aquatic fungus that causes chytridiomycosis in native frogs.

Objectives

A. Prevent the spread of invasive animals including New Zealand mud snail and American bullfrogs onto the Preserve.

Actions

IAM-1. Plan, educate and monitor to prevent the spread of invasive animals on the Preserve.

- For construction efforts in aquatic settings, develop and implement an invasive species plan to prevent the introduction and spread of non-native aquatic species, in particular New Zealand mud snail.
- Provide educational material at the kayak launch, and with kayak rentals, about NZMS and preventing its spread. Tailor the information to both anglers and boaters, asking visitors to report any findings and to follow decontamination protocols provided by CDFW (2016).
- Monitor for bullfrogs in conjunction with California red-legged frog. If identified, consult with a biologist to plan removal effort.

Restoration

In addition to the upland mill site restoration and estuary habitat enhancement addressed above, there are many other opportunities to improve habitat conditions on the site.

Objectives

A. Restore structurally diverse, robust, resilient native habitat to areas where diversity and function are diminished.
B. Expand populations of rare plant species.

Actions

RES-1. Revegetate and restore natural processes in Preserve locations with impaired natural functions or biodiversity.

- Restore wetland, willow, and coastal scrub habitat in the vicinity of the first mill site in conjunction with public access development (see Exhibit 2; along boardwalk).
- Expand wetland habitat in conjunction with salmonid habitat enhancement (see Appendix F).
- Restore native species in conjunction with invasive removal efforts and with trail decommissioning efforts.
- In conjunction with upland mill site restoration, plant conifers capable of providing wind shelter to the south of the eucalyptus to improve wind shelter and improve monarch habitat.
- In cooperation with Caltrans, restore bishop pine forest to the disturbed, open area near the main entrance, the upland west hillside, or other suitable locations. Caltrans is in process of developing a draft plan that would serve as mitigation for off-site impacts to bishop pine forest. Use seed or cuttings (Millar 1987) from the existing Mill Bend population, to conserve local genetic material. Incorporate an array of appropriate understory species in addition to woody plantings.
- Expand populations of rare plant species known on the site. Work with an experienced botanist to develop plans for appropriate receiving sites and seed collection and propagation methods, ensuring no impacts to existing populations.
  - Swamp harebell – in additional moist swales of the redwood understory, including where invasive species are removed. (Fringed corn lily is appropriate in similar settings, but already has extensive cover within its potential habitat.)
  - Coastal bluff morning glory – incorporate plantings into upland mill site restoration effort. See Exhibit B for discussion of the range of morphology and possible intergrading of subspecies on the site.
  - Point Reyes ceanothus – incorporate into upland mill site restoration effort, and other locations of invasive species removal in coastal scrub.
- When developing plant palettes for restoration, emphasize species with high potential to succeed and establish rapidly ("workhorse species"), but where feasible, also include other uncommon species of the Preserve, to expand diversity.

RES-2. In restoration planning, incorporate climate change considerations.

- Select plant palettes with climate change in mind. This is a new and evolving topic in restoration science, so stay apprised of developments. Based on our current understanding, plant palettes should still be comprised of species known to occur locally, but broadening the scope of a planting may provide insurance against future conditions. For instance, for upland mill site restoration, the planned palette has been selected to include species with a range of moisture needs and heat tolerances. Including multiple species from within plant lifeform types also provides redundancy that can serve as "insurance" against unknowns. Review species' known geographic distributions as a guide to how changing conditions may affect plantings.
- Select plant propagule sources with changing conditions in mind. This is another realm of developing knowledge. Current understanding suggests that selecting propagules from local

(Gualala area) sources, but aiming to capture genetic diversity and a range of environmental tolerances by collecting from a variety of individuals and a range of microhabitats relative to moisture, solar exposure, and elevation may be beneficial.

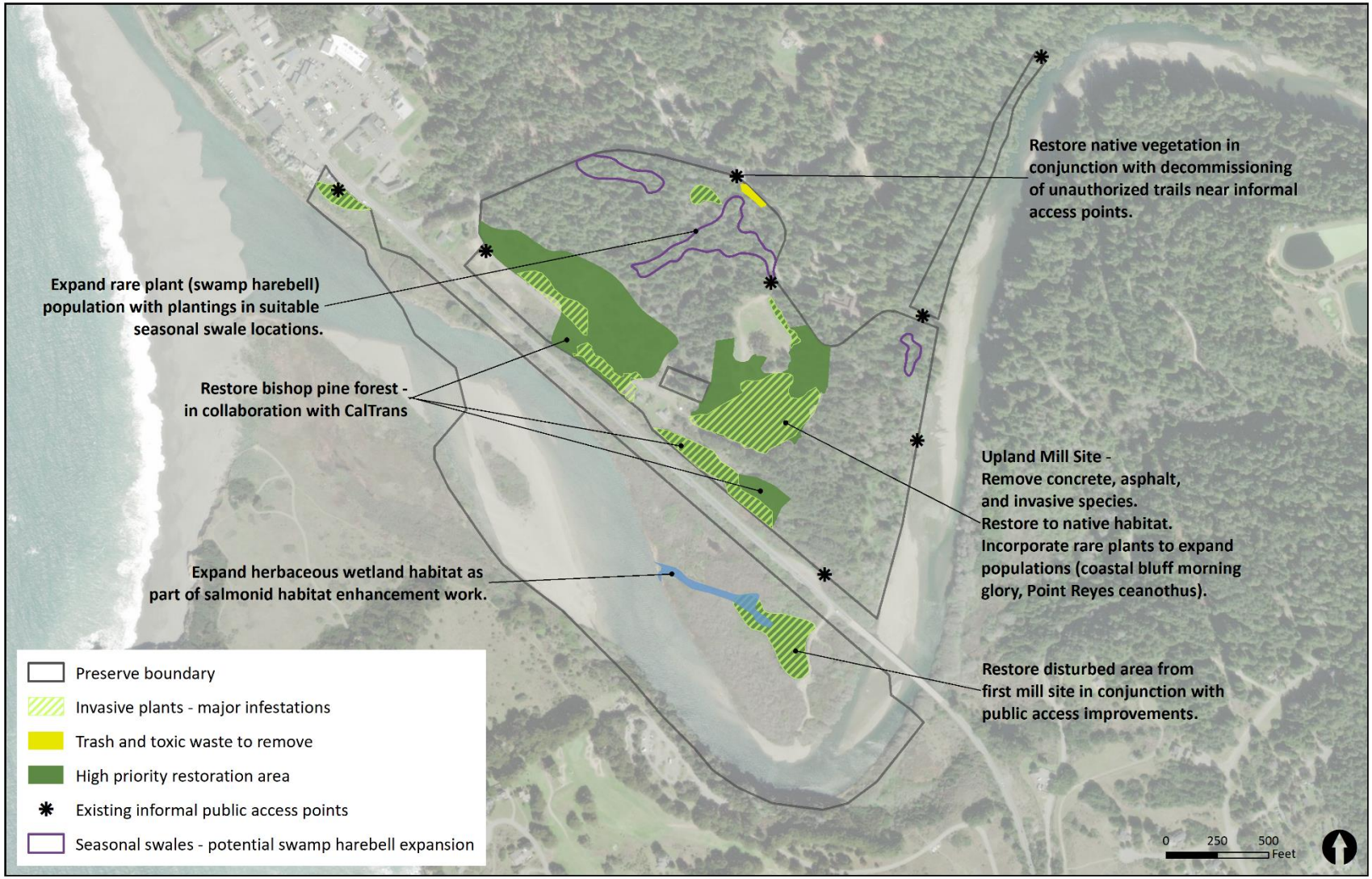


Figure 7.7. Additional Restoration Opportunities and Areas of Management Concern

7.6 Climate Resilience

Changing climate poses many challenges for Mill Bend's natural systems, from rising sea level flooding marshes to water stress for redwoods, higher water temperatures for salmonids and increased pest populations for bishop pine, and many more. To steward the Preserve during these rapid changes, RCLC can support the site's natural climate resilient qualities, and work to lessen the impact of climate change by reducing other stressors. Many of the objectives and actions described in the Plan support these goals; only key elements are listed here. There are also opportunities to reduce the carbon footprint of the Preserve.

Objectives

A. Minimize the carbon footprint of Preserve management activities, and support the natural carbon sequestration functions of Preserve habitats.
B. Support and improve Preserve qualities that provide natural resilience to climate change, including intact, diverse habitats; habitat connectivity; abundant and clean water resources; and thermal refugia for fish and wildlife.
C. Minimize other stressors to the Preserve's natural systems (e.g., invasive species, impacts from human activity).
D. In Preserve restoration efforts, plan for current and future conditions.
E. Incorporate evolving understanding of climate change effects into Preserve management.

Actions

CLI-1. Facilitate methods of Preserve access and management with a low carbon footprint.

- Encourage bicycling or walking to the Preserve by maintaining safe, accessible approaches to the site and providing bike racks at each entrance.
- Where vehicles and powered machinery are needed, use them efficiently. Use electric/battery-powered tools or hand labor where possible.

CLI-2. Support the Preserve's natural carbon sequestration and climate resilience potential.

- Facilitate the continued establishment of mature native trees and perennial grasses, and protect soils from disturbance, as all of these provide long-term carbon sequestration.
- Protect the riparian corridors along the river and China Gulch, and habitat connectivity between upland and riparian or wetland habitat. Conserving habitats across environmental gradients such as moisture may help allow for localized shifts within and beyond the property. Riparian woodlands are especially valuable, as these habitats are naturally resilient to changes in moisture, provide thermal refugia for wildlife, and already serve as corridors for wildlife movement.
- Protect water resources on the Preserve by maintaining and restoring the capacity of the land to absorb and store rainfall and runoff. Restoration of disturbed upland sites around the old mill operations will contribute to this goal, as will using permeable surfaces for parking where possible.
- In estuary enhancement work, increase habitat structural complexity for salmonids with large

wood, improving opportunities for refuge from increasingly intense flow events. Restore deep pools in the upper estuary, providing thermal refugia.

CLI-3. Monitor and learn in order to adapt stewardship methods to a changing environment.

- Stay apprised of evolving research and understanding about managing natural resources in the face of climate change. Regional organizations and collaboratives such as Climate Ready North Bay, the Terrestrial Biodiversity Climate Change Collaborative, and Point Blue all provide valuable resources for land managers addressing climate change.
- See Section 7.5, Habitat Protection measures, for habitat-specific monitoring to track climate change effects. See Section 7.5, Restoration, for incorporating climate change into restoration planning and implementation.

7.7 Fire Management

Fire is an integral process in most of California's landscapes. Prior to dense settlement, wildfires occurred with lightning strikes, and intentional burning was carried out by many indigenous tribes, including the Pomo. California ecosystems are adapted to periodic fire. Redwood forests are resistant to low-intensity fire and readily resprout; bishop pines rely on fire to germinate. Coastal grasslands regrow rapidly after surface fires, and riparian and wetland areas rarely burn due to their higher water content. Periodic fire also helps reduce pathogens and pest populations.

However, today, settlements and structures are abundant in and adjacent to wildlands like the Preserve, posing a challenge for management. At the same time, climate change is increasing the likelihood of higher-frequency and higher-intensity wildfire. Dense stands of flammable invasive species like broom further elevate the risk of damaging wildfires. Recent extreme fires in Sonoma County and Northern California emphasize the importance of fuels management, especially within and adjacent to towns and residential areas. Prescribed fire is an increasingly valued tool for fuel management in open spaces. It requires careful coordination to protect public safety and air quality, especially in locations like the Preserve, with its close proximity to Gualala, Gualala Arts Center, Highway 1, and related infrastructure. The potential for use of prescribed fire could be investigated with local fire agencies (South Coast Fire Protection District, Cal FIRE Mendocino Unit) and associations (Mendocino County Prescribed Burn Association, Good Fire Alliance of Sonoma County). In addition to reducing fuel loads, prescribed fire could support the persistence of bishop pine and other fire-facilitated species on the site.

In recent years, open space preserves have functioned as valuable locations for staging firefighting efforts to protect towns, and have themselves buffered residential areas from burning. When major firefighting efforts occur in native habitats, serious impacts can occur. Planning ahead to the extent possible to minimize those impacts, and working with fire agencies to ensure meaningful restoration afterwards, have become important parts of northern California open space stewardship.

At Mill Bend Preserve, fire management needs are to protect public safety and structures, and coordinate with local fire agencies to plan ahead for potential firefighting activity and its impacts, while also mimicking the benefits of natural wildfire cycles for the landscape.

Objectives – Fire Management

A. Protect public safety and Preserve infrastructure from damage by wildfire.
B. Reduce the risk of ignitions within the Preserve, and of fire spreading into or out from the Preserve.
C. Coordinate with local fire agencies and adjacent landowners to plan ahead for potential firefighting activity and potential prescribed fire activities on the Preserve.
D. Mimic the beneficial effects of naturally occurring fire for fire-dependent species.

Actions

FIR-1. Plan and design to minimize fire risk, to protect public safety in case of fire, and to support basic fire response capacity at the Preserve.

- When developing public access elements, plan for emergency access to the site and evacuation routes from the site in case of fire or another emergency. All new roads should accommodate emergency vehicles and meet CalFire regulations.
- Develop a fire management plan for the site, prepared by a specialist in fire ecology, fire behavior, and wildfire risk assessment. This would address wildfire hazard and risk on the site at a more detailed level, review wildfire response capabilities, and provide specific locations and treatments for fuel management and other risk reduction methods.
- Maintain a dedicated fire-tool cache in an easily accessible area. Typically, this will contain one McCleod, at least one Pulaski, several sturdy pointed shovels, safety gear, backpack water pumps, and hose. Confer with CalFire staff about any additional resources that RCLC may be able to maintain on site to support agency firefighting efforts, such as water sources and water delivery vehicles.
- Design any Preserve buildings, such as proposed education and research center, to be fire resistant. Maintain defensible space around buildings as specified by CalFire and Mendocino County. Current guidelines call for:
  - Zone 1: 0-5’ from buildings: Few or no plants; no flammable mulch. Hardscaping preferred. Any plantings should be well-hydrated. Ensure rooftops are clear of plant litter.
  - Zone 2: 5-30’ from buildings: Low-growing (3’ or less) herbaceous perennials and properly spaced shrubs or trees. Ensure grasses around these areas are cut to less than 4 inches in height from spring through fall.
  - Zone 3: 30-100’ from buildings: Well-maintained plant groupings (dead material removed) that transition into the natural landscape. Prohibit fires and smoking on the Preserve.
- Communicate with the community and other stakeholders to explain vegetation management practices, close areas off during work periods, and emphasize the need for all entities to take responsibility for wildfire prevention.
- Provide local fire agencies with information on Preserve roads and trails, fire-fighting resources, and sensitive areas to protect or avoid if possible. Seek their guidance on measures or resources needed to support fire-fighting efforts. Discuss how possible impacts from firefighting will be repaired.

- Discuss the potential for small-scale prescribed burning with fire agencies and other local prescribed burn experts (Mendocino County Prescribed Burn Association, Good Fire Alliance of Sonoma County).
  - Monitor for regeneration of bishop pine and other fire-facilitated plants including manzanita and ceanothus species. If lack of fire appears to be suppressing the regeneration, consider propagating and planting these species.

FIR-2. Reduce wildfire fuel loads on the Preserve.

- Remove invasive broom, which is highly flammable, throughout the Preserve. Minimize soil disturbance to prevent further encroachment of invasive/highly flammable species.
- Monitor for senescent or diseased trees, especially bishop pine, and remove these where near public use areas or roadways. Also monitor for other areas of potential dense fuel accumulation, such as aging coyote brush or tanoak affected by Sudden Oak Death, and thin.
- Reduce understory fuels in areas of high fire hazard, including the bishop pine forest along the highway (because of its proximity to the highway - a high use area and potential source of firebrands, and due to the nature of the fuels present). Management zone will vary (50' to 150'), with greater widths in steeper sections. Prune trees up to 12 feet.
- Along trails, roads, and other high use areas, create shaded fuel breaks, approximately 5-10' wide. Remove understory vegetation in that zone, especially highly flammable species like broom. In forested areas, remove any diseased or dead individuals at risk of falling onto trails. In grassland or scrub vegetation, trim or mow along road and parking edges. Chip woody materials and scatter on site.
- Coordinate with PG&E to review fuel reduction practices under power lines that run through the Preserve, and ensure these are aligned with RCLC goals for public safety, resource protection, and slash removal.
- In redwood forest, where high levels of downed wood are present from past logging practices, confer with fire management expert about removing some downed wood, if it is still flammable, to reduce potential for high intensity fire.

FIR-3. Reduce the potential for wildfire ignitions on the Preserve.

- When the National Weather Service issues a "red flag warning" for the area, no power equipment (chainsaws, mowers, etc.) should be used in grassland, shrub & woodland areas.
- All internal combustion driven equipment used in forest, woodland, and grasslands must have functioning spark arrestors: chainsaws, lawnmowers, weed-eaters, etc.
- When using equipment that could ignite vegetation – such as grinders, torches, or welding equipment – clear away flammable materials within a 10-foot-wide area around the operation.
- Trucks traveling on the property during fire season should be equipped with a shovel and fire extinguishers.
- Visitors must park in designated areas that have been cleared.
- Keep escape routes open during fire season and when burning.
- Burn slash piles only with a permit from CalFIRE and Air Resources Board when conditions are safe: wind less than 10 mph, high humidity and fuel moisture. Consider deploying biochar equipment to improve control and reduce air pollutants of pile burning.
- Burning is prohibited from May 1st until the end of CALFIRE's declared fire season.

- When burning in areas of continuous flammable vegetation or duff, clear a firebreak to mineral soil around burn piles. However, do not burn in designated sensitive areas and avoid grubbing out native species.

8 Implementation

Implementation of the Conservation Plan will span many years, and entail many steps; stewardship and maintenance activities will be ongoing. Some Plan elements will require significant regulatory compliance work and fundraising. Multiple agencies have jurisdiction over aspects of this sensitive environment, particularly with respect to aquatic and riparian resources, the coastal setting, and special-status species. These same sensitive resources may also open avenues for funding Preserve restoration and stewardship, with grant opportunities available for coastal access development, fisheries restoration, and wetland protection. This section provides a suggested timeline for implementation and a typical seasonal calendar for stewardship activities, identifies opportunities for grant fundraising, and concludes with guidance for regulatory compliance.

8.1 Schedule

RCLC will determine the timing for implementing specific projects based on the following considerations:

- Priority level for the Preserve's stewardship and function,
- RCLC's capacity for delivery and maintenance,
- Inter-relationship with other Preserve conservation and access actions, and
- The availability and timing of funding.

The schedule below (Table 8) is based on RCLC input, and indicates whether features are likely to be funded and implemented in the short term (1-2 years), medium term (3-5 years), or long term (5-10 years), and includes information about initial steps on each item.

The priority actions for the Preserve are driven by community input and resource management needs. Estuary enhancements for salmonid recovery and improving public access were the top two actions that the community wanted to see happen quickly on the Preserve. To meet this mandate, RCLC has submitted grant applications to the California Department of Fish and Wildlife to prepare a Salmonid Habitat Enhancement Plan and develop designs for Phase 1 implementation. Designs for trails and visitor amenities at the Mill Bend estuary access have been furthered under State Coastal Conservancy funding of the MBPMP. Applications for grants to complete those designs and to plan and design the CCTX are planned in the near term. Funding for project construction will be pursued in conjunction with the completion of planning-phase work.

Within the public access elements, those providing for basic access functions (e.g., parking, trails and sidewalks) may be prioritized, with accessory features such as boardwalks, bathrooms, and the suspension bridge as stand-alone pieces. However, in some cases, it may be most efficient to seek funds for and implement adjacent elements (basic and accessory) at the same time. For additional detail on steps toward development of public access improvements, see Appendix C.

*Table 9. Approximate Timeline for Implementation of Major Plan Elements**

Plan Element Year	1	2	3	4	5	6	7	8	9	10
ESTUARY ENHANCEMENT										
Develop comprehensive Habitat Enhancement Plan										
Prepare Phase 1 design and implement						*Maintain/monitor*				
Prepare additional enhancement designs and implement										
UPLAND MILL SITE RESTORATION										
Complete background investigations, internal decision-making, and fundraising										
Develop detailed mill site restoration plan										
Prepare for implementation										
Implement									*Maintain/ monitor*	
PUBLIC ACCESS										
Implement Mill Bend parcel estuary access elements: complete design, planning, and construction.	*Design & plan*		*Construct*							
Implement California Coastal Trail Extension route: complete design, planning, and construction.		*Design & plan*		*Construct*						
Complete background investigations for other public access elements.										
Implement other access elements.										
Ongoing: Conduct management of the site and public uses to protect resources, maintain safe conditions, and to build positive relations with the community. Provide an array of interpretive, educational, and volunteer opportunities to engage the community in learning about and helping care for the Preserve.										
CULTURAL RESOURCES PROTECTION										
Conduct further evaluation of historic resources.										
Develop and provide educational information about the site's history.										
Ongoing: Implement protection measures and continue tribal outreach efforts.										
BIOLOGICAL RESOURCES STEWARDSHIP, CLIMATE RESILIENCE, and FIRE MANAGEMENT										
These measures will be ongoing.										

*Note: Timeline sequence is contingent upon funding availability. This sequence assumes public agency grant and concept proposals pending at the time of publication are approved in Fiscal Year 2022-2023.

8.2 Seasonal Calendar

Table 10 provides a typical seasonal calendar for the key stewardship activities described in the plan. Activities that can occur at any time of year are not shown.

Table 10. Seasonal Calendar of Stewardship Activities

	Task	Location	Frequency/Season	J	F	M	A	M	J	J	A	S	O	N	D
Managing Public Uses	Conduct patrols to identify unauthorized uses, safety hazards and maintenance needs in public use areas, and address promptly.	All	Approximately weekly												
	Maintain restrooms, remove trash, restock dog waste bags and any informational fliers.	All trails, access points	Approximately weekly												
	Review Preserve roads, trails, boardwalks, signage, drainage structures, and buildings to identify and complete needed repairs.	All	Quarterly												
	Mow and/or trim back overhanging vegetation along trails and boardwalk, and in parking areas where needed. Conduct breeding bird/bat surveys prior to activity.	All	Twice annually; mow in spring where native grasses and coastal bluff morning glory occur, to allow for bloom/seed set. Prune in dry weather as feasible.												
Habitat Protection - Special Status Species	Monitor rare plant populations annually to review their extent, health, and stewardship needs.	All	Annually in species' blooming season						swamp harebell						
							coastal bluff morning glory								
										fringed cornlily					
						Point Reyes ceanothus									

	Task	Location	Frequency/Season	J	F	M	A	M	J	J	A	S	O	N	D
	Monitor California red-legged frog population annually.	Wetland/ aquatic habitat	Annually												
Contaminant and Pathogen Control	Annual training of staff/volunteers on pathogen control (chytrid, Sudden Oak Death) and spill prevention. May be in conjunction with general sensitive resource training.	All	Annually or as-needed												
	Monitor for plant disease (Sudden Oak Death in bays and tanoaks, and pitch canker and needle blight in bishop pine).	All	Annually, summer												
Invasive Species Management	Invasive plant mgmt. - see Appendix H.	All	Ongoing												
	Monitor for American bullfrogs in conjunction with the Red-legged frog.	Wetland/ aquatic habitat	Annually												
Restoration	Collect seed for restoration planting/ nursery propagation.	TBD	Summer through fall												
	(Typical) restoration planting.	TBD	Fall												
	(Typical) restoration planting maintenance; weeding and irrigation	TBD	Spring through fall												
	(Typical) restoration planting performance monitoring.	TBD	Annual, summer												
Fuel Reduction	Monitor for/remove diseased or dying trees near public use areas. Monitor for/thin other areas of dense fuels, understory fuels in high hazard zones, and along trails/roads.		Annual, spring to early summer. Conduct breeding bird/bat surveys prior to activity.												

8.3 Potential Funding Sources

There are many state-level and other sources of grant funding for improving public access to parks and preserves, and for restoration of impaired conditions, especially in riparian, wetland, and aquatic settings. The current (2022) grant sources are briefly described below. Private donations have also been a major source of support for RCLC's work, and is likely to continue to support ongoing stewardship and access developments.

See design memos (Appendices C, E, and F) for implementation cost estimates.

California Coastal Conservancy

The Coastal Conservancy, which provided funding for the Mill Bend Conservation Plan, accepts grant applications on an ongoing basis for projects that benefit public access, natural resources, working lands, and climate resiliency on the California coast. The process begins by contacting the appropriate Regional Manager. https://scc.ca.gov/grants/

California Coastal Commission

Whale Tail Grant Program. This program is for projects focusing on coastal and ocean education and stewardship. Climate change-related projects are eligible, as are projects that engage people in protecting and conserving the coast and ocean through beach cleanups, ecological restoration, or otherwise. Projects can engage California youth, adults, or general public. WHALE TAIL® Grants focus on reaching communities in California that have historically received fewer marine education and stewardship opportunities. Up to $50,000 per grant. Annual cycle, typically with a November application deadline. https://www.coastal.ca.gov/whaletailgrant/

Explore the Coast Grants. These grants are to increase opportunities for people to get to, learn about, and enjoy coastal areas, with a focus on people and communities who face challenges to accessing or enjoying the coast ("ETC Priority Communities"). ETC Priority Communities include but are not limited to lower-income individuals and households, people with disabilities, people of color, immigrant communities, and foster youth, among others. At least 50% of participants served by the ETC grant must be from an ETC Priority Community and must meet one or more of the following program priorities:

- Provides an enjoyable experience at the coast.
- Reduces economic, physical, operational, or societal barriers to accessing or enjoying the coast.
- Inspires ongoing coastal resource stewardship ethic through active learning and interactive activities.

https://scc.ca.gov/grants/explore-the-coast-grants/

California Department of Fish and Wildlife

Fisheries Restoration Grant Program. The overall goal of FRGP is to recover and conserve salmon and steelhead trout populations through restoration activities that reestablish natural ecosystem functions,

to ensure the survival and protection of the species in California. Each year, FRGP issues millions of dollars in grants to public agencies, Native American Indian Tribes, and nonprofit organizations for projects that lead to process-based restoration, enhancement, or protection of anadromous salmonid habitat. Provides coverage of CEQA, Clean Water Act Section 401 certification through the State Water Resources Control Board, and Section 404 Army Corps of Engineers permit. Annual proposal solicitation notice typically released in spring. https://wildlife.ca.gov/Grants/FRGP

Proposition 1 Watershed Restoration Grant Program. To fund multi benefit ecosystem and watershed protection and restoration projects. Funds water quality, river, and watershed protection and restoration projects of statewide importance outside of the Delta. Annual proposal solicitation typically released in June. https://wildlife.ca.gov/Conservation/Watersheds/Restoration-Grants

Proposition 68 Restoration Grant Programs. For projects that support restoration of rivers and stream for fisheries and wildlife, and improvement of conditions for fish and wildlife in streams, rivers, wetlands and estuaries. Includes planning, implementation, and acquisition projects. Example projects include reconnection of rivers with their flood plains, riparian and side-channel habitat restoration and restoration and protection of upper watershed forests and meadow systems that are important for fish and wildlife resources. https://wildlife.ca.gov/Conservation/Watersheds/Prop-68

Cal FIRE

California Forest Improvement Program. The purpose of the CFIP program is to encourage private and public investment in, and improved management of, California forest lands and resources. The program scope includes the improvement of all forest resources including fish and wildlife habitat, and soil and water quality. Cost-share assistance is provided to private and public ownerships containing 20 to 5,000 acres of forest land. Cost-shared activities include preparation of a forest management plan by a Registered Professional Forester (RPF) and RPF supervision of reforestation, stand improvement, and fish and wildlife habitat improvement. https://www.fire.ca.gov/grants/california-forest-improvement-program-cfip/

California Natural Resources Agency

CNRA contributed funding to the acquisition of Mill Bend.

Environmental Enhancement and Mitigation Program. This program is to mitigate for the environmental effects of transportation facilities through urban forestry projects that sequester carbon and resource land projects which restore and conserve land and enhance biodiversity. Eligible projects include:
1) urban forestry projects designed to offset vehicular emissions of carbon dioxide; 2) resource lands pr ojects that provide for the acquisition or enhancement of resource lands to mitigate the loss of, or the d etriment to, resource lands lying within or near the right-of-way acquired for transportation improvements; and 3) mitigation projects beyond the scope of the lead Agency responsible for assessin g the environmental impact of the proposed transportation improvement. https://resources.ca.gov/grants/environmental-enhancement-and-mitigation-eem

- For example, if a nearby road improvement project resulted in loss of bishop pine forest habitat, restoration of bishop pine forest to old mill areas could provide potential mitigation.

Wildlife Conservation Board

Provides grants on a rolling basis. The process begins with submittal of a pre-application, and WCB identifies which funding sources would be appropriate. Eligible project types include planning, implementation, acquisition, scientific studies, and others. WCB priorities include projects that provide long-term benefits in the following realms:

- Protected or enhanced biodiversity
- Climate change resiliency and connectivity
- Support of the State Wildlife Action Plan priority habitats
- Conserved or enhanced working landscapes
- Conserved or enhanced water-related projects
- Enhanced public access.

Projects should also contribute to the State of California's priorities such as protecting biodiversity, increasing climate resilience, providing access for all, and expanding nature-based solutions through initiatives such as the Pathways to 30 X 30 document that identifies a goal of protecting 30 percent of California's land and coastal waters by 2030.

https://wcb.ca.gov/Grants

Specific programs of the Wildlife Conservation Board include:

California Riparian Habitat Conservation Program – Example projects include:

- Restoration of riparian vegetation and re-establishing floodplain connectivity.
- Active or passive restoration that may include an element of invasive plant removal and control.
- Installation of fencing along the riparian corridor to manage livestock or wildlife and reduce impacts to streams or riparian vegetation.
- Reconfigure degraded, incised, or undefined streams to restore natural hydrology and encourage reestablishment of native riparian habitat.

Habitat Enhancement and Restoration Program

- Habitat restoration, wildlife corridors, and fisheries enhancements. Based on recommendation from CDFW.

Public Access Program

- Development of public access facilities designed to facilitate and encourage the public's access t o hunting, fishing or other wildlife-oriented recreation. Eligible project types include fishing piers or floats, public access roads, boat launching ramps, trails, boardwalks, interpretive facilities and lake or stream improvements. Support facilities such as restrooms and parking are also eligible.

US Fish and Wildlife Service

National Coastal Wetlands Conservation (NCWC) Grants

A NCWC grant through the Coastal Conservancy helped fund the acquisition of Mill Bend. These grants are both for the acquisition of coastal lands or waters and for the restoration, enhancement, or management of coastal wetlands ecosystems. They are provided to state agencies, with which conservation organizations may partner on projects. Priority is given to projects that: 1) support the goals of the National Wetlands Priority Conservation Plan, 2) provide long-term conservation, 3) conserve maritime forest on coastal barrier islands**,** 4) benefit threatened and endangered species*,* 5) encourage public-private partnerships, and 6) complement other conservation projects. Matching funds are required. https://www.fws.gov/story/national-coastal-wetlands-conservation-grants

8.4 Regulatory Compliance

Biological and cultural stewardship actions, restoration work, and public access activities proposed in the conservation plan are subject to stringent and complex environmental regulations. Protection and enhancement of the breathtaking Preserve lands and providing public access to such a special landscape involves a regulatory framework that can be complicated by the layered and concurrent jurisdiction between local, state, and federal agencies. These layers can create the potential for involvement by multiple agencies during the project approval process because the Preserve is located in the Coastal Zone on land that supports sensitive resources under the jurisdiction of numerous ecological and land use agencies. This section describes two important regulatory compliance components: compliance with the California Environmental Quality Act and the environmental permitting process. Potential compliance strategies are provided based on the components presented in the Conservation Plan.

California Environmental Quality Act (CEQA)

CEQA is an environmental review of a project, not an actual project approval. CEQA must be completed before a state or local agency can approve a project or issue a permit that could impact the environment. The CEQA process allows public agencies, the public, and project proponents to evaluate a project, understand potential environmental impacts of the project, and develop measures to reduce potential impacts. CEQA applies to projects that require discretionary permits from a state public agency. CEQA documents include information about the project, the areas where it may cause environmental impacts, whether the proposed project complies with applicable environmental laws and plans, and how the impacts can be avoided or mitigated.

Defining the Project and Identifying the Lead Agency

The CEQA Guidelines define a project under CEQA as “the whole of the action” that may result either directly or indirectly in physical changes to the environment. The CEQA Guidelines §15378 define a project as (1) an activity undertaken by any public agency; (2) activity undertaken by a person/organization which is supported in whole or in part through public agency contracts, grants, or other forms of assistance from one or more public agencies; and (3) any activity involving the issuance

to a person/organization of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies. If an action does not meet the definition of a project under CEQA, no CEQA compliance is necessary. For instance, a project on the Preserve that is privately funded and does not require approval from any local or state agency would not be considered a project under CEQA.

The CEQA process requires identification of a CEQA Lead Agency. The lead agency under CEQA is the public (state or local) agency that has the primary responsibility for carrying out or approving a project. Project approval may be issuance of a permit for a project proponent to implement a project. A CEQA Lead Agency must have discretionary authority over a proposed project. The lead agency will decide whether a project is subject to the CEQA or is categorically exempt, and if subject to CEQA, whether an Environmental Impact Report (EIR), Mitigated Negative Declaration (MND), or a Negative Declaration (ND) will be required for the project. The lead agency is responsible for preparing the appropriate CEQA document, although project proponents often prepare the CEQA document under the guidance of the Lead Agency.

Many of the potential activities included in this plan could be considered a project under CEQA. As discussed in Chapter 2.5, Applicable County, State, and Federal Regulations, and in the Regulatory Compliance Table in Appendix I, numerous state and local agencies have permitting authority for all or portions of the potential activities on the Preserve. Therefore, proposed activities will be subject to CEQA; however, a number of activities may be deemed exempt by the CEQA Lead Agency depending on the individual project.

CEQA Exemptions

Some projects are exempt from the provisions of CEQA. There are two types of exemptions under CEQA: statutory and categorical. Statutory exemptions are projects specifically excluded from CEQA consideration as defined by the State Legislature. These exemptions are delineated in the Public Resources Code §21080 et seq. A statutory exemption applies to any given project that falls under its definition, regardless of the project's potential impacts to the environment. Nonetheless, a statutorily exempt project must still meet all applicable local, state, and federal laws.

Categorical exemptions are made up of classes of projects that generally are considered not to have potential impacts on the environment. Categorical exemptions are identified by the State Resources Agency and are defined in the CEQA Guidelines (14 CCR Section 15300-15331). Unlike statutory exemptions, categorical exemptions are not allowed for projects that may cause a substantial adverse change in the significance of an historical resource (14 CCR Section 15300.2(f)). Therefore, one of the first steps in the CEQA process is to first determine if the project has the potential to impact historical resources.

Evaluating the Whole Project

Piecemealing or segmenting means dividing a project into two or more pieces and evaluating each piece in a separate environmental document, rather than evaluating the whole of the project in one environmental document. This is explicitly forbidden by CEQA, because dividing a project into a number of pieces would allow a Lead Agency to minimize the apparent environmental impacts of a project by evaluating individual pieces separately, each of which may have a less-than-significant impact on the environment, but which together may result in a significant impact. In general, if an activity is necessary

for the operation of a project, necessary to achieve the project objectives, or a reasonably foreseeable consequence of approving the project, then it should be considered an integral project component that should be analyzed within the environmental analysis.

Again, the CEQA Lead Agency is the entity with the responsibility to determine the appropriate approach for CEQA compliance. However, the Conservation Plan includes numerous distinct actions that can occur independently from the others identified in the plan. For instance, the public access plan does not depend on the estuary habitat enhancement activities to achieve the public access objectives nor does the estuary enhancement depend on public access to meet the proposed objectives for habitat enhancement. In this scenario, the two components could be viewed as two separate projects under CEQA.

In addition, the initial public access (Mill Bend Access and Coastal Trail Connection) may not depend on future public access to successfully provide visitors opportunities to enjoy the Preserve. In other words, the initial public access project could meet all project objectives without any future projects designed to provide additional public access to the Preserve. However, construction of the access road, ADA-compliant parking and porta-toilets, and the access to and from Highway 1 to the Mill Bend site are all necessary to provide public access and to meet the access objectives in the area. Therefore, all elements of the Mill Bend Access must be analyzed together to appropriately determine potential impacts from a single project and would be considered the "whole of the action" under CEQA.

CEQA Approach for Mill Bend

RCLC will identify an appropriate CEQA Lead Agency for when funds become available to implement each component identified in the conservation plan. The CEQA Lead Agency will then evaluate the proposed project and determine if the project is exempt or if a CEQA document is required. The following table identifies potential CEQA compliance strategies for RCLC to achieve the future vision of the Preserve.

Table 11. Potential CEQA Compliance Scenarios

Preserve Component	Potential Lead Agency	Likely / Potential Authorizations Needed	Potential CEQA Compliance Mechanism
Mill Site Restoration	Mendocino County if permits are required or a funding agency if grants secured from state or local agencies	Coastal Development Permit or other Mendocino County permits	May be exempt or may require a CEQA document depending on Mendocino County. A possible categorical exemption may be Class 5 exemption for small alterations of land (§15305)
Estuary Enhancement	Mendocino County or Regional Water Quality Control Board	Numerous permits from local and state agencies that are specifically designed for permitting restoration activities using Cutting the Green Tape[12] processes and federal permitting processes specifically designed for salmonid habitat restoration.	Statutory Exemption for Habitat Restoration (SERP) through CDFW or categorically exempt using a Class 33 exemption for small habitat restoration (§15333)
Public Access, initial and future access	California Coastal Commission, Caltrans	Coastal Development Permit and Caltrans Encroachment permit	CEQA must include the initial public access and may possibly need an analysis of future public access depending on the decision by CEQA Lead Agency
Cultural Resources Protection	N/A	State Historic Preservation Officer (SHPO) / Evaluation of eligibility for the National and California Registers of Historic Places	Evaluation needed to determine appropriate CEQA compliance methods.
Biological Resources Stewardship	Depends on authorizations needed but could include California Department of Fish and Wildlife, the Regional Water Quality Control Board, or Mendocino County	Numerous permits from local and state agencies may be needed depending on the proposed activities, see Appendix I for a list of permitting agencies	Activities proposed in the conservation plan are likely exempt from the provisions of CEQA because the restoration activities would not have significant impacts on the environment, including those with the safe use of herbicides. Some activities may not be a project under CEQA.
Climate Resilience	N/A	N/A	Project designs must account for climate change. No stand-alone activities proposed in the conservation plan for climate resiliency.

[12] Cutting Green Tape (CGT) is an initiative of the California Natural Resources Agency to increase the pace and scale of ecological restoration by streamlining government processes. CGT is focused on improving interagency coordination, agency processes and policies to allow ecological restoration to occur more quickly, simply, and cost-effectively. The CGT initiative is prioritizing efficient funding processes and engaging stakeholders in creating streamlined investments that achieve the State's restoration and biodiversity goals.

Preserve Component	Potential Lead Agency	Likely / Potential Authorizations Needed	Potential CEQA Compliance Mechanism
Fire Management	CalFire for prescribed burning and potential fuel breaks	Numerous depending on activity	Potential use of a Statewide CalVTP Programmatic Environmental Impact Report[13] for CEQA Compliance

Regulatory Permitting

A number of proposed activities captured in the conservation plan may require permits from local, state, and federal agencies. Appendix I includes a list of potential permits needed for each category of activities. The specific location and the type of ground-disturbing work will dictate the permit needs on a case-by-case basis. The table below lists the type of permits that may be needed for the work proposed within the Preserve grouped by conservation plan components, providing likely permitting routes for key project elements.

Table 12. Potential Permitting Strategies

Preserve Component	Agency/Permit Type	Jurisdictional Area	Potential Permit Type Permit
Mill Site Restoration	State Historic Preservation Officer and Tribal Preservation Officer	Historic, cultural, and tribal resources	National Historic Preservation Act Section 106 Compliance
	California Department of Fish and Wildlife / Incidental Take Permit	Rare plants	Restoration Management Permit (RMP)
Estuary Habitat Enhancement	U.S. Army Corps of Engineers / Clean Water Act Section 404 Permit or Section 10 Rivers and Harbors	Waters of the U.S.	Nationwide Permit #27
	U.S. Army Corps of Engineers / National Historic Preservation Act Section 106 Compliance	Historic, cultural, and tribal resources	Concurrence as part of Corps permit
	US Fish and Wildlife Service / Biological Opinion (Section 7 Endangered Species Act)	Federally listed plant and animal species	Concurrence as part of Corps permit
	National Marine Fisheries Service / Biological Opinion (Section 7 Endangered Species Act)	Federally listed aquatic species	Concurrence as part of Corps permit
	California Department of Fish and Wildlife / Streambed Alteration Agreement	Within the bed and bank of a stream or river / Gualala Estuary	Habitat Restoration and Enhancement Act of 2014 for projects less than 5 acres or Streambed Alteration Agreement issued in conjunction with Resource Management Permit if larger than 5 acres

[13] CalVTP Programmatic EIR is a streamlined method for CEQA review of vegetation treatment projects across the state of California. It provides a process to evaluate proposed fuels treatments, prescribed fire, and other fuels and fire management activities. It was developed by the Board of Forestry and Fire Protection. The CalVTP cannot be used for trails or public access activities.

Preserve Component	Agency/Permit Type	Jurisdictional Area	Potential Permit Type Permit
	California Department of Fish and Wildlife / Incidental Take Permit	State-listed special status species	Resource Management Permit
	California Coastal Commission	Development within the coastal zone	Letter of Consistency in conjunction with NOAA Fisheries using Consistency Determination CD-021-13
	Regional Water Quality Control Board	Fill within waters of the State	Notice of Intent, General Order for Restoration Projects
Public Access	U.S. Army Corps of Engineers / Clean Water Act Section 404 Permit or Section 10 Rivers and Harbors	waters of the U.S.	Nationwide Permit #27
	U.S. Army Corps of Engineers / National Historic Preservation Act Section 106 Compliance	Historic, cultural, and tribal resources	Concurrence as part of Corps permit
	US Fish and Wildlife Service / Biological Opinion (Section 7 Endangered Species Act)	Federally listed plant and animal species	Concurrence as part of Corps permit
	California Department of Fish and Wildlife / Streambed Alteration Agreement	Within the bed and bank of a stream or river, and for ground disturbance within riparian corridor	Streambed Alteration Agreement
	California Department of Fish and Wildlife / Incidental Take Permit	State-listed special status species	Incidental Take Permit
	Caltrans	Encroachment into state highway rights-of-way	Encroachment Permit
	California Coastal Commission and/or Mendocino County	Development within the coastal zone	Coastal Development Permit
	Regional Water Quality Control Board	Fill within waters of the State	401 Water Quality Certification
Biological Resources Stewardship, depending on location	U.S. Army Corps of Engineers / Clean Water Act Section 404 Permit	Waters of the U.S.	Nationwide Permit #27
	U.S. Army Corps of Engineers / National Historic Preservation Act Section 106 Compliance	Historic, cultural, and tribal resources	Concurrence as part of Corps permit
	US Fish and Wildlife Service / Biological Opinion (Section 7 Endangered Species Act)	Federally listed plant and animal species	Concurrence as part of Corps permit
	California Department of Fish and Wildlife / Streambed Alteration Agreement	Within the bed and bank of a stream or river	Habitat Restoration and Enhancement Act of 2014 for projects less than 5 acres or Streambed Alteration Agreement for larger projects
	California Department of Fish and Wildlife / Incidental Take Permit	State-listed special status species	Resource Management Permit
	Regional Water Quality Control Board	Fill within waters of the State	Notice of Intent, General Order for Restoration Projects

Preserve Component	Agency/Permit Type	Jurisdictional Area	Potential Permit Type Permit
Fire Management	CalFire	Within State Responsibility Area	CalVTP streamline CEQA and permitting

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