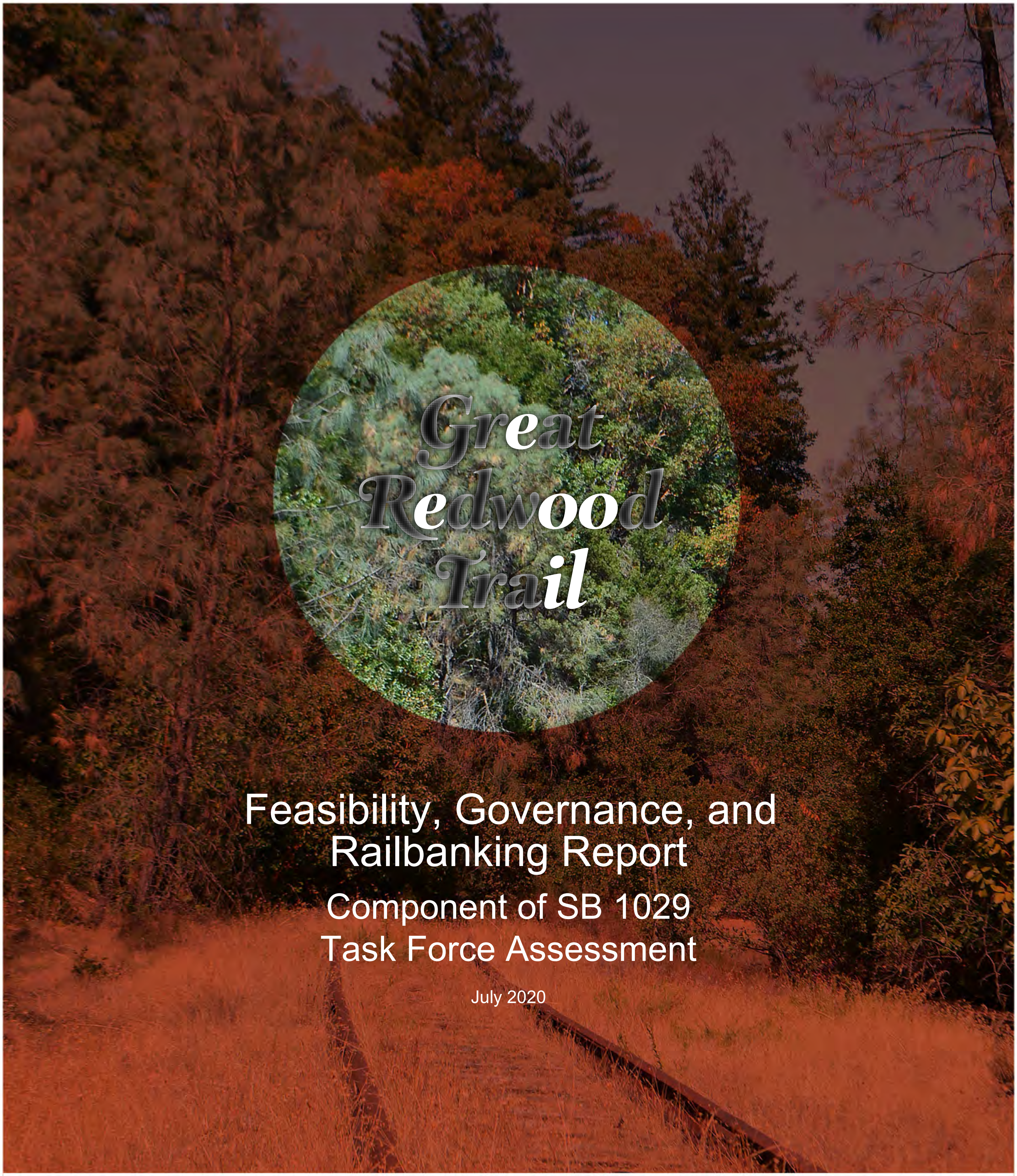

Great Redwood Trail

Feasibility, Governance, and Railbanking Report

Component of SB 1029 Task Force Assessment

July 2020

Title:	GREAT REDWOOD TRAIL FEASIBILITY, GOVERNANCE, AND RAILBANKING REPORT July 2020
Prepared for:	California State Parks Strategic Planning and Recreation Services Division 1725 23rd Street Sacramento, CA 95814 California Natural Resources Agency 1416 Ninth Street, Suite 1311 Sacramento, CA 95814 California State Transportation Agency 915 Capitol Mall, Suite 350B Sacramento, CA 95814
Prepared by:	Ascent Environmental, Inc. Contact: Nanette Hansel and Curtis Alling, AICP Alta Planning + Design Contact: Deven Young, PLA and Michael Jones

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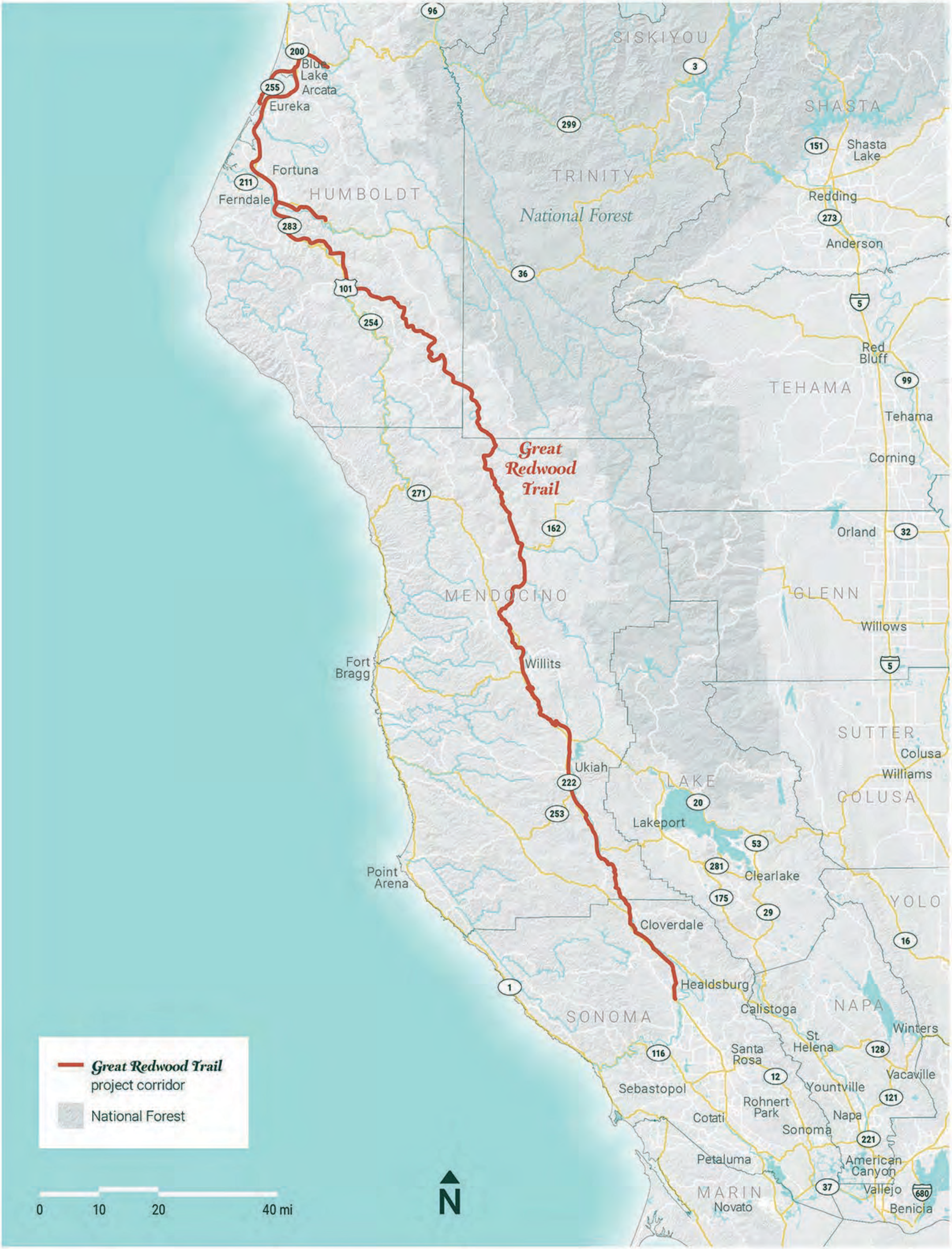

Great Redwood Trail
Great Redwood Trail
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SISKIYOU
SHASTA
TRINITY
National Forest
HUMBOLDT
TEHAMA
MENDOCINO
GLENN
SUTTER
LAKE
COLUSA
YOLO
NAPA
SONOMA
MARIN
Blue Lake
Arcata
Eureka
Fortuna
Ferndale
Shasta Lake
Redding
Anderson
Red Bluff
Tehama
Corning
Orland
Willows
Colusa
Williams
Fort Bragg
Willits
Ukiah
Lakeport
Clearlake
Point Arena
Cloverdale
Healdsburg
Calistoga
St Helena
Winters
Santa Rosa
Sebastopol
Yountville
Vacaville
Rohnert Park
Cotati
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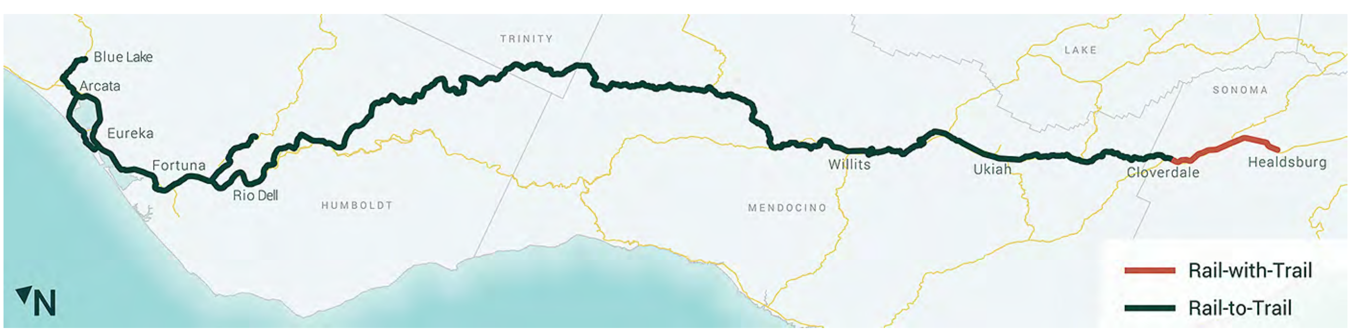
Executive Summary

Senate Bill (SB) 1029 (Statutes of 2018) directed the California State Transportation Agency (CalSTA), in consultation with the California Natural Resources Agency, to conduct an assessment of the North Coast Railroad Authority (NCRA) and its rights-of-way (ROW). The assessment of NCRA is intended to provide information necessary to determine the most appropriate way to dissolve the existing agency, establish renewed governance of the corridor, and re-assign corridor assets and liabilities. The legislation recognizes that the rail corridor presents the opportunity to convert over 300 miles of the former North Western Pacific (NWP) railroad into a long-distance recreational trail.

This document, consisting of a trail feasibility assessment and governance and railbanking report, is prepared under contract with California State Parks—an SB 1029 agency—and is one component of a full SB 1029 Assessment. It evaluates the feasibility of repurposing a 252-mile portion of NCRA's ROW into the Great Redwood Trail. The corridor evaluated herein extends from Healdsburg in Sonoma County to Blue Lake, northeast of Arcata; it passes through the cities of Healdsburg, Cloverdale, Ukiah, Willits, Fortuna, Rio Dell, Eureka, Arcata, and Blue Lake, and dozens of unincorporated communities.

The southern section, from Healdsburg to Cloverdale, is evaluated for the potential of a rail-with-trail, or RWT, where a rail facility and trail would share the corridor, consistent with Sonoma-Marin Area Rail Transit's (SMART's) existing RWT operations south of Healdsburg and its plans to develop passenger service to Cloverdale in the future (Figure ES-1). The central and northern portions of the corridor are evaluated for the potential to convert the existing rail line to a trail, known as rail-to-trail, or RTT, where rail service would cease, and the corridor facility would become a public trail.



Source: Alta and Ascent Environmental 2020

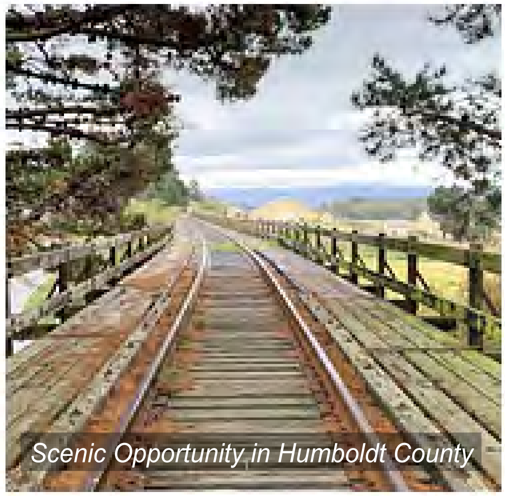
Figure ES-1 Rail-with-Trail and Rail-to-Trail Sections Evaluated in this Feasibility Assessment


Intact Loleta Tunnel


Damaged Trestle along Humboldt Bay


Trestle above the Eel River at Shively


Landslide in Southern Portion of Corridor


Scenic Opportunity in Humboldt County


Landslide in Eel River Canyon


Island Mountain Bridge and Tunnel


Undercut Section of Corridor


Vegetation Cleared by Local Agency


Abandoned Railroad Engine in Eel River


Bridge over Freshwater Slough in Eureka


Partially Collapsed Tunnel

Trail Feasibility Assessment Overview

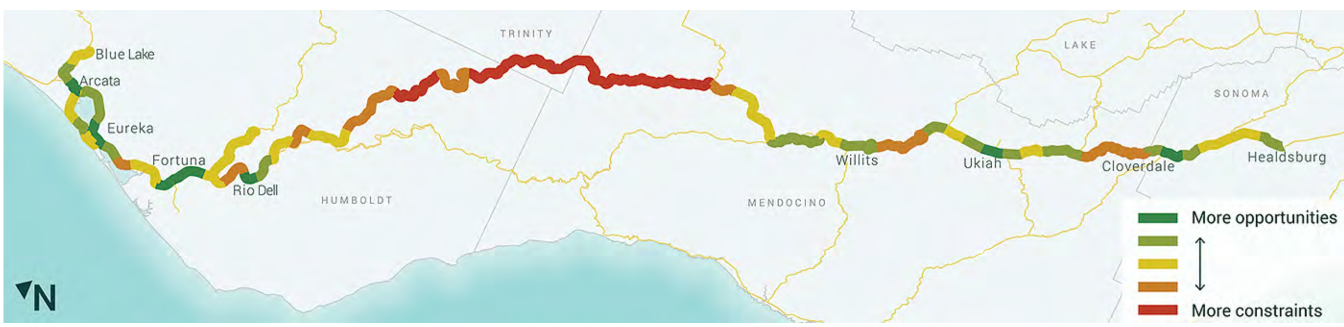
The trail feasibility assessment evaluates the condition of railroad infrastructure and physical and environmental characteristics of the corridor that pose opportunities and constraints. The assessment also ranks the 57 segments that are defined by access points based on their level of opportunity or constraint and the anticipated level of trail user demand. It considers these factors and potential costs to construct the full corridor, to assess the feasibility of constructing RTT in the central and northern portions and RWT in the southern portion of the corridor.

The purpose of the assessment is to inform decision-makers about the factors affecting feasibility of trail development and to identify which portions of the corridor may be more or less feasible for trail development and use (Figure ES-2). The conditions of existing railroad facilities, i.e., bridges, trestles, culverts, and tunnels, have substantial influence on the cost of trail development.

Physical and environmental characteristics of the corridor can also substantially affect feasibility, where there are challenging geophysical conditions (e.g., unstable slopes, river floodplains, drainageways), sensitive natural or cultural resources, or ROW encroachments. Trail use demand is also considered in this assessment, because the projected level of trail use influences feasibility in terms of potential economic and social benefits of developing the Great Redwood Trail and relative per-user costs of corridor development.

The corridor condition assessment informed the overall project prioritization, whereby the 57 segments are grouped into four trail implementation priorities or near-term, mid-term, and long-term phases. This assessment also provides planning-level cost estimates for developing the Great Redwood Trail within the NCRA ROW.

The findings of the trail feasibility assessment and governance and railbanking report are summarized herein.



Source: Alta, PWA, and Ascent Environmental 2020

Figure ES-2 Level of Opportunity or Constraint by Segment

Findings Related to the Trail Feasibility Assessment

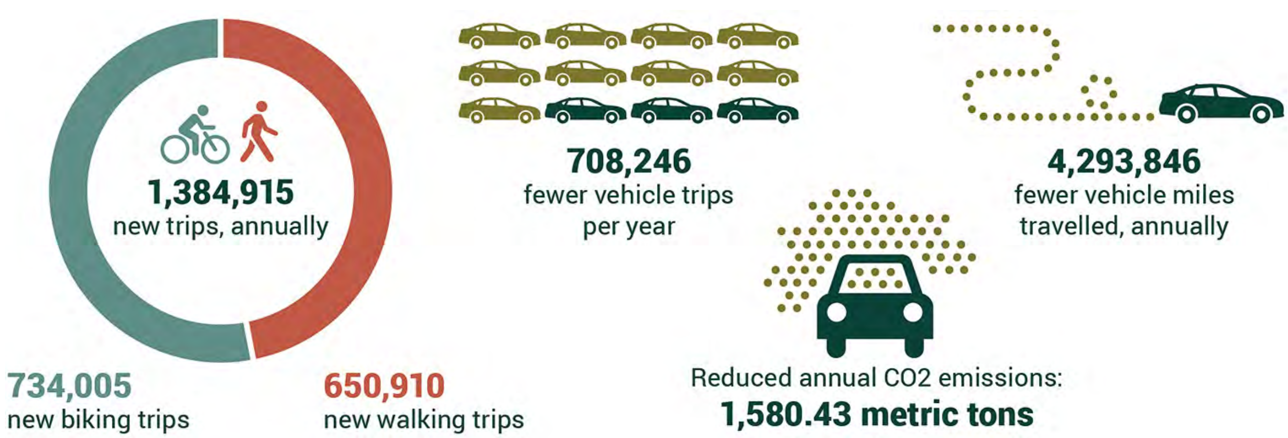
The Trail Feasibility Assessment is included in Part I of this document. The rail corridor contains significant feasibility challenges in certain locations, particularly in the remote segments within and close to the Eel River Canyon. The key challenges relate to segments with steep, unstable slopes that destabilize hundreds and occasionally thousands of feet of the corridor; existing ROW obstructions sometimes fully blocking the corridor; former rail infrastructure, i.e., bridges, trestles, tunnels, and major culverts, that have been dilapidated or destroyed by years of unmaintained decline; and the significant cost necessary to develop 252 miles of public trail.

The majority of the 252-mile corridor is generally intact with good physical conditions for trail construction. The assessment confirmed that the corridor's gentle grades lend themselves to interregional trail use. If fully developed, the Great Redwood Trail could create an outdoor recreation opportunity that would connect Northern California communities from the Bay Area to the North Coast. Figure ES-3 illustrates some of the economic and social benefits that could be realized by development of the full trail.

Trail demand projections are also important to consider. Not unexpectedly, where trail use demand estimates are high, they occur in segments within or near urban communities or towns along the corridor. Trail use through the remote center segments (generally between Willits and Ferndale) would be much lower and more oriented to serious, long-distance riders and hikers or visitors driving to remote access points for short day hikes.

Parts of the rail corridor have already been improved in populated areas and are supporting regular use, such as segments of the Humboldt Bay Trail near Arcata and Eureka. Only one developed segment (i.e., the Ukiah Rail Trail in Ukiah) has received a Great Redwood Trail designation.

The estimated demand in the southern sections of the rail corridor indicate the trail would support relatively substantial use, including commuters and recreational users of all ages and abilities. This would occur in Sonoma County where RWT could be implemented and near the larger communities (such as Ukiah and Willits in Mendocino County). Likewise, in the far northern segments from Ferndale and Fortuna through Eureka and Arcata to Humboldt Bay, trail demand projections are strong.



Source: Alta 2020

Figure ES-3 Economic and Social Benefits of a Fully Developed Great Redwood Trail

Planning-level cost estimates for fully developing the 252-mile corridor are nearly $750 million or about $3.1 million per mile in 2020 dollars, and over $1 billion or about $4.6 million per mile in 2030 dollars. These cost estimates are based on potential trail types that were applied to specific conditions along the corridor for cost estimating purposes, with planning, design, management costs, and contingencies included. These cost estimates do not include unknown environmental remediation costs that may be required prior to project construction.

Percentages were used to estimate the planning, design, and management costs for the corridor, which include survey, technical studies, and engineering design; environmental analysis, documentation, and permitting; project administration; construction management; mobilization; and design services during construction. A 30 percent contingency was added to account for unknown factors that may influence the overall cost of the trail. The contingency does not include currently unknown, significant costs, such as those associated with environmental remediation efforts that may be substantial and required prior to construction. This document estimates environmental costs as a soft cost or percentage of the construction costs. The cost to remediate environmental liabilities in remote locations (such as rail cars in the Eel River) has the potential to be significant. Additional study would be needed to further refine environmental liability costs.

While cost is not considered to be a measure of the technical feasibility of trail development, it is the main factor in determining whether and to what extent the trail can be built. Cost estimates by project phase illustrate how the trail could be developed over time, limiting the amount of investment required at any one time, and are provided in Chapter 5, "Planning-Level Cost Estimates."

Potential reroutes of the trail outside of the rail corridor and onto surface roads to bypass areas with major geologic challenges or failing infrastructure provide opportunities to reduce costs. Potential reroutes were identified that could result in an estimated $86 million in cost savings.

Overall, fully developing the Great Redwood Trail would be challenging and extremely costly. However, the gentle grade and terrain of the rail corridor, the general condition of most infrastructure, and degree of ROW integrity would allow for feasible development of the Great Redwood Trail, if sufficient funding is made available (Figure ES-4).

Source: Ascent Environmental 2020

Figure ES-4 Class I Trail in Humboldt County

The goal of this feasibility assessment is to provide the information necessary for decision makers to determine the financial feasibility and future planning ramifications of developing the Great Redwood Trail within the various sections of the current NCRA corridor. To that end, the following key findings are offered:

1. The major constraints within the rail corridor that most influence trail feasibility include geomorphic challenges (landslides, high-risk slopes), large ROW encroachments (particularly if they are legally authorized), failing infrastructure (bridges, trestles, culverts, and tunnels), and previous contamination and hazardous materials sites to the extent remediation is required. In addition, the presence of wetlands and special-status species, historic structures, areas of archaeological sensitivity, and tribal lands also may present significant constraints to trail development.

   The presence of wetlands and special-status species in the corridor may influence the time and cost to implement the trail, if extensive permitting, corridor re-routes, or compensatory mitigation are required.

Identification and designation of potential archaeological and tribal cultural resources along the corridor would require cultural records searches and regular and consistent coordination with tribal representatives. If resources are present and avoidance or mitigation measures are needed, the project may require a longer schedule and greater associated costs.

The presence of historic structures (Figure ES-5) along the corridor is a minor benefit in the opportunity and constraints analysis, because the resource offers an opportunity for interpretation. There are, however, potential challenges associated with permitting and zoning requirements for historic sites. If building renovations are needed, for instance, the process for obtaining relevant permits and approvals may pose a challenge to trail development. In addition, historic buildings can pose potential liabilities associated with safety hazards, if they are in poor condition.

Source: Mendocino County Rail-with-Trail Corridor Plan 2012

Figure ES-5 Willits Depot in Early 1930s

While these constraints would not be insurmountable, they would substantially increase the cost of trail construction and maintenance, and may delay the project schedule and increase overall cost.

2. Development of the long, center sections, generally between the Ferndale area of Humboldt County, through the Trinity County and northern Mendocino County portions, to the vicinity of Willits, would require significant costs with lower projected trail use, which may render development in the most remote sections difficult and financially challenging. Both construction and maintenance costs would be high. Appropriate trail types for steep, sometimes unstable terrain should be emphasized, such as a narrower, soft-surface recreational trail facility instead of a Class I, hard-surface trail.

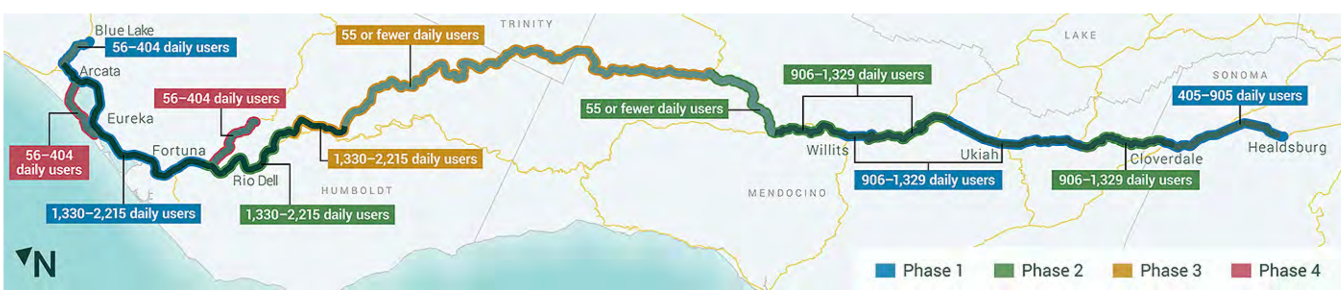
   The significant costs and long-term maintenance challenges are related mostly to major stabilization of slopes, rebuilding or replacement of deteriorated rail infrastructure, and potentially rerouting around major obstructions. Rerouting can reduce costs in some locations, compared to replacing infrastructure, but can also result in additional costs to obtain access rights for the public.

3. The Eel River Canyon poses unique challenges and opportunities. It presents some of the greatest constraints from difficult geophysical conditions and dilapidated, unmaintained infrastructure. It is isolated, rugged, and the slopes are unstable. The substantial costs of both construction and long-term maintenance in this highly dynamic landscape are noteworthy. Abandoned rail cars and other rail debris are also prevalent in this section, including within the river. However, much of the rail corridor within the Eel River Canyon is in good physical condition for trail construction, approximately 75 to 85 percent of its length. This section of the trail offers some of the most spectacular views of the entire corridor, including the scenic values reflected in its Wild and Scenic River designation.

   Because the Eel River is designated as a federal and state Wild and Scenic River rigorous, environmentally protective measures would need to be incorporated into the trail design and during construction. Trail development may also consider inclusion of river restoration opportunities. If trail development included river restoration elements, such as removal of collapsed rail infrastructure and rail cars from the river, the value of the trail development, and therefore its potential feasibility, could be enhanced. At this assessment stage, it is unknown whether environmental restoration would be a requisite part of trail development, a topic that would warrant further investigation if trail planning proceeds. Due to the access challenges, the costs to remove abandoned rail debris would be high.

Recognizing the complexity of this section of the corridor, a narrower, soft-surface trail may be more readily developed and maintained over time, compared to a Class I, hard-surface trail.

4. If fully developed, the Great Redwood Trail would become an interregional trail providing outdoor recreation and active transportation experiences. It would connect a major urban metropolitan area, the northern extent of the San Francisco Bay Area, with the natural and scenic resources of the landscape to the north, including the North Coast.
5. Given the limited constraints, access to nearby communities and potential users, and the relatively low cost per trail user, the southern RWT section in Sonoma County, trail segments near towns and urban communities (including Willits and Ukiah) in Mendocino County, and the Humboldt County segments from the Ferndale area to the north would be the most feasible to develop.
6. The southern section from Healdsburg (MP 68.22) to Cloverdale (MP 87) is well suited for RWT development. The corridor width in the southern section varies between 50 and 100 feet, with a typical width of about 60 feet, which can accommodate a trail with a rail facility. This section has no major constraints and could be implemented in conjunction with SMART's plans to develop passenger service to Cloverdale in the future. This section would be ready for project planning, design, and environmental review as potential next steps, if trail planning proceeds.
7. An RWT configuration along a stretch of the Humboldt Bay may be most appropriate. The rail corridor is currently used by the Timber Heritage Association for recreational rail operations (speeder crew car rides) in Eureka and Samoa. Continuing with an RWT configuration between these two operations could expand the extent of this recreational opportunity and enhance economic opportunities in the area.
8. Planning-level cost estimates for fully developing the trail are nearly $750 million in 2020 dollars and over $1 billion in 2030 dollars. If the trail were fully developed, it would be projected to provide economic activity (estimated at approximately $24 million in annual local economic activity) and health benefits (reduced vehicle trips, vehicle miles traveled, and carbon dioxide emissions resulting in improved air quality) to communities along its route. The costs for fully developing the corridor would not be incurred at any one time. Instead, these costs would be paid over a long period of time, based on project phasing and priorities.
9. Based on a review of the inventoried features and results of the condition and user demand assessments conducted in support of this assessment, the rail corridor can be divided into four logical phases (Figure ES-6) that represent grouped extents of near-term, mid-term, and long-term implementation priorities. While these project phases represent priority projects when considering an implementation approach for the entire corridor, the phases are not binding and can be modified.



Source: Alta and Ascent Environmental 2020

Figure ES-6 Anticipated User Demand and Project Phasing

Findings Related to Governance and Railbanking

Part II, "Governance and Railbanking Report," of this document evaluates potential railbanking and governance requirements and options to transform the NWP railroad corridor into a Great Redwood Trail. To successfully implement and maintain a potential future Great Redwood Trail, a trail manager must be identified that can guide the overall vision of the trail; identify funding opportunities and administer funds; coordinate with partner agencies and organizations; oversee planning, design, and construction; manage contractors; and oversee operations and maintenance. The trail manager would also need to railbank the corridor to ensure that it is preserved as a public transportation corridor.

Railbanking is the legal process by which an unused rail line is converted into an interim recreational multi-use trail. The railbanking process is triggered by a railroad determining that it wishes to divest a line and begins abandonment proceedings with the Surface Transportation Board (STB). At this point, qualified entities may express interest in railbanking the line. If the railbanking process does not occur during the required legal timeframe and the railroad is abandoned, adjacent land owners that have reversionary rights are given the opportunity to claim the ROW formerly held by the railroad. To preserve the intact ROW, the trail manager identified for the Great Redwood Trail would need to complete the railbanking steps within the legal timeframe and prior to full abandonment.

Railbanking would provide an opportunity to preserve the historic NWP line as a public-use active transportation corridor, which is a public transportation route dedicated to active modes such as walking and bicycling. Railbanking would not preclude the corridor from being converted back to an active rail line in the future if such a need were to arise. However, railbanking may be met with opposition from easement owners and adjacent landowners.

There are several considerations involved in determining a suitable trail management structure for the trail. Because NCRA has limited financial and administrative capacity, significant debt, and limited trail expertise, it is not considered to be an appropriate entity in its current incarnation to manage the trail. Part II of this document uses the lessons learned from NCRA as well as other trail governance case studies to identify potential governance structures for consideration.

Identifying the long-term governance structure early in the process can help (1) manage the railbanking process; (2) establish a long-term strategy for the rail corridor, from planning and design to construction, operations, and maintenance (Figure ES-7). A central governance structure is required to most efficiently meet the railbanking requirements and manage and maintain a multi-jurisdictional trail. Such a central governance structure should own the entire corridor, have a clear reporting structure, and have access to a consistent annual funding stream. This organization/agency could either develop, manage, and maintain the entire length of the corridor, or partner with various public and private entities for these services at specific locations along the trail.

Source: Ascent Environmental 2020

Figure ES-7 Failed Retaining Wall Due to Lack of Maintenance

Part II of this document examines six typical trail management structures used for trails across the United States: single government organization, nonprofit organization, cooperative agreement, Joint Powers Authority (JPA), commission, and special district. Of these six structures, four are considered to be potentially viable options for the Great Redwood Trail, and are included in this document as potential governance structures under different ownership models. Two organizational structures, commission and special district, are not considered to be suitable options for the complexity and scope of the corridor.

The Part II report primarily explores three potential ownership options: (1) state ownership, (2) JPA ownership, and (3) local and nonprofit organization ownership. A fourth option considers keeping the ROW within NCRA ownership but changing the agency's mandate to focus on trail management (Figure ES-8). However, because of NCRA's existing limitations, including its lack of clear reporting structure, its limited financial capacity, and its focus on local interests, this is not considered to be a strong candidate for governance of the corridor.

Source: Ascent Environmental 2020

Figure ES-8 Many NCRA Bridges, Like Dyerville Bridge, Remain in Generally Good Condition

The three ownership options all offer variations in terms of membership and organization, as well as opportunities for cooperative agreements with additional entities. Each of the three primary ownership models is conducive to managing a multi-jurisdictional rail corridor. The three structures have trade-offs with respect to State risk, timeframe for implementation, access to potential funding sources, staff expertise and capacity, trail consistency and quality, and long-term operations and maintenance costs.

An existing or new state agency could provide strong expertise, which may facilitate quicker and higher quality implementation of the trail. However, it would also have the highest risk to the State and may be subject to competing state efforts. Although a JPA would be subject to more interagency coordination, which could take time, it could provide strong expertise and resources for the trail. A nonprofit could provide an acceptable governance structure if it partners with local jurisdictions; however, this structure may result in less trail consistency and slower implementation.

While there are several complexities and challenges associated with the corridor that any trail manager would need to overcome, including associated costs, railbanking efforts, environmental remediation efforts, operations, and maintenance, the governance structure options presented in this report all have the potential to manage these tasks, regardless of the level of cost, efficiency, and quality trade-offs involved.

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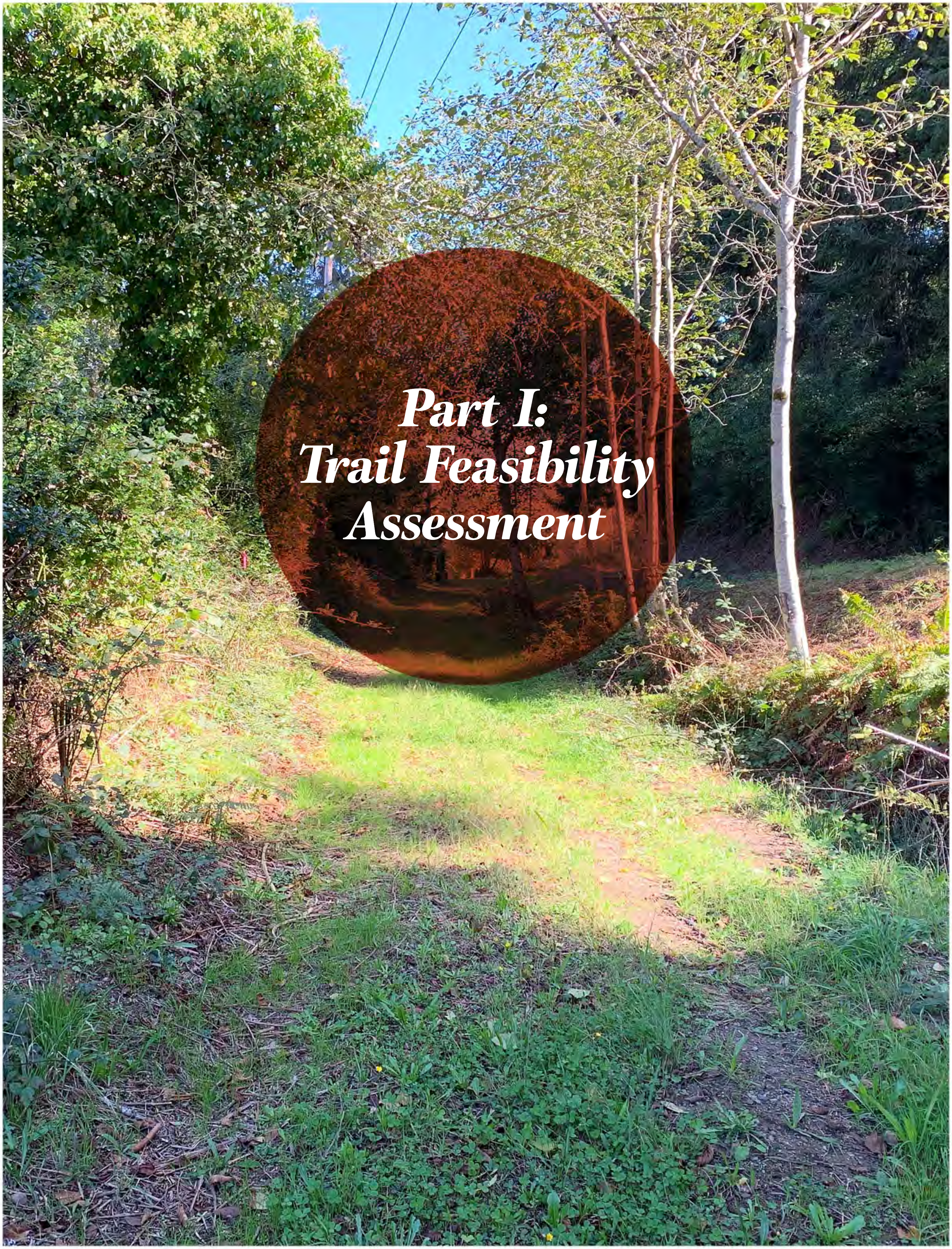

Part I: Trail Feasibility Assessment

Title:	## Part I: Trail Feasibility Assessment July 2020
Prepared for:	**California State Parks** Strategic Planning and Recreation Services Division 1725 23rd Street Sacramento, CA 95814 **California Natural Resources Agency** 1416 Ninth Street, Suite 1311 Sacramento, CA 95814 **California State Transportation Agency** 915 Capitol Mall, Suite 350B Sacramento, CA 95814
Prepared by:	**Ascent Environmental, Inc.** Contact: Nanette Hansel and Curtis Alling, AICP **Alta Planning + Design** Contact: Deven Young, PLA and Michael Jones

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1. Introduction

1.1 GREAT REDWOOD TRAIL CONCEPT

In 2018, legislation (Senate Bill [SB] 1029) declared that “the North Coast Rail Authority’s (NCRA) railroad tracks, rights-of-way (ROW), and other properties provide an opportunity to create a Great Redwood Trail for hiking, biking, and riding, that may be in the public and economic best interests of the north coast.” The legislation seeks to asses the feasibility of turning the 316-mile historic North Western Pacific (NWP) railroad corridor into a long-distance recreational trail to be known as the Great Redwood Trail.

Running from the San Francisco Bay in Marin County through Sonoma, Mendocino, Trinity, and Humboldt counties to Humboldt Bay in the north, the legacy railway could be used to create a multi-use trail that would serve communities along the North Coast. It would traverse the California redwoods, run next to oak woodlands and vineyards of Sonoma and Mendocino counties, wind through the Eel River Canyon next to the designated Wild and Scenic Eel River, and follow the shoreline of Humboldt Bay (Great Redwood Trail Alliance 2020).

1.2 BACKGROUND

Section 2 of SB 1029 directs the California State Transportation Agency (CalSTA), in consultation with the California Natural Resources Agency, to “conduct an assessment of the North Coast Railroad Authority to provide information necessary to determine the most appropriate way to dissolve the North Coast Railroad Authority and dispense with its assets and liabilities.” The legislation calls for the preparation of a report that includes “a preliminary assessment of which portions of the terrain along the rail corridor may be suitable for a trail.” A 252-mile portion of the rail corridor is evaluated in this feasibility assessment, pursuant to SB 1029 Section 2(a)(4)(b). As specified in the legislation, CalSTA shall report to the Legislature before July 1, 2020 on its findings and recommendations from the assessment.

1.3 HISTORY OF NWP AND NCRA

The former NWP railroad runs from Marin County north to Humboldt County, passing through Sonoma, Mendocino, and Trinity counties. The full extent of the railroad was completed in 1914, connecting two sections of rail line, north of Ukiah and south of Eureka. Passenger service and freight transport were popular from the time of completion until the 1930s, after which service became less frequent due to a variety of factors, including the increased use of automobiles and trucks instead of rail service. Although less frequent than at its peak, the railroad continued to operate regularly for the next several decades.

A 1964 flood destroyed a significant portion of the railroad through the Eel River Canyon, changing the topography of the area and making future rail service less reliable because of persistently unstable slopes. Despite the operational constraints within the corridor, freight traffic remained until the 1970s, when improvements to U.S. 101 made transporting freight by truck competitive with rail.

The railroad was under private ownership until the 1980s when the timber industry began to decline. Portions of the railroad were sold to other operators, which later filed for bankruptcy. To keep the corridor intact, the California State Legislature adopted the North Coast Railroad Authority Act of 1989 (Title 12, Section 93000 and subsequent sections of the California Government Code [12 Government Code Section 93000 et seq.), creating NCRA to assume responsibility over the corridor.

In 1992, NCRA purchased the NWP railroad from the City of Willits north to Humboldt. The southern portion of the line was purchased a few years later in two separate transactions by a Joint Powers Authority (JPA) between Marin County and the Golden Gate Bridge District, resulting in the “Willits Segment” and the “Healdsburg Segment.” The “Healdsburg Segment” continues south of Healdsburg at milepost (MP) 68.22 and was eventually transferred to Sonoma-Marin Area Rail Transit (SMART) to operate passenger service.

In the mid-1990s, severe flooding in the Eel River Canyon permanently damaged the rail infrastructure, ending rail service in the northern portion of the corridor. In addition, years of deferred maintenance resulted in the Federal Railroad Administration issuing Emergency Order No. 21, which called for an end to all rail operations on NCRA ROW until it repaired its track and grade crossing signals, and trained its employees to properly maintain the corridor. Following execution of an Operator Agreement between NCRA and NWP Company (NWP Co.) in September 2006, NWP Co. brokered a contract with NCRA that helped to finance rehabilitation of the corridor and lift the Emergency Order. In 2011, the Emergency Order was lifted from Windsor south to Lombard and the rail line was officially reopened by the Surface Transportation Board (STB) to allow freight surface only. This section of the rail line is not included in this feasibility assessment because it is south of the assessment corridor. NCRA's freight operator NWP Co. manages freight operations along this portion of the corridor. The corridor north of Windsor has remained inactive with no rail operations.

1.4 TRAIL FEASIBILITY ASSESSMENT PURPOSE AND SCOPE

This assessment evaluates the feasibility of repurposing the use of the NCRA ROW as the Great Redwood Trail. The trail would be within the existing NCRA and SMART ROW, south to north through the counties of Marin, Sonoma, Mendocino, Trinity, and Humboldt. The portion of the rail corridor addressed in this trail feasibility assessment extends from Healdsburg in Sonoma County (MP 68.22) to Arcata in Humboldt County (MP 296), with three branches that extend to Fairhaven, Carlotta, and Korblex in Humboldt County. The rail corridor passes through the cities of Healdsburg, Cloverdale, Ukiah, Willits, Fortuna, Rio Dell, Eureka, Arcata, and Blue Lake, and dozens of unincorporated communities. The entirety of the rail corridor is illustrated in Figure ES-1 in the Executive Summary chapter.

The southern section, from Healdsburg (MP 68.22) to Cloverdale (MP 87), is evaluated for the potential of a rail-with-trail, or RWT, where a rail facility and trail would share the corridor, consistent with SMART's plans to develop passenger service to Cloverdale in the future. The northern terminus of the RWT portion of the corridor was determined with input from SMART, which has future plans to operate passenger rail in the corridor. The central and northern sections of the rail corridor, from Cloverdale (MP 87) to Arcata (MP 296), and including the three shorter branches, are evaluated for the potential to convert the existing rail line to a trail, known as rail-to-trail, or RTT, where rail service would cease, and the corridor facility would become a public trail.

This assessment evaluates the conditions of rail facilities, physical and environmental characteristics, potential demand for trail use, and potential construction costs for the full rail corridor to assess the feasibility of constructing RTT in the northern portion and RWT in the southern portion of the corridor.

The purpose of the assessment is to inform decision-makers about the factors affecting feasibility and to identify which portions of the rail corridor may be more or less feasible for trail development and use. The conditions of existing railroad facilities, i.e., bridges, trestles, culverts, and tunnels, have substantial influence on the cost of trail development. Physical and environmental characteristics of the corridor can also substantially affect feasibility, where there are challenging geophysical conditions (e.g., unstable slopes, river floodplains, drainageways), sensitive natural or cultural resources, hazardous materials sites, or ROW encroachments. Trail use demand and demand density (i.e., users per trail mile) are also considered in this assessment, because the projected level of trail use influences feasibility in terms of potential economic benefits from users and relative per-user costs of corridor development.

1.5 ORGANIZATION OF THE TRAIL FEASIBILITY ASSESSMENT

This trail feasibility assessment is organized into chapters, as described below. Chapters are further divided into sections (e.g., Chapter 2, "Existing Conditions"; and Section 2.4, "Environmental Conditions") to organize the presentation for the reader.

Executive Summary: This chapter summarizes the findings of the trail feasibility assessment (Part I) and the results of the evaluation of railbanking and governance options (Part II).

Chapter 1, Introduction: This chapter provides background information, a brief description of the history of the rail corridor, and an overview of the purpose and scope of the trail feasibility assessment.

Chapter 2, Existing Conditions: This chapter provides a description of the current conditions within the rail corridor. It addresses adjacent land uses, infrastructure, and environmental conditions and informs the subsequent corridor condition assessment and overall project prioritization.

Chapter 3, Conditions Assessment: This chapter synthesizes the findings from Chapter 2 to summarize the condition of the corridor for future trail development, highlighting the key obstacles, risks, and existing infrastructure. Results of the assessment support the project prioritization and cost estimates contained in subsequent chapters.

Chapter 4, Trail Types and Project Prioritization: This chapter describes potential trail types for the corridor; groups trail implementation priorities into near-term, mid-term, and long-term phases; and identifies the economic and social benefits of developing the Great Redwood Trail.

Chapter 5, Planning-Level Cost Estimates: This chapter provides planning-level cost estimates by construction phase to support project priorities and future corridor decision-making.

Chapter 6, Findings Summary: This chapter summarizes the key findings of the trail feasibility assessment.

Chapter 7, References: This chapter identifies the documents, websites, and databases cited in the trail feasibility assessment.

Chapter 8, Report Preparers and Acknowledgements: This chapter identifies the preparers of the trail feasibility assessment and acknowledges those individuals who contributed background information in support of this document.

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2. Existing Conditions

This chapter provides a summary of the current conditions within the rail corridor. It addresses land uses, infrastructure, and environmental conditions. This work informs the subsequent corridor conditions assessment and overall project prioritization.

2.1 Methods and Approach

For the purposes of describing existing conditions in this chapter, the rail corridor has been divided into five major sections, which are illustrated in Figure 2-1 and described below:

- **RWT Southern Section.** The RWT Southern Section of the rail corridor extends from MP 68.22 in Healdsburg to MP 87 in Cloverdale. The terminus of this section of the rail corridor was determined with input from staff from SMART, which operates an existing RWT trail south of Healdsburg and is a potential operator of a future trail in this section.
- **RTT Southern Section.** The RTT Southern Section of the rail corridor extends from Cloverdale (MP 87) to a location north of Willits (MP 151) before entering the Eel River Canyon.
- **RTT Eel River Canyon Section.** The RTT Eel River Canyon Section of the rail corridor traverses the Eel River Canyon from north of Willits at MP 151 to MP 236 near Weott.
- **RTT Northern Section.** The RTT Northern Section of the rail corridor extends from near Weott (MP 236) to Arcata at MP 296.
- **RTT Carlotta, Samoa, and Korblex Branches.** The RTT Carlotta, Samoa, and Korblex Branches Section of the rail corridor includes the Carlotta, Samoa, and Korblex branches of the NWP railroad.

This chapter includes a companion existing conditions mapbook, which is included as Appendix A to this document. The existing conditions mapbook includes a map series that provides additional details and features described herein, including approximate MP and structure locations. (Note: Inventoried features and other resources discussed in this chapter that pose opportunities and constraints to trail development are also shown in Figure 2.6-1 at the end of this chapter) Accurate MP locations of some features have been difficult to discern from available secondary resources. The MP locations of structures have been refined based on field assessments, where the original, on-the-ground milepost markers were found. References to MP locations herein correspond to the MP dataset developed for the purposes of this feasibility assessment.

Several methods were used to gather information about existing conditions of the rail corridor, including searches of publicly available data sources, review of existing reports related to the corridor, and field assessment of existing structures and other physical conditions within the rail corridor. These methods are described below.

2.1.1 EXISTING INFORMATION AND REPORTS

Information on existing conditions along the rail corridor was obtained through a review of materials compiled by the California Department of Transportation (Caltrans), including information obtained from NCRA, NWP Co., SMART, and others; a review of preliminary feasibility assessment materials (i.e., spreadsheets and valuation maps) being developed by the California Department of General Services (DGS); queries and searches of available data using public databases; local, state, and federal agency websites; and other existing reports and documents related to the rail corridor. Examples of websites and databases that were queried include: the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI); California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB); California State Water Resources Control Board (SWRCB) GeoTracker; California Department of Toxic Substances Control (DTSC) EnviroStor; California State Parks web map of park boundaries; and local and regional agency websites. The applicable data and resources used for each topic inventoried and described are summarized in each section of this chapter.

Source: Adapted by Ascent Environmental and Alta in 2020

Figure 2-1 Rail Corridor Sections Used to Characterize Existing Conditions

Existing reports and other documents related to the corridor were also reviewed to help inform the characterization of existing conditions. These included previous California Environmental Quality Act (CEQA) evaluations, such as the Draft Environmental Impact Report for the Freight Rail Project prepared by NCRA in 2009; NCRA Capital Assessment Reports and Environmental Consent Decrees; and local and regional planning documents, such as transportation and mobility plans. Refer to Chapter 7, "References," for a comprehensive list of the reports, documents, and other materials that were reviewed to assist in describing existing conditions.

2.1.2 FIELD ASSESSMENTS

To help inventory and assess the condition of existing structures and features along the rail corridor, field assessments were conducted by small teams from Healdsburg at MP 68.22 to Arcata near MP 300, and the Carlotta, Samoa, and Korblex branches of the rail corridor. Prior to entering the field, the team divided the rail corridor into broad sections and developed field assessment tools, including field maps; data collection guidelines for taking photos, recording infrastructure conditions, and recording general corridor conditions; a field form for recording the conditions observed; and field collection safety requirements. As a companion to the field form, the team created a survey key with type coding to consistently record the type and condition of the structures and physical elements encountered. This allowed field staff to quickly record the general condition and any issues observed for each item requiring visual assessment, such as tunnels, bridges, and geomorphic features. Prior to commencing the field assessments, the team spent one day field testing the assessment tools along the rail corridor in Cloverdale and determined they were appropriate for the effort. The final form used to guide the field assessments is provided in Appendix B.

The field assessments occurred largely in October and November 2019, with assessments in the Eel River Canyon extending through February 2020 given the remote nature of this area and access challenges. Although the vast majority of the rail corridor was surveyed, a few areas were not reachable due to safety issues or access blockages, such as failed or impassible infrastructure, landslides, or access constraints related to private property. For those parts of the corridor, the assessment relied on aerial photography and previously gathered field information. Refer to Table C-1 in Appendix C for a summary of the areas that were not surveyed.

2.2 Land Uses, Land Ownership, and Right-of-Way Encroachments

Although the enabling legislation gave NCRA authority to purchase the historic NWP railroad and oversee railroad operations, it did not provide an annual funding allotment for its operating expenses. Consequently, NCRA has struggled financially since its beginning, and has acquired substantial debt. To meet basic expenses and pay some of these debts, NCRA has relied on lease payments from NWP Co., as well as revenue generated from the sale or lease of property and other railroad assets.

The North Coast Railroad Authority Closure and Transition to Trails Act of 2018 (which amended 12 Government Code Section 93000 et seq.), commonly known as SB 1029, became effective on January 1, 2019. The legislation calls for dissolving NCRA following an assessment of its assets and liabilities. The legislation also envisions a new life for the corridor, one that recognizes that "NCRA's railroad tracks, rights-of-way, and other properties provide an opportunity to create a Great Redwood Trail for hiking, biking, and riding, that may be in the public and economic best interests of the north coast."

As illustrated in Figure 2-1 and the mapbook in Appendix A, the rail corridor runs south to north through the counties of Sonoma, Mendocino, Trinity, and Humboldt, and the cities of Healdsburg, Cloverdale, Ukiah, Willits, Fortuna, Rio Dell, Eureka, Arcata, and Blue Lake, and several unincorporated communities. All of the cities, except Blue Lake, have a population of 2,000 persons or greater, and the majority of the unincorporated communities have a population of less than 2,000 people.

2.2.1 CORRIDOR OWNERSHIP AND WIDTHS

DGS, as part of the SB 1029 Task Force Assessment, is leading the process to gather ownership information for the rail corridor. To date, they have gathered information indicating that within the rail corridor there are more than 2,500 recorded transactions that have occurred between 1871 and 1990 that range in size from less than 15 square feet to several hundred acres. More than 150 grantees hold property rights to over 30,000 acres of land within the right-of-way (ROW) through agreements, leases, deeds, resolutions or ordinances, licenses, and quitclaims.

The width of the rail corridor is highly variable and ranges from approximately 30 feet to over 300 feet. Corridor widths in each section of the rail corridor are described as follows:

- **RWT Southern Section.** In the southern section of the corridor between Healdsburg and Cloverdale, the corridor width varies between 50 and 100 feet. The typical width in this section is about 60 feet. The widest portions of the corridor in this section are at the southern and northern extents.
- **RTT Southern Section.** In the southern section from just north of Cloverdale to the community of Decamp, the corridor width ranges from 60 to 300 feet. There are several miles within this section where the corridor is at least 100 feet wide. The corridor widens to over 300 feet near the unincorporated community of Ridge, just south of Willits.
- **RTT Eel River Canyon Section.** The typical width in the Eel River Canyon section of the corridor is 100 feet, but varies between 40 and 200 feet. Challenging topography in this section may impact the amount of ROW that is available for construction.
- **RTT Northern Section and RTT Carlotta, Somoa, and Korblex Branches.** The northern section of the corridor, from South Fork to Korbel, has an average corridor width of 66 feet. The corridor width varies between 30 and 150 feet in this section, with particularly narrow ROW (30 feet) through parts of Eureka, Arcata, and Korblex.

2.2.2 LAND USES ADJACENT TO THE CORRIDOR

RWT Southern Section

This section of the rail corridor extends from the City of Healdsburg to Cloverdale (MP 68.22 to MP 87). Within the city limits of Healdsburg (MP 68.22 to MP 71) and Cloverdale (MP 84 to MP 87), adjacent land uses are a mix of industrial, commercial, residential, office/mixed uses, and public open space. In Cloverdale, the rail corridor travels alongside the west side of Cloverdale Municipal Airport and is within the Referral Area Boundary and several designated safety zones of the airport (Sonoma County ALUC 1998). Some of the land uses adjacent to the rail corridor are currently encroaching on the existing railroad ROW. For example, as illustrated in Figure 2.2.2-1, there is a parking area at the west side of the Big Johns Market building, near the intersection of the rail corridor and Dry Creek Road in Healdsburg, where vehicles appear to be parking within the existing railroad ROW; it also appears that pavement could be in the ROW at this location. There are also several grade crossings of major roadways as the corridor passes through each of these cities, such as at Mill Street (see Figure 2.2.2-2) and Dry Creek Road in Healdsburg, and East First Street in Cloverdale. Between Healdsburg and Cloverdale (MP 71 to MP 84), land uses are primarily agricultural and rural, low-density residential, with few industrial and commercial areas, such as winery operations. Several grade crossings of roadways occur in this area; however, they are primarily unpaved rural roadways, except for one grade crossing of State Route (SR) 128 near MP 76.

Source: Google Earth Street View 2019

Figure 2.2.2-1 Photograph of Vehicles Parking in Railroad ROW

Source: Google Earth Street View 2019

Figure 2.2.2-2 Photograph of Grade Crossing at Mill Street in Healdsburg

RTT SOUTHERN SECTION

From Cloverdale to Ukiah (MP 87 to MP 111), adjacent land uses are predominately rural. Beginning around MP 87, the rail corridor meanders alongside the Russian River until reaching the community of Hopland (MP 99), passing public park and recreation areas (such as Cloverdale River Park), and agricultural and rangeland areas with dispersed rural residences. A few grade crossings of roadways occur in this section, which are primarily unpaved rural roadways, but there is a grade crossing of SR 175/River Road near MP 100. As the rail corridor enters Ukiah near MP 111, it travels alongside areas of industry, agriculture, a few residences, and adjacent to the Ukiah Wastewater Treatment Plant and Ukiah Municipal Airport. Once past the airport, development intensifies, and adjacent land uses include industrial, commercial, and medium- to high-density residential areas. Multiple grade crossings of major roadways occur, including at Talmage Road and East Perkins Street. Adjacent land uses are similar in Willits, between MP 138 and MP 140, and consist mostly of industrial areas and residences, as well as grade crossings of roadways. Leaving Ukiah, from MP 115 north, land uses are primarily industrial and include large lumber operations and carpet mills. There are also pockets of adjacent residential areas and agricultural operations until MP 124; past that, adjacent land uses are mostly undeveloped forested areas and rangelands until entering near MP 138. Adjacent land uses leaving Willits near MP 140 north to MP 151 also consist primarily of undeveloped areas, which are predominately mountainous and forested.

RTT Eel River Canyon Section

From MP 151 to MP 238, the rail corridor follows the Wild and Scenic Eel River closely. The Eel River has received both state and federal Wild and Scenic river designation and is managed by the Bureau of Land Management (BLM); see Section 2.4.4, “Natural and Biological Resources” for more information. Adjacent land uses consist of the river and undeveloped forestland and mountainous areas, including tribal lands. The rail corridor passes a few rural communities, such as Alderpoint near MP 208, where a few residences and commercial businesses are present. Very few grade crossings of roadways are present in this section and where there are crossings they primarily include rural, unpaved roadways with steep grades. Rural roads that do not cross but may provide access to the rail corridor are located near the Nashmead Maintenance Yard, Island Mountain, and where River Road intersects a parcel near MP 203.5 managed by the Bureau of Land Management. See Section 2.5.1, “Access Routes” for further discussion.

RTT Northern Section

Between MP 236 and MP 251, adjacent land uses continue to include the Wild and Scenic Eel River, as well as Humboldt Redwoods State Park and other recreation and wilderness areas (refer to Section 2.5.3, “Recreational Resources and Destinations”). The area remains primarily undeveloped, with a few rural roadways and agricultural areas. Near MP 251, adjacent land uses become industrial, residential, commercial, and agricultural as the rail corridor passes through several small communities and the City of Fortuna. Several grade crossings of roadways are present in this section within community and city limits, including a grade crossing of SR 36 near MP 263. Starting around MP 276, Humboldt Bay is immediately adjacent to the rail corridor to the west and the City of Eureka is to the east. Land uses to the east are industrial with small areas of open space, and residential and commercial areas occur near the north end of Eureka near MP 285. The rail corridor then crosses the Eureka Slough and adjacent land uses include industrial and open space areas, marshes and wetlands, as well as U.S. 101 and the Murray Field Airport. Between MP 292 and MP 296, land uses intensify again, and the rail corridor enters the City of Arcata. Adjacent land uses include industrial, residential, commercial, and open space areas, and several grade crossings of roadways occur as the rail corridor passes through Arcata.

RTT Carlotta, Samoa, and Korblex Branches

The Carlotta Branch jogs east from the main rail corridor from the intersection of U.S. 101 and SR 36 (between MP 262 and MP 263), immediately north of the community of Alton and crosses SR 36. Land uses to the north of the Carlotta Branch include the Rohnerville Airport and small areas of commercial, industrial, and rural residential uses. To the south, adjacent land uses include agricultural parcels. Through the community of Carlotta, land uses adjacent to the rail corridor include SR 36, several residences, and agricultural farmlands. A few grade crossings of roadways also occur in this stretch. Exiting Carlotta, land uses transition to undeveloped forest lands.

The Samoa Branch diverges from the main rail corridor near Arcata and travels west directly adjacent to SR 255. Additional adjacent land uses in this section include undeveloped agricultural and natural areas, including the Mad River Wildlife Area and Humboldt Bay to the south. The Samoa Branch then travels south along the peninsula, bisecting commercial, industrial, and former military uses/current U.S. Coast Guard facilities, including lumber and trucking operations, and small areas of residences in the communities of Manila, Samoa, and Fairhaven. Few grade crossings of roadways exist in this section, and where they occur they include local community roads.

The Korblex Branch begins around MP 295 and travels east past the community of Blue Lake. Adjacent land uses include the Mad River, SR 299, and primarily undeveloped lands with areas of industrial uses and residences as the rail corridor enters the community of Glendale near MP 299. A few grade crossings of rural roadways occur in this section.

2.2.3 ENCROACHMENTS WITHIN THE RAIL CORRIDOR

Table C-2 in Appendix C presents a list of physical encroachments encountered by field crews during the 2019-2020 corridor condition assessment survey work, which are also shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A. Some of these encroachments may be legal land uses formalized by an NCRA encroachment permit, lease, or other legally binding agreement. NCRA maintains approximately 127 paid property lease agreements with adjacent property owners for use of the corridor (NCRA 2020). Existing uses of leased corridor areas include road and utility crossings, parking, private and commercial uses, storage, and cellular telephone towers. Additionally, some legal encroachments that do not present an impediment to travel (such as a driveway crossing the corridor) may not be shown. Existing NCRA encroachment records were reviewed to determine the legal status of encroachments resulting in residential or commercial development within the corridor. Of the encroachments shown, only the Humboldt Redwood Company's encroachment in the RTT Northern Section was identified as a legal encroachment. Further research is needed to determine the status of the other encroachments listed. Temporary structures such as fences, gates, or greenhouses and material stored in the corridor (such as shown in Figure 2.2.3-1) were considered minor encroachments with the assumption that these uses could be relocated and would not affect trail feasibility. Private or commercial development within the corridor were considered to be major encroachments or obstructions. An example of a major encroachment on the Korblex Branch is shown in Figure 2.2.3-2.

Source: Pacific Watershed Associates 2020

Figure 2.2.3-1 Minor Encroachment in Rail Corridor

Source: Ascent Environmental 2019

Figure 2.2.3-2 Major Encroachment in Rail Corridor

Encroachments into each section of the rail corridor are summarized as follows:

- **RWT Southern Section.** No major or minor encroachments were documented in the RWT Southern Section.
- **RTT Southern Section.** In the RTT Southern Section, two major encroachments and 12 minor encroachments were found in the corridor. Minor encroachments included fences, ranching uses, and storage of vehicles, materials, and trash.
- **RTT Eel River Canyon Section.** Eight instances of private development within the corridor were found in the RTT Eel River Canyon Section. An additional 10 minor encroachments included material storage and greenhouse structures within the rail corridor.
- **RTT Northern Section.** In the RTT Northern Section there is one major encroachment and one minor encroachment. The major encroachment, a one-mile long encroachment by the Humboldt Redwood Company, is a legal encroachment by permit through NCRA (NCRA 2020). The minor encroachment is a construction company in the City of Arcata that has fenced the corridor and is using it for storage.
- **RTT Carlotta, Samoa, and Korblex Branches.** In The Carlotta Branch has 27 minor encroachments and six major encroachments caused by residential and commercial development. The Samoa Branch has three minor encroachments caused by driveway encroachments or fencing of the corridor. The Korblex Branch has four major encroachments cause by commercial or private development within the corridor.

2.3 Rail Corridor Infrastructure

2.3.1 STRUCTURES: BRIDGES, TRESTLES, TUNNELS, AND CULVERTS

The rail corridor contains many railroad structures that were built to support NWP rail operations, including trestles, bridges, tunnels, and large culverts. In total, there are 151 of these existing structures along the rail corridor, north of Healdsburg.

Bridges and Trestles

The rail corridor includes 84 bridges and trestles (Table C-3 in Appendix C). ”Bridge” is a generic description for a structure that carries transportation infrastructure over an obstruction. A “trestle” comprises a series of short spans supported by bents or piles and can vary greatly in both length and height, from small bridges over streams to long, low structures stepping across wide bodies of water to massive frameworks crossing deep valleys. Figures 2.3.1-1 and 2.3.1-2 illustrate a typical trestle and bridge along the rail corridor, respectively. Of the 84 bridges and trestles within the rail corridor, 51 are in good condition or generally intact, 19 have some form of visible damage, nine are either partially or fully collapsed, and five have only piling or remnants of a previous structure remaining. The bridges and trestles vary in length from 15 to 1,190 feet; the average length is about 200 feet. The locations of bridges and trestles are shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A.

Source: Ascent Environmental 2019

Figure 2.3.1-1 Bridge over Larabee Creek

Source: Ascent Environmental 2019

Figure 2.3.1-2 Trestle along the Korblex Branch

Tunnels

The rail corridor includes 30 tunnels, 21 of which occur in the RTT Eel River Canyon Section of the corridor (Table C-4 in Appendix C). The tunnel lining is consistently either concrete or timber. Figures 2.3.1-3 and 2.3.1-4 illustrate a generally intact and partially collapsed tunnel along the rail corridor, respectively. Of the 30 tunnels within the rail corridor, 17 are in good condition or generally intact, eight are partially collapsed, and five are fully collapsed. Tunnels vary in length from 100 to 4,300 feet. The locations of tunnels are shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A.

Source: Ascent Environmental 2019

Figure 2.3.1-3 Generally Intact 1,950-foot Loleta Tunnel

Source: PWA 2020

Figure 2.3.1-4 Partially Collapsed Tunnel in Eel River Canyon

Culverts

The field assessment involved documenting the condition of culverts measuring over 12 feet in diameter. A total of 37 culverts (Table C-5 in Appendix C) were observed in the rail corridor, which occur only in the RTT Southern Section and the RTT Eel River Canyon Section of the corridor. Of the 37 culverts within the rail corridor, 18 are in good condition or generally intact, six are partially collapsed, and 13 are fully collapsed or blown out and causing erosion. The locations of culverts are shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A. Figure 2.3.1-5 shows an example of a failed culvert.

Source: PWA 2020

Figure 2.3.1-5 Washed-out Culvert

2.3.2 DEPOTS AND YARDS

A total of 24 train depots (or stations) and yards served the operation of the NWP railroad. Depots are locations where trains would regularly stop to load or unload passengers or freight, or both. They generally consist of at least one track-side platform and a station building that provided ancillary services, such as ticket sales and waiting rooms. The smallest stations were often referred to as stops. Yards are locations where freight cars would be stored and organized into trains and where maintenance would occur. Yards would typically contain three or more parallel tracks connected at each end, and were usually located on larger parcels of land owned by NCRA. Table C-6 in Appendix C identifies the known depots and yards along the NWP railroad within the rail corridor and describes whether they are still present, and if so, their current use. Figure 2.3.2-1 shows an existing depot along the rail corridor, which now serves as a warehouse for an agricultural equipment business.

Source: Ascent Environmental 2019

Figure 2.3.2-1 Ferndale Depot Near MP 268

2.3.3 GRADES, EMBANKMENTS, AND RETAINING WALLS

Recognizing its history of railroad operation, the rail corridor offers gentle grades for users through its entire length in all types of topography. While the northwestern part of California is generally rugged, it is also bisected by numerous rivers including the Wild and Scenic Eel River and the Russian River. The southern section of the rail corridor consists of very gentle gradients even through the canyon north of Cloverdale, with elevation increasing from 101 feet above mean sea level in Healdsburg to 610 feet above mean sea level in Ukiah. For this section, the elevation change translates into 509 feet of rise over 242,880 linear feet (46 miles) of distance, a gradient of 0.2 percent.

North of Ukiah, the railroad engineers had to overcome the highest elevations of the rail corridor, a summit called “Ridge” between Ukiah and Willits. The rail corridor climbs to the summit by using a long, curved section up Baker’s Creek in Redwood Valley, and gains elevation as it travels above U.S. 101 through unstable soils. The distance between Ukiah and Ridge is 91,872 feet (17.4 miles). This same section gains 1,303 feet of vertical climb, for an average gradient of 1.4 percent and a maximum gradient of 2.7 percent. For trail users, while this would be the steepest climb of the corridor, the gradient is gentle and would be accommodating to users of all abilities.

The remaining sections to the north also consist of gentle grades. The entire RTT Eel River Canyon Section from Dos Rios to South Fork, a distance of 373,824 linear feet (70.8 miles), drops 755 feet over this section, a gradient of 0.2 percent. The relatively flat grade and elevation similar to the river contributes to flooding in the areas surrounding the Wild and Scenic Eel River, as the water moves slowly over the broad riverbed, dropping silt and gravel, and causing water levels to rise rapidly rather than flowing quickly toward the ocean.

The condition of embankments along the rail corridor is generally reflective of the surrounding geological conditions. In steep canyon areas that are prone to landsliding or erosion there are many instances of collapsed or undercut embankments. In gentle and moderate terrain, the rail embankment generally remains intact. One exception to this is the storm-damaged areas of the embankment along the Humboldt Bay, near MPs 277 and 280. In these areas the embankment has been severely eroded due to ocean wave action. In the most extensive eroded area (MP 280) rock armoring has been placed on the seaward side of the embankment to prevent further loss.

The field assessment crews documented 11 retaining walls within the rail corridor. Most observed walls were failing due to rotten wood or were damaged by erosion or landsliding (Figure 2.3.3-1). The documented failing retaining walls are at least 25 feet in length and located south of Willits, and near the communities of Dos Rios, Larabee, Holmes, and Loleta. They are shown in the mapbook in Appendix A.

Source: Alta 2019

Figure 2.3.3-1 Retaining Wall

2.3.4 ABANDONED RAIL EQUIPMENT

The field assessment crews documented 113 locations throughout the rail corridor where abandoned rail equipment, structures, or debris were observed (Table C-7 in Appendix C); the locations of these items are shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A.

The locations of documented rail equipment are all within the remote RTT Eel River Canyon Section and the northernmost portion of the RTT Southern Section. The field assessment crews found 47 locations along the rail corridor where one or more rail cars have been abandoned on or near the tracks, and eight of those locations involve multiple rail cars. Rail cars have been overturned in at least two locations, and several rail cars are present in the Wild and Scenic Eel River and are known to obstruct fish passage. Of the 113 documented locations, 60 places along the rail corridor contained noteworthy quantities of abandoned rail equipment. The types of rail equipment that were observed include:

- rail cars (e.g., cranes, excavators, horse trailers);
- a communications tower;
- crossing debris;
- railroad track switches;
- grease boxes;
- displaced culverts and culvert debris;
- scattered metal debris and pieces;
- residential buildings (such as hunting cabins and abandoned homes); and
- failed tunnel portals.

It is likely that the abandoned rail equipment has not been removed given that it is in remote locations that are difficult to access. The abandoned rail equipment poses an environmental constraint or liability, but also provides an opportunity for restoration. Figures 2.3.4-1 through 2.3.4-4 illustrate the types of abandoned rail equipment in the rail corridor.

Source: PWA 2020

Figure 2.3.4-1 Metal Rail Debris

Source: PWA 2020

Figure 2.3.4-2 Abandoned Rail Crane and Rail Cars

Source: PWA 2020

Figure 2.3.4-3 Rail Cars in the Wild and Scenic Eel River

2.4 Environmental Conditions

2.4.1 PHYSICAL SETTING

The rail corridor is located north of San Francisco in the Coast Ranges and it spans 235 miles from Healdsburg to Korbel. The land uses range from pastoral Healdsburg, a small city in the heart of Sonoma County Wine Country, to the remote mountains of the North Coast.

The rail corridor between Healdsburg and Korbel has a variety of qualities. Rainfall varies from 42 inches per year in Healdsburg to 55 inches per year in Samoa. The rivers and streams in the rail corridor experience frequent flooding. The population is generally sparse, with a growing number of rural residents in Healdsburg and northern Sonoma County. Three economic sectors dominate the area: (a) tourism, (b) lumber and related industries, and (c) wine making. A growing sector is legal cannabis production, concentrated in Mendocino, Trinity, and Humboldt counties. Tourist destinations within or near the rail corridor include wineries, the Skunk Train in Willits, Humboldt Redwoods State Park, and many other regional and local parks. In the past several decades, the communities along the northern part of the rail corridor have suffered from economic downturn due to diminishing logging activities, while the service industry and other sectors have grown.

The historic NWP railroad used available north-south rivers and creeks wherever it could to avoid hills and mountains. Because most ranges in the north coast run north-south with rivers in between, the NWP railroad did the same. The NWP corridor follows the Russian River as it bends northward, transiting a canyon and bisecting vineyards until it reaches Ukiah. The gradients are low and the track is mostly straight in this area except in the canyon north of Cloverdale. Vineyards and wineries are interspersed with lumber mills or other industrial uses. Small towns, such as the community of Hopland and City of Cloverdale, welcome visitors using U.S. 101.

North of Ukiah, the rail corridor climbs its only major grade to Ridge, an elevation of 1,913 feet, offering views to the west of the coast mountains. Up to this point the corridor has traveled through oak woodland, typified by grassy hills and oak and other hardwood trees. From Ridge northward, while the oaks and grassy hills remain mixed in the landscape, pine and fir trees become common.

The corridor traverses the large, flat plains of Little Lake Valley, an environmentally sensitive area of wetlands that serves as one of the headwaters of the Wild and Scenic Eel River, until it reaches Willits. Here the railroad yards historically served as the dividing line between operating divisions, and also gathered freight cars from the California Western Railroad (CWR), also known as the Skunk Train, which extends to Fort Bragg on the coast.

North of Willits, the corridor follows Outlet Creek, a meandering creek in heavy woods with numerous tunnels and bridges. Following Outlet Creek, the corridor enters the main fork of the Eel River Canyon at Dos Rios. The canyon landscape consists of extremely unstable soils, the river (which has experienced significant floods), and a few public roads. This area is characterized by exceptional scenic beauty accessible to ranchers, anglers, summer residents, river rafters, and cannabis growers who live in the area.

Past Fort Seward, redwood trees become more common, until the corridor reaches McCann, where it passes between massive stands of redwoods. The corridor and river finally converge with the south fork of the Wild and Scenic Eel River, and the river changes character to a deep, slow moving, and wide water course. Lumber mills and related industries are common, such as the Pacific Lumber Mill in Scotia. Rainfall here is the highest in the state, increasing the instability of the soil on slopes, especially along the Scotia Bluffs where the original NWP tracks are perched on over 3,100 feet of trestles directly between the bluffs and the river.

North of Scotia, the rail corridor follows the shoreline of the Humboldt Bay to Eureka. Short branch lines to Carlotta and Samoa reach small lumber mills. The corridor continues along Humboldt Bay until it reaches Arcata, where the original NWP railroad extended to Trinidad, and the Arcata & Mad River railroad extends to Blue Lake and Korbel.

2.4.2 GEOLOGIC CONDITIONS AND HAZARDS

The rail corridor is in the Coast Ranges geomorphic province of California. The Coast Ranges are northwest trending mountains and valleys that generally parallel the San Andreas Fault (CGS 2010). They extend from the western edge of the Klamath Mountains near the Oregon border, to the Transverse Ranges in southern California, more than 1,000 miles.

The rocks of the Coast Range mountains formed as a massive pile of debris and sediment in an ancient undersea subduction zone at the boundary of tectonic plates. The unique geologic material and seismic environment of these mountains create a suite of geologic challenges related to seismic shaking and slope stability.

Geology

The geology of the rail corridor is a mixture of marine and river sediments in low-lying areas and outwash plains, while the interior coast range is dominated by a geologic formation known as the Franciscan Complex (CGS 2010). The Franciscan Complex is made up of interbedded sedimentary and volcanic rocks that accumulated at the bottom of the sea between the Late Jurassic (205 to 140 million years ago) and the Late Cretaceous periods (140 to 65 million years ago). These materials were later metamorphosed (modified by heat and pressure) and lifted up as they were squeezed between colliding oceanic and continental tectonic plates along the coast of California. Sandstone and clayey rocks (mudstone, siltstone, and shale) are the dominant bedrock materials within the complex. The complex is a tumbled mix of hard rock materials, such as blocks of metamorphic rock, sandstone, or unsheared siltstone, in a matrix of soft soil-like shale (Kim et al. 2004). For this reason, the overall stability of the complex depends on the placement and volume of intact blocks relative to soft shale.

The geologic conditions underlying different portions of the rail corridor affect the stability of slopes and the potential for landslides and erosion (discussed in greater detail below). Conditions in each section of the rail corridor are described as follows:

- **RWT Southern Section.** This section of the rail corridor follows the Russian River through the Alexander Valley. This section is underlain by river outwash marine sediments with bedrock consisting chiefly of sandstone and mudstone.
- **RTT Southern Section.** This section continues to cross river alluvium and marine sediments with some areas of serpentine rock and Franciscan Complex.
- **RTT Eel River Canyon Section.** This section is almost entirely underlain by the Franciscan Complex, but transitions into more consistent marine sediments near MP 230 and the town of Whitlow.
- **RTT Northern Section and RTT Carlotta, Samoa, and Korblex Branches.** These sections cross the Eureka plain and are mostly underlain by younger, sedimentary rocks and alluvium with older marine sediments exposed by uplift at the margins of the plain (as seen in Figure 2.4.2-1)

Source: Ascent Environmental 2019

Figure 2.4.2-1 Alluvial River Gravels Abutting a Marine Sandstone Bluff near Shively

Seismic Setting

The north coast of California has been shaped by the slow and powerful collision of three continental plates, the Pacific, the North American, and the Gorda. These three plates meet just offshore of Cape Mendocino, an area known as the Mendocino Triple Junction. Faults have formed along the edges of tectonic plates that are colliding, moving past each other, or moving at different rates. Earthquakes occur along these faults and are experienced as ground shaking or surface rupture as the earth moves and adjusts in response to the pressure created by the tectonic plates.

The well-known San Andreas fault follows the margin of the Pacific and North American plates south of the Mendocino Triple Junction and parallels the rail corridor, which lies approximately 15 to 30 miles to the east. Several other faults are active within 5 miles of the rail corridor and are capable of producing large earthquakes. Ground shaking could potentially result in the damage or collapse of structures, triggering of landslides, or soil liquefaction. Additionally, the rupture of an offshore fault could generate a tsunami.

Landslides and Slope Failure

The rail corridor sections have varying levels of slope instability chiefly driven by the underlying geologic material and the general steepness of the terrain. Other factors that contribute to slope instability are heavy rains, grading, or earthquakes. The RWT Southern Section, RTT Southern Section, the RTT Northern Section (north of the junction of the south fork and main fork of the Wild and Scenic Eel River), and the RTT Carlotta, Samoa, and Korblex Branches are predominantly located in valleys, plains, or moderately hilly terrain. Additionally, these sections are underlain by marine sandstone and mudstone geology or river alluvial deposits. The RTT Eel River Canyon Section and the southern portion of the RTT Northern Section are located in the steep terrain of the Eel River Canyon, frequently underlain by Franciscan Complex bedrock that is held in place by sheared silt and clay shales. In general, granular and clay-free materials, such as sandstone, are strong and tend to sustain stable, steep slopes. Conversely, clayey materials tend to be weaker and susceptible to slope failure. The clay-rich materials of the Franciscan Complex are especially prone to slipping and landslides when wet.

Although many portions of the rail corridor may be susceptible to slope failure under certain conditions, the greatest risk exists in the RTT Eel River Canyon Section and the southern portion of the RTT Northern Section (between MP 151 and MP 263) due to the combination of unstable bedrock materials and very steep slopes. When NWP operated in the corridor, constant maintenance was required to address the frequently moving slopes of the Eel River Canyon. Massive slow-moving landslides occur along the length of the canyon, coupled with rockfalls, washouts, and the risk of sudden slope failure, especially during the rainy winter months. The railroad catalogued these slope failures as slides if the material moved across and covered the rail, or sinks if the slope moved downward leaving the rail undercut. Examples of active sinks and landslides are shown in Figures 2.4.2-2 through 2.4.2-4.

Source: PWA 2020

Figure 2.4.2-2 Sink Undercutting the Rail Corridor at MP 211

Source: Ascent Environmental

Figure 2.4.2-3 Landslide Undercutting the Rail Corridor at MP 244

Source: PWA 2020

Figure 2.4.2-4 Landslide Over the Rail Corridor Near MP 157

Table C-8 in Appendix C provides the location and description of landslides and large slope failures documented during the field assessment of the rail corridor. Consistent with available geologic data and historic records (Stindt and Dunscomb 1964), the highest density of landslides and unstable slopes was found in the Eel River Canyon. Thirteen landslides or slope failures were found in the RTT Southern Section while 125 landslides or unstable areas were found in the RTT Eel River Canyon Section. An additional eight landslides or unstable areas were found along the Eel River in the RTT Northern Section between Weott (approximately MP 236) and the mouth of the Eel River near Loleta (approximately MP 272). The locations of landslides and other geomorphic hazards are shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A.

2.4.3 HAZARDOUS MATERIALS AND ENVIRONMENTAL CONTAMINANTS

This section describes existing known and probable hazardous materials and environmental contaminants adjacent to and within the rail corridor. Principal areas of known and probable contaminants are former depots and maintenance yards where maintenance, repair, and hazardous materials storage took place. Some of these areas have been remediated, and there is potential for discovery of additional contaminated areas. Some sites that have been remediated and "closed" currently have land use restrictions, which include requirements for notification before excavations, as well as restrictions on types of land uses allowed on the site.

Methodology

The hazardous materials and environmental contaminants existing conditions were characterized through a review of databases and relevant reports, including SWRCB's GeoTracker and DTSC's EnviroStor. SWRCB's Geotracker is a database for sites that impact groundwater or have the potential to impact groundwater, and contains sites that require groundwater cleanup (such as leaking underground storage tanks [LUSTs]). It is used by regional boards and local agencies to track and archive compliance. Envirostor is DTSC's data management system for tracking cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or potential contamination. Specifically, the following was queried from these databases:

- **GeoTracker.** This database was queried to identify any LUST cleanup sites, cleanup program sites, and military cleanup sites near or within the rail corridor. Closed cases, permitted facilities, and other sites in the GeoTracker database were not included in this review, although closed sites with property restrictions were included. The following are definitions for GeoTracker's cleanup statuses:
  - **Completed – Case Closed.** A closure letter or other formal closure decision document has been issued for the site.
  - **Open – Assessment & Interim Remedial Action.** An "interim" remedial action is occurring at the site and additional activities such as site characterization, investigation, risk evaluation, and/or development of a site cleanup plan are occurring.
  - **Open – Inactive.** No regulatory oversight activities are being conducted by the responsible party.
  - **Open – Remediation.** An approved remedy or remedies has/have been selected for the impacted media at the site and the responsible party is implementing one or more remedy under an approved cleanup plan for the site. This includes any ongoing remedy that is either passive or active, or uses a combination of technologies.
  - **Open – Site Assessment.** Site characterization, investigation, risk evaluation, and/or a development of a site cleanup plan are occurring at the site. Examples of site assessment activities include the following: (1) identification of the contaminants and the investigation of their potential impacts, (2) determination of the threats/impacts to water quality, (3) evaluation of the risk to humans and ecology, (4) delineation of the nature and extent of contamination, (5) delineation of the contaminant plume(s), and (6) development of a site cleanup plan.

    - **Open – Verification Monitoring (used only for underground storage tanks, Chapter 16 regulated cases).** Remediation phases are essentially complete, and a monitoring/sampling program is occurring to confirm successful completion of cleanup at the site.

- **EnviroStor.** This database was queried to locate cleanup sites near or within the rail corridor. Permitted sites, other sites, and completed sites in the EnviroStor database were not included in this review. The following are definitions for EnviroStor's cleanup statuses:
    - **Active.** Identifies that an investigation and/or remediation is currently in progress and that DTSC is actively involved, either in a lead or support capacity.
    - **Certified Operations & Maintenance.** Identifies sites that have certified cleanups in place but require ongoing Operation and Maintenance (O&M) activities. The Certified O&M status designation means that all planned activities necessary to address the contamination problems have been implemented. However, some of these remedial activities (such as pumping and treating contaminated groundwater) must be continued for many years before complete cleanup would be achieved. Prior to the Certified O&M designation, all institutional controls (e.g., land use restrictions) that are necessary to protect public health must be in place.
    - **Inactive – Action Required.** Identifies non-active sites where, through a Preliminary Endangerment Assessment (PEA) or other evaluation, DTSC has determined that a removal or remedial action, or further extensive investigation, is required.
    - **No Further Action.** Identifies completed sites where DTSC determined after investigation, generally a PEA (an initial assessment), that the property does not pose a problem to public health or the environment.
    - **Referred to RWQCB.** Identifies sites that, based on limited information available to DTSC, appear to be more appropriately addressed by the California Regional Water Quality Control Boards.

These information sources did not precisely georeference sites through GIS or other spatially exact data; therefore, whether the sites are adjacent to or within the rail corridor is interpreted from an evaluation of maps in the databases. In addition to a review of databases, the following reports were reviewed and informed the characterization of existing conditions at some of the former rail-related facilities:

- Mitigated Negative Declaration, NCRA Updated Capital Assessment Report – Lombard to Willits (NCRA 2005)
- Consent Decree and Stipulated Judgment, California v. North Coast Railroad Authority, CV80240, July 1999
- Consent Decree Assessment, North Coast Railroad Authority (Kleinfelder 2002)
- Documentation of Completion: Waste and Debris Cleanup, North Coast Railroad Authority (Kleinfelder 2005)
- Draft Environmental Impact Report, Freight Trail Project (NCRA 2009)
- Remediation Agreement—Ukiah Depot, between North Coast Railroad Authority and Northwestern Pacific Railroad (2013)

Information on identified hazardous materials and sites within and adjacent to the rail corridor is provided at a summary level of detail in Table C-9 in Appendix C. The approximate locations of the hazardous materials sites are shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A.

Overview of Hazardous Materials and Environmental Contaminants

A total of 39 hazardous materials sites were identified within or immediately adjacent to the rail corridor; three are in the RWT Southern Section, 16 are in the RTT Southern Section, six are in the RTT Eel River Canyon Section, 10 are in the RTT Northern Section, two are along the Samoa and

Korblex Branches, and none of the sites are associated with the Carlotta Branch of the rail corridor. Five of these sites are documented as having land use restrictions in place. In all sections of the rail corridor, railroad ties carry a risk of exposure to creosote-treated wood, which may be considered hazardous waste (EPA 2016).

Review of aerial imagery indicates that additional railroad infrastructure and equipment may also be scattered near or in the ROW (see Section 2.3.4, "Abandoned Rail Equipment"), which could indicate the presence of hazardous materials and contaminants such as fuels and lubricants. Railroad bridges may also contain asbestos and lead-based paint. As discussed for specific stations, contamination at train depots and railyards may have occurred from maintenance activities (i.e., parked engines) as well as normal, repeated operation of trains for nearly 100 years. Contaminants include oil, diesel, grease, and metals. It is also likely that former train depot buildings contain materials that would typically contain asbestos (NCRA 2009).

Figures 2.4.3-1 through 2.4.3-4 show examples of abandoned rail equipment and other potentially hazardous debris that were observed in the field during field assessments of the rail corridor that occurred in early 2020.

Source: PWA 2020

Figure 2.4.3-1 Abandoned Rail Equipment

Source: PWA 2020

Figure 2.4.3-2 Abandoned Grease Box

Source: PWA 2020

Figure 2.4.3-3 Abandoned Waste Drums

Source: PWA 2020

Figure 2.4.3-4 Waste Drums and Other Debris

2.4.4 NATURAL AND BIOLOGICAL RESOURCES

The rail corridor traverses a diverse range of natural resources and biological communities as it winds its way through foothills and alluvial river valleys; oak woodlands and redwood forests; across rivers, streams, marshes, and estuaries; and to coastal dunes, terraces, and bluffs of the northern California coastline. The wide variety of habitats found along the rail corridor provides opportunities for an enriching user experience. Potential constraints may include the presence of protected plant species or habitats or critical habitat for protected wildlife species within the trail construction footprint. Natural and biological resources constraint data at the current planning scale is limited and must be defined at the project level through resource surveys and project-level mapping. This section explores the natural and biological resources that are known or have the potential to occur along the rail corridor and describes the environmental regulations and policies that protect these resources.

Wildlife Habitats and Vegetation Communities

The predominant terrestrial habitat types along the rail corridor include urban and agricultural lands, barren lands, annual grassland, montane hardwood, redwood, Douglas fir forest, and riparian habitats. California Wildlife Habitat Relationships (CWHR) habitat types and their acreages are presented in Table C-10 in Appendix C for each section of the rail corridor. The major habitat types are described below. Aquatic habitats are discussed in more detail under the header "Waters of the United States and Waters of the State," below. Representative photographs of redwood, mixed riparian, and urban habitats along the rail corridor are presented in Figures 2.4.4-1 through 2.4.4-3.

Urban and Agricultural Lands

Modified habitats, including urban development, vineyards, and pastures make up 23 percent of the corridor (approximately 697 acres). These areas experience regular disturbance and are unlikely to provide habitat for rare or protected plant or animal species. However, agricultural lands such as vineyards and pastures can provide habitat for many species of common rodents and birds.

Source: Ascent Environmental 2019

Figure 2.4.4-1 View from the Rail Corridor in Redwood Forest Habitat

Barren

Approximately 32 percent of the corridor (972 acres) is classified as barren habitat. This habitat type covers the largest area within the rail corridor. Barren is defined by the absence of vegetation. In the marine and estuarine environment, barren habitat includes rocky outcroppings in the intertidal and subtidal zones, open sandy beaches, and mudflats. Along rivers, it includes vertical river banks and canyon walls. Urban settings covered in pavement and buildings may be classified as barren as long as vegetation, including non-native landscaping, does not reach the percent cover thresholds for vegetated habitats (CWHR 2019).

Annual Grasslands

Annual grasslands make up approximately 11 percent of the corridor (341.9 acres). Introduced annual grasses and forbs dominate annual grasslands. Perennial grasses such as California oatgrass (*Danthonia californica*), slender hairgrass (*Deschampsia elongata*), and sweet vernal grass (*Anthoxanthum odoratum*) are the dominant species in perennial grasslands.

Many wildlife species breed, nest, and forage in grasslands. Common wildlife species that are likely to be associated with annual and perennial grasslands include northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), western kingbird (*Tyrannus verticalis*), western meadowlark (*Sturnella neglecta*), western fence lizard (*Sceloporus occidentalis*), black-tailed jackrabbit (*Lepus californicus*), mule deer (*Odocoileus hemionus*), and coyote (*Canis latrans*).

Montane Hardwood and Montane Hardwood-Conifer

Montane Hardwood and Montane Hardwood Conifer (Figure 2.4.4-4) habitats cover approximately 15 percent of the rail corridor (458.9 acres). To be considered montane hardwood-conifer, at least one-third of the trees must be conifer and one-third must be broad-leaved, whereas the montane hardwood habitat type is dominated by hardwoods. Common associates in both habitat types within the rail corridor include bigleaf maple (*Acer macrophyllum*), Pacific madrone (*Arbutus menziesii*), red alder (*Alnus rubra*), Douglas fir (*Pseudotsuga menziesii*) (Figure 2.4.4-5), and oak species that vary by topography, soil, and elevation, and typically include canyon live oak, interior live oak (*Quercus wislizeni*), California black oak (*Quercus kelloggii*), and Oregon oak (*Quercus garryana*).

Species found in montane hardwood habitat include wild turkey (*Meleagris gallopavo*), mountain quail (*Oreortyx pictus*), band-tailed pigeon (*Patagioenas fasciata*), California ground squirrel (*Otospermophilus beecheyi*), dusky-footed woodrat (*Neotoma fuscipes*), American black bear (*Ursus americanus*), mule deer, western fence lizard, and western rattlesnake (*Crotalus oreganus*).

Source: Ascent Environmental 2019

Figure 2.4.4-2 View from the Rail Corridor in Urban Habitat

Redwood

Covering about 7 percent of the rail corridor (209.8 acres), redwood forest is one of the dominant CWHR habitat types mapped within the rail corridor. In the north coast region of California within 2.5 miles of the coast, redwood habitat consists of Sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*), redwood (*Sequoia sempervirens*), red alder, and Douglas fir. Further inland, Douglas fir becomes dominant with tanoak (*Notholithocarpus densiflorus*) and Pacific madrone as the major associates (CDFW 2019).

Redwood habitats provide food, cover, or special habitat elements for numerous birds, reptiles, amphibians, and mammals including most of the same species listed in other habitats along the rail corridor.

Source: Ascent Environmental 2019

Figure 2.4.4-3 View from the Rail Corridor in Riparian Habitat

Douglas Fir

Approximately 4 percent of the rail corridor (114.1 acres) is made up of Douglas fir habitat. Douglas fir is the dominant species in the upper overstory of this habitat type with a lower overstory of dense, broad-leaved evergreen trees including tanoak, Pacific madrone, and canyon live oak (*Quercus chrysolepis*). On wet sites, shrub layers are well developed, often with 100 percent cover and include Oregon grape (*Mahonia aquifolium*), California blackberry (*Rubus ursinus*), and poison oak (*Toxicodendron diversilobum*). This habitat supports a high abundance of wildlife species.

Source: PWA 2020

Figure 2.4.4-4 Montane Hardwood-Conifer

Riparian Habitat

Riparian habitats cover approximately 3 percent (94.2 acres) of the rail corridor. All riparian habitats have a high value for many wildlife species for food, cover and reproduction, migration and dispersal corridors, escape, nesting, and thermal cover for an abundance of wildlife, including many species of amphibians, reptiles, birds, and mammals.

Source: PWA 2020

Figure 2.4.4-5 Douglas Fir

Other Habitat Types

Approximately 5 percent of the rail corridor is made up of small pockets of various habitats including blue oak woodland, blue oak-foothill pine, coastal oak woodland, coastal scrub, mixed chaparral, perennial grassland, and undetermined shrublands.

Sensitive Biological Resources

Sensitive biological resources include those that are afforded special protection or consideration through CEQA, California Fish and Game Code (including the California Endangered Species Act [CESA]), Federal Endangered Species Act (ESA), Clean Water Act (CWA), Porter-Cologne Water Quality Control Act (Porter-Cologne Act), and local or regional policies. Environmental regulations and policies related to the development of a potential future trail are presented in Table C-11 in Appendix C.

Special-Status Plant and Animal Species

Plants and animals may be special-status species due to declining populations, vulnerability to habitat change, or restricted distributions. Special-status species include those species legally protected under CESA, ESA, or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing.

During project-level planning and evaluation, a combination of data sources and survey efforts would be used to verify special-status plant and animal species known or with potential to occur along the rail corridor. Special-status plant and animal species with the potential to occur in the rail corridor would be determined through review of USFWS critical habitat GIS data; federal candidate, proposed, threatened, and endangered species lists from USFWS; and searches of CDFW's CNDDB and the California Native Plant Society's online inventory and other natural and biological resources databases. Additional biological analyses could include field assessments, confirmation of biological resources that could be affected, pre-construction surveys for special-status species, and implementation of resource protection measures during trail construction.

Sensitive Natural Communities and Habitats

CDFW maintains a list of sensitive natural vegetation communities that are native to California. Sensitive natural communities are ranked by CDFW from S1 to S3, where S1 is critically imperiled, S2 is imperiled, and S3 is vulnerable. These communities are mapped at a much finer scale than the broad CWHR vegetation communities shown in Table C-10 in Appendix C. Because CDFW mapping of sensitive natural vegetation communities has not been completed for the rail corridor, the extent of these communities can only be identified through project-level surveys. Sensitive natural habitat may be of special concern for a variety of reasons, including their locally or regionally declining status, or because they provide important habitat to common and special-status species. Sensitive natural communities are those native plant communities defined by CDFW as having limited distribution statewide or within a county or region and that are often vulnerable to environmental effects related to development (CDFW 2019). In addition to habitats officially identified by CDFW as sensitive natural communities or meeting the definition of waters of the United States, other sensitive habitats include riparian habitats, oak woodlands, chaparral, and coastal sage scrub.

Riparian habitats including the banks, floodplains, and terraces of lakes, rivers, and streams are subject to regulation under Section 1602 of the California Fish and Game Code and are considered sensitive habitats. Riparian habitat areas may also qualify as waters of the United States if they occur within the ordinary high-water mark of waters of the United States or if they meet the three parameters of wetland vegetation, hydric soils, and wetland hydrology and are located in areas subject to federal jurisdiction. The rail corridor crosses 274 rivers, streams, tributaries, and other drainages and wetlands; these features are shown in the mapbook in Appendix A. Table 2.4.4-1 presents the number of crossings by rail corridor section.

Table 2.4.4-1 Crossings Over Aquatic Features within the Rail Corridor

Rail Corridor Section	Number of Crossings Over All Aquatic Features
RWT Southern Section	14
RTT Southern Section	62
RTT Eel River Canyon Section	127
RTT Northern Section	45
RTT Carlotta, Somoa, and Korblex Branches	26
Total	274

Notes: RTT = Rail to Trail; RWT = Rail with Trail.
Source: Compiled by Ascent Environmental in 2019 from the USFWS National Wetlands Inventory (USFWS 2019c)

Critical Habitat

Critical habitat is a USFWS-designated geographic area that is essential for the conservation of a threatened or endangered species that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species, but that will be needed for its recovery. A critical habitat designation only affects activities performed by federal agencies or that involve a federal permit, license, or funding, and that are likely to destroy or adversely modify the area of critical habitat. Consultation with USFWS may be required for actions related to the development of a potential future trail within critical habitat.

Waters of the United States and Waters of the State

Waters of the United States include navigable waters of the United States; interstate waters; all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce; perennial and intermittent tributaries to any of these waters; and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Wetlands are areas that are inundated or saturated by surface water or groundwater and support a prevalence of vegetation typically adapted for life in saturated soil conditions. To qualify for federal protection, wetlands must occur in hydrologic locations subject to federal jurisdiction and meet three wetland delineation criteria: hydrophytic vegetation, hydric soil types, and wetland hydrology. Many surface waters and wetlands in California meet the criteria for waters of the United States, including intermittent streams, seasonal lakes, and wetlands.

Waters of the state are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. This includes all waters of the United States, but also areas not regulated under the federal CWA.

The NWI was used to identify aquatic habitats and potentially jurisdictional wetlands within the rail corridor; however, project-specific analysis would be required to identify wetlands and other waters that are typically defined at a finer scale than is available in the NWI. A total of 210.08 acres of NWI-mapped wetlands, consisting of estuarine marine deep water, estuarine marine wetland, freshwater emergent wetland, freshwater forested and shrub wetland, freshwater pond, and riverine are present within the rail corridor. Wetlands types and their acreage for each trail section is provided in Table 2.4.4-2.

Table 2.4.4-2 Acreage of Aquatic Resources by Rail Corridor Section

Rail Corridor Section	Estuarine and Marine Deepwater	Estuarine and Marine Wetland	Freshwater Emergent Wetland	Freshwater Forested and Shrub Wetland	Freshwater Pond	Riverine	Total (acres)
RWT Southern Section	—	—	0.03	2.18	0.28	1.15	**3.64**
RTT Southern Section	—	—	0.06	3.51	—	9.16	**12.73**
RTT Eel River Canyon Section	—	—	1.37	—	—	13.72	**15.09**
RTT Northern Section	1.52	25.35	17.69	14.79	0.20	0.82	**60.38**
RTT Carlotta, Samoa, and Korblex Branches	0.53	7.43	44.56	57.18	0.98	8.45	**119.14**
TOTAL	**2.05**	**32.78**	**63.71**	**77.66**	**1.46**	**33.3**	**210.98**

Notes: RTT = Rail to Trail; RWT = Rail with Trail. The unit of measurement for all values reported is acres.
Source: Compiled by Ascent Environmental in 2019 from the USFWS National Wetlands Inventory

Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. Following the passage of the federal Wild and Scenic Rivers Act, California's Legislature passed their own in 1972. Initially, the state's Wild and Scenic Rivers Act protected free-flowing rivers along California's Northern Coast from development. All state-designated Wild and Scenic rivers were placed under the federal Wild and Scenic Rivers Act protection as well in 1980. Today, California's Act prohibits construction of dams or diversion facilities, except to serve local needs, on portions of, or on entire rivers around the state (Water Education Foundation 2020). The national Act prohibits federal support for actions such as the construction of dams or other instream activities that would harm the river's free-flowing condition, water quality, or outstanding resource values. However, federal designation neither prohibits development nor gives the federal government control over private property. Recreation, agricultural practices, residential development, and other uses may continue. Any proposed new development must be guided by land use and resource management objectives that are compatible with a river's classification (National Wild and Scenic River System 2020a).

The Eel River has received both state (1972) and federal (1981) Wild and Scenic river designation. Management of each designated river is administered by either a federal or state agency; the Wild and Scenic Eel River is managed by the Bureau of Land Management (BLM). For federally administered rivers, the designated boundaries generally average one-quarter mile on either bank to protect river-related values (National Wild and Scenic River System 2020a). BLM has developed their own guidance manual for managing Wild and Scenic rivers, which includes management guidelines for recreation development on designated rivers (BLM 2012).

There are three levels of designation: wild (fisheries), scenic, and recreation; the Eel River is designated wild for 97 miles, scenic for 28 miles, and recreational for 273 miles. The section of the Wild and Scenic Eel River adjacent to the rail corridor is classified as recreational, with outstandingly remarkable values designated as fish (National Wild and Scenic River System 2020b). According to the *Evaluation Report on the Eligibility of Five California Rivers for Inclusion in the National Wild & Scenic Rivers System*, the Eel River system has a remarkable anadromous (fish that migrate up rivers from the sea for spawning) fishery and ranks first for coho salmon habitat and second for chinook salmon and steelhead habitat of all California coastal river systems (DOI 1980). For these reasons, sections of the river are closed to fishing to protect the juvenile steelhead.

Conservation Lands and Special Management Areas

Other protected biological and natural resources include lands managed under conservation easements and special management areas, such as protected open space lands. A conservation easement or open space preserve is a voluntary legal agreement that permanently limits the uses of the land to protect its conservation values. These lands may remain under their original ownership or may be purchased outright by the conservation entity.

Conservation lands and special management areas were queried within 2.5 miles of the rail corridor and are listed in Table C-12 in Appendix C. No conservation lands or special management areas overlap with the rail corridor. Therefore, they would not present a constraint to the development of a trail within the rail corridor and are not discussed further in this document. Open space preserves that are open to the public are considered in Section 2.5.3, "Recreational Resources and Destinations."

2.4.5 CULTURAL RESOURCES

Cultural resources include archaeological sites, districts, buildings, structures, or objects generally older than 50 years and considered to be important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. They include archaeological sites of prehistoric or historic origin, historic-era built or architectural resources older than 50 years, cultural landscapes, and traditional or ethnographic resources, including "tribal cultural resources." Tribal cultural resources are a new category of cultural resources in CEQA, established pursuant to Assembly Bill (AB) 52 (Statutes of 2014, Public Resources Code Section 21074), that considers tribal cultural values in addition to the scientific and archaeological values when determining impacts.

Historic and Archaeological Resources

Documented historic buildings and archaeological resources make a substantial contribution to our understanding of local, regional, or national prehistory or history. Significant historic or archaeological resources are generally defined as those that are listed or have been determined eligible for listing in the National Register of Historic Places (NRHP) ("historic properties") or the California Register of Historical Resources (CRHR) ("historical resources"). The NRHP includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, and cultural importance that is considered significant at the national, state, or local level. The CRHR is a listing of state of California resources that are significant within the context of California's prehistory or history (and may include tribal cultural resources). Locally significant historic and archaeological resources may also be listed in a local register. To be listed in the NRHP or CRHR, a resource must retain several and usually most of the seven aspects of integrity (location, design, setting, materials, workmanship, feeling, and association). The retention of specific aspects of integrity is paramount for a historic property to convey its significance. Determining which of these aspects are most important to a particular property requires knowing why, where, and when the property is significant (NPS 1997).

Built Resources

A wide variety of historic built resources (e.g., buildings, structures, districts) located within the rail corridor may be found to be significant and potentially eligible for inclusion in the NRHP, CRHR, or local listings. Examples of railroad features that may be individually significant and have retained sufficient integrity to be eligible, include stations/depots (freight and/or passenger terminals), shops and maintenance yards, bridges, trestles, tunnels, and turntables. More common railroad features, such as the roadbed, culverts, switches, sidings, spurs, communication and signal facilities (e.g., whistle posts, call boxes), telegraph poles, sidings, junctions, wyes, and crossing markers, are generally not considered individually eligible for NRHP, CRHR, or local listing, although they may be contributors to larger properties (e.g., historic districts). Considering the growth of the railroad industry is firmly tied to economic and industrial growth and settlement, other historic built resources located adjacent to the rail corridor may also be found to be potentially significant, either individually or as a historic district. Such resources, for example, may include buildings or structures associated with the agriculture, wine, timber, dairy/ranching industries, or residential districts.

Archaeological Resources

Prehistoric or historic-era archaeological resources, representing villages or settlements, temporary resource gathering or processing camps, vestiges of railroad stations/depots (e.g., building foundations, demolished structures, historic-era debris), landscapes, burial grounds, or similar evidence of past human lives or cultures may be located within or adjacent to the rail corridor. The locations of archaeological resources depend on a number of factors, such as proximity of natural resource availability and a stable landscape during the prehistoric period and economic potential during the historic period. Due to historic-era disturbance by construction of the railroad, the rail corridor itself has a variable potential for the presence of buried archaeological deposits, although intact prehistoric deposits or features may remain at depth. The integrity of the archaeological resources, shaped by local natural and human processes that contribute to preservation or destruction of resources, is integral to an eligibility determination. In general, an archaeological site that retains sufficient integrity and has yielded or may likely yield information important in prehistory or history, which is examined by considering the resource within the context of regional prehistoric or historic research themes, may be found to be significant and potentially eligible for inclusion in the NRHP, CRHR, or local listings. An archaeological district or landscape would also be required to retain integrity and may also be associated with a prehistoric, ethnographic, or historic-era event, person, or activity.

Known Historic and Archaeological Resources in the Vicinity of the Rail Corridor

Historic and archaeological resources within or immediately adjacent to the rail corridor that have been previously found eligible or that are potentially eligible for listing in the NRHP, CRHR, or local listing within each section of the rail corridor are described below. Detailed summaries of the known historic and archaeological resources in the vicinity of the rail corridor are included in Appendix D. The locations of these resources are shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A.

RWT Southern Section

In the RWT Southern Section, there are four properties located adjacent to the rail corridor; three have been found eligible for NRHP or CRHR listing, and one is a designated California Historical Landmark (the Italian Swiss Colony in Asti).

RTT Southern Section

In the RTT Southern Section, 16 bridges, eight tunnels, and one trestle are within the rail corridor that may have engineering or architectural significance, and may be contributing elements of a railroad corridor historic district. One is a California Historic Landmark, located within this section of the rail corridor (Frog Woman Rock; Figure 2.4.5-1), and two are areas of potential archeological sensitivity (i.e., because of previous Native American use, they may contain significant archeological resources). In addition, five properties and one railroad segment (the California Western Railroad) next to the rail corridor are either listed, or have been found eligible for listing, in the NRHP or CRHR.

RTT Eel River Canyon Section

In the RTT Eel River Canyon Section, 22 tunnels and 12 bridges within the rail corridor may have engineering or architectural significance, and may be contributing elements of a railroad corridor historic district. Figure 2.4.5-2 is a photo of the Cain Rock Bridge. It was built in 1913 and is the longest bridge in this section measuring 1,124 feet in length.

RTT Northern Section

In the RTT Northern Section, three tunnels and one bridge within the rail corridor may have engineering or architectural significance, and may be contributing elements of a railroad corridor historic district. There is one potential historic district (the Scotia Historic District) and one area of potential archaeological sensitivity located along the rail corridor. In addition, four properties located adjacent to the rail corridor are either listed, or have been found eligible for listing, in the NRHP or CRHR.

Source: Tony Phillips 2019

Figure 2.4.5-1 Frog Woman Rock Near Pieta

Source: Bridgehunter.com (https://bridgehunter.com/ca/humboldt/alder-point-railroad/)

Figure 2.4.5-2 Cain Rock Bridge near Alderpoint

Source: RCAA 2003

Figure 2.4.5-3 Building at 410 South Railroad Avenue in the Downtown Historic District of Blue Lake

RTT Carlotta, Samoa, and Korblex Branches

No potentially significant historic or archaeological resources were identified within the Carlotta Branch of the rail corridor. There are areas of potential archaeological sensitivity along the Samoa Branch of the rail corridor. In addition, there is one historic district that is bisected by the Samoa Branch of the rail corridor (the Samoa Historic District), which has been found eligible for listing in the NRHP and CRHR. There are 4 trestles and one bridge within the rail corridor on the Korblex Branch that may have engineering or architectural significance, and may be contributing elements of a railroad corridor historic district. In addition, there is one property and one historic district (the Blue Lake Downtown Historic District; Figure 2.4.5-3) located adjacent to the rail corridor on the Korblex Branch that have not been evaluated but are potentially significant, and there is one property adjacent to the rail corridor that is the site of the plaque designating the railroad as a California Historical Landmark.

Tribal Cultural Resources

Tribal cultural resources (TCR) were added as a resource subject to review under CEQA, effective January 1, 2015, as required by AB 52. TCRs include sites, features, places, cultural landscapes, sacred places, or objects that are of cultural value to a California Native American tribe. Under CEQA, tribal cultural resources may also be historical resources eligible for listing in the CRHR, and may also be included in a local register. A tribal cultural resource may also be eligible for listing in the NRHP as a traditional cultural property, because of its association with cultural practices or beliefs rooted in a tribe's history that are important to maintaining its continuing cultural identity (NPS 1998). Cultural or sacred places could be traditional plant gathering or fishing locales, or places of spiritual significance, and could require access for continuing those traditions, including for ceremonial or spiritual purposes.

The inventory of California Native American sacred sites maintained by the Native American Heritage Commission (NAHC) and previously documented archaeological resources, burial sites, or traditional landscapes may already include places now also identified as tribal cultural resources. Identification and designation of potential tribal cultural resources along the rail corridor would depend on consultation with tribal representatives that are traditionally and culturally affiliated with a specific geographic area.

Known Tribal Lands in the Vicinity of the Rail Corridor

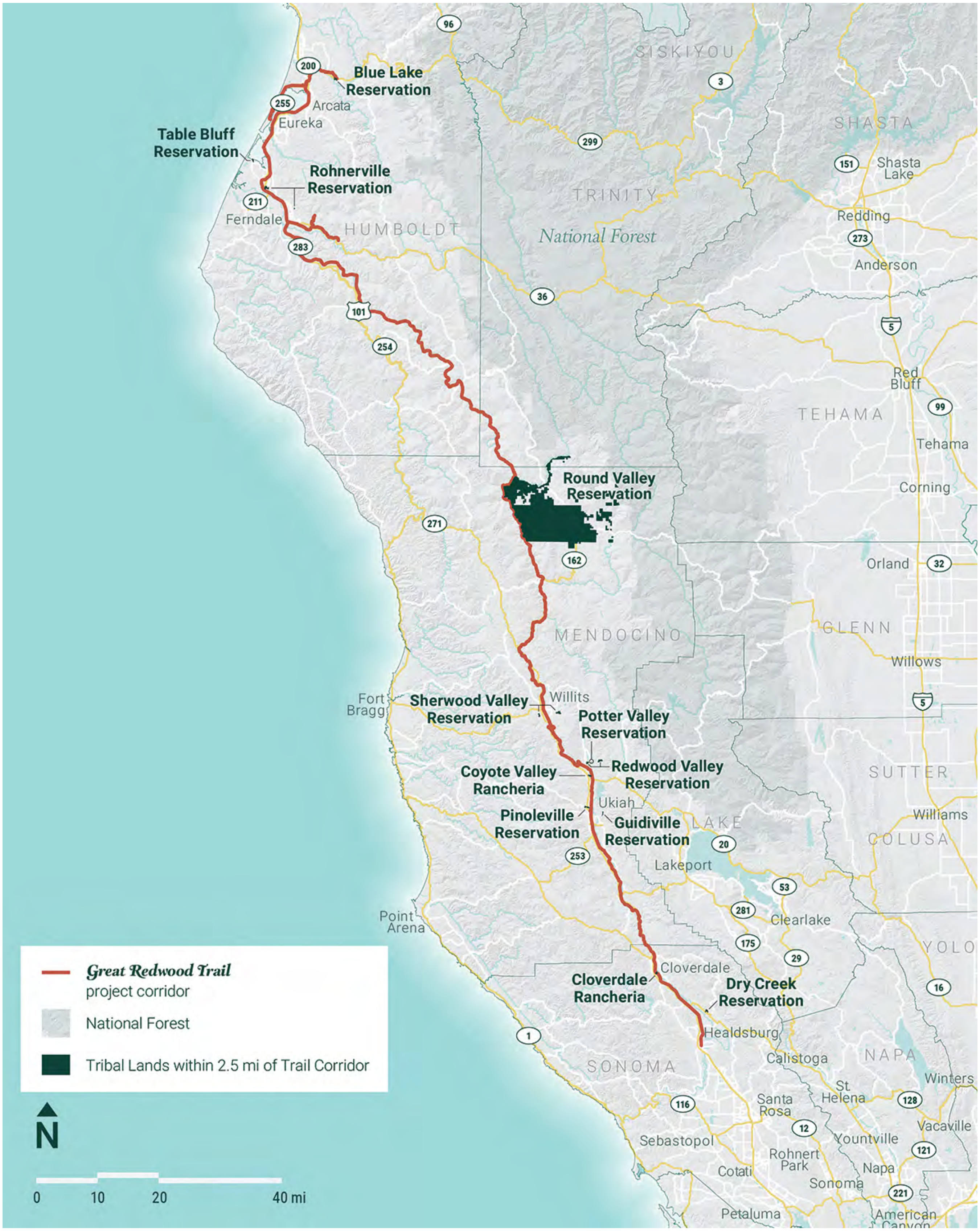
There are 12 areas designated as tribal lands within 2.5 miles of the rail corridor; four of which are within 500 feet (or approximately 0.1-mile) of the rail corridor. All of the tribal lands within 2.5 miles are included in Table 2.4.5-1, and those that are within 500 feet of the rail corridor are described in more detail below. The locations of the tribal lands are shown relative to the rail corridor in Figure 2.4.5-1 and in the mapbook in Appendix A.

Table 2.4.5-1 Tribal Lands within 2.5 Miles of the Rail Corridor

Tribal Land	Size (acres)	Distance from Rail Corridor (at nearest point)
Dry Creek Rancheria	94	6, 042 feet northeast of MP 74
Cloverdale Rancheria	**62**	**Adjacent to rail corridor at MP 84**
Guidiville Rancheria	45	9,414 feet east of MP 115
Pinoleville Pomo Nation	108	1,502 feet west of MP 116
Coyote Valley Reservation	**80**	**474 feet to the west of MP 121**
Redwood Valley Rancheria	207	2,671 feet north of MP 123
Potter Valley Tribe	4	5,379 feet northeast of MP 123
Sherwood Valley Rancheria	234	4,647 feet west of MP 138
Round Valley Reservation	**62,690**	**Adjacent to rail corridor from MP 174 to MP 188**
Rohnerville Rancheria	191	712 feet east near MP 270
Table Bluff Reservation	62	11,837 feet west of MP 275
Blue Lake Rancheria	**94**	**Adjacent to rail corridor near MP 300**

Notes: Bolded tribal lands are those that are within 500 feet of the rail corridor.

Source: NIC 2020; Ascent Environmental 2020



Source:

Figure 2.4.5-4 Tribal Lands within 2.5 Miles of the Rail Corridor

RWT Southern Section

MP 83.8-84 Cloverdale Rancheria, Cloverdale

The 62-acre Cloverdale Rancheria located at MP 83.8-84, just south of Cloverdale, between Lile Lane on the north, Asti Road on the west, the Russian River on the east, and the former rancheria on the south, is bisected by the rail corridor. However, the rail corridor is completely within an easement and does not actually overlap with the tribal land boundary.

A tribal cemetery is marked on the Cloverdale 1960 USGS 7.5-minute quadrangle within the bounds of the former Rancheria north of Santana Drive and immediately west of the rail corridor. Per the SMART Draft EIR (SMART 2005:3/263, 3/264), the Cloverdale Rancheria of Pomo Indians identified one tribal cultural property, stated their traditional lands are adjacent to the rail corridor, requested notification of any new construction near the Rancheria, and requested the presence of tribal monitors for subsurface work near the planned Cloverdale Station and within their sacred lands, which extend generally from Cloverdale south to Healdsburg (MP 66-86).

RTT Southern Section

MP 120.8-121.1 Coyote Valley Reservation, north of Calpella

The 80-acre Coyote Valley Reservation located at MP 120.8-121.1, north of Calpella between the forks of Forsythe Creek and the Russian River, is 474 feet west of the rail corridor on the opposite (west) side of the river. The Coyote Valley Band of Pomo Indians, a federally recognized tribe, own and operate a casino on the reservation. Tribal housing presently lines the west bank of the river within the reservation. The former 101-acre Coyote Valley Rancheria, which was located a few miles to the southeast, was flooded by Lake Mendocino when the Coyote Dam was constructed in 1958. The traditional lands of the Shodakai Pomo, the name of the group that inhabited Coyote Valley on the lower East Fork Russian River, and adjacent Northern Pomo groups, would have included the terrain along the rail corridor between Ukiah and Redwood Valley (MP 112-122).

RTT Eel River Canyon Section

MP 173.5-188 Round Valley Reservation, between Woodman and Ramsey

The 62,690-acre Round Valley Reservation located at MP 173.5-188 in northern Mendocino County, west of Covelo and between Woodman and Ramsey, borders (but does not overlap) the rail corridor along the Eel River. The reservation is within the traditional territory of the Yuki but also includes descendants of Concow Maidu, Cahto, Little Lake Pomo, Nomlaki, Wailaki, and Pit River peoples who were forced to move there in the 1850s. A unified community emerged, forming a new tribe in 1936, which is federally recognized as the Round Valley Indian Tribes. The mission of the Tribal Historic Preservation Officer (THPO) is to help meet cultural preservation needs voiced by the tribe's members. The traditional lands of the Yuki included the terrain on both sides of the Wild and Scenic Eel River along this section of the rail corridor.

RTT Carlotta, Samoa, and Korblex Branches

MP 300-300.8 Blue Lake Rancheria, Blue Lake

The 94-acre Blue Lake Rancheria located at MP 300-300.8 immediately northwest of the City of Blue Lake between SR 299 on the north, Railroad Avenue on the east, Mad River on the west, and Ivye Lake on the south, is bisected by the rail corridor along Railroad Avenue. However, the rail corridor is completely within an easement and does not actually overlap with the tribal land boundary.

The reservation is within the traditional territory of the Wiyot and also includes Yurok and Hoopa descendants. Approximately ten former Wiyot villages lie within or around the potential trail area. In 2002, the federally recognized Blue Lake Rancheria Tribe opened a casino and hotel on the reservation. In accordance with the Annie & Mary Rail-Trail Feasibility Study (RCAA 2003:32, 44), the Tribe has known sites of cultural significance mapped in the general area and has requested review of the approximate disturbance footprint for the rail corridor during the planning and design phase to avoid or mitigate disturbance, plus the presence of a professional archaeological monitor and tribal monitors for all earthmoving activities. The Tribe also requested it be consulted for development of an interpretive program for the rail corridor regarding native use of the area. The Tribe also recommended consultation with other Wiyot people, the federally-recognized Wiyot Tribe on the 153-acre Table Bluff Reservation southwest of Eureka, approximately 2.5 miles west of the rail corridor near Beatrice (MP 275). Wiyot peoples traditionally occupied the area between the Pacific Coast and the North Coast Ranges from the Bear River, south of Ferndale, north beyond Arcata to the Little River (between MP 253 and MP 296, and east to MP 302).

2.4.6 POTENTIAL UTILITY CONFLICTS

Utilities in the vicinity of the rail corridor include infrastructure for water supply, stormwater, wastewater, electrical power, natural gas, and telecommunications. Utilities tend to be concentrated within city limits and near highly populated areas. Publicly available statewide utilities data includes locations of transmission lines, substations, power plants, and natural gas pipelines. Additional existing utilities information was provided by DGS for the southern section of rail corridor, between MP 68 in Healdsburg and MP 140 near Willits; this information is summarized in Table 2.4.6-1 below. For the entire rail corridor, publicly available information from the California Energy Commission (CEC) on existing utilities within 0.10-mile of the rail corridor is provided. Electrical power in California is generated from a variety of sources, including natural gas, hydroelectric, geothermal, solar, nuclear, and wind. Electricity service providers' territories that intersect with the rail corridor include Pacific Gas and Electric (PG&E), City of Ukiah Electric Utility Department, City of Healdsburg Electric Department, and Trinity Public Utilities District (CEC 2016). Several overhead electric power lines span the rail corridor (DGS 2019); however, there are no regional high-power transmission lines. Natural gas infrastructure that intersects with the rail corridor, primarily underground gas pipelines, is owned and operated by PG&E (CEC 2018a). Telecommunications facilities for a variety of providers include wireless transmission towers, landline telephone, cable, and internet fiber optics lines.

Table 2.4.6-1 Utilities Present within the Rail Corridor between Healdsburg and Willits

Rail Corridor Section	Utilities Present within Rail Corridor
RWT Southern Section	
Healdsburg (MP 68.22 to MP 71)	Overhead electrical power lines, storm drains, culverts, underground sewer lines, and telecommunications systems
Southern Geyserville (MP 73 to MP 76)	Overhead electrical power lines, culverts, underground water and gas pipelines, and telecommunications systems
Northern Geyserville (MP 76 to MP 79)	Overhead electrical power lines, culverts, underground water and sewer pipelines, and telecommunications equipment
Cloverdale (MP 80 to MP 87)	Overhead electrical power lines, culverts, underground water and gas pipelines, and telecommunications equipment
RTT Southern Section	
Between Cloverdale and Hopland (MP 87 to MP 99)	Minimal utilities (few overhead electrical power lines and underground telecommunications equipment)
Hopland to south of Ukiah (MP 99 to MP 107)	Overhead electrical power lines, culverts, underground water and gas pipelines, and telecommunications equipment
Ukiah and Calpella (MP 109 to 122)	Overhead electrical power lines; culverts; underground water, sewer, and gas pipelines; and telecommunications equipment
Between Calpella and Willits (MP 122 to MP 128)	Minimal utilities (few overhead electrical power lines, underground water pipelines, and telecommunications equipment)
Willits (MP 137 to MP 140)	Overhead electrical power lines; underground water, sewer, and gas pipelines; and telecommunications equipment

Notes: MP = mile post; RTT = Rail-to-Trail; ROW = right of way; RWT = Rail-with-Trail

Source: DGS 2019

Water utilities and services are provided by a variety of water companies and providers regulated by the California Public Utilities Commission. Water infrastructure includes various components that pump, divert, transport, store, treat, and deliver domestic water. These may consist of groundwater wells, surface-water intakes, dams, reservoirs, aqueducts, storage tanks, treatment facilities, and pipelines. Water infrastructure spanning the rail corridor primarily consists of underground conveyance pipelines (DGS 2019). Wastewater collection, conveyance, treatment, reuse and disposal services are provided by a variety of public agencies, including cities, counties, joint powers authorities, and special districts (such as sanitation and community services districts). Where treatment plants are not available or feasible, such as in sparsely populated rural areas, individualized onsite sanitation systems (like septic tanks and leach lines) are used (Water Education Foundation 2013). Several underground sanitary sewer lines span the rail corridor, primarily within the incorporated city limits (DGS 2019).

Utilities Within the Rail Corridor

Healdsburg to Willits (Mile Post 68 to Mile Post 140)

Existing utilities located within the rail corridor from MP 68 in Healdsburg to MP 140 in Willits are summarized in Table 2.4.6-1. Where no utilities were identified along or crossing the rail corridor, no information is provided.

In addition to the utilities summarized in Table 2.4.6-1 that are within the rail corridor (DGS 2019), there is electrical and gas infrastructure located within 0.10-mile of the rail corridor, including three electrical substations and additional overhead electrical power lines and underground gas pipelines (CEC 2018b, 2019a, 2019b). All of the utilities identified within 0.10-mile of the rail corridor are shown on the mapbook in Appendix A.

Willits to Northern Terminus (MP 140 North)

Along the northern section of the rail corridor from MP 140 north, the same types of utilities listed in Table 2.4.6-1 are likely to occur within developed areas, such as the cities of Fortuna, Eureka, and Arcata. Outside of developed areas, such as within the Eel River Canyon, public utilities are likely to be sparse or not present. Electrical and gas infrastructure within 0.10-mile of the rail corridor from MP 140 north , including the Carlotta, Samoa, and Korblex branches, is shown on the mapbook in Appendix A and includes five electrical substations (two of which are located adjacent to the Samoa Branch), one PG&E-owned power plant, and multiple overhead electrical power lines and underground gas pipelines (CEC 2018b, 2019a, 2019b). Only the overhead electrical power lines and underground gas pipelines intersect the rail corridor.

2.5 Potential Access Routes, Trail Connections, and Recreational Resources and Destinations

Access to the rail corridor is available via adjacent and intersecting roads, trails, and other recreational resources. Adjacent and intersecting trails and recreational resources are important components of access and are described in Subsections 2.5.2 and 2.5.3 below. Subsection 2.5.1 focuses on access routes that include public roadways that are adjacent to the rail corridor, or cross over, under, or at the same grade as the rail corridor.

2.5.1 ACCESS ROUTES

Much of the rail corridor follows existing roadways, especially U.S. 101 in Mendocino and Humboldt counties. Public access points and crossings are generally frequent, especially around urban areas such as Healdsburg, Cloverdale, and Willits. North of Willits, the corridor follows Outlet Creek and the main fork of the Wild and Scenic Eel River, where access and public roads are scarce. From the community of South Fork northward, public crossings and access points are generally available particularly near Fortuna, Eureka, and Arcata.

Identifying crossings is important because they not only represent potential access points to the rail corridor, but they would also require safety enhancements to make them safe for rail corridor users crossing these roads. The crossings that have been identified were developed from publicly available maps showing named roads. Public access points (i.e., roads and trails that are adjacent to or cross the rail corridor) are also important because the Great Redwood Trail, if constructed, would likely be built in phases. Each phase would need to have not only public access on each side, but sufficient space nearby for cars to park without affecting adjacent landowners.

NWP and its predecessors pre-dated most roads in the region. When new public roads were built, they obtained an easement from the railroad to cross. The California Public Utilities Commission is responsible for requiring warning devices (e.g., flashers, gates, sawbucks) and overall rail safety. Private property owners have “Private Crossing” easements for which they are responsible for the maintenance. These crossings typically only have a small warning sign.

The rail corridor between Healdsburg and Eureka contains over 150 access points/crossings; 23 in the RWT Southern Section, 45 in the RTT Southern Section, 20 in the RTT Eel River Canyon Section, 64 in the RTT Northern Section, 17 on the Korblex Branch, six on the Carlotta Branch, and 12 on the Samoa Branch. Table C-13 in Appendix C includes an inventory of the public road access points/crossings within the rail corridor; the locations of these features are shown on the mapbook in Appendix A. Examples of different types of access points along the rail corridor are shown in Figure 2.5.1-1 through Figure 2.5.1-3.

Source: Alta Planning and Design 2019

Figure 2.5.1-1 Public Access to Simi Winery

Source: Alta Planning and Design 2019

Figure 2.5.1-2 Grade Crossing in Healdsburg

Source: Alta Planning and Design 2019

Figure 2.5.1-3 Corridor Passing under U.S. 101

2.5.2 CLASS I PATHS

Several existing and planned Class I paths (i.e., paved, multi-use trails that are Americans with Disabilities Act [ADA] compliant) are located adjacent to or within the rail corridor, many of which could become part of the Great Redwood Trail (see Figure 2.5.2-1). These include trails that have already been completed within the rail corridor, as well as others that are planned to be constructed. There are also existing and planned trails that would connect with or provide access to the corridor. Additional unpaved trails and other nearby recreational resources may be a recreational destination for trail users, such as unpaved hiking trails in Humboldt Redwoods State Park; these opportunities are described in Section 2.5.3, "Recreational Resources and Destinations." The following describes pertinent Class I paths, which are also shown in Figure 2.6-1 at the end of this chapter and in the mapbook in Appendix A.

Source: Alta Planning and Design 2019

Figure 2.5.2-1 Ukiah Rail Trail

Humboldt Bay Trail. The Humboldt Bay Trail is a Class I multi-use path around the Humboldt Bay that will one day span 14 miles, connecting the communities of central Arcata and southern Eureka. Several segments of the trail have already been completed, all of which may eventually become part of the Great Redwood Trail. These include the Hikshari' Trail, the Eureka Waterfront Trail, the Eureka Boardwalk and Adorni Trail, the Humboldt Bay Trail North, and the Arcata City Trail. Construction of the final 4 miles of the trail (Humboldt Bay Trail South) is planned to begin in 2021.

Annie and Mary Trail. The Annie and Mary Trail is a proposed Class I multi-use path that would mainly run along the Mad River and the former Arcata and Mad River Railroad Company rail corridor, connecting the cities of Arcata and Blue Lake. Phase 1 of the trail is a half-mile stretch in Blue Lake, from Chartin Way to H Street, and has been funded. Phase 2 would extend the trail from Blue Lake to Glendale, covering 1.7 miles, but has not yet been funded. Once completed, it may become part of the Great Redwood Trail.

Annie and Mary Trail Connectivity Project. The Arcata Annie and Mary Trail Connectivity Project involves an assessment of current opportunities and constraints for walking and biking between downtown Arcata, the Valley West neighborhood, Humboldt State University, and to the future Annie and Mary Trail; robust public participation; and development of concept design alternatives for a trail and/or on-street facilities for safe walking and biking connectivity between these important community destinations. Arcata has obtained funding from the Caltrans Sustainable Communities Program to plan this next section of multi-use trail in Arcata, which would connect the Sunset Avenue/Larson Park area to Valley West, West End Road area, and Aldergrove Industrial Park.

Eureka to Scotia Trail. The Eureka to Scotia Trail is in early planning stages and is conceptually planned to provide connections from the Eureka Waterfront Trail southward along the east side of the Humboldt Bay into the Eel River Valley. The study was funded by the Humboldt County Association of Governments to identify conceptual alignments for a network of rail-with-trail projects, alternative separated trails, and on-street bikeway facilities to serve the communities from Eureka to Scotia. The final study was released in June 2016.

Ukiah Rail Trail (NWP Rail Trail). The NWP Rail Trail within Ukiah is an RWT Class I multi-use path project and is part of the rail corridor. Phase 1 of the trail, which spans the center of Ukiah, was recently completed and the City held a ribbon cutting ceremony on January 31, 2020. This became the first section of trail officially designated as a section of the Great Redwood Trail. Phases 2 and 3 are currently under construction. Overall, the three phases will span approximately 2 miles within the City of Ukiah, connecting Commerce Drive with Brush Street.

Willits Rail Trail. The Willits Rail Trail is a proposed Class I RWT multi-use path that would run 1.6 miles between East Commercial Street and East Hill Road in Willits, adjacent to the NWP railroad tracks. The trail may eventually become part of the Great Redwood Trail. The design of the trail is expected to be completed in 2020.

Cloverdale River Park Trail. The Cloverdale River Park trail is a Class I multi-use path located along the banks of the Russian River, running 1 mile from First Street to McCray Road in Cloverdale. A few trail spurs provide access to the river's edge. The trail runs parallel to the rail corridor for about 0.75-mile from First Street heading north.

2.5.3 RECREATIONAL RESOURCES AND DESTINATIONS

This inventory of recreational resources along the rail corridor focuses on local, regional, state, and federal parks; open space areas; wildlife refuges; preserves; and other recreational resources open to the public within approximately 2.5 miles of the rail corridor (i.e., 2.5 miles from the centerline of the rail corridor). This distance is used because rail corridor users could reasonably travel 2.5 miles to visit other recreational resources, and recreational resources within 2.5 miles could be used to access the rail corridor.

A total of 93 local, regional, state, and federally managed parks; campgrounds; preserves; or other public recreational resources were identified within 2.5 miles of the rail corridor; no lands managed by the National Park Service were identified (NPS 2019). More than half of the recreational resources identified are located along the RTT Northern Section, spanning from MP 236 to MP 296 in Humboldt County. Only two recreational resources, the Wild and Scenic Eel River and Humboldt Redwoods State Park, are located within 2.5 miles of the RTT Eel River Canyon Section.

All of the recreational resources identified are summarized in Table C-14 in Appendix C. Figure 2.6-1 at the end of this chapter and the mapbook in Appendix A show the locations of these recreational resources and destinations relative to the rail corridor. Figures 2.5.3-1 through 2.5.3-3 illustrate some of the recreational opportunities along the rail corridor.

Source: Adobe Stock Photograph

Figure 2.5.3-1 Lake Sonoma Recreation Area

Source: Adobe Stock Photograph

Figure 2.5.3-2 Wild and Scenic Eel River

Source: Adobe Stock Photograph

Figure 2.5.3-3 Humboldt Redwoods State Park (Founders Tree)

2.6 Composite Map Showing Inventoried Features and Existing Conditions

Locations of the inventoried features and environmental conditions along the rail corridor described above are shown on Figure 2.6-1 below and on the mapbook in Appendix A. The condition of these features and their influence on overall trail feasibility are discussed in Chapter 3, "Conditions Assessment."

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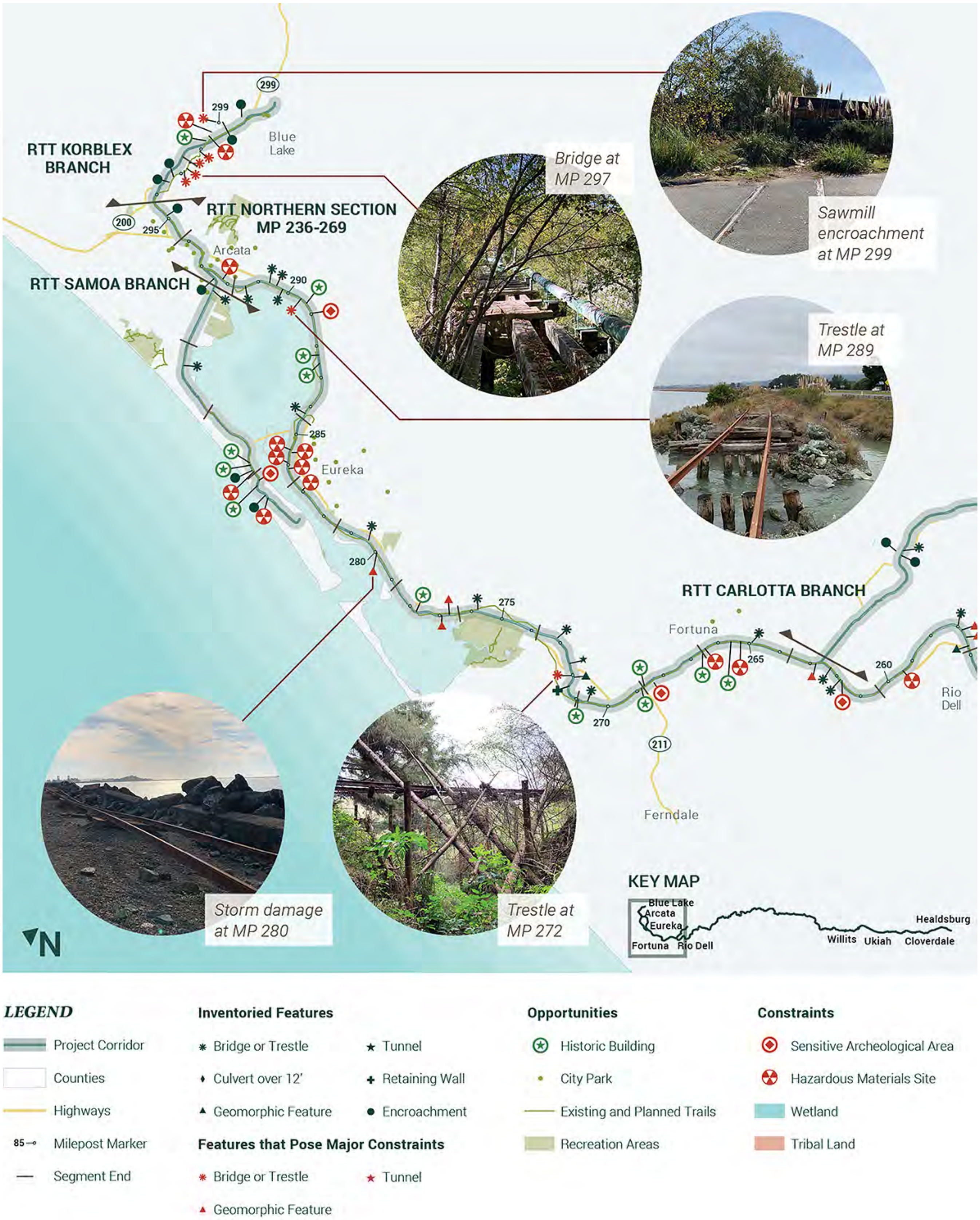
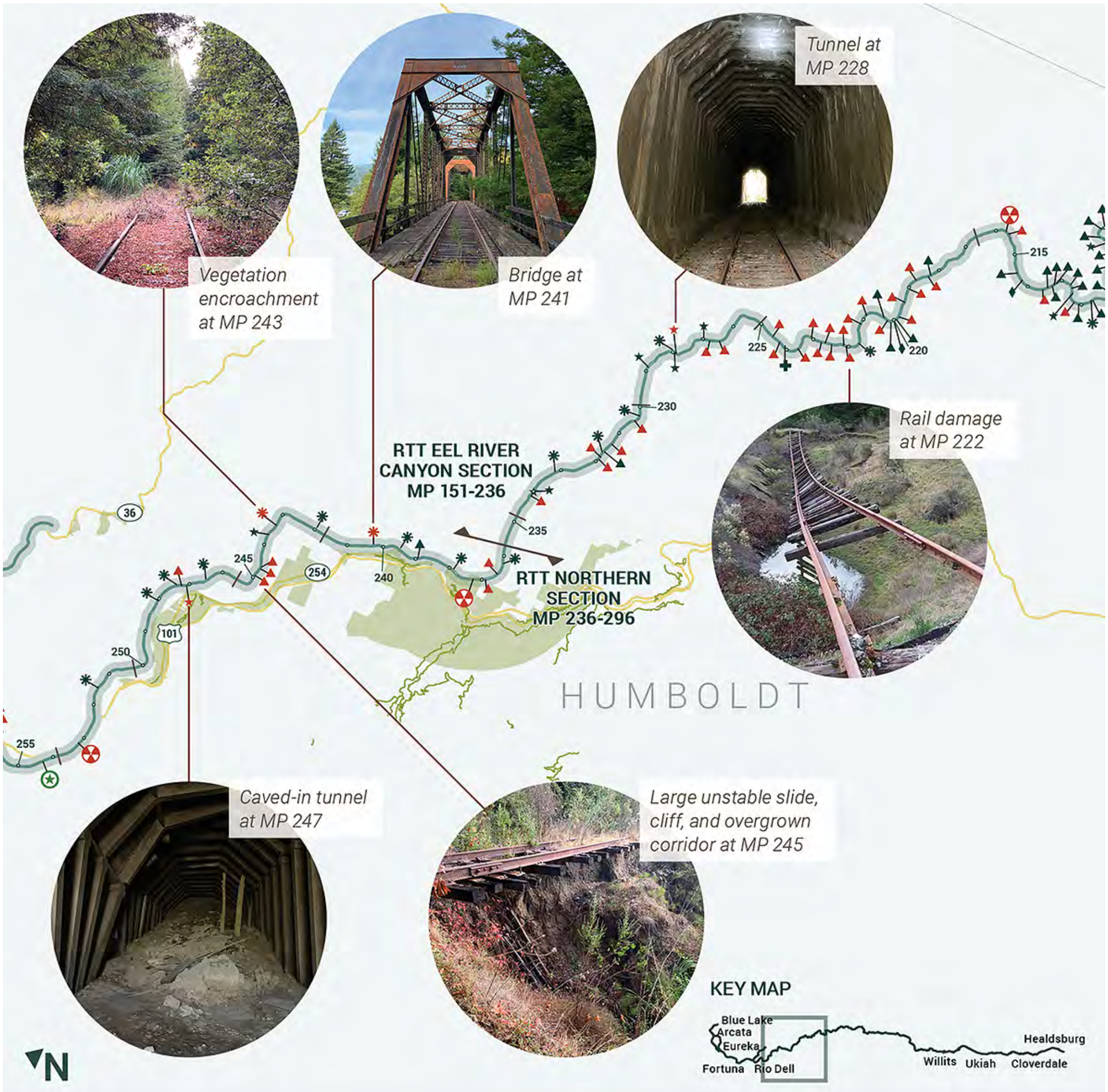


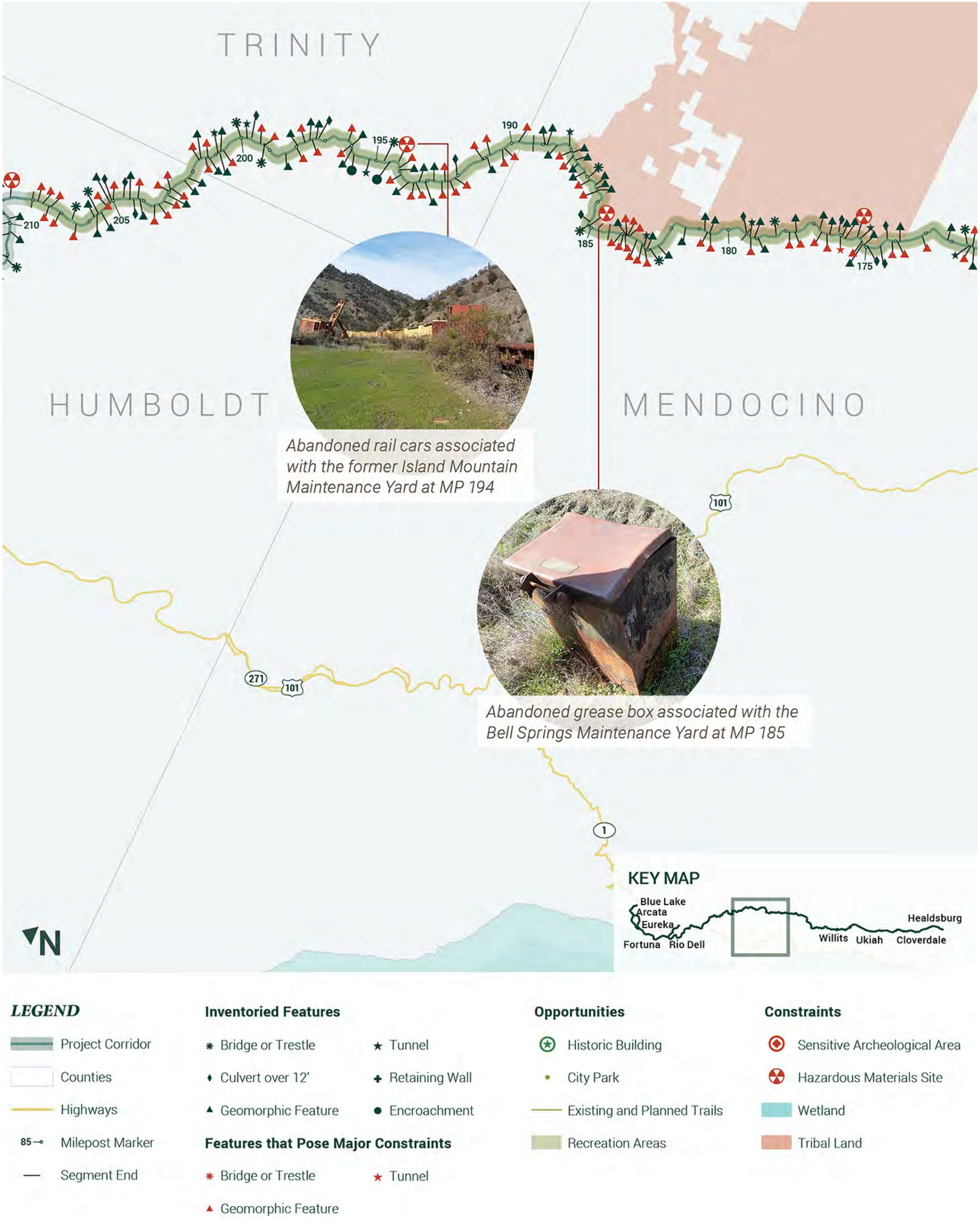
Source: Alta, Ascent, NIC, and PWA 2020

Figure 2.6-1a Locations of Inventoried Features and Opportunities and Constraints



Source: Alta, Ascent, NIC, and PWA 2020

Figure 2.6-1b Locations of Inventoried Features and Opportunities and Constraints



Source: Alta, Ascent, NIC, and PWA 2020

Figure 2.6-1c Locations of Inventoried Features and Opportunities and Constraints

Source: Alta, Ascent, NIC, and PWA 2020

Figure 2.6-1d Locations of Inventoried Features and Opportunities and Constraints

LEGEND

- Project Corridor
- Counties
- Highways
- 85 Milepost Marker
- Segment End

Inventoried Features

- Bridge or Trestle
- Tunnel
- Culvert over 12'
- Retaining Wall
- Geomorphic Feature
- Encroachment

Features that Pose Major Constraints

- Bridge or Trestle
- Tunnel
- Geomorphic Feature

Opportunities

- Historic Building
- City Park
- Existing and Planned Trails
- Recreation Areas

Constraints

- Sensitive Archeological Area
- Hazardous Materials Site
- Wetland
- Tribal Land

Source Alta, Ascent, NIC, and PWA 2020

Figure 2.6-1e Locations of Inventoried Features and Opportunities and Constraints

Source: Alta, Ascent, NIC, and PWA 2020

Figure 2.6-1f Locations of Inventoried Features and Opportunities and Constraints

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3. Conditions Assessment

The conditions of the corridor, such as existing infrastructure integrity, geomorphic hazards, and presence of protected and/or sensitive resources, can substantially affect trail feasibility. This chapter synthesizes the findings of the Existing Conditions chapter to summarize the condition of the corridor for future trail development, highlighting the key obstacles, risks, and existing infrastructure. Results of the assessment support the project prioritization and cost estimates contained in subsequent chapters.

3.1 Assessment Approach

The conditions assessment involved evaluating both the general condition of the corridor and the condition of inventoried infrastructure and geomorphic features. Infrastructure and geomorphic features were evaluated as to whether they would present significant constraints or opportunities for trail development. In addition to infrastructure features, the conditions assessment included a review of environmental and cultural opportunities and constraints throughout the corridor, which are illustrated in Figure 2.6-1 at the end of Chapter 2.

Infrastructure and environmental and cultural features were included in a scoring method and weighted based on their anticipated influence related to trail feasibility. These scores were aggregated within discrete corridor segments and considered in conjunction with the results of the trail demand analysis to guide the project prioritization process for the corridor. This process identifies segments that are less constrained and, therefore, better suited to trail development in the near term, because they have existing conditions that would result in fewer complications and lower costs for trail implementation.

3.1.1 TRAIL SEGMENTS DEFINED BY ACCESS POINTS

The rail corridor was divided into 57 trail segments based on access connections. Each segment begins and ends at a potential trail access point and provides independent utility. Potential access points were identified based on desktop and field research along the corridor, and include intersections with roadways and other trails. Segments have a minimum length of 2 miles and maximum length of nearly 19 miles. In some locations, particularly those in more populated areas, project segments may include several access points. In these segments, the first intersection beyond the 2-mile minimum mark from the prior segment serves as the segment boundary. Project segments typically consist of similar corridor conditions overall, however, they contain variations in their features and are not homogenous. The 57 segments are illustrated in Figure 3.2-2 at the end of this chapter.

3.1.2 INFRASTRUCTURE ASSESSMENT APPROACH

Field survey teams conducted numerous field visits to assess the condition of existing infrastructure and document the location and condition of existing features along the rail corridor. Features that were inventoried during the field surveys include:

- tunnels;
- bridges and trestles;
- geomorphic features, including landslides, high-risk slopes, and geologic conditions;
- vehicular crossings and public access points;
- retaining walls;
- culverts greater than 12 feet in diameter;
- significant ROW encroachments and corridor obstructions; and
- rail debris.

At each feature, the teams documented the approximate location, identified the type, and took photos of its condition. The teams then rated the condition of these features on a grading scale, with -1 indicating it is generally intact and in good condition and lower numbers (i.e., -2, -3, or -4, depending on feature) indicating it requires major repairs or replacement. Figures 3.1.2-1 through 3.1.2-3 show the range of bridge conditions, with bridge condition ratings of -1, -2, and -3.

Source: Ascent Environmental 2019

Figure 3.1.2-1 Bridge with Condition Rating -1 and All Components Intact

Source: Ascent Environmental 2019

Figure 3.1.2-2 Bridge with Collapsed Decking and Condition Rating -2

Source: Ascent Environmental 2019

Figure 3.1.2-3 Collapsed Bridge with Condition Rating -3

Scoring/Weighting

Infrastructure was scored using the method (i.e., weighting) shown in Table 3.1.2-1. This weighted scoring methodology was developed to account for the wide range of complex factors that may impact feasibility. A weighted numeric scoring methodology is well suited to complex trail feasibility studies and is common practice in active transportation planning documents. Because a weighted scoring system allows different variables to have different levels of impact on feasibility, it provides a means to understand challenges and opportunities and enables different variables to be analyzed relative to one another. The comparisons that are made relate only to this corridor and are not meant to be compared to other trail systems.

The scoring criteria reflect a combination of the relative cost and physical challenge of rehabilitating the infrastructure to accommodate a trail. Numeric values were assigned to each type of infrastructure, depending on its condition, which was evaluated during the field survey (Section 3.1.2). Detailed tables showing the condition of existing infrastructure are provided in Appendix C.

The numeric values were developed to illustrate the relative impact they have on trail feasibility. A value of -1 indicates the feature is relatively intact, while scores of -5 through -8 indicate the feature is in need of major repairs or replacement. The lower the score, the more challenges the existing infrastructure would pose for trail implementation. For example, a major slide is considered to pose a greater challenge for trail feasibility than a collapsed trestle, and therefore it is given a lower score (-8 versus -5).

Total infrastructure features and the associated condition were calculated for each segment. Total segment scores were then divided by the length of the segment to normalize the scoring between segments of varying length.

Table 3.1.2-1 Infrastructure Scoring Criteria

Condition Rating	Condition Description	Score
Tunnel – 1	Generally intact	-1
Tunnel – 2	Partially collapsed	-3
Tunnel – 3	Fully collapsed	-5
Bridge/Trestle – 1	Generally intact	-1
Bridge/Trestle – 2	Visible damage	-3
Bridge/Trestle – 3	Partially or fully collapsed	-5
Geomorphic Feature – 1	Steep bench/retaining wall failure	-2
Geomorphic Feature – 2	Soil creep	-4
Geomorphic Feature – 3	Rotational slide/slip-out	-6
Geomorphic Feature – 4	Transitional slide/major slide	-8
Road Crossing – 1	Existing infrastructure in place; good sight lines	-1
Road Crossing – 2	No infrastructure in place; poor sight lines	-2
Road Crossing – 3	No infrastructure in place; poor sight lines; moderate to heavy vehicular volumes	-3
Culvert – 1	Generally intact	-1
Culvert – 2	Partially collapsed	-2
Culvert – 3	Collapsed or blown out	-3
Retaining Wall	Failing wall	-2
Dense Tree Cover	At least 50 percent of segment under tree canopy	-2
Encroachments/Obstructions – 1	Fence, machinery, other equipment encroaching on rail corridor	-2
Encroachments/Obstructions – 2	Structure encroaching on rail corridor	-3

Source: Compiled by Alta in 2020

3.1.3 OPPORTUNITIES AND CONSTRAINTS ASSESSMENT APPROACH

The conditions assessment also identified existing environmental features and existing/proposed corridor uses that serve as opportunities and constraints within each of the 57 corridor segments. These features were identified either through field surveys or database research and include:

- existing and proposed uses within the corridor,
- the number of historic rail structures within each segment,
- the number of sensitive archaeological areas within each segment,
- tribal lands within 500 feet of the corridor,
- acres of potential wetlands within the corridor,
- the number of active or restricted hazardous materials sites within or immediately adjacent to the corridor,
- the number of historic buildings or districts within 200 feet of the corridor,
- the number of access points within each segment,
- recreational destinations within 2.5 miles of the corridor, and
- existing and planned trails within or parallel to the corridor.

Scoring/Weighting

The features were divided into two categories:
(1) opportunities, which are existing features that may provide a benefit to trail users or be useful during trail development; and (2) constraints, which are existing features that may pose challenges for trail development.

A weighted numeric scoring method was developed and applied to each opportunity and constraint to determine the relative positive or negative impact a feature may have on trail feasibility. Scoring is based on the project team's current understanding of anticipated challenges associated with known existing resources. However, there are potential unknown challenges, such as those associated with permitting and zoning that are not included in this methodology. These challenges may surface during future trail planning and development, but cannot be quantified during the initial feasibility study phase without additional investigations.

The features were assigned a score using the method (i.e., weighting) criteria shown in Table 3.1.3-1. The scores were based on the relative benefit (opportunity) or challenge (constraint/cost). Higher scores are considered to have a stronger positive impact on trail feasibility, while lower scores represent the opposite. Total segment scores were divided by the length of the segment to normalize the scoring between segments of varying length.

Infrastructure and environmental and cultural assessment scores were combined to create a composite existing conditions assessment score for each trail segment. Conditions were grouped into three categories: (1) infrastructure constraints; (2) environmental and cultural constraints; and (3) environmental and cultural opportunities. Scores for these three categories were calculated for each segment and normalized on a scale of 0-1.

Each category received a unique weighting factor according to how it impacts trail feasibility: infrastructure constraint scores received a weighing factor of -2; environmental and cultural constraint scores received a weighting factor of -1; and environmental and cultural opportunity scores received a weighting factor of 1. The overall scores by segment are shown in Appendix E.

Table 3.1.3-1 Opportunities and Constraints Assessment Scoring Criteria

Resource	Type	Score
Existing and Proposed Uses in the Corridor	Constraint	-2
Historic Rail Structures	Constraint	-1
Sensitive Archeological Areas	Constraint	-1
Tribal Lands	Constraint	-0.5
Wetlands	Constraint	-2
Hazardous Materials Sites	Constraint	-2
Historic Buildings	Opportunity	0.5
Recreation Sites	Opportunity	1.5
City Parks	Opportunity	1
Existing and Planned Trails within Corridor	Opportunity	2
Access Points	Opportunity	1

Source: Compiled by Alta in 2020

3.1.4 TRAIL DEMAND ASSESSMENT APPROACH

Two parallel approaches were used to estimate demand for the Great Redwood Trail. First, the Alta Trail Demand Model estimated how trail quality, climate, and tourism may influence the level of trail use. Because large sections of the corridor are in rural areas, and in some places are adjacent to heavily-used recreational sites, such as state parks, traditional demand models that rely heavily on population data are likely to underestimate use in those more remote locations. Alta's Trail Demand Model accounts for regional tourist traffic to better represent how trails in sparsely-populated areas may be used by visitors.

As a point of comparison, demand was also estimated using the model specified in the Transportation Research Board, National Cooperative Highway Research Program (NCHRP) Report 552: *Guidelines for Analysis of Investments in Bicycle Facilities* (NCHRP 2006), which provides general demand estimates for trail facilities. Because the NCHRP Model relies heavily on commuting data and is calibrated based on trails in populated areas, it is also likely to underestimate recreational use in more rural settings. The NCHRP Model estimates can reliably estimate demand within the populated areas through which the corridor passes. The NCHRP Model also produces high, medium, and low estimates. If estimates from Alta's Trail Demand Model are between the NCHRP Model high and low estimates, or are similar in magnitude, this reinforces confidence in both sets of estimates.

Both the Alta Trail Demand Model and NCHRP Model were applied to the corridor as a whole, as well as to the five major sections defined in Chapter 2, "Existing Conditions" (i.e., RWT Southern Section; RTT Southern Section; RTT Eel River Canyon Section; RTT Northern Section; and RTT Carlotta, Samoa, and Korblex Branches). Input data for each model were used to calculate both segment-level and overall demand estimates with each model specification. While outputs from the Alta Trail Demand Model are used for the results, NCHRP results were used to provide further context for the trail demand model outputs.

Alta Trail Demand Model

The Alta Trail Demand Model operates with five main input variables representing: (1) the quality of the path, (2) area climate, (3) the population of areas directly served by the trail, (4) the population of areas within 20 miles of the trail, and (5) annual tourist visits to the area. These inputs were gathered based on design, geographic, demographic, and tourism criteria for each trail segment as well as the corridor as a whole. The inputs were combined using a formula that has been calibrated based on use data from similar existing trails throughout the United States.

NCHRP Report 552 Demand Model

Similar to the Alta Trail Demand Model, the NCHRP Model uses population data as a core input, using populations within different distances of the trail (i.e., 0-400 meters, 400-800 meters, and 800-1,600 meters). The model does not, however, account for tourist visits. Instead, it focuses on estimating the number of bicycle commuters based on localized commuter mode share, and adjusts this estimate upward to account for likely recreational use among the local adult population. This method produces low, medium, and high estimates, which are useful for understanding the potential range in demand resulting from a new trail facility.

Trail Demand and Demand Density Results

If fully completed, the Great Redwood Trail is estimated to attract approximately 1.4 million annual trail users, or 3,800 daily users. As a comparison, New York State's 750-mile Empire State Trail attracts approximately 8.6 million annual users. The Katy Trail, a 240-mile trail through Missouri, attracts approximately 400,000 visitors per year (Missouri State Parks 2012).

User demand and demand density estimates for the trail by each of the five major sections identified in Chapter 2, "Existing Conditions," are shown in Table 3.1.4-1 and Figure 3.1.4-1. The section values are helpful for comparing relative levels of demand between sections, while the corridor-wide value presents a full picture of future trail use. Demand density describes the expected intensity of use, dividing the upper limit of the demand estimate by the number of trail miles in the section. Demand density estimates provide the opportunity to compare potential effectiveness of investment in serving users on a per mile basis. Individual sections were not summed to derive corridor-wide results because the individual sections draw from the same population and tourism variables; instead, the corridor-wide value represents model output data that eliminates double counting. Similarly, the values for the RTT Carlotta, Samoa, and Korblex Branches reflect the combined trail demand for all three branches.

Total user demand is estimated to be highest and demand density the second highest (38 users per mile) in the RTT Northern Section of the corridor in Humboldt County. This section is close to and readily accessed by local populations in Eureka and Arcata. Because of its extended trail length (about 59 miles), it would support the highest total use.

The RWT Southern Section would have the highest concentration of users per mile, an estimated 53 users per mile demand density. This is a relatively short section at only 17 miles, so its total estimated demand is lower than segments that are longer. Nonetheless, development in this section would serve the most users per mile of trail.

RTT Southern Section and RTT Carlotta, Samoa, and Korblex Branches Section are estimated to support intermediate levels of total demand and demand density. Demand density is estimated to be 20 and 16 users per mile, respectively.

Not surprisingly because of its remoteness, the RTT Eel River Canyon Section would support lower total trail demand levels and demand density (about 1 user per mile). Trail users would likely either be interregional-distance hikers or riders, or users driving farther to use the trail near a distant access point.

The results of the demand analysis reflect currently available population and tourism data. Further studies could expand on this analysis by conducting bicycle and pedestrian counts to determine current usage and project future demand along the corridor.

Table 3.1.4-1 Great Redwood Trail Demand – Modeled Estimates of Trail Users

Section	Estimated Annual Trail Demand	Estimated Daily Trail Demand	Estimated Demand Density - Users Per Mile
RWT Southern Section	330,490	405-905	53
RTT Southern Section	485,240	906-1,329	20
RTT Eel River Canyon Section	20,215	1-55	1
RTT Northern Section	808,416	1,330-2,215	38
RTT Carlotta, Samoa, and Korblex Branches[1]	147,813	56-404	16

1. The numbers shown here reflect the combined trail demand for all three branches.

Source: Compiled by Alta in 2020

Source: Alta 2020

Figure 3.1.4-1 Great Redwood Trail Demand Estimates

3.2 Findings and Feasibility Influences

Findings from the infrastructure, opportunities and constraints, and trail demand assessments help identify relevant opportunities and constraints along the corridor, and those segments that offer the greatest opportunities or constraints as indicated by color (see Figure 3.2-1 at the end of this chapter). The color rating indicating the level of opportunities and constraints for each segment is illustrated in Figure 3.2-2 at the end of this chapter. Detailed assessment results for each segment are provided in Appendix E.

3.2.1 INFRASTRUCTURE CONSTRAINTS

The condition of existing infrastructure (e.g., tunnels and bridges) and geomorphic hazards (e.g., landslides and slope failures) can substantially affect trail feasibility. A trail segment with infrastructure in good condition is typically considered to be more feasible than a segment that requires substantial and costly infrastructure improvements or replacement. In some instances where a failed bridge or tunnel exists, it could require rerouting the trail around the affected area, if substantial cost savings can be achieved and site conditions are conducive.

The presence of rugged and unstable terrain along the corridor can affect feasibility of trail development due to isolation, steep topography, and underlying geology. The existing rail bed in portions of the corridor may require substantial rebuilding and modification to create a sustainable facility and to maintain drainage pathways.

3.2.2 EXISTING/PROPOSED USES AND ENVIRONMENTAL CONSTRAINTS

Existing and Proposed Uses in the Corridor

Any future planning and design of a trail within the rail corridor would need to consider adjacent and nearby land uses that could conflict with the trail facility and public access. Heavy industrial areas adjacent to the corridor or grade crossing of a major roadway can create a constraint. Legally authorized encroachments (through permit, lease agreement, or other legally binding document with NCRA) could affect trail feasibility and may require a trail re-route to bypass the affected area.

Wetlands

Wetlands in California are considered Waters of the State and can be federally jurisdictional as well. Because of this, they are afforded protections under the Clean Water Act and any actions that have the potential to degrade water quality require permits and potentially compensatory mitigation. Although the presence of wetlands in the corridor does not influence the overall feasibility of the trail, they may influence the time and cost to implement the trail if extensive permitting is required.

Hazardous Materials

Several sites within or adjacent to the corridor have been identified to have historic or current contamination. Within the corridor, contamination and hazardous materials that pose environmental liabilities are largely associated with historic rail operations and could, in its current state, pose an exposure danger to trail users. If future planning efforts occur, additional investigation through Phase I Environmental Site Assessments and potentially, Phase II remediation plans should be conducted to characterize the hazards in specific locations and determine their effect on project costs.

3.2.3 CULTURAL RESOURCES

Sensitive Archaeological Areas and Tribal Lands

The presence of archaeological resources and tribal lands can affect trail feasibility due to uncertainties related to tribal consultation and the potential for extensive avoidance and mitigation measures during trail planning and implementation. There are areas of known archaeological sensitivity adjacent to the corridor and four areas of tribal lands located within 500 feet of the corridor. Consultation with interested tribes would likely involve notification procedures, coordination on project design, and the involvement of tribal monitors during subsurface work within culturally important areas.

Identification and designation of potential tribal cultural resources along the corridor would depend on regular and consistent coordination with relevant tribal representatives. The extent to which avoidance and mitigation measures are required may impact the project schedule and associated project costs.

Historic Buildings

The presence of historic buildings along the corridor is considered to be a minor benefit in the opportunity and constraints analysis because the buildings present an opportunity to provide interpretation. Creating new opportunities for historic interpretive experiences along the corridor could attract more visitors and trail users. As long as no alterations that could affect the integrity of a historic building are proposed, the presence of historic buildings along the corridor would not create significant constraints to the feasibility of trail development.

There are, however, potential challenges associated with permitting and zoning requirements for historic structures and sites. If renovations are needed, the process related to obtaining relevant permits and approvals may pose a challenge to trail development. In addition, historic structures can pose potential liabilities associated with safety hazards, if they are in poor condition. Stabilization of historic structures may be needed, if building conditions warrant it.

3.2.4 ACCESS AND OPPORTUNITIES

Adjacent Recreation Opportunities

A substantial number of recreational resources or destination are located within 2.5 miles of the corridor and would be potentially accessible to trail users. These resources could provide opportunities for connections to recreation-based destinations near the trail, which would likely be attractive to trail users. In addition, many of these recreational resources provide publicly available restrooms and other amenities that could support trail use. Overall, the presence of nearby recreational resources could be beneficial to trail use and would likely create no constraints to the feasibility of trail development.

If the project moves into the next planning phase, an evaluation of each recreational resource should be conducted to confirm that a new trail would not overburden adjacent facilities. In addition, future traffic modeling efforts should take these recreational resources into consideration, because they could attract additional visits.

Access and Trails

The presence of adjacent public roads and trails could benefit the development of the trail by providing access points to the corridor and allowing trail users to use shorter stretches of the corridor. Generally, the urban areas along the corridor (e.g., Healdsburg, Cloverdale, Willits, Ukiah, Arcata) are corridor access points regardless of grade crossings or road intersections due to relatively large populations and infrastructure in close proximity to the corridor.

The RTT Eel River Canyon Section, from north of Willits to South Fork, represents a major public access constraint. The area is extremely remote and has no highway along its length. Public access is limited to just a few roads, the majority of which are unpaved, winding roads, with steep grades. While public access may be technically feasible, only four paved roads (Laytonville Dos Rios Road, Alderpoint Road, Fort Seward Road, and Dyerville Loop Road) could serve as practical public access points if a future trail were constructed along this section.

All of the existing and planned Class I paths within or adjacent to the corridor could support development of the Great Redwood Trail either by being designated as part of the corridor, or providing additional access to the corridor for individuals of all abilities.

3.2.5 TRAIL DEMAND INFLUENCES ON FEASIBILITY

Trail demand is an important consideration when determining trail feasibility and project prioritization. Areas with higher demand are typically located in or near populated sections of the corridor and in areas that have fewer physical constraints. Remote segments of the corridor with substantial physical constraints, high development costs, and low user demand are more likely to be questionably feasible, at least on the basis of cost per unit of demand. For instance, the RTT Eel River Canyon Section of the corridor is expected to have the lowest user demand and has several major physical constraints along its length. Trail demand does not by itself define feasibility. It is, however, an important overall consideration when deciding funding priorities.

3.2.6 OTHER CONSIDERATIONS

There are additional feasibility influences that should be considered when planning and designing the trail, including sensitive biological resources (e.g., special-status species) and existing utilities. Because extensive field surveys and research beyond the scope of this feasibility assessment would be required to document and assess sensitive biological resources and existing utilities, and wildlife species are transient, these considerations were not integrated into the feasibility level conditions assessment described in Section 3.1. Their potential influences on feasibility of trail development are summarized below.

Sensitive Biological Resources

Many biological resources in California are protected and/or regulated by a variety of federal and state laws and policies (Figures 3.2.6-1 through 3.2.6-3). Project-level biological surveys would determine whether protected resources are present within a proposed disturbance area. In many cases, compliance with necessary permits would include impact avoidance measures that can be incorporated into the project such as limiting construction activities when nesting birds might be present, flagging construction footprints to avoid unnecessary disturbance, constructing water crossings to avoid impacts to riparian communities and allow fish passage. Where impacts cannot be avoided, compensatory mitigation may be required. In some cases, such as the presence of a California native endangered plant within the construction footprint, the only option may be to modify or re-route the corridor through the problematic area to avoid impacting the protected species.

Source: PIXNIO

Figure 3.2.6-1 California Red Legged Frog (Threatened Species)

Source: Adobe Stock Photograph

Figure 3.2.6-2 Northern Spotted Owl (Threatened Species)

Source: Adobe Stock Photograph

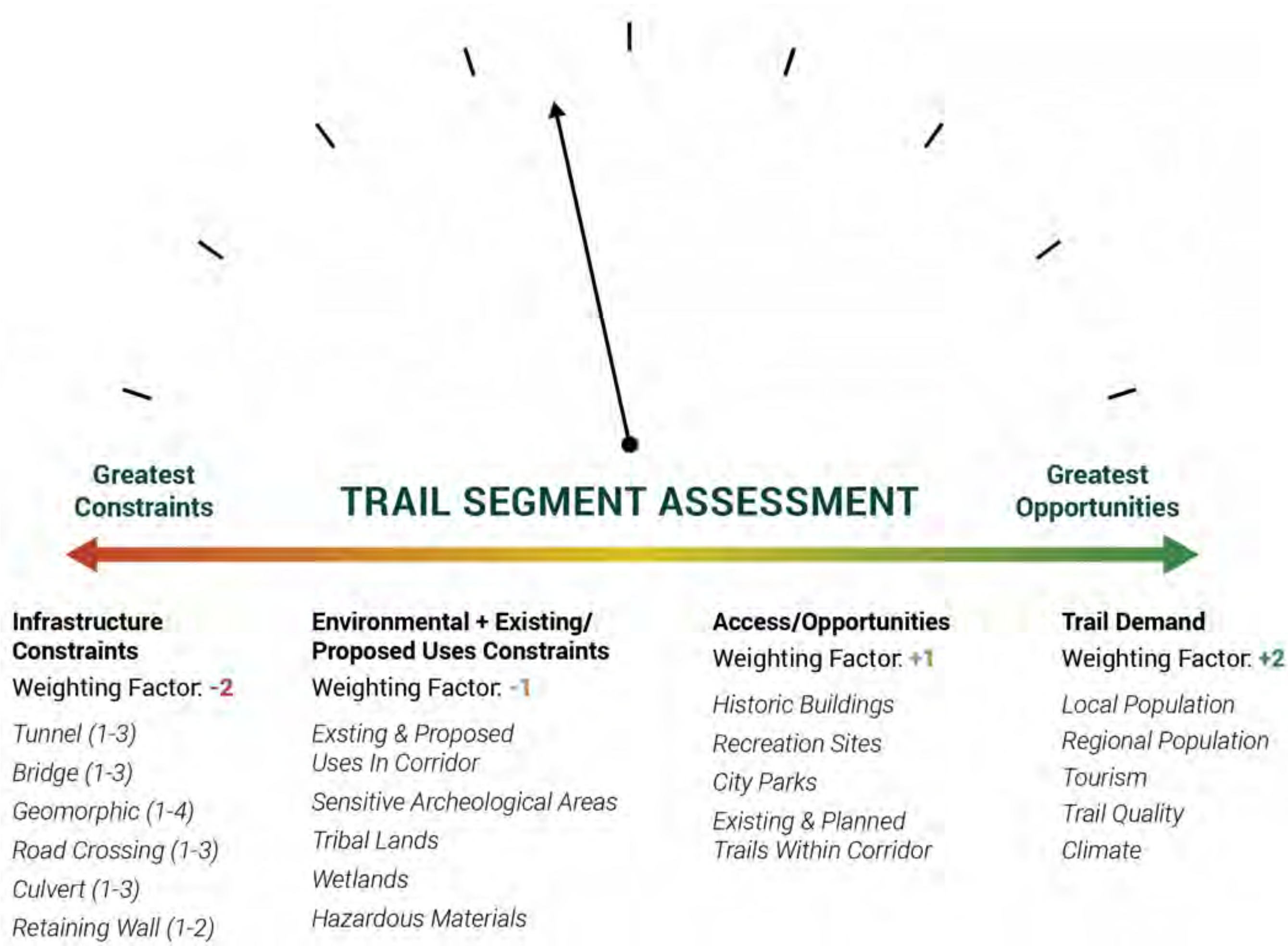
Figure 3.2.6-3 American Marten (California Species of Special Concern)

Special Considerations Regarding the Wild and Scenic Eel River

Because the Eel River is designated as a federal and state Wild and Scenic River, its outstandingly remarkable values must be preserved. Because of this, it would need to be demonstrated that development of the trail would not conflict with preservation of the river's outstandingly remarkable values, and rigorous measures would be needed during implementation to avoid erosion and sediment or other pollutant discharges into the river. Because development of the trail could provide recreational access, its protected status is not anticipated to substantially influence the feasibility of the Great Redwood Trail as long as environmentally protective features are in place for construction of projects.

Potential Utility Conflicts

A variety of utilities exist along the corridor, with more in the southern section than the middle or northern sections. It is unknown whether the utilities could impede or constrain development of the trail. The presence of utility infrastructure along the corridor could also influence the overall cost of developing the trail due to potential relocations of facilities.



Source: Alta 2020

Figure 3.2-1 Trail Segment Assessment Score

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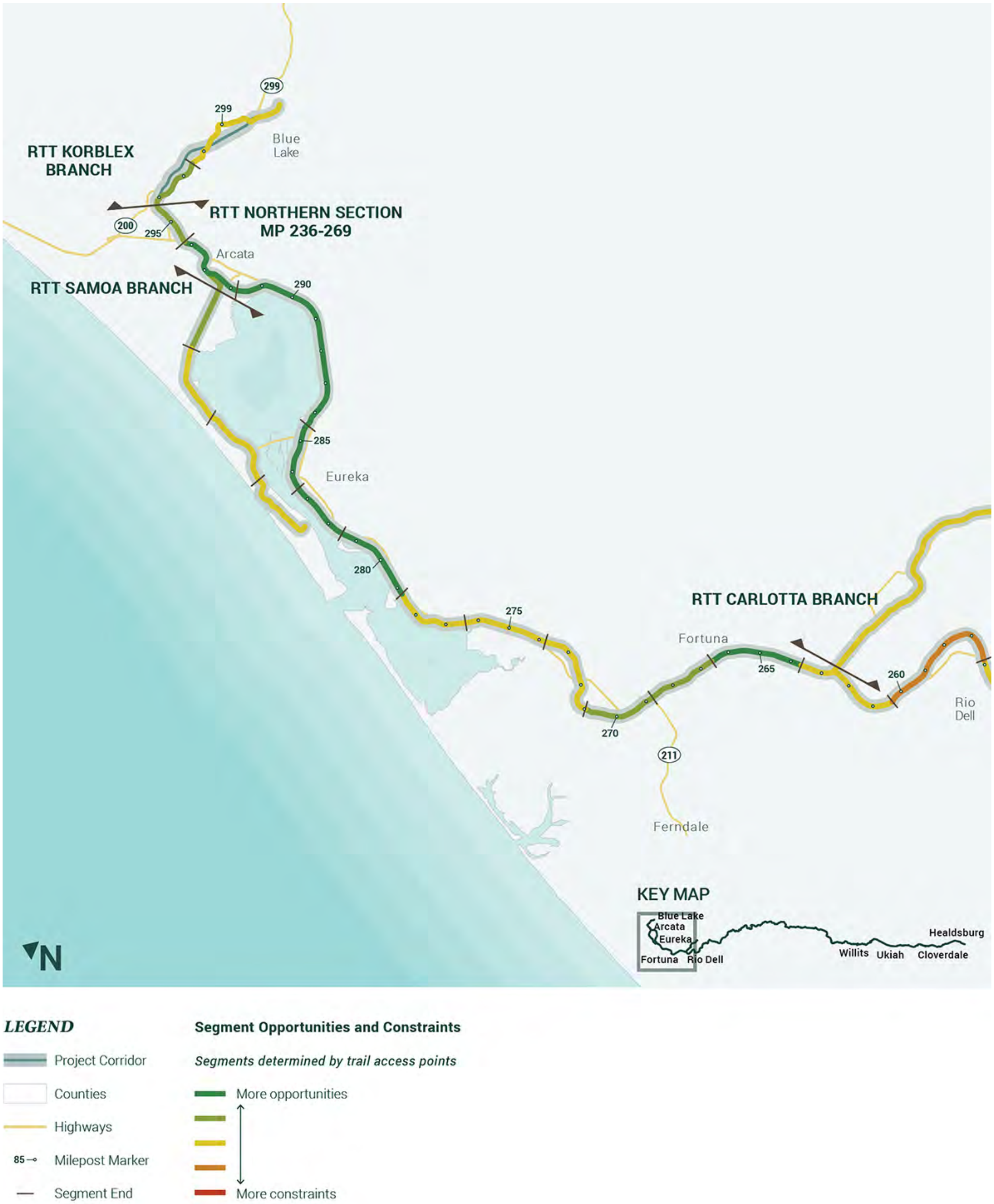
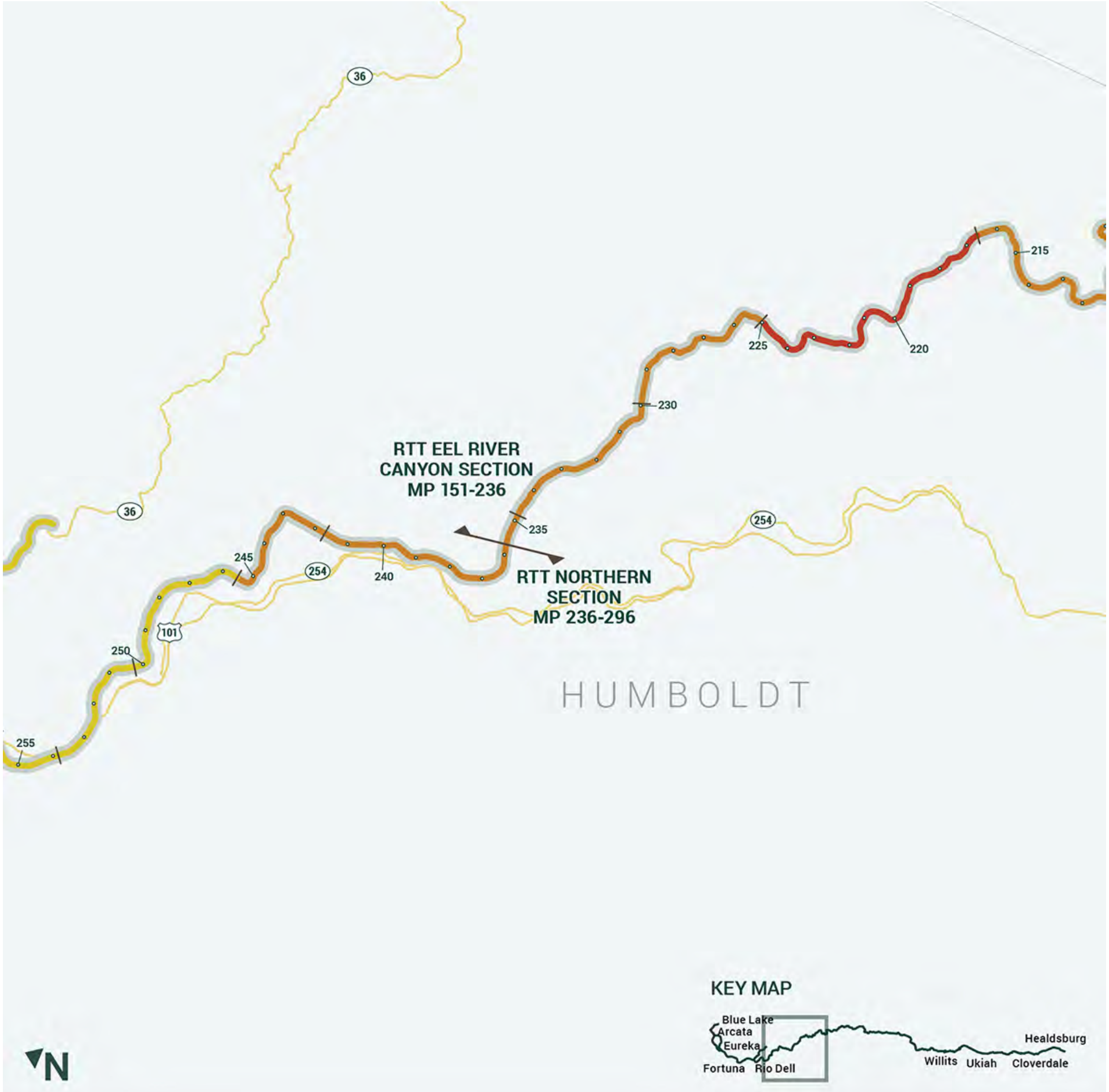


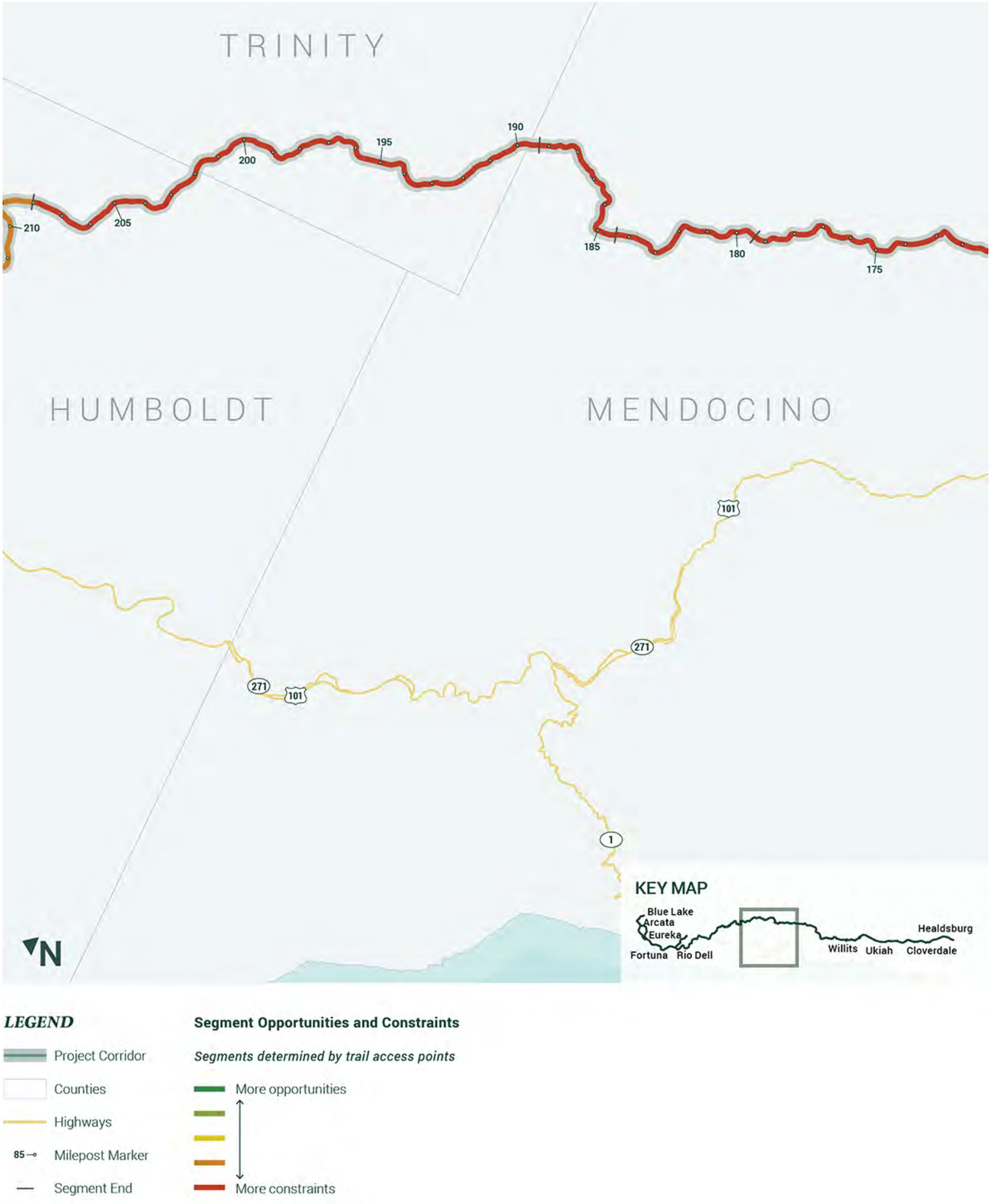
Source: Alta 2020

Figure 3.2-2a Overall Score by Project Segment



Source: Alta 2020

Figure 3.2-2b Overall Score by Project Segment

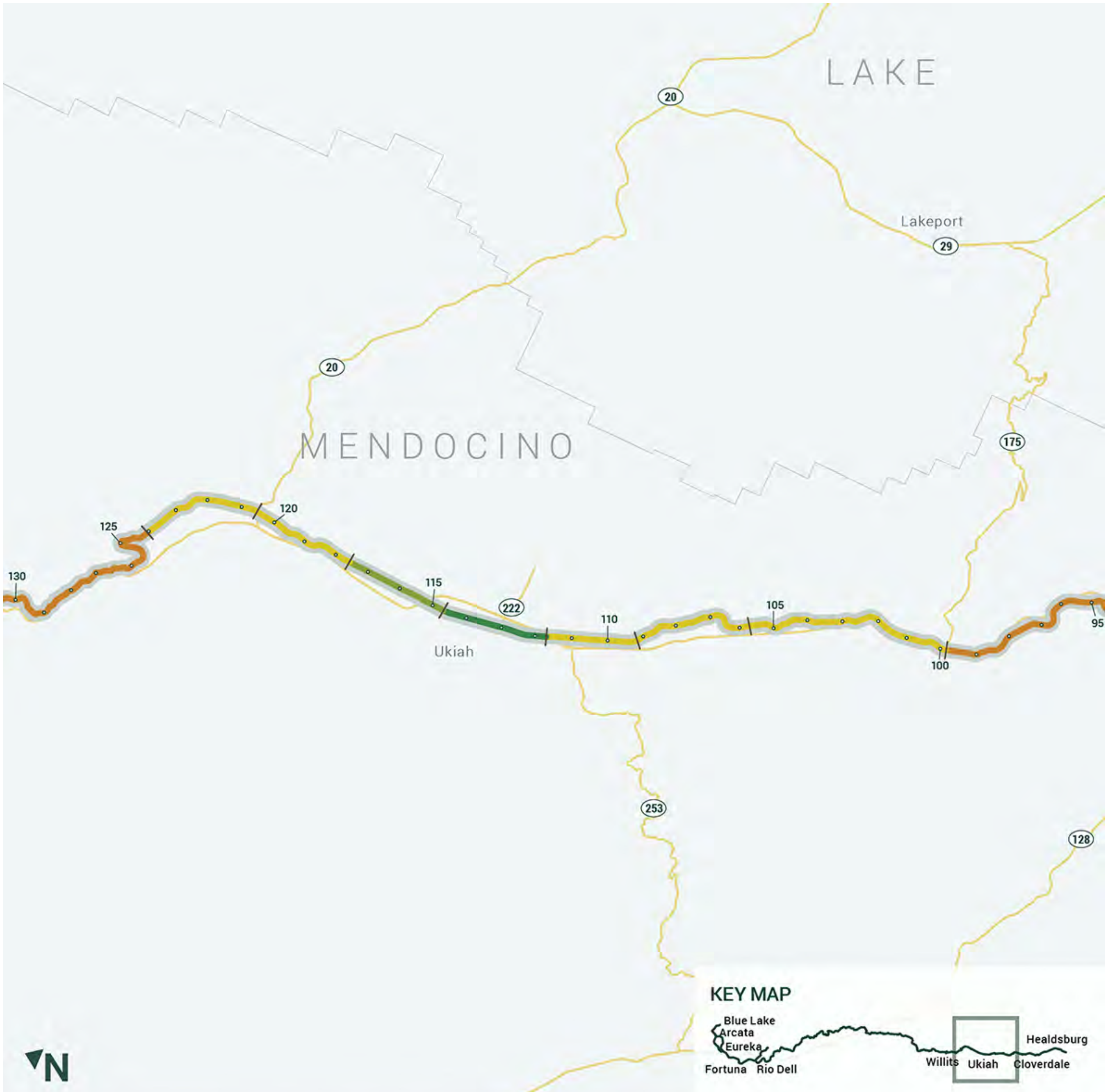


Source: Alta 2020

Figure 3.2-2c Overall Score by Project Segment

Source: Alta 2020

Figure 3.2-2d Overall Score by Project Segment



LEGEND

Project Corridor

Counties

Highways

85 Milepost Marker

Segment End

Segment Opportunities and Constraints

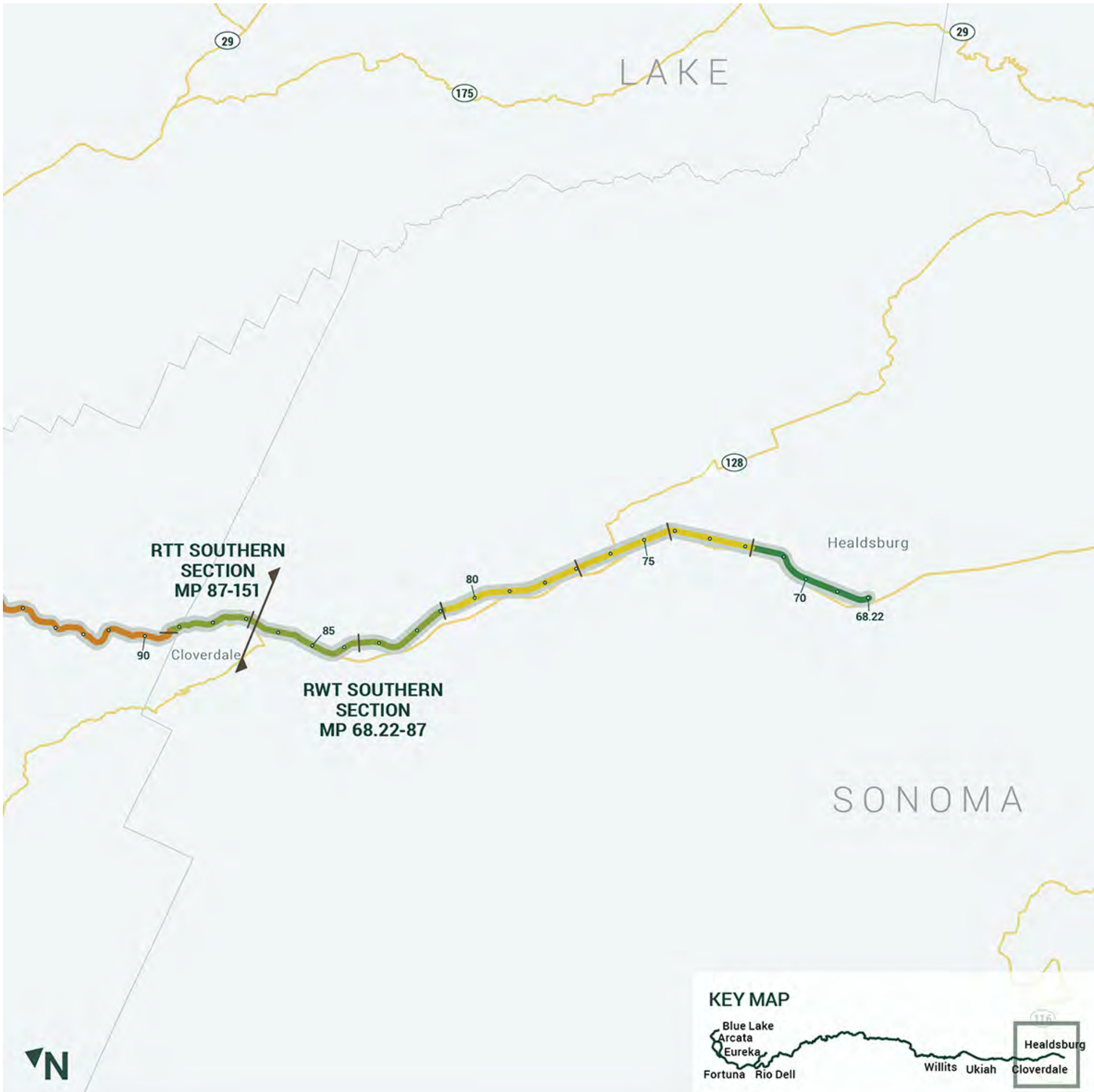
Segments determined by trail access points

More opportunities

More constraints

Source: Alta 2020

Figure 3.2-2e Overall Score by Project Segment



Source: Alta 2020

Figure 3.2-2f Overall Score by Project Segment

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4. Trail Types and Project Prioritization

A trail along the rail corridor could connect the region, but due to the varying site conditions it would comprise a variety of trail types, including both hard and soft surface trails. This chapter describes potential trail types for the corridor; groups trail implementation priorities into near-term, mid-term, and long-term phases; and identifies the economic and social benefits of developing the Great Redwood Trail.

4.1 Potential Trail Design

SB 1029 Section 2(a)(4)(B) directs the preparation of "a preliminary assessment of which portions of the terrain along the rail corridor may be suitable for a trail." This chapter describes potential trail design options that could be implemented to accommodate the variety of terrain in the corridor.

The natural and developed environment varies greatly along the length of the corridor. Different trail design methods or typologies would be needed to address local conditions and user demands. The corridor would traverse populated areas, rural areas, and RWT conditions. Typical conditions include populated areas and areas with high demand (Figure 4.1.1-1), rural areas and areas with low demand (Figure 4.1.1-2), and rail-with-trail conditions (Figure 4.1.1-3).

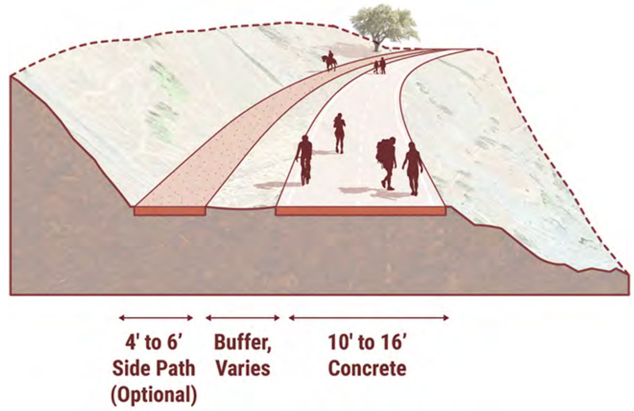
The presence of unstable slopes, moderate slopes, and lowlands and creeks would require specific trail typologies to overcome these challenging conditions. Typologies include elevated, benched, and cantilevered trail types, as well as structures such as bridges, tunnels, and culverts. In addition, numerous access points exist along the corridor in the form of crossings with roads and other trails, as well as areas with the potential to serve as formal trailheads. The recommended design of these access points varies based on context and user demand. The following discussion includes trail design solutions to accommodate the variety of physical conditions and user demands throughout the corridor. These solutions are design elements that can overcome known site terrain conditions. If planning efforts continue, future site investigations would be required to determine trail design.

4.1.1 HARD AND SOFT SURFACE TRAILS

To become a public trail, the corridor would require a variety of trail types, including both hard and soft surface trails. Hard surface trails refer to a concrete, asphalt, or boardwalk trail, while soft surface trails include natural surfaces or aggregate base materials. The recommended use of hard and soft surface trail types varies depending on the trail type, site conditions, and user demand. In areas projected to have higher demand and where the trail is proposed to be 10 feet wide or wider on readily workable terrain, the corridor is suitable for trail constructed with hard surface materials. In lower demand areas, a proposed 4- to 10-foot-wide trail is typically better suited for soft surface trails.

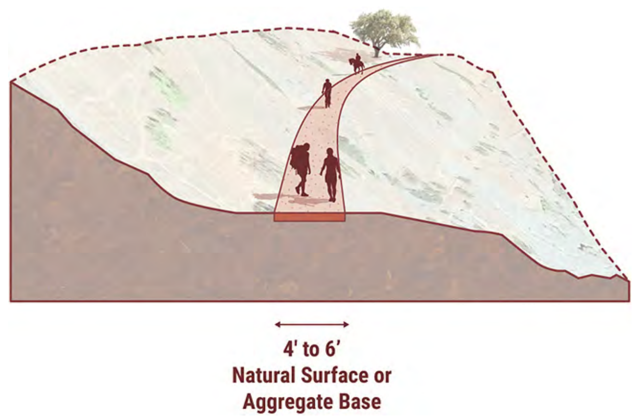
Typical Cross Sections

In populated areas and areas with high user demand, a wide (10 to 16 feet) concrete or asphalt trail is proposed to provide for the greatest user experience (Figure 4.1.1-1). As an option, a narrow (4 to 6 feet) soft-surface side path could be constructed parallel to a hard-surface trail to accommodate equestrians and minimize potential user conflicts. A buffer of varying width would be provided between the concrete trail and side path to create separation between the two. In low demand or rural areas, a 4- to 10-foot soft surface trail is recommended to best accommodate expected user groups, including bicyclists, hikers, and equestrians (Figure 4.1.1-2). In RWT areas (such as the southern extent of the corridor between Healdsburg at MP 68.22 and Cloverdale at MP 87), the use of hard or soft surface materials would depend on context and demand (Figure 4.1.1-3).



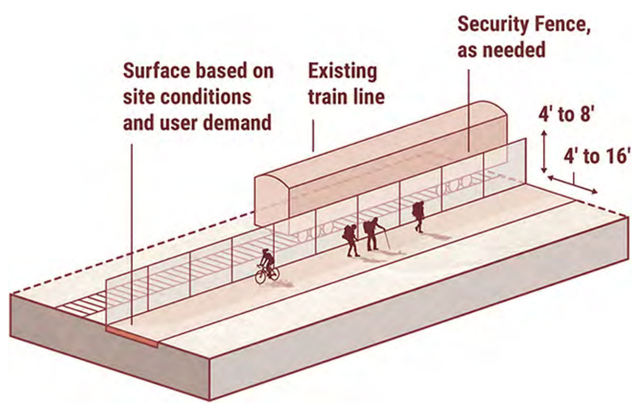
Source: Alta 2020

Figure 4.1.1-1 Trail Design for Urban and High Demand Areas



Source: Alta 2020

Figure 4.1.1-2 Trail Design for Rural and Low Demand Areas



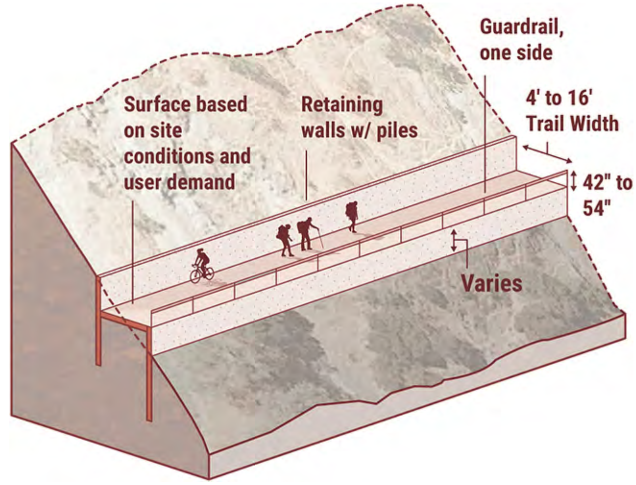
Source: Alta 2020

Figure 4.1.1-3 Trail Design for Rail-With-Trail Areas

Unstable Slopes

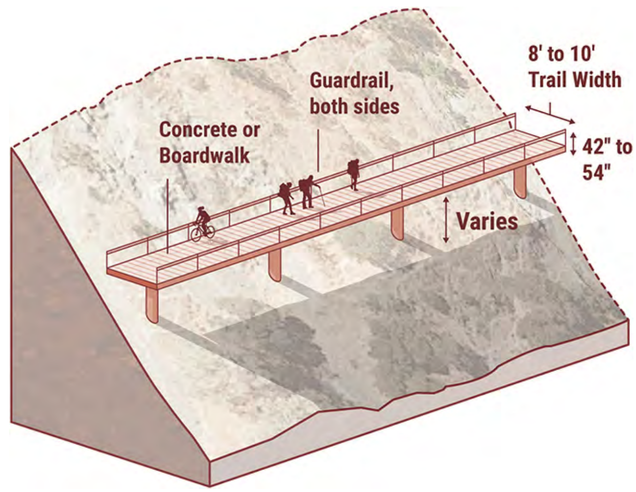
In certain challenging conditions such as unstable slopes, a variety of typologies could be used to provide solutions for the trail. The typologies that are recommended in unstable slope areas include a pile-driven bench (Figure 4.1.1-4), an elevated trail (Figure 4.1.1-5), and a temporary balanced bench (Figure 4.1.1-6).

An elevated trail would be constructed using hard-surface trail materials, such as concrete, asphalt, or a boardwalk. This trail design concept involves driving piles or piers into the slope, allowing for drainage and small soil slippage underneath the elevated hard-surface trail. A pile-driven bench could be constructed with either hard or soft surface materials, depending on site context and demand. A temporary, balanced bench would be constructed with natural surface materials. This trail type is designed to washout if a landslide or flood occurs, and is relatively low-cost and easy to install.



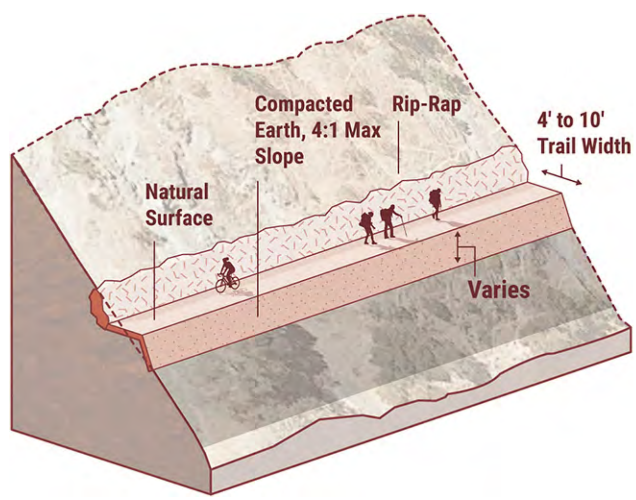
Source: Alta 2020

Figure 4.1.1-4 Pile-Driven Bench Trail Type



Source: Alta 2020

Figure 4.1.1-5 Elevated Trail Type

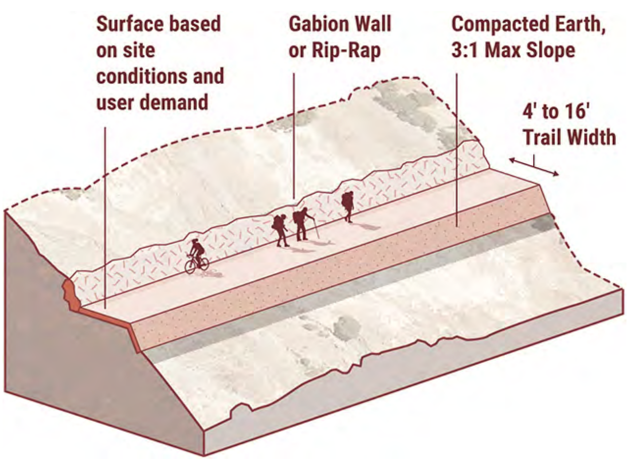


Source: Alta 2020

Figure 4.1.1-6 Temporary Balanced Bench Trail Type

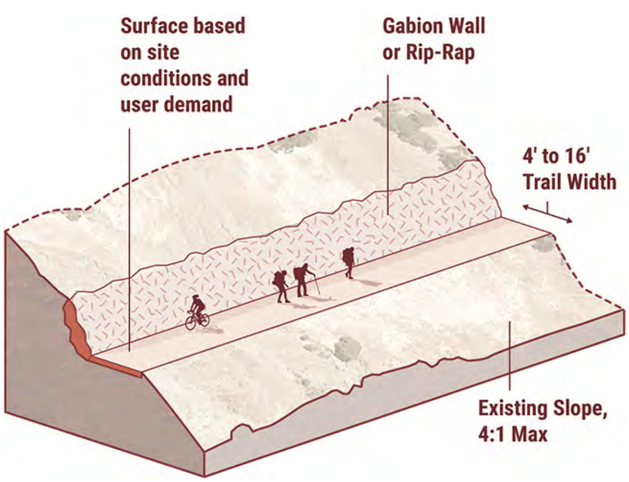
Moderate Slopes

In moderate slope conditions, a balanced bench (Figure 4.1.1-7), cut bench (Figure 4.1.1-8), fill bench (Figure 4.1.1-9), and cantilevered trail (Figure 4.1.1-10) could be used to overcome site conditions. The benched trail with compacted earth and gabion wall or rip-rap is a low-impact and cost-effective trail type. Cut and fill bench types can be used to create a new bench in a stabilized slope or stabilize an existing bench impacted by geomorphic slides below it. A cantilevered trail utilizes a structural anchor to extend the trail over the slope, and can be used in constrained areas where benched options are not feasible. In higher demand areas where the trail is proposed to be greater than 10 feet wide, concrete, asphalt, or boardwalk materials are recommended.



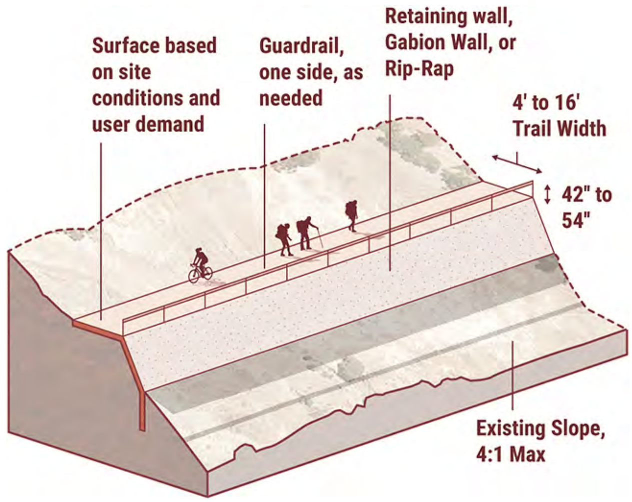
Source: Alta 2020

Figure 4.1.1-7 Balanced Bench Trail Type



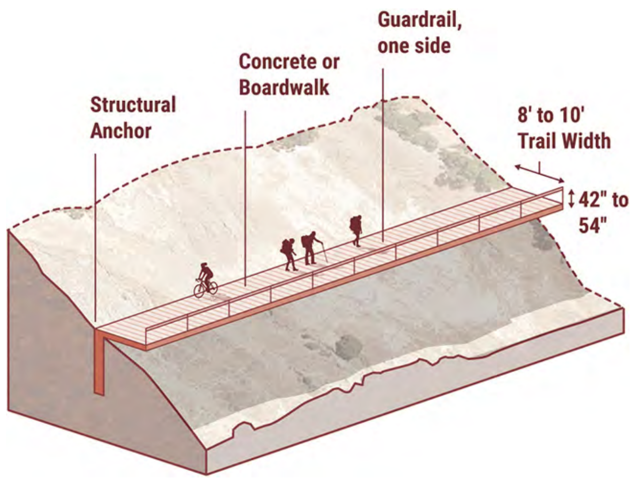
Source: Alta 2020

Figure 4.1.1-8 Cut Bench Trail Type



Source: Alta 2020

Figure 4.1.1-9 Fill Bench Trail Type



Source: Alta 2020

Figure 4.1.1-10 Cantilevered Trail Type

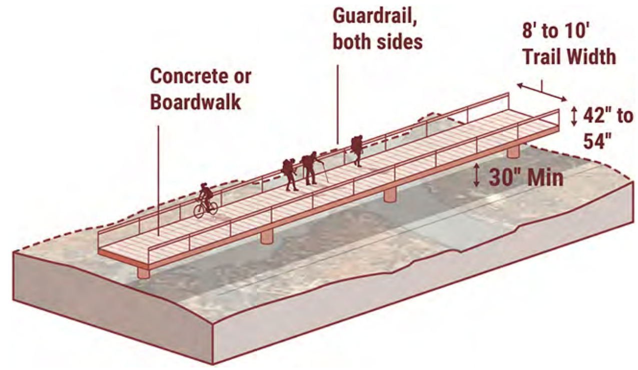
Lowlands, Creeks, and Culverts

In most lowland conditions, such as those where the trail crosses saturated soils or overflowing or standing water, a boardwalk or concrete trail would be best suited to navigate the terrain. Specific trail typologies in these lowland conditions include an elevated boardwalk (Figure 4.1.1-11), a low boardwalk (Figure 4.1.1-12), or a short-span bridge (Figure 4.1.1-13).

With the elevated boardwalk trail type, piers allow the boardwalk to be supported over the wet terrain while allowing for drainage underneath. Low boardwalks should be situated at a height of 30 inches or less above the ground, and can have low curbs instead of guardrails. Short-span bridges allow the trail to cross small waterways without interfering with existing hydrology. A prefabricated structure may be feasible in select locations.

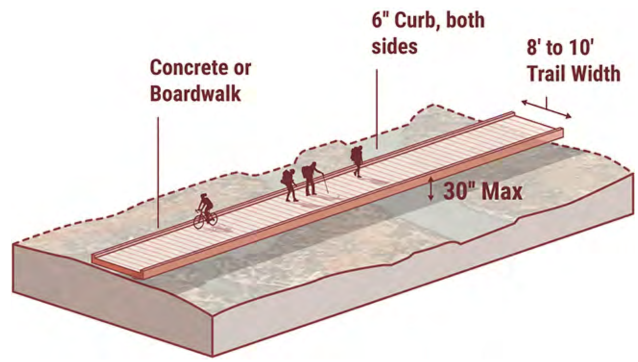
Several existing culverts along the corridor have collapsed or have been blown or washed out. Large culverts can be used to replace these collapsed culverts, or can be added in other locations to allow the trail to pass over drainage channels. Culverts can be implemented below both hard and soft surface trails (Figure 4.1.1-14).

There are also numerous smaller culverts that were not inventoried as part of this assessment but would require replacement in many circumstances.



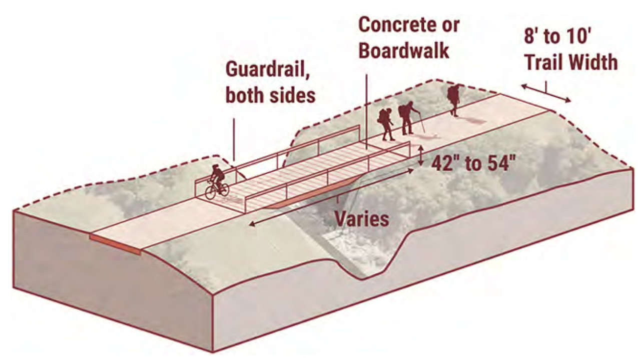
Source: Alta 2020

Figure 4.1.1-11 Elevated Boardwalk Trail Type



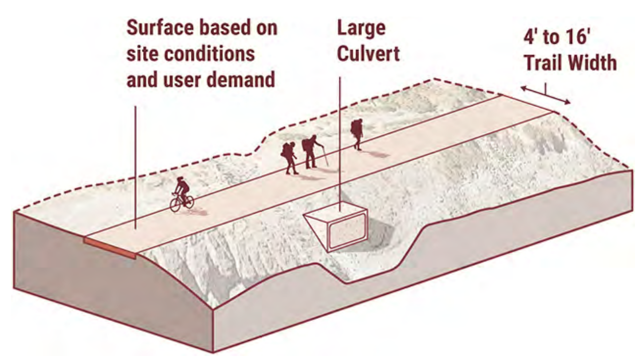
Source: Alta 2020

Figure 4.1.1-12 Low Boardwalk Trail Type



Source: Alta 2020

Figure 4.1.1-13 Short-Span Bridge Trail Type



Source: Alta 2020

Figure 4.1.1-14 Large Culvert Example

4.1.2 STRUCTURES: BRIDGES, TRESTLES, AND TUNNELS

There are several existing bridges, trestles, and tunnels along the corridor. Some of these can be retrofitted, while other areas would require the construction of new or replacement structures.

Existing Bridges and Trestles

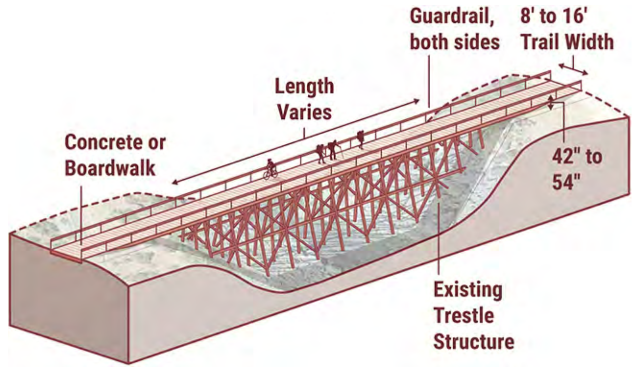
For existing bridges and trestles that are structurally sound, new surfacing and guardrails may be added to make the bridge more functional as a trail (Figure 4.1.2-1). These bridges are typically 8 to 16 feet wide, and in many cases, use an existing trestle structure. A concrete or boardwalk surface is recommended for these bridges.

Tunnels

Several existing tunnels along the corridor have collapsed and would need to be retrofitted or reconstructed (Figure 4.1.2-2). While trail width and surface type would vary based on context and user demand, it is recommended that tunnel openings be a minimum of 12 feet wide by 12 feet tall. Lighting should be provided in all tunnels to allow for adequate visibility.

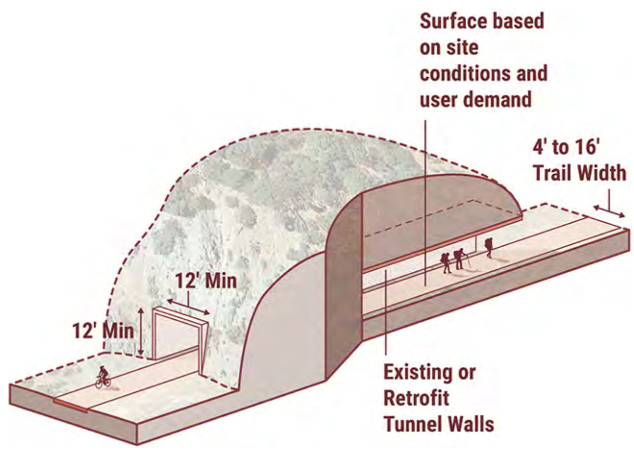
New Long-Span Bridges

The construction of new long-span bridges is recommended in some areas to allow the trail to cross over major valleys, creeks, or rivers (Figure 4.1.2-3). While the span and construction type can be context specific, it is recommended that new bridges are constructed to be 8 to 16 feet wide with concrete or boardwalk materials.



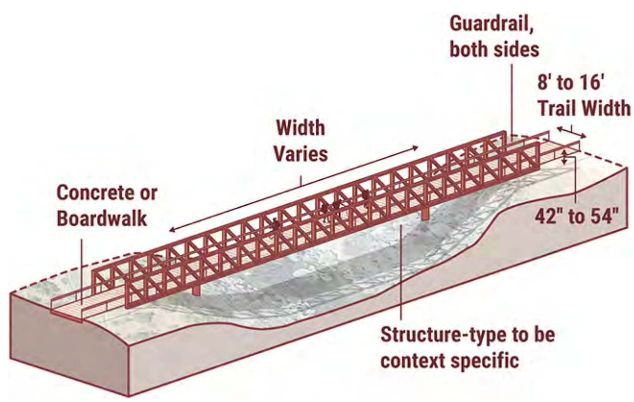
Source: Alta 2020

Figure 4.1.2-1 Bridge Retrofit Example



Source: Alta 2020

Figure 4.1.2-2 Tunnel Reconstruction or Retrofit Example



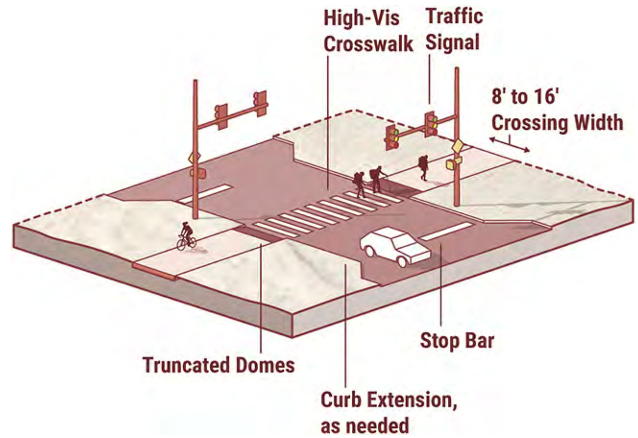
Source: Alta 2020

Figure 4.1.2-3 New Long-Span Bridge Example

4.1.3 ACCESS, TRAILHEADS, TRAIL CONNECTORS, TRAIL REROUTES

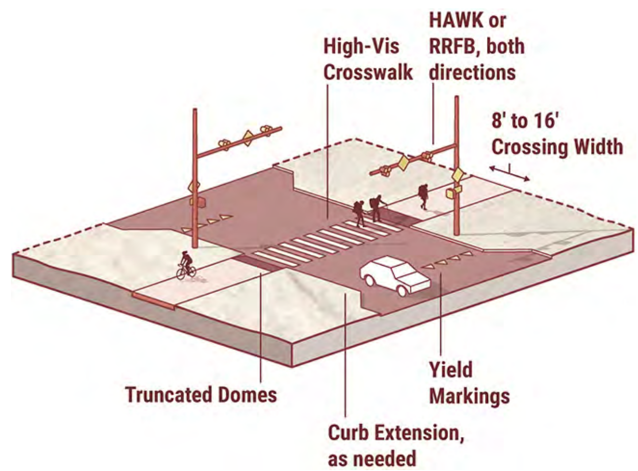
Informal Access Points

The corridor intersects numerous public roads and trails, all of which can be access points to the corridor. The type of recommended roadway crossing depends on context, demand, vehicle speeds, and traffic volumes. In locations where the trail crosses a high-speed or high-volume roadway, a traffic signal may be needed (Figure 4.1.3-1), while a rectangular rapid flashing beacon (RRFB) or high-intensity activated crosswalk beacon (HAWK) (Figure 4.1.3-2) may be more appropriate in locations where the trail crosses a low-volume roadway. In rural settings with very limited traffic, a stop or yield sign may suffice (Figure 4.1.3-3). In all scenarios, truncated domes (ground surface indicators designed to assist and warn pedestrians who are blind or visually impaired) and signage for trail users and drivers are required. Curb extensions may be included to create a shorter crossing for trail users.



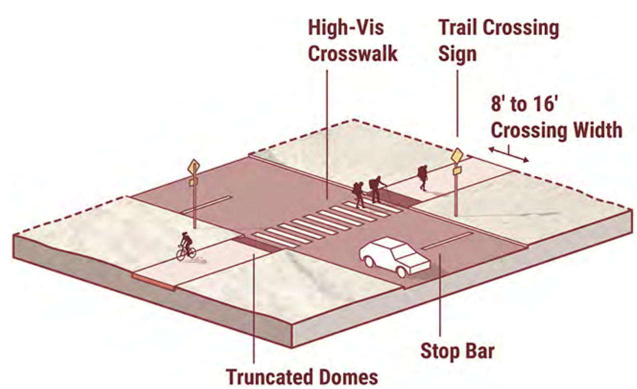
Source: Alta 2020

Figure 4.1.3-1 Traffic Signal Example



Source: Alta 2020

Figure 4.1.3-2 High-Intensity Activated Crosswalk Beacon (HAWK) Example



Source: Alta 2020

Figure 4.1.3-3 Rural Intersection Example

Trailheads

Good access to a trail system is a key element for its success. Trailheads serve the local and regional population arriving to the corridor by car, transit, bicycle, or other modes. Trailheads provide access to the corridor and include amenities such as parking for vehicles and bicycles, restrooms (at major trailheads), and posted maps. Two distinct tiers of trailheads are recommended for the Great Redwood Trail.

Large/Urban Trailhead

Large trailheads should be located at higher demand access points and typically include restrooms, bicycle parking, drinking fountains, picnic shelters, small plazas or open space, trail maps, and wayfinding (Figure 4.1.3-4). A small parking lot may be considered depending on parking demand if deemed appropriate by the governing body. The existing historic rail depots that are remaining along the corridor could be repurposed and incorporated into these large trailheads.

Small/Rural Trailhead

Small trailheads should be located at lower-demand access points (Figure 4.1.3-5). These trailheads typically provide a subset of the regional and local major trailhead amenities including seating, maps, and interpretive signage. Restrooms could also be provided if desired. Parking would be available along the shoulders of existing roads.

Source: Alta 2020

Figure 4.1.3-4 Large Trailhead Example

Source: Alta 2020

Figure 4.1.3-5 Small Trailhead Example

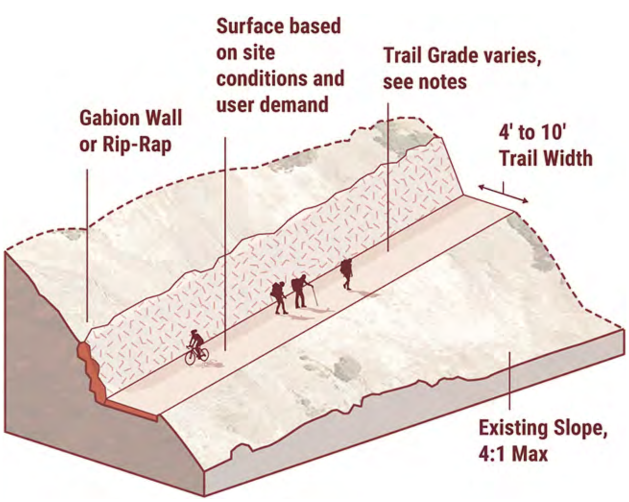
Trail Connectors

Trail connectors are used to connect the corridor to access points, roadways, and other trails. Potential trail connector typologies include ramps, switchbacks, side paths, and on-street connectors.

A ramp connector is suitable for providing access between trailheads and across moderate slopes (Figure 4.1.3-6). A switchback is a series of ramps with landings that can be used to navigate steep slopes (Figure 4.1.3-7). Earthen, rip-rap, or gabion walls may be used to retain the switchbacks, depending on slope steepness and context.

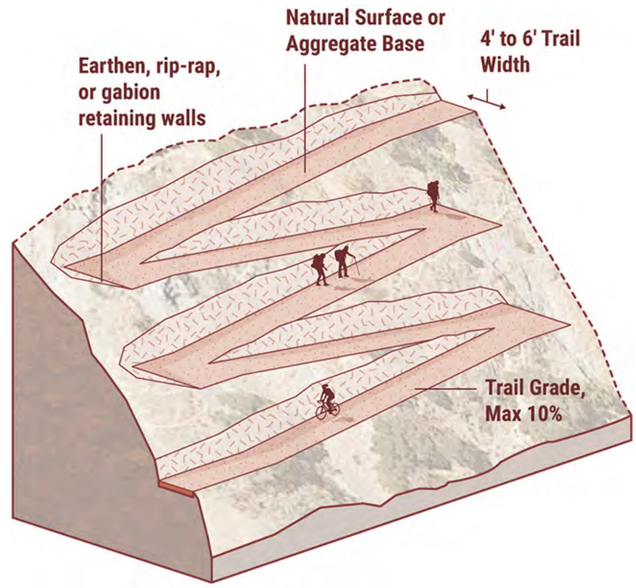
A side path allows the connector to follow alongside a roadway before reconnecting with the trail, and enables the trailhead to be located in an accessible location (Figure 4.1.3-8). The facility utilizes wayfinding to guide users from the trailhead to the primary trail. A side path greater than 8 feet in width is a Class I facility, while a width less than 8 feet is a soft-surface rural trail facility.

An on-street option may be considered in locations where a side path is not feasible (Figure 4.1.3-9). The on-street connector may be a striped cycletrack or an advisory bicycle lane, and is only feasible in locations with adequate street ROW. The facility utilizes wayfinding to guide users from the trailhead to the primary trail.



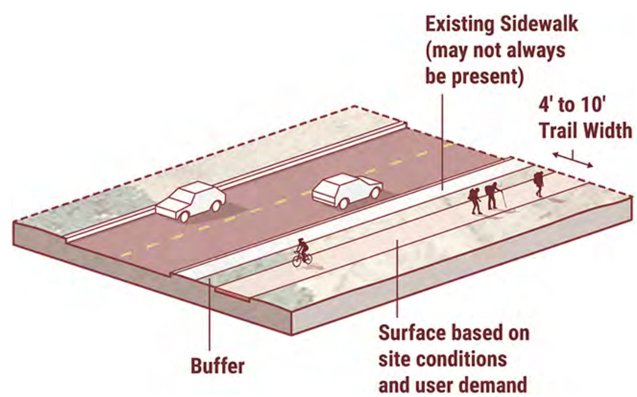
Source: Alta 2020

Figure 4.1.3-6 Ramp Connector Example



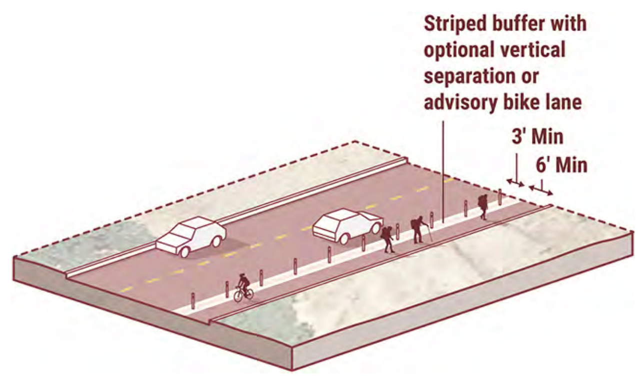
Source: Alta 2020

Figure 4.1.3-7 Switchback Connector Example



Source: Alta 2020

Figure 4.1.3-8 Side Path Example



Source: Alta 2020

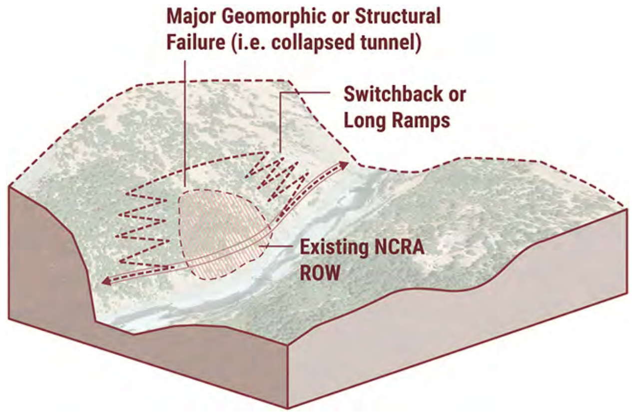
Figure 4.1.3-9 On-Street Trail Example

Trail Reroutes

In the event of a major geomorphic failure, such as a landslide, or major structural failure, such as a tunnel collapse, it may be more economically feasible to reroute the trail around the impasse than build through or over the landslide, or reconstruct the tunnel. Several solutions could be used in this situation to ensure trail users can safely continue along the corridor, including switchbacks or long ramps, a river crossing, a side path, or on-street reroute.

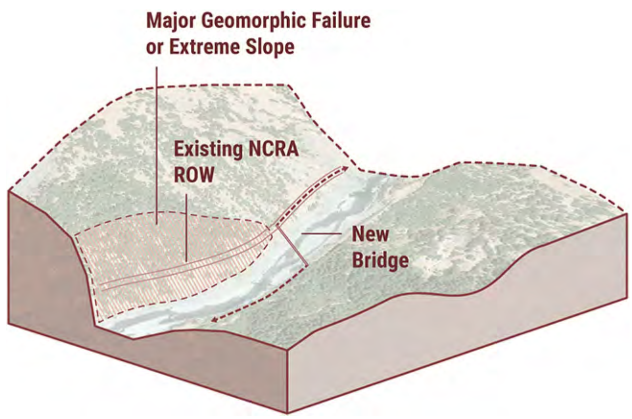
A series of switchbacks or long ramps would allow users to navigate around the impasse by traveling above and around the obstruction (Figure 4.1.3-10). A river crossing would allow the trail to cross to the opposite bank until it was feasible to reconnect with the corridor ROW (Figure 4.1.3-11). This is possible at smaller waterways; however, it may not be a feasible option for larger waterways, like the Eel River.

A side path or an on-street reroute may also be considered to bring trail users closer to a destination or town (Figure 4.1.3-12). This may be a lower cost option, but forces trail users to travel adjacent to a roadway.



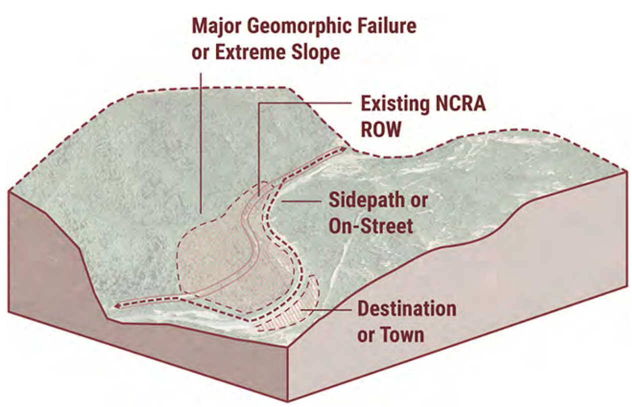
Source: Alta 2020

Figure 4.1.3-10 Switchbacks Reroute Example



Source: Alta 2020

Figure 4.1.3-11 River Crossing Reroute Example



Source: Alta 2020

Figure 4.1.4-12 Side Path or On-Street Reroute Example

4.2 Project Prioritization

The project team reviewed the inventoried features and results of the condition and user demand assessments from Chapters 2 and 3 to determine priority projects along the corridor. Individual segment costs, currently planned and funded projects, and constructed projects were also considered when determining priority projects. The projects were divided into four phases which represent grouped extents of near-term, mid-term, and long-term implementation priorities. Figure 4.2-1 at the end of this chapter shows the suggested project phases along the corridor.

While these project phases represent priority projects when looking at the entirety of the corridor, the phases are not binding. Should funding become available for individual trail gaps along the corridor, the funded projects should be implemented regardless of their suggested project phase.

4.2.1 NEAR-TERM IMPLEMENTATION PRIORITIES

Phase 1 projects are those that have the highest priority for near-term implementation, as well as those previously funded or currently underway. Phase 1 projects feature few constraints (see Chapters 2 and 3) and are typically located within areas with higher population density and anticipated user demand. Phase 1 projects include:

- Healdsburg to Cloverdale (SMART jurisdiction; MP 68.22-87)
- Hopland to Calpella (MP 100-120)
- Willits (MP 136-140)
- Rohnerville to Blue Lake (MP 264-299), includes the Korblex Branch

These projects close gaps within existing trail networks or leverage planned trail projects. It is recommended in this report that all Phase 1 projects use hard surface trail typologies, but site specific conditions at the time of trail project design would need to determine the trail type.

4.2.2 MID-TERM IMPLEMENTATION PRIORITIES

Phase 2 projects are those considered to be mid-term priorities that are located along moderately constrained, medium-high demand extents of the corridor. Phase 2 projects include:

- Cloverdale to Hopland (MP 88-100)
- Calpella to Willits (MP 121-135)
- Willits to Dos Rios (MP 141-166)
- Shively to Rohnerville (MP 245-263)

These projects close constrained gaps between Phase 1 projects. It is recommended in this report that all Phase 2 projects use hard surface trail typologies, but site specific conditions at the time of trail project design would need to determine the trail type.

4.2.3 LONG-TERM IMPLEMENTATION PRIORITIES

Phase 3 and 4 projects represent long-term implementation priorities.

Phase 3

Phase 3 projects are located along highly constrained, low-demand extents of the corridor. Phase 3 projects include:

- Dos Rios to Alder Point (MP 167-207)
- Alder Point to Shively (MP 208-244)

It is recommended in this report that all Phase 3 projects use soft surface trail typologies, but site specific conditions at the time of trail project design would need to determine the trail type.

Phase 4

Phase 4 projects are located in branch extents with lower expected user demand. It is recommended in this report that these projects use a combination of hard and soft surface trail typologies, but site specific conditions at the time of trail project design would need to determine the trail type. Phase 4 projects include:

- Carlotta Branch
- Samoa Branch

4.3 Project Economic and Social Benefits

The completed Great Redwood Trail is expected to bring numerous economic and social benefits to the communities surrounding the trail. To calculate potential trail benefits, the user demand estimates described in Section 3.1.4, "Trail Demand Assessment Approach," were used to determine the number of potential pedestrians and bicyclists that would use the trail. These estimates were then used to calculate a range of potential trail benefits including reduced vehicle trips and vehicle miles traveled (VMT); improved air quality, user health, and recreational opportunities; and increased visitor spending (Figure 4.3-1).

The following trail benefits consider a fully built Great Redwood Trail. Actual trail benefits would be relative to the amount of trail that is completed.

4.3.1 ECONOMIC BENEFITS

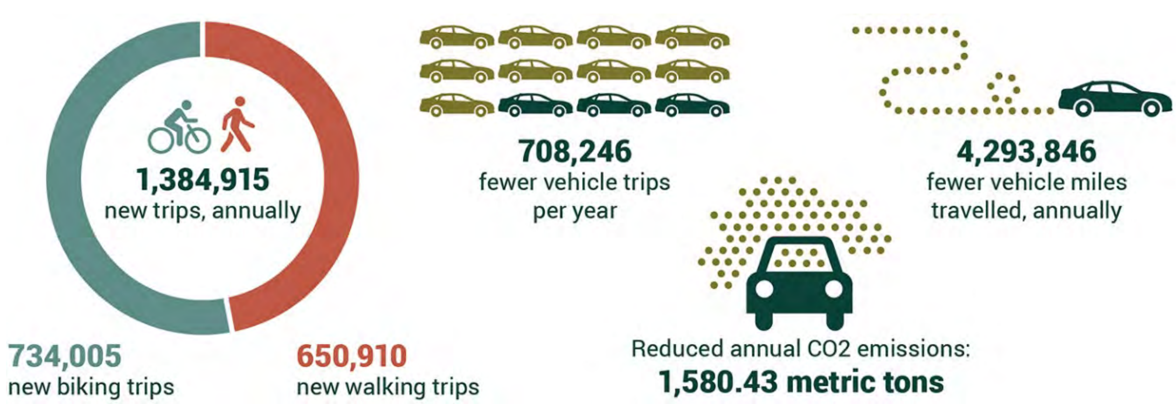
According to a 2010 Appalachian National Scenic Trail pilot survey, trail users spend approximately $13.50 per day (in 2010 dollars) on local products and services (American Hiking Society 2015). This figure was adjusted for inflation and used to determine potential local spending in the communities surrounding the corridor. While it is not suggested that the Great Redwood Trail would have the same user demand as the Appalachian Trail (which attracts approximately 3 million users per year), the estimated daily spending level is a reasonable estimate for expected trail users.

Trail users are expected to spend money on lodging, food, and other services, bringing approximately $24 million in annual local economic activity. A significant portion of this is expected to come from visitors to the area, enhancing annual tourism revenues in Sonoma, Mendocino, and Humboldt counties.

4.3.2 TRANSPORTATION AND AIR QUALITY BENEFITS

The completed Great Redwood Trail would provide residents and visitors with an alternative to driving, thereby reducing vehicle trips, VMT, and associated greenhouse gas emissions. This is especially true in the more populated areas of the corridor, where the trail has the potential to serve as a safe and convenient route for daily travel between destinations. The projected reductions in VMT and greenhouse gas emissions would support state-wide efforts to reduce VMT and greenhouse gas emissions.

Reductions in vehicle trips and VMT were calculated using Alta's Trail Demand Model described in Chapter 3. The model assumes that 69 percent of bicycling trips and 31 percent of walking trips would replace vehicle trips for all users. It also assumes that the average length of a round trip is 1.2 miles for walking trips and 8 miles for bicycling trips. Based on these assumptions, it is estimated that the completed Great Redwood Trail would result in a reduction of 708,246 vehicle trips and 4,293,846 VMT annually. This reduction does not account for any additional vehicle trips made to access the trail. These would be studied and further refined during future environmental processes if required.



Source: Alta 2020

Figure 4.3-1 Economic and Social Benefits of a Fully Developed Great Redwood Trail

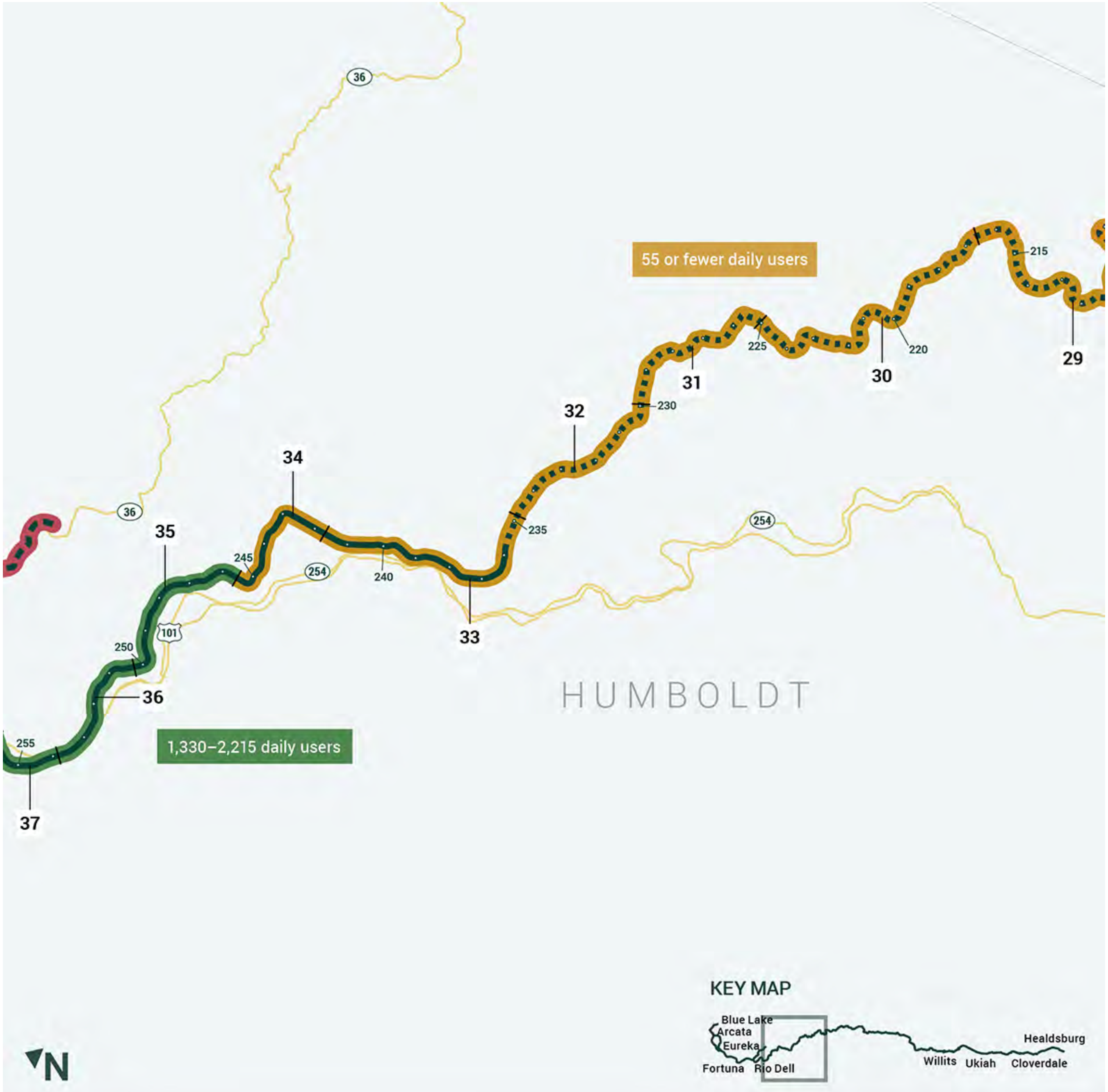
Reductions in VMT directly correlates to a reduction in greenhouse gas emissions. Air quality benefits were calculated using values outlined in the U.S. EPA Office of Transportation and Air Quality's publication Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks (2008). Based on these values, it is expected that a reduction of 4,293,846 VMT would result in an annual reduction of approximately 4.62 metric tons of total hydrocarbons; 0.19 metric tons of particulate matter measuring 10 microns or less (PM10); 2.97 metric tons of nitrogen oxide (NOx), an ozone-forming compound; 40.33 metric tons of carbon monoxide (CO); and 1,580.43 metric tons of carbon dioxide (CO_2).

4.3.3 USER HEALTH AND RECREATION BENEFITS

The completed Great Redwood Trail would also bring additional non-monetary health and recreation benefits to users, including those that come from the enjoyment of bicycling and other outdoor activities. NCHRP Report 552 assumes that the average person values time at approximately $10 per hour (Transportation Research Board 2006). Therefore, a one-hour bike ride can be assumed to generate about the same amount in non-monetary health and recreation benefits to account for the time spent, since the total benefit amount must exceed the total cost to justify the activity. The report references a number of studies that have calculated outdoor recreational activities as generating non-monetary benefits of about $40 per day in 2004 dollars, or $10 per hour. This value was adjusted for inflation and used to calculate the total health and recreation benefits that can be expected for the Great Redwood Trail, which are estimated to be equivalent to nearly $75 million annually.

Source: Alta 2020

Figure 4.2-1a Project Prioritization Map



Source: Alta 2020

Figure 4.2-1b Project Prioritization Map

Source: Alta 2020

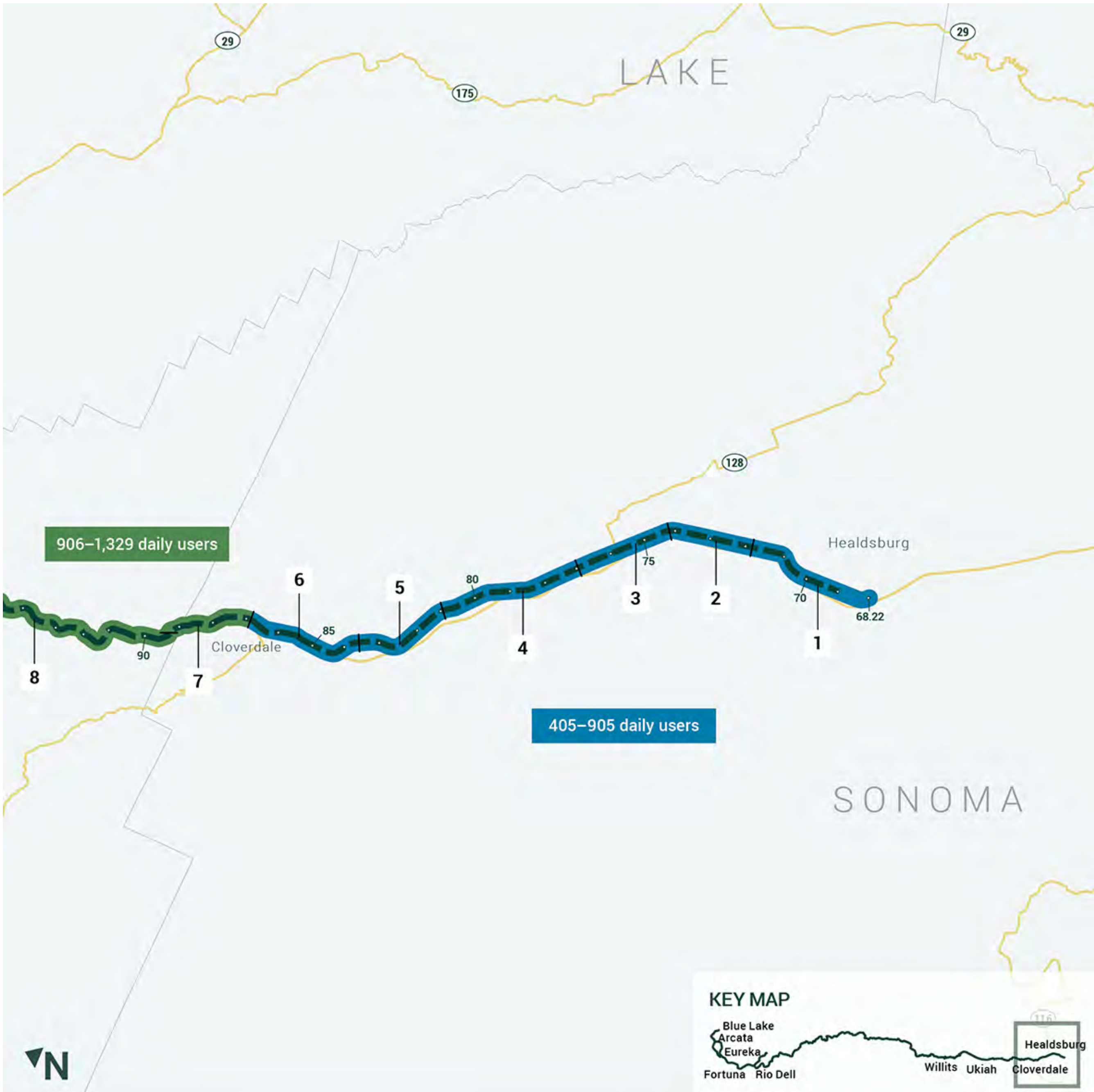
Figure 4.2-1c Project Prioritization Map

Source: Alta 2020

Figure 4.2-1d Project Prioritization Map

Source: Alta 2020

Figure 4.2-1e Project Prioritization Map



Source: Alta 2020

Figure 4.2-1f Project Prioritization Map

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5. Planning-Level Cost Estimates

Implementing a trail along the rail corridor would require a variety of the trail types introduced in Chapter 4. This chapter identifies planning-level cost estimates by construction phase to support project priorities and future corridor decision-making.

Planning-level cost estimates are based on assumptions about the planned trail facility and general cost factors applied to the types of facilities. Cost estimates are provided by corridor segment and by project priority (as described in Chapter 4, "Trail Types and Project Prioritization"), as well as for the entire corridor. Cost estimates within this chapter have been rounded to the nearest hundred dollars.

While an overall corridor cost estimate is provided, the total costs for fully developing the corridor would not be incurred at any one time. Instead, these costs would be paid over a long period of time, based on project phasing and priorities. The costs included herein do not include estimates of environmental remediation efforts that may be required prior to construction. Remediation costs may be substantial.

5.1 Methods and Assumptions

Linear costs (costs per linear foot) were developed for the different typologies proposed for the corridor, because costs differ by trail type. These cost estimates are based on the trail types outlined in Chapter 4 and may change significantly if different typologies are selected.

The 19 trail types outlined in Section 4.1 were applied to specific conditions along the corridor to define seven broad type and condition categories for cost estimating: (1) typical urban and rural conditions, (2) unstable slopes, (3) moderate slopes, (4) lowland areas, (5) water crossings, (6) bridges, and (7) tunnels. Several construction options were considered for each of these seven categories.

For each construction option, assumptions were made regarding trail width, trail material, proposed slopes, and existing slopes, and were used to develop unit areas (square foot) or volumes (cubic foot or yard) of materials that would be required. Trail width, proposed slopes, and existing slopes were used to estimate the amount of earthwork and grading that would be required. Trail width and existing slopes were used to determine the height of potential retaining walls and the areas of slope stabilization. The base cost of each construction option was then estimated using unit costs.

Percentages were used to estimate the planning and management costs for the corridor. Planning and management soft costs include survey, technical studies, and engineering design (15 percent); environmental analysis, documentation, and permitting (10 percent); project administration (10 percent); construction management (10 percent); mobilization (10 percent); and design services during construction (5 percent). A 30 percent contingency was added to account for unknown factors that may influence the overall cost of the trail, as is standard for multi-modal infrastructure projects estimated at the feasibility stage. The planning and management cost percentages used were based on typical construction industry standards.

Typology costs per mile for all trail types in 2020, 2025, and 2030 dollars are shown in Table 5.1-1. These include base (i.e., construction) costs and planning and management soft cost and contingency percentages included in the total cost.

In areas of the corridor that are difficult to access, a percentage was used to account for the increased costs of construction due to limited site accessibility. The site accessibility factor includes additional fuel and labor costs for moving materials, equipment, and personnel to and from the construction site. It also includes the difficulty of performing construction activities within constrained and narrow sites. The construction site could be limited by available ROW, easements, adjacent properties, or environmental boundaries. The site accessibility factor ranges from 0 to 20 percent.

These cost estimates do not include unknown costs such as those associated with environmental remediation efforts that may be required prior to construction. While cost is not considered to be a measure of the technical feasibility of trail development, it is the main factor in determining whether and to what extent the trail can be built. This chapter presents cost estimates by project phase to illustrate how the trail could be developed over time, limiting the amount of investment required at any one time.

Table 5.1-1 Typology Cost Summary

Trail Typology	Base Cost in 2020 Dollars (per mile)	Total Cost in 2020 Dollars (per mile)*	Total Cost in 2025 Dollars (per mile)*	Total Cost in 2030 Dollars (per mile)*
Typical Urban and Rural				
A1 – Urban Trail	$1,504,800	$2,859,100	$3,436,900	$4,131,600
A2 – Rural Trail	$491,000	$933,000	$1,121,500	$1,348,200
A3 – Rail with Trail	$1,663,200	$3,160,100	$3,798,700	$4,566,500
A4 – Side paths	$633,600	$1,203,800	$1,447,100	$1,739,600
A5 – On-Street / Advisory Bike Lanes	$316,800	$601,900	$723,600	$869,800
Unstable Slopes				
B1 – Elevated (Concrete Deck)	$9,055,200	$17,204,900	$20,682,000	$24,861,800
B2 – Pile-Driven Bench	$3,553,400	$6,751,500	$8,116,000	$9,756,300
B3 – Temporary Balanced Bench	$1,029,600	$1,956,200	$2,351,600	$2,826,900
Moderate Slopes				
C1 – Balanced Bench	$1,541,800	$2,929,300	$3,521,400	$4,233,000
C2 – Cut Bench	$1,568,200	$2,979,500	$3,581,700	$4,305,500
C3 – Fill Bench	$1,853,300	$3,521,200	$4,232,900	$5,088,300
C4 – Cantilever	$9,073,200	$17,239,000	$20,723,000	$24,911,100
Lowland Areas				
D1 – Elevated Boardwalk	$4,356,000	$8,276,400	$9,949,100	$11,959,800
D2 – Low Boardwalk	$2,772,000	$5,266,800	$6,331,200	$7,610,800
Water Crossings				
E1 – Short-Span Bridge	$4,224,000	$8,025,600	$9,647,600	$11,597,300
E2 – Large Culvert (each)	$40,000 (each)	$76,000 (each)	$91,400 (each)	$109,800 (each)
Bridges				
F1 – Retrofit Bridge	$2,349,600	$4,464,200	$5,366,500	$6,451,000
F2 – New Long-Span Bridge	$10,692,000	$20,314,800	$24,420,400	$29,355,800
Tunnel				
G1 – Tunnel	$60,720,000	$115,368,000	$138,683,900	$166,711,800
Access Points				
Small Access Point (each)	$50,000 (each)	$95,000 (each)	$114,200 (each)	$137,300 (each)
Large Access Point (each)	$400,000 (each)	$760,000 (each)	$913,600 (each)	$1,098,200 (each)

**includes planning and management soft costs and contingencies*

Source: Alta 2020

5.2 Cost Estimates

5.2.1 TOTAL PROJECT COSTS

Planning-level cost estimates for fully developing the 252-mile corridor are:

- $749,259,900 in 2020 dollars
- $900,685,200 in 2025 dollars
- $1,082,713,500 in 2030 dollars

The factors considered in the development of these cost estimates are described in the subsequent sections of this chapter and summarized in Table 5.2.2-5. These cost estimates do not include unknown environmental remediation costs that may be required prior to project construction.

5.2.2 COST BY TRAIL SEGMENT

Cost estimates were calculated for the 57 segments of the corridor (see Appendix E). Estimates range from less than $3 million to nearly $54 million for a segment, depending on the length of the segment, existing land conditions, recommended trail types, the presence and size of planned access points, and the presence of required infrastructure. Segments that have areas with unstable slopes, lowland areas, and water crossings require trail types and infrastructure solutions that have higher costs than those recommended for typical urban and rural conditions. Segments that already include a built or funded trail (such as the Humboldt Bay Trail shown in Figure 5.2.1-1) are considered to have zero or no cost associated with them, account for approximately 16 miles of the corridor. Ten segments (i.e., Segments 2, 12, 18, 19, 46-50, and 53) include existing or funded trails related to the following:

- Ukiah Rail Trail
- Humboldt Bay Trail
- Cloverdale River Park Trail
- Willits Rail Trail

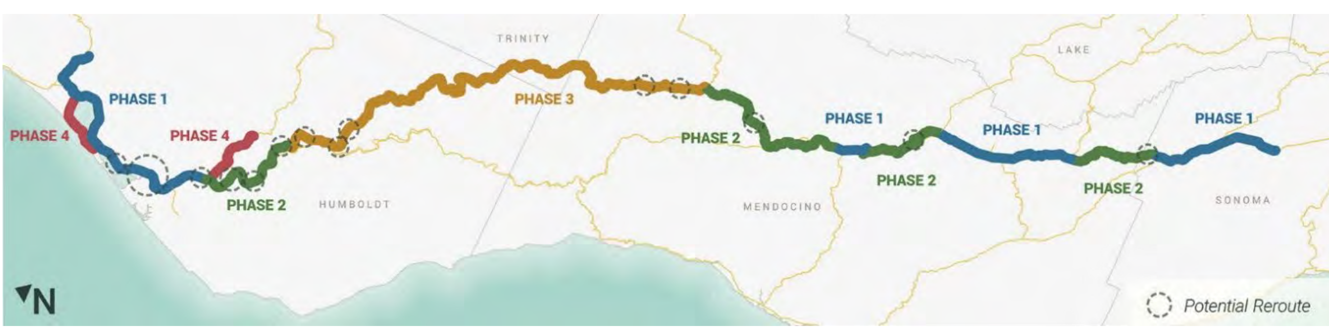
Planning-level cost estimates by corridor segment are provided in Appendix E.

5.2.3 COST BY PROJECT PRIORITIES

Cost estimates were also calculated for each of the four project phases (segments grouped into near-term, mid-term, and long-term phases) outlined in Section 4.2 and illustrated in Figure 5.2.2-1. The cost of each phase is a sum of the segment costs included in the phase. These cost estimates are organized by trail typology and include construction costs, planning and management costs, contingency, and escalation. Potential reroutes were also determined for each phase, which identify opportunities for cost savings that can be explored in a later stage of the project. The general locations of potential reroutes are illustrated in Figure 5.2.2-1. The cost estimates shown below in Tables 5.2.2-1 through 5.2.2-4 reflect construction of the trail within the NCRA ROW and do not account for the potential savings that could be realized through reroutes. Potential cost savings with reroutes are generally described below by phase.

Source: Ascent Environmental 2019

Figure 5.2.1-1 Humboldt Bay Trail



Source: Alta 2020

Figure 5.2.2-1 Map of Project Phases

Phase 1

Phase 1 has an estimated total cost of $190,974,700 in 2020 dollars. Phase 1 projects include 62 miles of urban trail, 24 small access points, and seven large access points. They also include short stretches of cut bench, low boardwalk, and bridge types. While the typical urban trail cost per mile is approximately $1.5 million, the presence of several access points and more complicated boardwalk and bridge types result in a higher overall per mile cost estimate. This phase has one potential reroute which could result in cost savings of nearly $11 million. Phase 1 cost estimates are shown in Table 5.2.2-1.

Table 5.2.2-1 Cost Estimates for Phase 1 Projects

Trail Typology	Length (miles)	Construction Cost	Cost per Mile
Typical Urban and Rural			
A1 – Urban Trail	62	$93,153,300	$1,504,800
Moderate Slopes			
C1 – Balanced Bench		$ -	
C2 – Cut Bench	0.01	$21,800	$1,568,200
Lowland Areas			
D2 – Low Boardwalk	0.5	$1,508,100	$2,772,000
Bridges			
F1 – Retrofit Bridge	0.4	$916,300	$2,349,600
F2 – New Long-Span Bridge	0.1	$913,400	$10,692,000
Access Points			
Small Access Point (per unit)	24	$1,200,000	
Large Access Point (per unit)	7	$2,800,000	
Construction Cost Estimate—Phase 1		**$100,512,900**	**$1,597,000**
Accessibility Factor		$ -	
Survey, Technical Studies, and Engineering Design (15%)		$15,077,000	
Environmental Analysis, Documentation, and Permits (10%)		$10,051,300	
Project Administration (10%)		$10,051,300	
Construction Management (10%)		$10,051,300	
Mobilization (10%)		$10,051,300	
Design Services During Construction (5%)		$5,025,700	
Contingency (30%)		$30,153,900	
Total Cost 2020 Dollars of Phase 1		**$190,974,700**	**$3,034,400**
Total Cost 2025 Dollars of Phase 1		**$229,570,800**	**$3,647,600**
Total Cost 2030 Dollars of Phase 1		**$275,967,000**	**$4,384,800**

Source: Alta 2020

Phase 2

Phase 2 has an estimated total cost of $296,230,500 in 2020 dollars. Phase 2 projects include 48 miles of urban trail, 13.7 miles of rural trail, and five small access points. They also include trail types required in areas with unstable and moderate slopes, as well as bridges and tunnels. These more complicated trail types, particularly the tunnels, result in a higher cost estimate than what may be expected for a partially rural trail. This phase has three potential reroutes identified that could result in cost savings of nearly $56 million. Phase 2 cost estimates are shown in Table 5.2.2-2.

Table 5.2.2-2 Cost Estimates for Phase 2 Projects

Trail Typology	Length (miles)	Construction Cost	Cost Per Mile
Typical Urban and Rural			
A1 – Urban Trail	48	$72,412,500	$1,504,800
A2 – Rural Trail	13.7	$6,737,000	$491,000
Unstable Slopes			
B1 – Elevated (Concrete Deck)	0.03	$306,400	$9,055,200
B2 – Pile-Driven Bench	1.9	$6,667,000	$3,553,400
B3 – Temporary Balanced Bench	0.2	$217,400	$1,029,600
Moderate Slopes			
C1 – Balanced Bench	4.1	$6,363,400	$1,541,800
C4 – Cantilever	0.4	$3,451,500	$9,073,200
Water Crossings			
E2 – Large Culvert (per unit)	1	$40,000	
Bridges			
F1 – Retrofit Bridge	1.3	$2,969,800	$2,349,600
F2 – New Long-Span Bridge	0.7	$7,134,300	$10,692,000
Tunnel			
G1 – Tunnel	0.7	$41,366,000	$60,720,000
Access Points			
Small Access Point (per unit)	5	$250,000	
Construction Cost Estimate—Phase 2		**$147,915,300**	**$2,080,900**
Accessibility Factor (10%)		$14,831,500	
Survey, Technical Studies, and Engineering Design (15%)		$22,247,300	
Environmental Analysis, Documentation, and Permits (10%)		$14,831,500	
Project Administration (10%)		$14,831,500	
Construction Management (10%)		$14,831,500	
Mobilization (10%)		$14,831,500	
Design Services During Construction (5%)		$7,415,800	
Contingency (30%)		$44,494,600	
Total Cost 2020 Dollars of Phase 2		**$296,230,500**	**$4,161,800**
Total Cost 2025 Dollars of Phase 2		**$356,098,500**	**$5,002,900**
Total Cost 2030 Dollars of Phase 2		**$428,065,900**	**$6,014,000**

Source: Alta 2020

Phase 3

Phase 3 has an estimated total cost of $194,628,100 in 2020 dollars, which is a conservative estimate for a rural trail through unstable conditions. Phase 3 projects have 62 miles of rural trail, 7 miles of urban trail, and 11 small access points. These projects also include trail types required in areas with unstable, moderate slopes, and water crossings. This phase also includes a relatively high accessibility factor because of the remoteness of most of the segments. Four potential reroutes have been identified for this phase, which could result in nearly $19 million in cost savings. Phase 3 cost estimates are shown in Table 5.2.2-3.

Table 5.2.2-3 Cost Estimates for Phase 3 Projects

Trail Typology	Length (miles)	Construction Cost	Cost Per Mile
Typical Urban and Rural			
A1 – Urban Trail	7	$11,189,500	$1,504,800
A2 – Rural Trail	62	$30,404,900	$491,000
Unstable Slopes			
B1 – Elevated (Concrete Deck)	1.5	$13,266,900	$9,055,200
B2 – Pile-Driven Bench	1.9	$6,751,500	$3,553,400
B3 – Temporary Balanced Bench	3.8	$3,940,900	$1,029,600
Moderate Slopes			
C1 – Balanced Bench	0.2	$331,100	$1,541,800
C2 – Cut Bench	0.03	$48,100	$1,568,200
C4 – Cantilever	0.1	$1,135,600	$9,073,200
Water Crossings			
E1 – Short-Span Bridge	0.1	$363,200	$4,224,000
E2 – Large Culvert (per unit)	8	$335,500	
Bridges			
F1 – Retrofit Bridge	1	$3,146,200	$2,349,600
F2 – New Long-Span Bridge	0.1	$913,100	$10,692,000
Tunnel			
G1 – Tunnel	0.3	$20,303,700	$60,720,000
Access Points			
Small Access Point (per unit)	11	$550,000	
Construction Cost Estimate—Phase 3		**$92,680,100**	**$1,176,700**
Accessibility Factor (20%)		$18,536,000	
Survey, Technical Studies, and Engineering Design (15%)		$13,902,000	
Environmental Analysis, Documentation, and Permits (10%)		$9,268,000	
Project Administration (10%)		$9,268,000	
Construction Management (10%)		$9,268,000	
Mobilization (10%)		$9,268,000	
Design Services During Construction (5%)		$4,634,000	
Contingency (30%)		$27,804,000	
Total Cost 2020 Dollars of Phase 3		**$194,628,100**	**$2,471,100**
Total Cost 2025 Dollars of Phase 3		**$233,962,400**	**$2,970,500**
Total Cost 2030 Dollars of Phase 3		**$281,246,200**	**$3,570,800**

Source: Alta 2020

Phase 4

Phase 4 has an estimated total cost of $67,826,500 in 2020 dollars. Phase 4 projects have 22 miles of urban trail and four small access points. Phase 4 also includes one new long-span bridge. Phase 4 projects do not have any identified reroutes. Cost estimates for Phase 4 projects are shown in Table 5.2.2-4.

Table 5.2.2-4 Cost Estimates for Phase 4 Projects

Trail Typology	Length (miles)	Construction Cost	Cost Per Mile
Typical Urban and Rural			
A1 – Urban Trail	22	$32,991,800	$1,504,800
Bridges			
F2 – New Long-Span Bridge	0.1	$721,500	$10,692,000
Access Points			
Small Access Point (per unit)	4	$200,000	
Construction Cost Estimate—Phase 4		**$33,913,300**	**$1,542,100**
Accessibility Factor (10%)		$3,391,300	
Survey, Technical Studies, and Engineering Design (15%)		$5,087,000	
Environmental Analysis, Documentation, and Permits (10%)		$3,391,300	
Project Administration (10%)		$3,391,300	
Construction Management (10%)		$3,391,300	
Mobilization (10%)		$3,391,300	
Design Services During Construction (5%)		$1,695,700	
Contingency (30%)		$10,174,000	
Total Cost 2020 Dollars of Phase 4		**$67,826,500**	**$3,084,200**
Total Cost 2025 Dollars of Phase 4		**$81,534,400**	**$3,707,500**
Total Cost 2030 Dollars of Phase 4		**$98,012,400**	**$4,456,800**

Source: Alta 2020

Total Costs

Costs for the entire corridor are shown in Table 5.2.2-5. These costs are broken down by typology and show total costs, with soft costs and contingencies included, in 2020, 2025, and 2030 dollars.

Table 5.2.2-5 Cost Estimates for All Projects

Trail Typology	Length (miles)	Construction Cost	Cost Per Mile
Typical Urban and Rural			
A1 – Urban Trail	139	$209,747,100	$1,504,800
A2 – Rural Trail	75.6	$37,141,800	$491,000
Unstable Slopes			
B1 – Elevated (Concrete Deck)	1.5	$13,573,300	$9,055,200
B2 – Pile-Driven Bench	3.8	$13,418,500	$3,553,400
B3 – Temporary Balanced Bench	4	$4,158,300	$1,029,600
Moderate Slopes			
C1 – Balanced Bench	4.3	$6,694,500	$1,541,800
C4 – Cantilever	0.5	$4,587,100	$9,073,200
Water Crossings			
E2 – Large Culvert (per unit)	9	$375,000	
Bridges			
F1 – Retrofit Bridge	3	$7,032,300	$2,349,600
F2 – New Long-Span Bridge	0.9	$9,682,300	$10,692,000
Tunnel			
G1 – Tunnel	1	$61,669,700	$60,720,000
Access Points			
Small Access Point (per unit)	44	$2,200,000	
Large Access Point (per unit)	7	$2,800,000	
Construction Cost Estimate—Total		**$375,021,600**	**$1,597,400**
Accessibility Factor (10%)		$36,718,900	
Survey, Technical Studies, and Engineering Design (15%)		$56,253,200	
Environmental Analysis, Documentation, and Permits (10%)		$37,502,200	
Project Administration (10%)		$37,502,200	
Construction Management (10%)		$37,502,200	
Mobilization (10%)		$37,502,200	
Design Services During Construction (5%)		$18,751,100	
Contingency (30%)		$112,506,500	
Total Cost 2020 Dollars – All Projects		**$749,259,900**	**$3,191,400**
Total Cost 2025 Dollars – All Projects		**$900,685,200**	**$3,836,400**
Total Cost 2030 Dollars – All Projects		**$1,082,713,500**	**$4,611,700**

Source: Alta 2020

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HENLEY

6. Findings Summary

This chapter summarizes the key results of the feasibility assessment of developing the Great Redwood Trail. Feasibility findings are presented related to rail-with-trail (RWT) and rail-to-trail (RTT) development. Findings and options related to governance and railbanking are discussed separately in Part II, "Governance and Railbanking Report."

The rail corridor contains significant feasibility challenges in certain locations, particularly in the remote segments within and close to the Eel River Canyon. The key challenges relate to segments with steep, unstable slopes that destabilize hundreds and occasionally thousands of feet of the corridor; existing right-of-way (ROW) obstructions sometimes fully blocking the corridor; former rail infrastructure, i.e., bridges, trestles, tunnels, and major culverts, that have been dilapidated or destroyed by years of unmaintained decline; and the significant cost necessary to develop 252 miles of public trail.

The majority of the 252-mile corridor is generally intact with good physical conditions for trail construction. The assessment confirmed that the corridor's gentle grades lend themselves to interregional trail use. If fully developed, the Great Redwood Trail could create an outdoor recreation opportunity that would connect Northern California communities from the Bay Area to the North Coast.

Trail demand projections are also important to consider. Not unexpectedly, where trail use demand estimates are high, they occur in segments within or near urban communities or towns along the corridor. Trail use through the remote center segments (generally between Willits and Ferndale) would be much lower and more oriented to serious, long-distance riders and hikers or visitors driving to remote access points for short day hikes.

Parts of the rail corridor have already been improved in populated areas and are supporting regular use, such as segments of the Humboldt Bay Trail near Arcata and Eureka. Only one developed segment has received a Great Redwood Trail designation (i.e., the Ukiah Rail Trail in Ukiah).

The estimated demand in the southern sections of the rail corridor indicate the trail would support relatively substantial use, including commuters and recreational users of all ages and abilities. This would occur in Sonoma County where RWT could be implemented and near the larger communities (such as Ukiah and Willits in Mendocino County). Likewise, in the far northern segments from Ferndale and Fortuna through Eureka and Arcata to the Humboldt Bay, trail demand projections are strong.

Planning-level cost estimates for fully developing the 252-mile corridor are estimated at nearly $750 million or about $3.1 million per mile in 2020 dollars, and over $1 billion or about $4.6 million per mile in 2030 dollars. These cost estimates are based on potential trail types that were applied to specific conditions along the corridor for cost estimating purposes, with planning, design, management costs, and contingencies included. These cost estimates do not include unknown environmental remediation costs that may be required prior to project construction.

Percentages were used to estimate the planning, design, and management costs for the corridor, which include survey, technical studies, and engineering design; environmental analysis, documentation, and permitting; project administration; construction management; mobilization; and design services during construction. A 30 percent contingency was added to account for unknown factors that may influence the overall cost of the trail. The contingency does not include currently unknown, significant costs, such as those associated with environmental remediation efforts that may be substantial and required prior to construction. This document estimates environmental costs as a soft cost or percentage of the construction costs. The cost to remediate environmental liabilities in remote locations (such as rail cars in the Eel River) has the potential to be extraordinary. Additional study would be needed to further refine environmental liability costs.

While cost is not considered to be a measure of the technical feasibility of trail development, it is the main factor in determining whether and to what extent the trail can be built. Cost estimates by project phase illustrate how the trail could be developed over time, limiting the amount of investment required at any one time, and are provided in Chapter 5, “Planning-Level Cost Estimates.”

Potential reroutes of the trail outside of the rail corridor and onto surface roads to bypass areas with major geologic challenges or failing infrastructure provide opportunities to reduce costs. Potential reroutes were identified that could result in an estimated $86 million in cost savings.

Overall, fully developing the Great Redwood Trail would be challenging and extremely costly. However, the gentle grade and terrain of the rail corridor, the general condition of most infrastructure, and degree of ROW integrity would allow for feasible development of the Great Redwood Trail, if sufficient funding is made available.

The goal of this feasibility assessment is to provide the information necessary for decision makers to determine the financial feasibility and future planning ramifications of developing the Great Redwood Trail within the various sections of the current NCRA corridor. To that end, the following key findings are offered:

1. The major constraints within the rail corridor that most influence trail feasibility include geomorphic challenges (landslides, high-risk slopes), large ROW encroachments (particularly if they are legally authorized), failing infrastructure (bridges, trestles, culverts, and tunnels), and previous contamination and hazardous materials sites to the extent remediation is required. In addition, the presence of wetlands and special-status species, historic structures, areas of archaeological sensitivity, and tribal lands also may present significant constraints to trail development.

   The presence of wetlands and special-status species in the corridor may influence the time and cost to implement the trail, if extensive permitting, corridor re-routes, or compensatory mitigation are required.

   Identification and designation of potential archaeological and tribal cultural resources along the corridor would require cultural records searches and regular and consistent coordination with tribal representatives. If resources are present and avoidance and mitigation measures are needed, the project may require a longer schedule and greater associated costs.

   The presence of historic structures along the corridor is a minor benefit in the opportunity and constraints analysis, because the buildings present an opportunity for interpretation. There are, however, potential challenges associated with permitting and zoning requirements for historic sites. If building renovations are needed, for instance, the process for obtaining relevant permits and approvals may pose a challenge to trail development. In addition, historic buildings can pose potential liabilities associated with safety hazards, if they are in poor condition.

   While these constraints would not be insurmountable, they would substantially increase the cost of trail construction and maintenance, and may delay the project schedule and increase overall cost.

2. Development of the long, center sections, generally between the Ferndale area of Humboldt County, through the Trinity County and northern Mendocino County portions, to the vicinity of Willits, would require significant costs with lower projected trail use, which may render development in the most remote sections difficult and financially challenging. Both construction and maintenance costs would be high. Appropriate trail types for steep, sometimes unstable terrain should be emphasized, such as a narrower, soft-surface recreational trail facility instead of a Class I hard-surface trail.

   The significant costs and long-term maintenance challenges are related mostly to major stabilization of slopes, rebuilding or replacement of deteriorated rail infrastructure, and potentially rerouting around major obstructions. Rerouting can reduce costs in some locations, compared to replacing infrastructure, but can also result in additional costs to obtain access rights for the public.

3. The Eel River Canyon poses unique challenges and opportunities. It presents some of the greatest constraints from difficult geophysical

conditions and dilapidated, unmaintained infrastructure. It is isolated, rugged, and the slopes are unstable. The substantial costs of both construction and long-term maintenance in this highly dynamic landscape are noteworthy. Abandoned rail cars and other rail debris are also prevalent in this section, including within the river. However, much of the rail corridor within the Eel River Canyon is in good physical condition for trail construction, approximately 75 to 85 percent of its length. This section of the trail offers some of the most spectacular views of the entire corridor, including the scenic values reflected in its Wild and Scenic River designation.

Because the Eel River is designated as a federal and state Wild and Scenic River rigorous, environmentally protective measures would need to be incorporated into the trail design and during construction. Trail development may also consider inclusion of river restoration opportunities. If trail development included river restoration elements, such as removal of collapsed rail infrastructure and rail cars from the river, the value of the trail development, and therefore its potential feasibility, could be enhanced. At this assessment stage, it is unknown whether environmental restoration would be a requisite part of trail development, a topic that would warrant further investigation if trail planning proceeds. Due to the access challenges, the costs to remove abandoned rail debris would be high.

Recognizing the complexity of this section of the corridor, a narrower, soft-surface trail may be more readily developed and maintained over time, compared to a full Class I, hard-surface trail.

4. If fully developed, the Great Redwood Trail would become an interregional trail providing outdoor recreation and active transportation experiences. It would connect a major urban metropolitan area, the northern extent of the San Francisco Bay Area, with the landscape to the north, including the North Coast.
5. Given the limited constraints, access to nearby communities and potential users, and the relatively low cost per trail user, the southern RWT section in Sonoma County, trail segments near towns and urban communities (including Willits and Ukiah) in Mendocino County, and the Humboldt County segments from the Ferndale area to the north would be the most feasible to develop.
6. The southern section from Healdsburg (MP 68.22) to Cloverdale (MP 87) is well suited for RWT development. The corridor width in the southern section varies between 50 and 100 feet, with a typical width of about 60 feet, which can accommodate a trail with a rail facility. This section has no major constraints and could be implemented in conjunction with SMART's plans to develop passenger service to Cloverdale in the future. This section would be ready for project planning, design, and environmental review as potential next steps, if trail planning proceeds.
7. An RWT configuration along a stretch of the Humboldt Bay may be most appropriate. The rail corridor is currently used by the Timber Heritage Association for recreational rail operations (speeder crew car rides) in Eureka and Samoa. Continuing with an RWT configuration between these two operations could expand the extent of this recreational opportunity and enhance economic opportunities in the area.
8. Planning-level cost estimates for fully developing the trail are nearly $750 million in 2020 dollars and over $1 billion in 2030 dollars. If the trail were fully developed, it would be projected to provide economic activity (estimated at approximately $24 million in annual local economic activity) and health benefits (reduced vehicle trips, vehicle miles traveled, and carbon dioxide emissions resulting in improved air quality) to communities along its route. The costs for fully developing the corridor would not be incurred at any one time. Instead, these costs would be paid over a long period of time, based on project phasing and priorities.
9. Based on a review of the inventoried features and results of the condition and user demand assessments conducted in support of this assessment, the rail corridor can be divided into four logical phases that represent grouped extents of near-term, mid-term, and long-term implementation priorities. While these project phases represent priority projects when considering an implementation approach for the entire corridor, the phases are not binding and can be modified.

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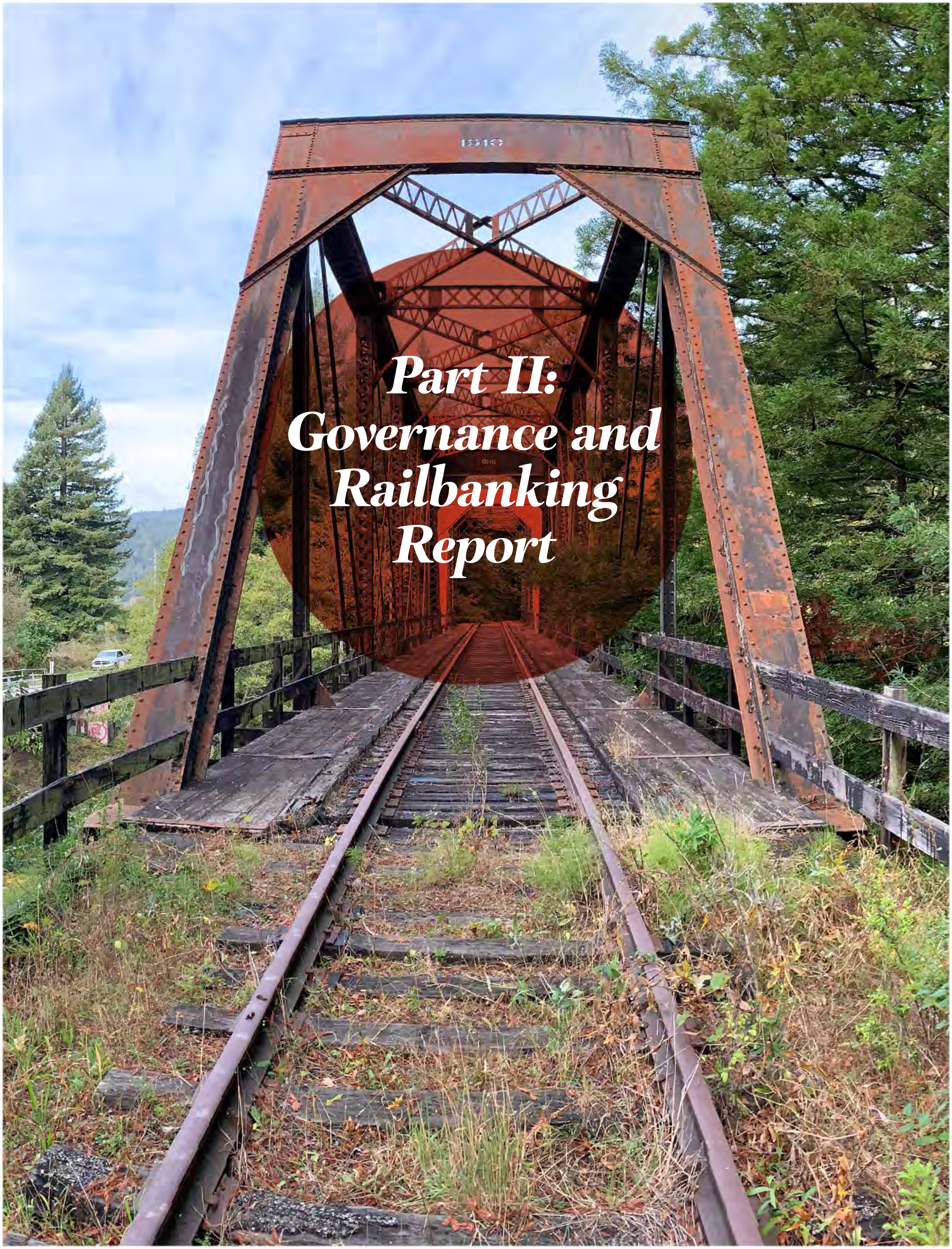

Part II: Governance and Railbanking Report

Title:	Part II: Governance and Railbanking Report July 2020
Prepared for:	**California State Parks** Strategic Planning and Recreation Services Division 1725 23rd Street Sacramento, CA 95814 **California Natural Resources Agency** 1416 Ninth Street, Suite 1311 Sacramento, CA 95814 **California State Transportation Agency** 915 Capitol Mall, Suite 350B Sacramento, CA 95814
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Table of Contents

1. Introduction

The Governance and Railbanking Report evaluates potential railbanking and governance requirements and options to transform the Northwestern Pacific (NWP) railroad corridor into the Great Redwood Trail.

To successfully implement and maintain the Great Redwood Trail, a trail manager must be identified that can guide the overall vision of the trail, identify funding opportunities and administer funds; coordinate with partner agencies and organizations; oversee planning, design, and construction; manage contractors; and oversee operations and maintenance. The trail manager must also railbank the corridor to ensure that it is preserved as a public transportation corridor.

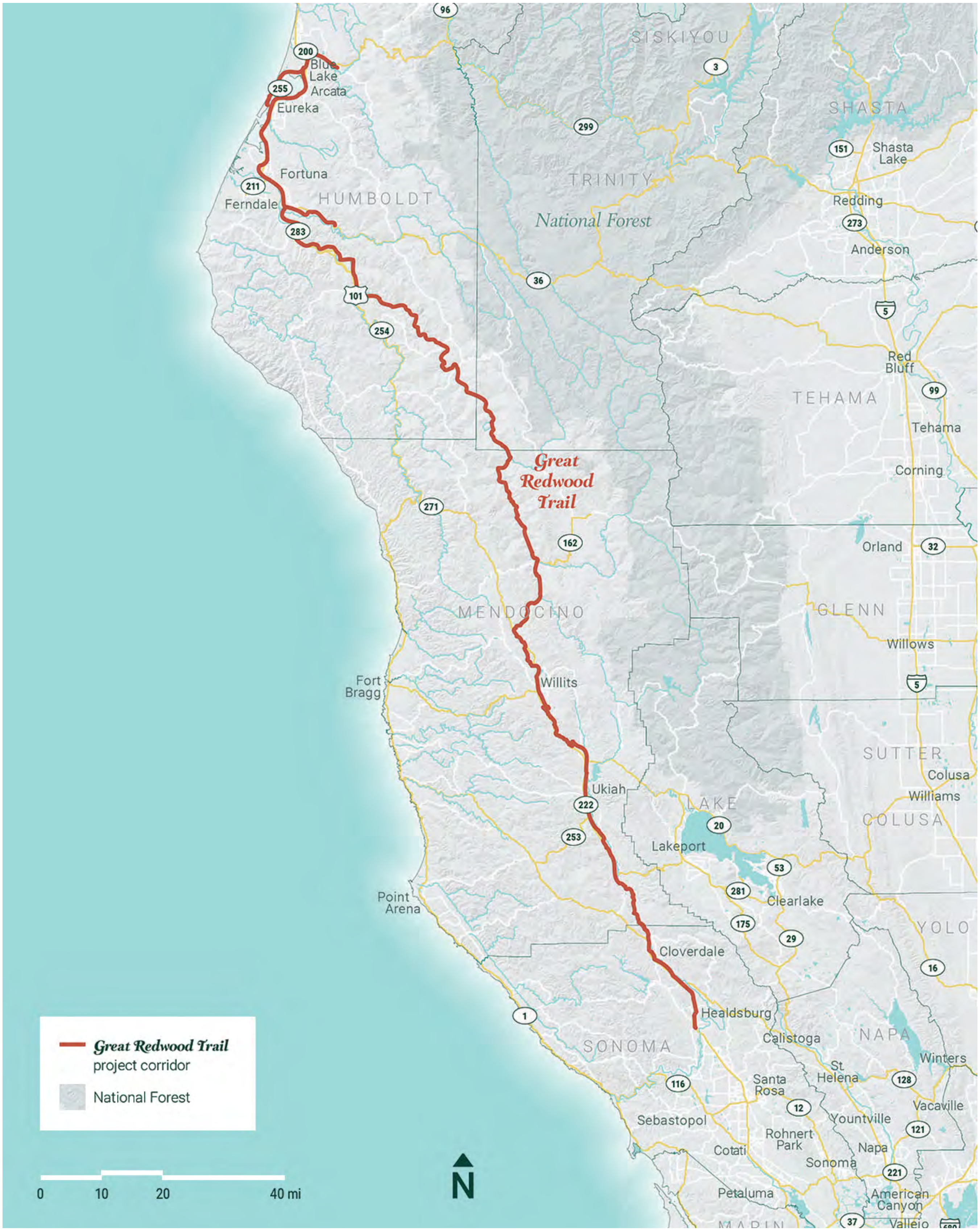
There are several considerations involved in determining a suitable trail management structure for the corridor. This report uses the lessons learned from the North Coast Railroad Authority (NCRA) as well as other trail governance case studies to identify potential governance structures for consideration.

The report primarily explores three potential ownership options: (1) state ownership, (2) Joint Powers Authority (JPA) ownership, and (3) local and nonprofit organization ownership. A fourth option considers keeping the right-of-way (ROW) within NCRA ownership but changing the agency's mandate to focus on trail management.

1.1 Context

The Great Redwood Trail, if constructed, would run along the historic NWP railroad corridor, south to north, through the counties of Marin, Sonoma, Mendocino, Trinity, and Humboldt (Figure 1-1). The corridor for this assessment runs from Healdsburg in Sonoma County to Korbel and around Humboldt Bay in Humboldt County, passing through the cities of Cloverdale, Ukiah, Willits, Fortuna, Eureka, and Arcata along the way. Per Senate Bill (SB) 1029 Section 2(c), the northern section of the corridor, from north Cloverdale to Korbel, is being evaluated for the potential to convert the existing rail line to a trail, known as rail-to-trail, or RTT. The southern section, from Healdsburg to Cloverdale, may resume service as active rail under the management of Sonoma-Marin Area Rail Transit (SMART) and is therefore being evaluated for the potential of a rail-with-trail, or RWT. This report mainly applies to the RTT section of the corridor, as the RWT section of the corridor would likely be managed by SMART.

Several methods were used to gather information about existing conditions of the corridor, including searches of publicly available data sources, review of existing reports related to the corridor, and field assessment of existing structures and other physical conditions within the corridor.



Source: Alta 2020

Figure 1-1 Great Redwood Trail Corridor Overview Map

1.2 Report Purpose

The purpose of this report is to evaluate potential railbanking and governance options for the NWP corridor owned by NCRA (SB 1029 Section 2[a][4][A-B]). NCRA was established by the NCRA Act of 1989 to assume responsibility of the NWP corridor. Although the legislation gave NCRA authority to purchase the rail line and oversee railroad operations, it did not provide an annual allotment for its operating expenses. As a result, NCRA has struggled financially since its beginning and has acquired significant debt.

Recent legislation (SB 1029) calls for an assessment of NCRA's assets and liabilities to determine the most appropriate way to dissolve the agency and the feasibility of converting its ROW into the Great Redwood Trail. Railbanking, or the legal process of converting an unused rail line into an interim trail, is being considered as part of this assessment. Railbanking would provide an opportunity to preserve the corridor as a public Active Transportation corridor, a public transportation route dedicated to active modes such as walking and bicycling. Railbanking would not preclude the corridor from being converted back to an active rail line in the future if such a need were to arise, however, railbanking may be met with opposition from easement owners and adjacent landowners.

This report provides an overview of the requirements of the railbanking process and identifies potential governance structures that could be used to manage the corridor after the dissolution of NCRA.

Identifying the long-term governance structure early in the process can help (1) manage the railbanking process; (2) establish a long-term strategy for the rail corridor, from planning and design to construction, operations, and maintenance; and (3) build local and stakeholder support for the Great Redwood Trail.

1.3 Policy Field Review

Although the purpose of this report is to identify options for governance structures for a trail manager that can manage the corridor, numerous other stakeholders would play an important role in determining the appropriate structure for the Great Redwood Trail and assisting in its implementation. Federal, state, and local government agencies, the California State Legislature, and several other public and private entities would be involved in any implementation of the trail.

1.3.1 REQUIREMENTS AND RESPONSIBILITIES OF A TRAIL MANAGER

A trail manager would be responsible for guiding the overall vision of the trail; identifying funding opportunities and administering funds; coordinating with partner agencies and organizations; overseeing planning, design, and construction; managing contractors; and overseeing operations and maintenance.

For the Great Redwood Trail, a trail manager would also be responsible for managing the railbanking process, and would ideally assume all of NCRA's existing assets, including the entire length of the corridor ROW. To meet these responsibilities, a qualified trail manager must have access to an adequate and consistent funding stream.

1.3.2 REQUIREMENTS AND RESPONSIBILITIES OF FEDERAL, STATE, AND LOCAL AGENCIES

The California State Legislature together with other agencies would all play important roles in the development of the Great Redwood Trail. These agencies and their relevant responsibilities are outlined in Table 1-1.

1.3.3 ADDITIONAL GREAT REDWOOD TRAIL STAKEHOLDERS

In addition to those stakeholders listed in Table 1-1, there are numerous other public, private, and nonprofit entities that may be involved. A partial list of known Great Redwood Trail stakeholders is provided below.

Agencies

Humboldt County Association of Governments (HCAOG), Humboldt Bay National Wildlife Refuge, Mendocino Council of Governments (MCOG), Sonoma County Transportation Authority (SCTA), Trinity County Transportation Commission (TCTC)

Tribes

Federated Indians of Graton Rancheria, Bear River Rancheria, Table Bluff Rancheria, Blue Lake Rancheria, Round Valley Rancheria, Coyote Valley Rancheria, Wiyot Tribe, Pinoleville Rancheria, Guidiville Rancheria, Dry Creek Rancheria

Nonprofit Organizations

Great Redwood Trail Alliance, The Wildlands Conservancy (TWC), Rails-to-Trails Conservancy, Friends of the Eel River, Timber Heritage Association (THA)

Railroad Industry Partners

SMART, Northwestern Pacific Railroad Company (NWP Co.), Skunk Train

Communities along the ROW

Scotia, Alton, Loleta, Fields Landing, King Salmon, Manila, Samoa, Fairhaven, Alderpoint, Redwood Valley, Hopland, Geyersville

Other Stakeholders

Neighboring wineries, timber industry, raw natural resources producers, existing freight customers

Table 1-1 Federal, State, and Local Requirements and Responsibilities

Entity		Requirements and Responsibilities
Federal	Surface Transportation Board (STB)	• Hold jurisdiction over active railroads • Oversee railbanking process
	United States Department of Transportation (USDOT)	• Oversee federal grant programs for railroad and bicycle infrastructure • Oversee FRA and FHWA
	Federal Railroad Administration (FRA)	• Hold jurisdiction over active railroads
	Federal Highway Administration (FHWA)	• Administer surface transportation-related federal grant programs
	United States Army Corps of Engineers (USACE)	• Hold jurisdiction over land that serves a flood control management purpose
	Bureau of Land Management (BLM)	• Manage and oversee public lands
State	California State Legislature	• Draft and pass legislation • Appropriate state funds
	State Agencies, Departments, Boards, and Commissions	• Administer grant programs that provide funding for parks, recreation, and natural resource projects
Local	Counties: Humboldt County, Trinity County, Mendocino County, Sonoma County, Marin County	• Hold jurisdiction over county-owned land and property
	Cities: Blue Lake, Arcata, Eureka, Fortuna, Rio Dell, Willits, Ukiah, Cloverdale, Healdsburg, Windsor, Santa Rosa, Rohnert Park, Petaluma, Novato	• Hold jurisdiction over city-owned land and property

Source: Alta 2020

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2. Overview of NCRA

2.1 Existing Management Structure

2.1.1 ORGANIZATIONAL STRUCTURE

NCRA's structure and authority are outlined in the Public Utilities Code. NCRA's organizational structure is shown in Figure 2-1. Although it was established as a public agency, it was neither designated as a state nor a local agency, and as such did not have a clear reporting body from its beginning. NCRA is subject to STB and FRA jurisdiction at the federal level.

NCRA's staff includes an executive director and an administrative assistant. The County of Sonoma provides legal counsel and accounting support to NCRA. In addition, NCRA also has on-call contracts with a resident engineer and transportation planner. While staff-level decisions are made by the executive director, most major decisions require board approval.

The Board of Directors is made up of nine members: two representatives each from Humboldt, Mendocino, Marin, and Sonoma counties, and one city representative.

Each year, the Board of Directors elects a Chair and Vice Chair to serve a period of 12 months, which goes into effect on January 1. The board meets monthly at different locations in participating counties. These meetings are open to the public and offer community members an opportunity to provide input on NCRA activities.

NCRA has three standing committees: the Property/THA Ad Hoc Committee, Finance Committee, and Policies and Procedures/Bylaws Committee. Ad hoc committees include the Ad Hoc Trail and Railbanking Committee, Ad Hoc NCRA/Humboldt Bay Rail Trail Corridor Committee, Ad Hoc NCRA/SMART Coordination Committee, Ad Hoc NCRA Operator Report Committee, and the Ad Hoc NCRA Legislative Committee. The Board of Directors makes appointments to NCRA committees each December.

2.1.2 FUNDING

NCRA receives no regular source of funding. Any state project funding that NCRA has received in the past has been appropriated by the Legislature, then approved and allocated by the California Transportation Commission (CTC), and finally administered by Caltrans. This is project specific and not a continual source of funding for the agency.

NCRA receives local funding in the form of annual payments for property and equipment leases as well as utility revenue. Local funds are collected and overseen solely by NCRA.

Some local entities utilize NCRA ROW without paying a fee, instead, covering operations and maintenance of a section of the corridor. For example, the City of Ukiah holds a license agreement with NCRA that enables it to construct and maintain a multimodal path along NCRA ROW within city limits. Instead of providing a one-time license payment to NCRA, the City provides maintenance for the NCRA ROW within its jurisdiction.

2.2 Existing Management Challenges

The primary NCRA management challenges are summarized below.

1. **NCRA was not designated as a local or state agency when it was established, and as a result, was not provided with a clear reporting body**. Because it has not clearly been subject to a regulating authority, there has been little oversight over its decision-making and financial transactions.

2. **NCRA does not have sustainable funding to support its operating expenses**. The decline of the timber industry reduced demand for railroad operations and ultimately led to the railroad's bankruptcy under private ownership prior to NCRA. Without a thriving industry behind it to drive demand, the complexity of the corridor meant that NCRA could not maintain railroad operations without a sustainable funding source.

The agency was created to assume financial and legal responsibility of the bankrupt railroad, but was not provided with adequate funds to be able to meet its mandate. As a result, NCRA has been unable to hire and retain qualified staff, and has been forced to contract out work. These on-call contracts have ultimately proven to be more expensive and have limited NCRA's ability to manage the existing ROW, address concerns along the corridor, and make improvements to failing infrastructure.

3. **Because NCRA's board is made up entirely of local representation, it has historically made decisions that mostly benefit local interests**. While the board has worked to protect the corridor as a singular transportation corridor, it has done so primarily for local economic interests.

2.3 Considerations for the Great Redwood Trail

Because NCRA has long struggled financially due to a lack of available funding and low revenue stream, it has acquired significant debt. If NCRA were to be transformed into a new trail agency, the new agency would assume this debt, making environmental remediation efforts, trail development, and maintenance exceedingly difficult. Disposing of this debt and transferring NCRA's assets to either an existing entity or a new trail agency created for the purpose of developing the Great Redwood Trail would provide a governance structure that could more efficiently manage these tasks.

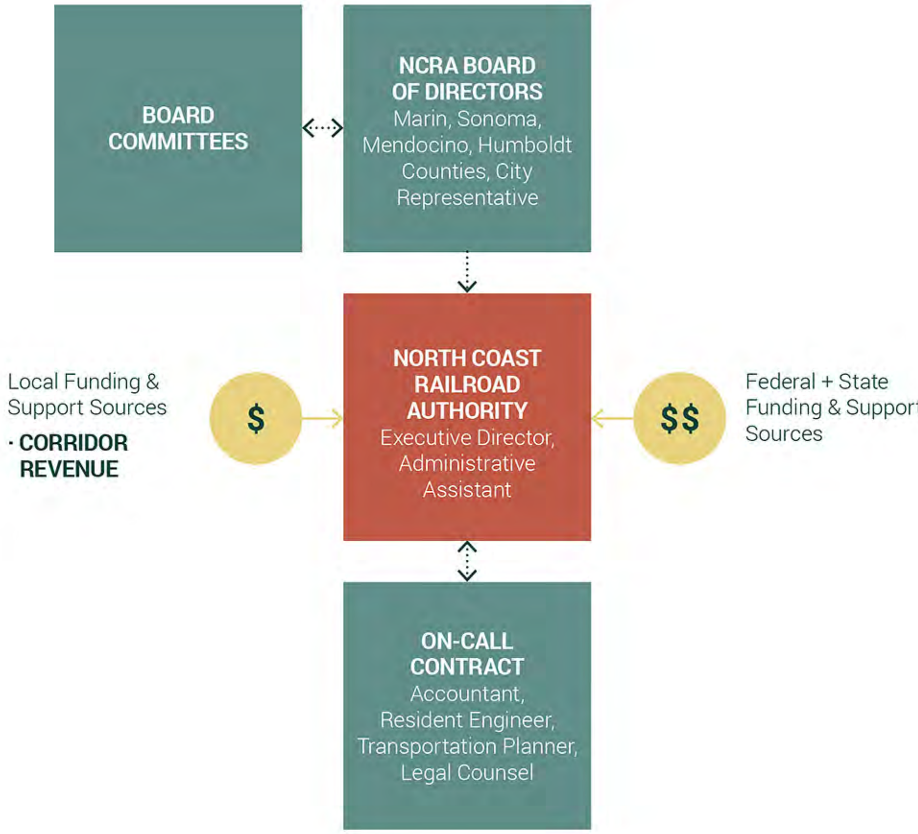
2.3.1 FUNDING

The majority of local funds that NCRA receives are for rail equipment that the agency rents to other companies, which would likely not be available to a future trail manager because it may be sold during the dissolution of NCRA. The one exception of potential funding sources that can be extended is utility revenue from the utilities that exist within the corridor ROW.

Additionally, there are several existing encroachments on NCRA ROW that are not currently paid for. The new trail manager for the Great Redwood Trail should undergo a full review of any unpaid encroachments, and charge an annual fee for any that may remain.

2.3.2 OTHER LIABILITIES

There are additional environmental constraints associated with the corridor that any trail manager would be liable for. These constraints include infrastructure such as bridges, tunnels, culverts, and other structures in need of repair, and areas with hazardous materials that may require environmental remediation, among others. These environmental constraints are described in more detail in Chapters 2 and 3 of the Trail Feasibility Assessment in Part I of this document.



Other Potential Entities Providing Funding and Oversight

	Money	Policy
Federal		
Federal Highway Administration	●	
Federal Railroad Administration		●
Surface Transportation Board		●
State		
California Legislature	●	●
California Transportation Commission	●	●
Caltrans	●	●

Source: Alta 2020

Figure 2-1 NCRA Organizational Chart

3. Railbanking

3.1 Overview

Railbanking is the process by which unprofitable or unused rail corridors can be converted to trails for recreational or transportation purposes. The process was established through an amendment to the federal National Trails System Act, adopted by Congress in 1983. Section 8(d) of the National Trails System Act, often called the “Railbanking Act” or the “Rails-to-Trails Act,” guides the railbanking process. Today, there are over 2,000 rail-trails in the United States, spanning over 24,000 miles in all 50 states (Rails-to-Trails Conservancy).

Railbanking allows railroad owners to preserve established rail lines by transferring them, through sale, donation, or lease, to a qualified public or private entity to manage the ROW as an interim trail. This entity becomes legally and financially responsible for managing the rail corridor ROW. The corridor can be used as a trail until the need for rail service resumes, at which point the ROW can be converted to, or shared with, active rail.

3.2 Railbanking Process and Timeline

Step 1: Railroad Files Notice of Exemption to Begin Abandonment Proceedings

Normally, the railbanking process is triggered by a railroad determining that it wishes to divest a line and begins abandonment proceedings with STB, at which point qualified entities may express interest in railbanking the line through the railbanking process. In the case of the Great Redwood Trail where there is already a desire to railbank the corridor, abandonment would not result in actual desertion of the corridor. However, initiating abandonment proceedings is a required component of the railbanking process. For the Great Redwood Trail, the entity chosen to own and manage the existing NCRA ROW, i.e., the trail manager, should first be identified before proceeding with the railbanking process to ensure all required railbanking steps can be completed within the legal timeframe required (see Table 3-1).

The railbanking process can only be completed when railroad corridors are under STB’s jurisdiction, meaning the rail owner has filed for abandonment but the corridor has not been fully abandoned. If the railbanking process does not occur during the required timeline (see Table 3-1) and the railroad is abandoned, adjacent land owners that have reversionary rights are given the opportunity to claim the ROW formerly held by the rail owner. By conducting the railbanking process during this timeframe and prior to full abandonment, any reversionary rights that would be triggered by formal abandonment of the railroad corridor are not activated, and the ROW is preserved intact.

Abandonment procedures may either be fully regulated by STB or “exempt.” Exempt procedures typically apply when a corridor has been out of service for more than 2 years, and can be abandoned by filing a Notice of Exemption with STB. This class exempt status applies to the trail corridor, meaning that the abandonment process would be more streamlined than a typical abandonment proceeding. While the physical railroad has been abandoned for years, particularly through the Eel River Canyon section of the corridor, filing the Notice of Exemption is necessary for changes to be made to the corridor’s legal status as an active rail corridor.

To file under class exempt status, the rail owner must file a notice with STB certifying that “(1) no local traffic has moved on the line for the past 2 years, (2) any overhead traffic that has moved over the line can be rerouted over other lines, and (3) no formal complaint about a lack of service is pending or has been decided in favor of the shipper.” Once the notice is filed with STB, and STB publishes the filing in the Federal Register, the trail manager can file a request to use the corridor as an interim trail, formally beginning the railbanking process. A timeline and list of necessary steps for filing for abandonment under class exempt status and the corresponding railbanking process are shown in Table 3-1.

Table 3-1 Railbanking Process and Timeline

At least 20 days before filing notice with STB	• Circulate environmental report (ER) and historic report (HR) to all of the federal, state, and county agencies required by STB (see 49 CFR § 1105.7(b)) • Provide a copy to the State Historic Preservation Officer

At least 10 days before filing notice with STB	• Notify of abandonment in writing:
	  o The Public Utilities Commission
	  o Department of Defense (Military Surface Deployment and Distribution Command, Transportation Engineering Agency, Railroads for National Defense Program)
	  o National Park Service, Recreation Resources Assistance Division
	  o U.S. Department of Agriculture, Chief of the Forest Service
	• Publish notice in a newspaper in each county in which the abandonment is located (see Appendix to 49 CFR § 1105.12)

Filing of notice with STB	• Rail owner files Notice of Exemption with STB (see 49 CFR § 1152.50(b) and 1152.22(a) for requirements)
20 days after filing notice with STB	• STB publishes notice of filing in Federal Register and on its website
Within 30 days after filing notice with STB	• Trail manager files Public Use Condition and Trail Use Request and “Statement of Willingness to Assume Financial Responsibility” with STB
40 days after filing notice with STB	• Railroad notifies STB if it agrees to negotiate railbanking
50 days after filing notice with STB	• STB issues Notice of Interim Trail Use (NITU) and Railbanking negotiations commence
1 year time period, which can be extended up to three times at the request of the parties to allow them to complete negotiations	• Rail owner and trail manager negotiate terms of agreement
After negotiations conclude	• Rail owner and trail manager execute agreement
	• Rail owner removes tracks, ties, or other property along the corridor
After agreement is executed	• Trail planning and construction begins

Source: Alta 2020

Step 2: Trail Manager Files Public Use Condition And Interim Trail Use Request

Once the rail owner has filed the Notice of Exemption with STB, the trail manager must then submit a Public Use Condition and Interim Trail Use request to STB within 30 days of the filing.[1] The trail use request must include a map outlining the extents of the corridor that would be converted to a trail, including mile posts. The trail manager must also formally acknowledge its willingness to assume full legal and financial responsibility for the corridor, and must share a copy of the request with the rail owner.

Step 3: Railbanking Negotiations

Once the trail use request is received by STB, the rail owner must write to STB confirming that it consents to converting the corridor to an interim public use trail. STB would then issue a Notice of Interim Trail Use (NITU) and authorize formal negotiations to take place between the rail owner and trail manager. The rail owner and trail manager then have 1 year to negotiate a voluntary agreement which identifies how the corridor, including any easements on the property, is to be transferred, whether through donation, sale, or lease.[2] The agreement also outlines how the corridor may be converted back to active rail use in the future. The parties can request to extend the 1-year time period up to three times to allow them to complete negotiations.

During this period, the rail owner is permitted to remove any tracks, ties, or other property along the corridor, if they have the capacity to do so. The rail owner may not remove any bridges, tunnels, or culverts. Trail planning and construction can begin after an agreement is reached by the parties.

Unsuccessful Negotiations

If a trail manager decides to end negotiations without reaching an agreement, another trail manager can enter into negotiations as a substitute if there is no break in the NITU (4 49 CFR § 1159.29[f]). However, if the 1-year timeframe is reached without an agreement or an agreement is reached but the agreement is vacated, then the railroad has 60 days to consummate abandonment of the line.

Occasionally, there may be other outstanding STB-imposed conditions that must be fulfilled before the railroad can consummate abandonment, in which case the 60-day period would not commence until the other outstanding conditions are satisfied. If the railroad does not consummate abandonment within this timeframe, then the railroad would need to refile for abandonment at a later date.

3.3 Benefits of Railbanking

The railbanking process benefits the rail owner by relieving them of their maintenance and financial responsibilities. Railbanking would offer an opportunity to preserve the corridor as a public Active Transportation corridor, while relieving NCRA of its financial and administrative burden. Railbanking also benefits the public by preserving land for long-term public use.

1 Surface Transportation Board, Resources: Rails to Trails

2 STB adopted a final rule in November 2019 amending its regulations to: (1) provide that the initial term for Notices of Interim Trail Use will be 1 year (instead of the previous 180 days); (2) permit up to three 1-year extensions of the initial period if the trail manager and rail owner agree; and (3) permit additional 1-year extensions if the parties agree and if there are extraordinary circumstances. The rule went into effect on February 2, 2020.

3.4 Risks of Railbanking

As part of the railbanking agreement, the corridor is preserved for future rail service if the need is to arise. Although this is an unlikely scenario for the Great Redwood Trail because of the complexity of the corridor and the limited demand for rail service, it does present a risk to the trail manager. The arrangement leaves the potential for the trail to be transformed back into a railroad at a later date, despite the financial investment and work that would have gone into creating the trail. Railbanking could also result in certain risks for the trail manager, as that entity would ultimately assume any corridor liabilities once agreement is reached with the rail owner and the railbanking process concludes.

3.5 Considerations for the Great Redwood Trail

The necessary steps associated with the railbanking process require the responsible parties to be identified early. NCRA counsel would be expected to file for abandonment with STB and complete the required forms and environmental and historic reports (see 49 CFR § 1105.7(b) listed in Table 3-1) associated with the abandonment process. It would be best if NCRA continues to exist as an agency during the railbanking process, so that it can own the ROW until a trail manager is identified that can assume full legal and financial responsibility of the corridor, and the 1-year (or extended) negotiation period concludes.

The identified trail manager would be the entity to file a Public Use Condition and Interim Trail Use request with STB. Ideally, this entity would also be the entity that ultimately owns and manages the full length of the trail corridor. Continuous ownership would help the trail have a consistent vision and help it to be maintained to the same high standard throughout its length. The trail manager can be "any state, political subdivision, or qualified private organization... interested in acquiring or using a right-of-way of a rail line proposed to be abandoned for interim trail use." (49 CFR § 1152.29).

STB has no formal criteria that must be met by the trail manager other than it must state that it is willing to assume financial and legal responsibility for the corridor. The trail manager does not actually assume this responsibility until after an agreement is reached with the rail owner and the railbanking process concludes. Potential governance structures and their relevance to the railbanking process are identified in the next section of this report.

If it is determined that a decentralized governance structure would be more feasible for the corridor, the trail manager can serve an interim "broker" role between STB and NCRA while individual trail owners, such as the counties, are identified for different sections of the trail. The trail manager would need to acknowledge its willingness to assume financial and legal authority for the corridor, but while negotiations are ongoing and NCRA continues to own the ROW, the interim trail manager would not need to take on this responsibility. This interim trail manager, or broker, would continue to extend the NITU with STB for as long as necessary to keep the corridor intact, but no longer than the three 1-year extensions granted by STB. Once new long-term trail owners are identified, they would need to file their own statement of willingness with STB to assume their portion of the corridor (49 CFR § 1159.29[f]).

Without one trail manager serving this "broker" role, there would not be a method with which to preserve the entire length of the corridor as a transportation corridor under a decentralized structure unless all entities interested in managing parts of the trail submitted their required paperwork with STB within the 30-day time period required. To address this, one trail manager could be identified to manage the railbanking process before NCRA files their Notice of Exemption with STB.

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4. Governance

4.1 Introduction

The planning, construction, operation, and maintenance of the Great Redwood Trail in its entirety would likely be a multi-generational effort. Although the primary purpose of this report is to identify potential governance structures for the immediate next steps for the project, which include the railbanking, planning, and design processes, this report also recommends looking beyond these steps to identify a long-term management solution for the trail (see SB 1029 Section 2[a][4][A]).

The rail corridor would require certain environmental remediation efforts before and during construction of a trail (see Chapters 2 and 3 of the Trail Feasibility Assessment in Part I of this document). After construction, the Great Redwood Trail would require a comprehensive operations and maintenance plan, as well as a significant annual operating budget to maintain acceptable trail standards. Identifying the owner and operator of the trail at this early stage would help provide an adequate structure to manage the complex future operations and maintenance needs of the trail.

Three primary ownership models were evaluated for the Great Redwood Trail: state ownership, JPA ownership, and local and nonprofit organization ownership. A fourth model considers a continuation of the status quo, in which NCRA continues to own the ROW but changes its mandate to focus on trail management. Criteria were created to evaluate different potential organizational structures that fit within these ownership models. The criteria measure how well different proposed trail governance structures would fulfill the required tasks and responsibilities of the trail manager. These criteria also consider the existing policy field and the lessons learned from NCRA.

4.1.1 GOVERNANCE CRITERIA

For purpose of comparison, criteria were developed to measure how each potential governance structure might potentially manage the corridor. Two criteria—classification and multi-jurisdictional trail—are criteria that are required of any entity that could adequately manage the corridor.

Classification: Identifies what type of entity is being proposed. Classifications include local and state agency, multi-agency, joint powers authority, nonprofit, and special district. The classification is important to determine early on so that there can be a clear reporting structure in place. NCRA did not have a clear classification, which made oversight of its operations challenging.

Conducive to Multi-Jurisdictional Trail: Identifies whether the governance structure is conducive to building and maintaining a trail that spans multiple jurisdictional boundaries. All governance structures considered for the Great Redwood Trail meet this criterion.

In addition to the two above, measurable criteria were created to evaluate potential governance structures for the corridor. These include:

- **State Risk**: Measures the level of risk and liability assumed by the State.
- **Timeframe for Implementation**: Measures how long the trail would take to implement given the strengths and weaknesses of the proposed governance structure.
- **Existing Staff Expertise and Resources:** Measures whether an entity has staff with trail expertise and capacity to manage and maintain the trail. Establishing and running a new entity would require additional administrative and overhead costs.
- **Trail Consistency:** Measures the ability for the trail to be consistently built and maintained. Decentralized governance structures or structures with less stable funding sources may have less of an ability to implement or maintain the trail in a consistent manner.
- **Potential Funding Consistency**: Measures the availability of stable funding sources for trail planning and design, development, and operations and maintenance. Governance structures that rely on membership fees or donations may result in unequal distribution of resources along the corridor.

- **Long-Term Operations & Maintenance Costs**: Measures the level of funds required to operate and maintain the trail. A state agency would provide a more costly option than a nonprofit organization, which may have a leaner operating structure.
- **Maintenance Capabilities:** Measures the capacity for conducting maintenance along the trail.

4.1.2 GOVERNANCE EVALUATION FOR THE GREAT REDWOOD TRAIL

The governance evaluation for the Great Redwood Trail identified common trail management structures and measured them against the criteria developed for the trail. Because the identified governance structure must also assume financial and legal responsibility of the corridor, some of the structures that are applicable to developing and maintaining a trail, such as a cooperative agreement or nonprofit organization, would also need to partner with an entity that has the capacity to own the corridor. As a result, the three primary governance structure options identified for the Great Redwood Trail involve a combination of different common management structures and strategies to maximize resources, oversight, and accountability.

4.1.3 RELEVANCE TO RAILBANKING REQUIREMENTS

A centralized governance structure is required to most efficiently meet the railbanking requirements identified earlier in this report and manage and maintain a multi-jurisdictional trail. As a result, the governance evaluation for the Great Redwood Trail is primarily focused on identifying governance structures that include one central trail manager that could manage the entire corridor. This trail manager could either manage the trail in its entirety or partner with another entity to manage trail implementation, operations, and maintenance. The governance structure options considered for the Great Redwood Trail provide examples for both options.

4.2 Typical Trail Management Structures

The following management structures are commonly used for trails across the United States and can be considered for the Great Redwood Trail.

4.2.1 SINGLE GOVERNMENT ORGANIZATION

In this management structure, paths are managed by a single agency. This entity can be either a federal, state, or local agency, and would have different reporting requirements depending on its classification. The rail corridor passes through multiple jurisdictions, complicating the potential for a single local agency to be the manager of the potential trail.

4.2.2 NONPROFIT ORGANIZATION

A nonprofit is able to draw funding from a larger pool of sources, including private funding, and provides more flexibility with program development, advocacy, and communications. A nonprofit typically does not have the authority of an elected body or landowner and no dedicated funding source without assistance from local, state, or federal funding mechanisms. Smaller nonprofits may not have the resources required to manage a corridor of this magnitude without support from another entity.

4.2.3 COOPERATIVE AGREEMENT

A cooperative agreement allows for agencies to manage the trail within their jurisdiction, while another entity oversees the project vision through planning, programming, and overall coordination. Because a cooperative agreement does not identify one entity to act as the trail manager, it cannot be the central trail manager for the Great Redwood Trail. However, it can be used as a tool to bring together additional partners and resources.

4.2.4 JOINT POWERS AUTHORITY (JPA)

A JPA is an entity that allows its member agencies to jointly exercise common powers. The structure allows for one entity to oversee a trail over multiple jurisdictions. A JPA is typically funded by member agency funds, and can pursue donations and grants as well as issue bonds. Because it requires creating a new entity, a JPA would include initial administrative and other overhead costs.

4.2.5 COMMISSION

A Commission is overseen by a governing board made up of participating agencies and municipalities. The Commission typically funds its operating expenses through membership contributions based on population and trail area.

4.2.6 SPECIAL DISTRICT

A Special District creates a designated funding stream and provides local accountability as board members are elected by the districts' voters. The new funding requires voter approval.

Table 4-1 compares the organizational structures outlined in the previous pages, and identifies their classifications as well as whether they are conducive to managing a multi-jurisdictional trail. The table also evaluates how well these structures meet the measurable governance criteria established for the Great Redwood Trail.

4.3 Options for the Great Redwood Trail

Four potential governance options for the Great Redwood Trail involve three distinct ownership models: (1) state ownership, (2) JPA ownership, and (3) local and nonprofit ownership. A fourth option considers the existing NCRA structure; however, because of NCRA's existing management challenges identified previously, this structure is not recommended for the trail. The three structures offer variations in terms of membership and organization, as well as an opportunity for cooperative agreements with additional entities. In addition, each involves trade-offs between funding opportunities, costs, and capacity, and would offer different approaches to managing the trail.

A state agency could provide strong expertise, which may facilitate quicker and higher quality implementation of the trail. However, it would also create the highest risk to the State and may be subject to competing state efforts. Although a JPA would be subject to more interagency coordination which could take time, it could provide strong expertise and resources for the trail. A nonprofit could provide an acceptable governance structure if it partners with local jurisdictions; however, this structure may result in less trail consistency and slower implementation.

Table 4-1 Typical Trail Management Structures

Management Structure	Classification	Conducive to Multi-Jurisdictional Trail	State Legal & Financial Risk	Implementation Timeframe	Existing Staff Expertise & Resources	Trail Consistency	Potential Funding Consistency	Long-Term Operations & Maintenance Costs	Maintenance Capabilities
Single Governmental Organization	State Agency	Yes	High	Moderate	High	Medium	Medium	Medium/High	Medium
Single Governmental Organization	Local Agency	No	Low	Moderate/Fast	Medium	Medium	Low/Medium	Medium	High
Nonprofit Organization or Foundation	Nonprofit	Yes	Low	Slow	Low	Low	Low	Low	Low
Cooperative Agreement	Multi-agency	Yes	Moderate	Slow	Medium	Low	Medium	Medium	Medium
Joint Powers Authority (JPA)	JPA	Yes	Moderate	Slow/Moderate	Medium	Medium	Medium	Medium	Medium
Commission	Multi-agency	Yes	Moderate	Slow/Moderate	Low	Low	Low/Medium	Medium	Medium
Special District	Special District	Yes	Low	Slow	Low	High	Low/Medium	Medium	Medium

Source: Alta 2020

5. Case Study 1

5.1 Columbia Plateau State Park Trail: Washington State Parks

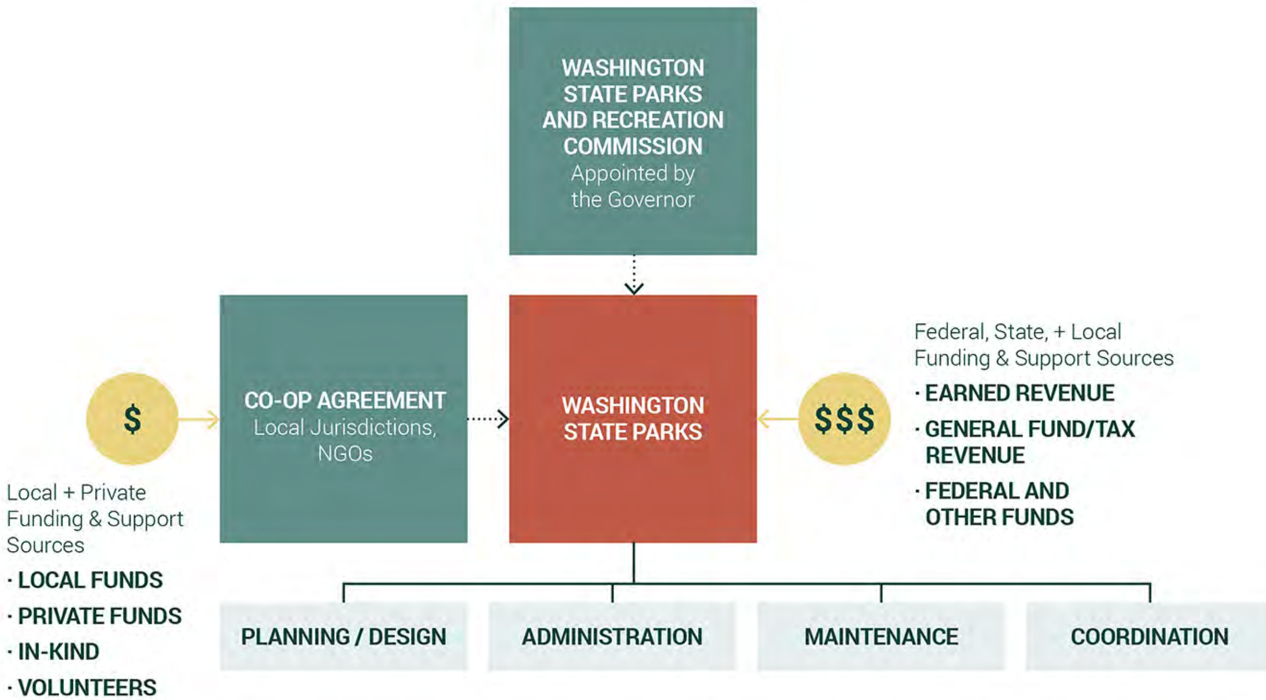
Washington State Parks manages the Columbia Plateau State Park Trail, a 130-mile trail in eastern Washington State managed as part of the state park system. The southern part of the trail follows the former Spokane, Portland, and Seattle Railroad. The northern section passes through the Turnbull National Wildlife Refuge. Nearly 100 miles between the two sections of trail are undeveloped and only available to long-distance hikers.

5.1.1 ORGANIZATIONAL STRUCTURE

Washington State Parks is overseen by a seven-member volunteer commission that provides policy direction for the agency. The commission hires an agency director, who hires other executive staff to lead the agency which include an Assistant Director of Operations, an Assistant Director of Parks Development, and an Assistant Director of Administrative Services, among others. State park areas and park managers are overseen by Region Managers, who report to the Assistant Director of Park Operations. The Eastern Region Manager is responsible for overseeing the Columbia Plateau State Park Trail. While Washington State Parks owns the trail ROW and is responsible for operations and maintenance, it holds cooperative agreements with local jurisdictions for development and some maintenance of certain sections of the trail and adjacent access areas (Figure 5-1).

5.1.2 FUNDING

Washington State Parks manages 124 developed parks, including marine parks, historic parks, and long-distance trails. The majority of the agency's 2017-2019 $167 million Operating Budget funds the park system's general operations. Revenue earned from fees covers nearly 80 percent of these costs, while the remaining 20 percent comes from taxes, including the General Fund and litter tax. The majority of fee revenue comes from the Discover Pass and camping, as well as donations made through the Department of Licensing's vehicle registration system.



Other Potential Entities Providing Funding and Oversight

	Money	Policy	Oversight
Federal			
National Park Service	●		
State			
Washington Legislature	●	●	
Washington State Parks and Recreation Commission	●	●	●
Local & Non-Governmental Organizations (NGO)			
Local Jurisdictions	●		
Local NGOs	●		

Source: Alta 2020

Figure 5-1 Columbia Plateau State Park Trail Organizational Chart

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6. Option 1: State Ownership

6.1 Overview

Under the state agency option, such an agency would be responsible for the Great Redwood Trail and management of the corridor.

To lower State risk, the designated agency could partner with local jurisdictions through cooperative agreements to operate and maintain the trail (Table 6-1).

Table 6-1 Option 1 Governance Criteria: State Agency

Measurable Criteria	Rating
State Risk	High
Timeframe for Implementation	Moderate
Existing Staff Expertise and Resources	High
Trail Consistency	Medium
Potential Funding Consistency	Medium
Long-Term Operations & Maintenance Costs	Medium/High
Maintenance Capabilities	Medium

6.2 Flow of Money and Decisions

6.2.1 ORGANIZATIONAL STRUCTURE

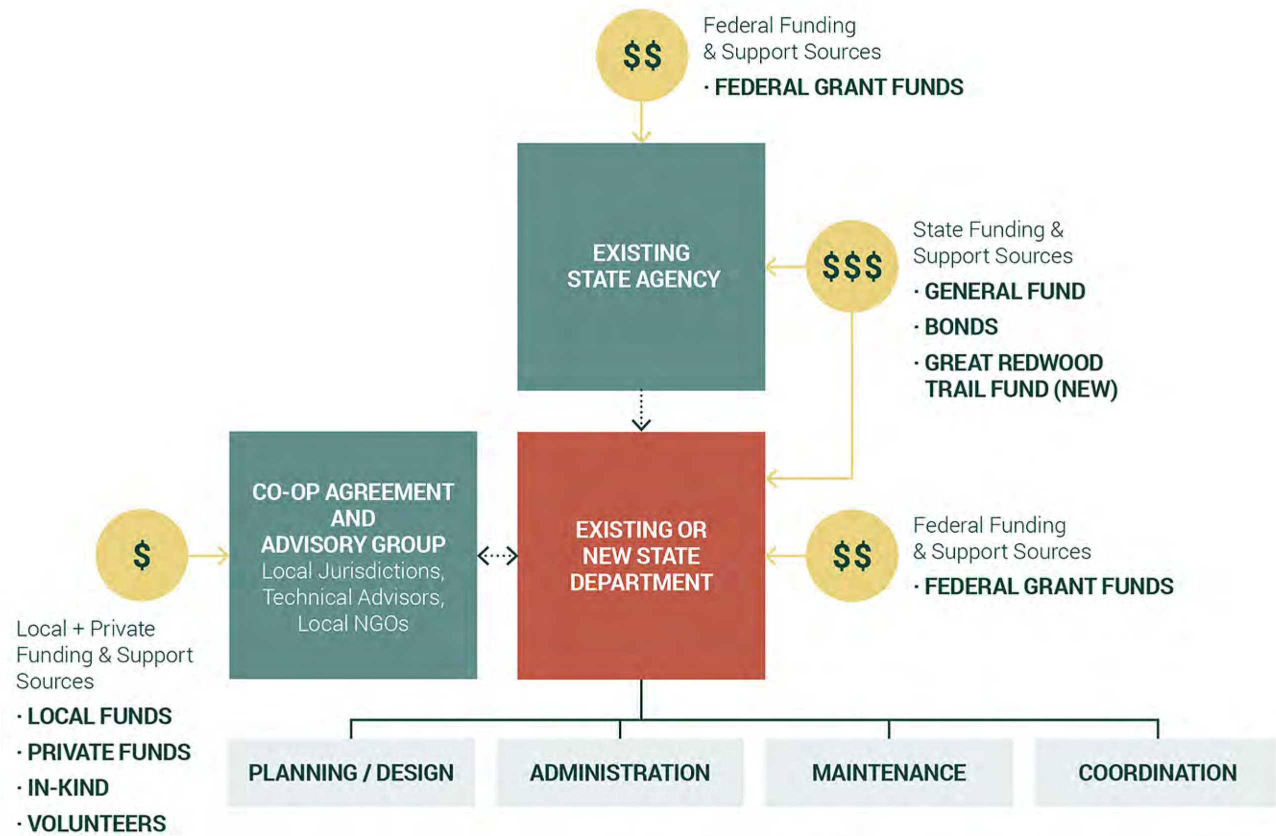
The organizational structure of state ownership of the Great Redwood Trail would vary depending on whether the designated agency is an existing or a new agency. While a state agency may have the organizational structure and expertise to manage the Great Redwood Trail, it would require additional substantial staffing, equipment and funding resources to oversee environmental remediation efforts and effectively administer the trail (Figure 6-1).

6.2.2 GOVERNMENTAL AND NONPROFIT PARTNERS

Under this option, a state agency could form cooperative agreements with local jurisdictions to manage trail implementation and maintenance. It could also partner with a nonprofit organization to advocate and fundraise for the trail as well as help guide the trail vision through programming and events.

6.2.3 STATE AGENCY FUNDING

Whether the trail manager is an existing or new state agency, the trail manager would require an additional funding source to adequately manage environmental remediation efforts, trail planning, operations, and maintenance. Funding could also come from federal, local, and private sources.



Other Potential Entities Providing Funding and Oversight

	Money	Policy	Oversight
Federal			
Federal Highway Administration	●		
National Park Service	●		
State			
California Legislature	●	●	
California Transportation Commission	●		●
California Department of Finance	●		
California State Transportation Agency	●	●	●
California Natural Resources Agency/Departments	●	●	●
Local & Non-Governmental Organizations (NGO)			
Local Counties & Cities	●		
Local NGOs	●		

Potential Level of Funding

Source: Alta 2020

Figure 6-1 State Ownership Organizational Chart

6.3 Great Redwood Trail: Roles and Responsibilities

Under a state ownership model, an existing or new state department would oversee planning and design as well as administration of the Great Redwood Trail. Staff dedicated to the trail would oversee operations and maintenance and any required coordination with other agency or nonprofit partners. Agency partners could include another state agency, which would have shared responsibility for the corridor. For example, California State Parks and the California State Coastal Conservancy frequently collaborate on parks projects, sharing resources and responsibilities.

Additionally, agency staff could partner with local agencies and organizations through cooperative arrangements to provide additional resources and guidance for implementing the trail. This would lower State risk and allow local jurisdictions to have greater control in trail implementation with respect to trail construction and maintenance. Local partners include the local counties and cities, as well as any supportive nonprofit organizations. Local partners could provide local funds, in-kind support, and volunteers to supplement the state and federal funds available to the designated agency. These entities could also serve as an advisory group for the trail.

6.4 Role, Responsibility, and Liabilities of the State

In a state ownership option, the State would be directly involved in all aspects of trail implementation, operations, and maintenance. The State would also, in turn, be liable for any existing rail infrastructure and associated liabilities along the corridor, which may result in significant increased costs of at least hundreds of millions of dollars to state taxpayers, potentially even before implementation and operation of the trail. However, not all costs would necessarily fall on the State, as some could be accounted for through innovative financing solutions as well as private, federal, and local sources.

6.5 Great Redwood Trail: Funding Stream

To provide adequate funding for trail planning, operations, and maintenance, the State could collect revenue generated through programming at its access points and through the presence of utilities and fiber optic cable lines to support staff costs, capital projects, and future maintenance. The designated agency could also be assisted by federal grant funds for trail implementation.

Additionally, local agency and nonprofit partners could provide local funds, in-kind support, and volunteers to supplement the state and federal funds available to the agency.

PROS

- Existing structure would be most efficient option for the railbanking process
- Existing staff and resources require less upfront investment than establishing a new entity
- Using existing structure may enable quicker trail implementation

CONS

- Burdens existing state resources or results in significant costs to state taxpayers
- Results in less local control
- Existing state agency may be subject to specific design criteria (e.g., Caltrans' Highway Design Manual [HDM]), which can result in less flexibility than other structures when implementing the trail
- Existing state agency may not be able to dedicate enough resources to the Great Redwood Trail given competing state mandates and limited resources

7. Case Study 2

7.1 San Dieguito River Valley Regional Open Space Park Joint Powers Authority

The San Dieguito River Park includes more than 65 miles of trails within the San Dieguito River Valley in San Diego County, CA, including a Coast to Crest Trail that extends from the coast to the mountains. To date, about 48 miles of the planned 71 miles of the Coast to Crest Trail have been completed.

The San Dieguito River Park is managed by the San Dieguito River Valley Regional Open Space Park Joint Powers Authority, which was formed in 1989 by the County of San Diego and the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach. Its powers include acquisition, planning, design, improvements, operations, and maintenance for the San Dieguito River Park.

7.1.1 ORGANIZATIONAL STRUCTURE

The JPA Board is composed of nine voting members and one non-voting ex-officio advisory representative. The Board includes two elected officials or one elected official and one appointed designee each from the County of San Diego and the City of Diego. Additionally, the Board includes one elected City Council member each from the Cities of Del Mar, Escondido, Poway, and Solana Beach, and one public member representing the Citizens Advisory Committee. One non-voting ex officio advisory representative is appointed by the Board. The Board elects its own Chairperson and Vice Chairperson from among its members (Figure 7-1).

The Citizens Advisory Committee is a standing committee of the JPA Board which advises the Board on land use matters that impact park planning efforts.

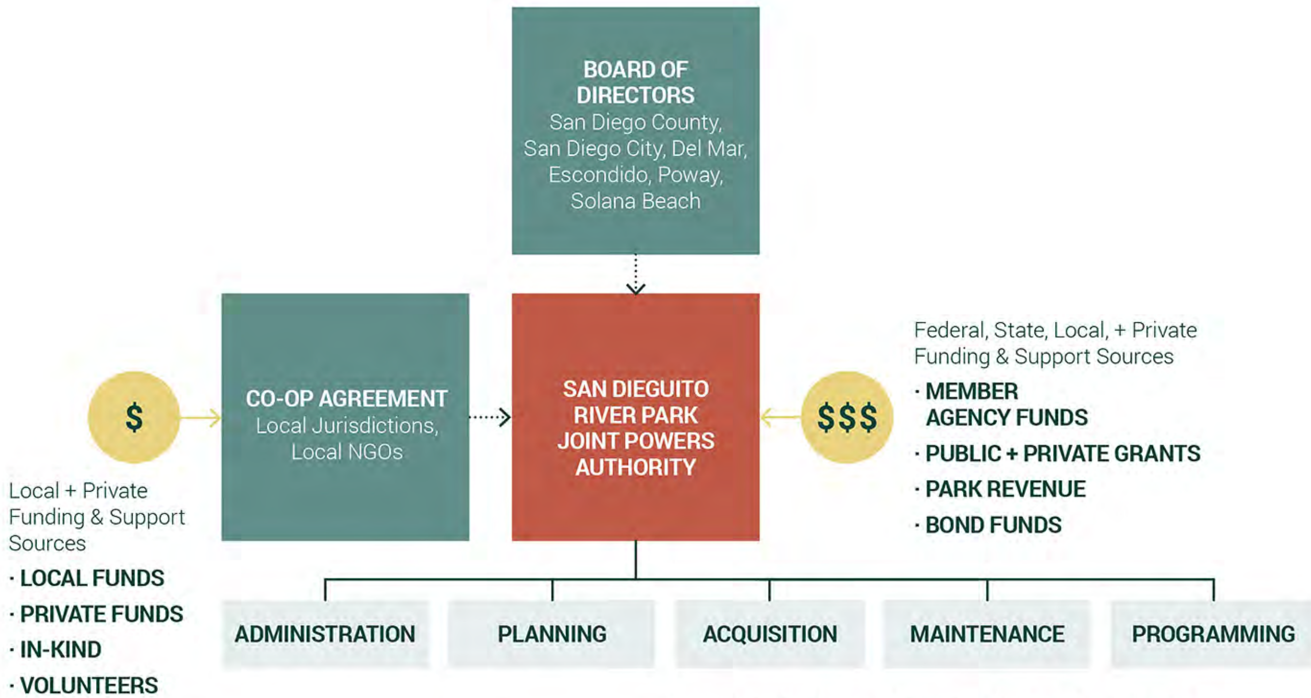
The JPA is managed by an Executive Director and includes 10 additional staff members.

The Treasurer of the JPA is an active Treasurer of the County of San Diego and serves as an ex-officio Treasurer of the JPA. The Auditor of the JPA is also an acting Auditor of the County of San Diego and serves ex-officio as Auditor of the JPA.

7.1.2 FUNDING

Each member agency of the JPA contributes some portion of their agency budget, which is based on a contribution formula outlined in the joint powers agreement. The formula is based on each agency’s total population, as determined by the U.S. Census, and the agency’s jurisdictional acreage, based on a weighted percentage.

As outlined in its joint powers agreement, subject to unanimous agreement by public agencies, the JPA also has the power to issue bonds and levy assessments under any assessment district act of impact fee provisions authorized under State law. The JPA can also receive grants from governmental or private sources and can collect revenue generated by park operations and activities.



Other Potential Entities Providing Funding and Oversight

	Money	Policy	Oversight
Federal			
U.S. Fish and Wildlife Service	●		
State			
Caltrans	●		
California State Parks	●		
California Transportation Commission	●		
Coastal Conservancy	●		
California Natural Resources Agency/Departments	●		
Local & Non-Governmental Organizations (NGO)			
JPA Member Agencies	●	●	●
SANDAG	●		
San Diego County Parks and Recreation	●		
Local NGOs: Friends of San Dieguito River Valley, San Dieguito River Valley Conservancy	●	●	

Source: Alta 2020

Figure 7-1 San Dieguito River Valley Regional Open Space Park Organizational Chart

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8. Option 2: Joint Powers Authority Ownership

8.1 Overview

A JPA could provide another potential governance structure for the Great Redwood Trail. A JPA allows public entities to jointly exercise common powers. This structure would enable agencies to formally partner by creating a new legal entity to oversee trail implementation and maintenance. The JPA would own the corridor in fee or easement, manage trail planning and implementation, and ultimately, manage trail operations and maintenance.

For the Great Redwood Trail, the JPA option is considered to be a local-only option made up of the local counties and cities. It could, however, also be established using both local and state agencies.

Each member agency of the JPA would allocate some portion of their available budget to fund the new entity, which would be based on population and jurisdictional acreage. The JPA could also accept additional federal, state, and local funds and collect revenue and other fees. It could also partner with a nonprofit that would provide additional support through private donations and volunteers. Because the JPA would be a new legal entity, it would have associated overhead costs with developing an administrative structure and hiring staff (Table 8-1).

Table 8-1 Option 2 Governance Criteria: JPA

Measurable Criteria	Rating
State Risk	Moderate
Timeframe for Implementation	Slow/Moderate
Existing Staff Expertise and Resources	Medium
Trail Consistency	Medium
Potential Funding Consistency	Medium
Long-Term Operations and Maintenance Costs	Medium
Maintenance Capabilities	Medium

Option 2 results in less State risk than Option 1 because the tasks of trail planning, design, implementation, and operations and maintenance would not fall to the State. However, it may have higher initial administrative expenses because it requires setting up a new entity, which would require hiring staff and developing a framework for operations.

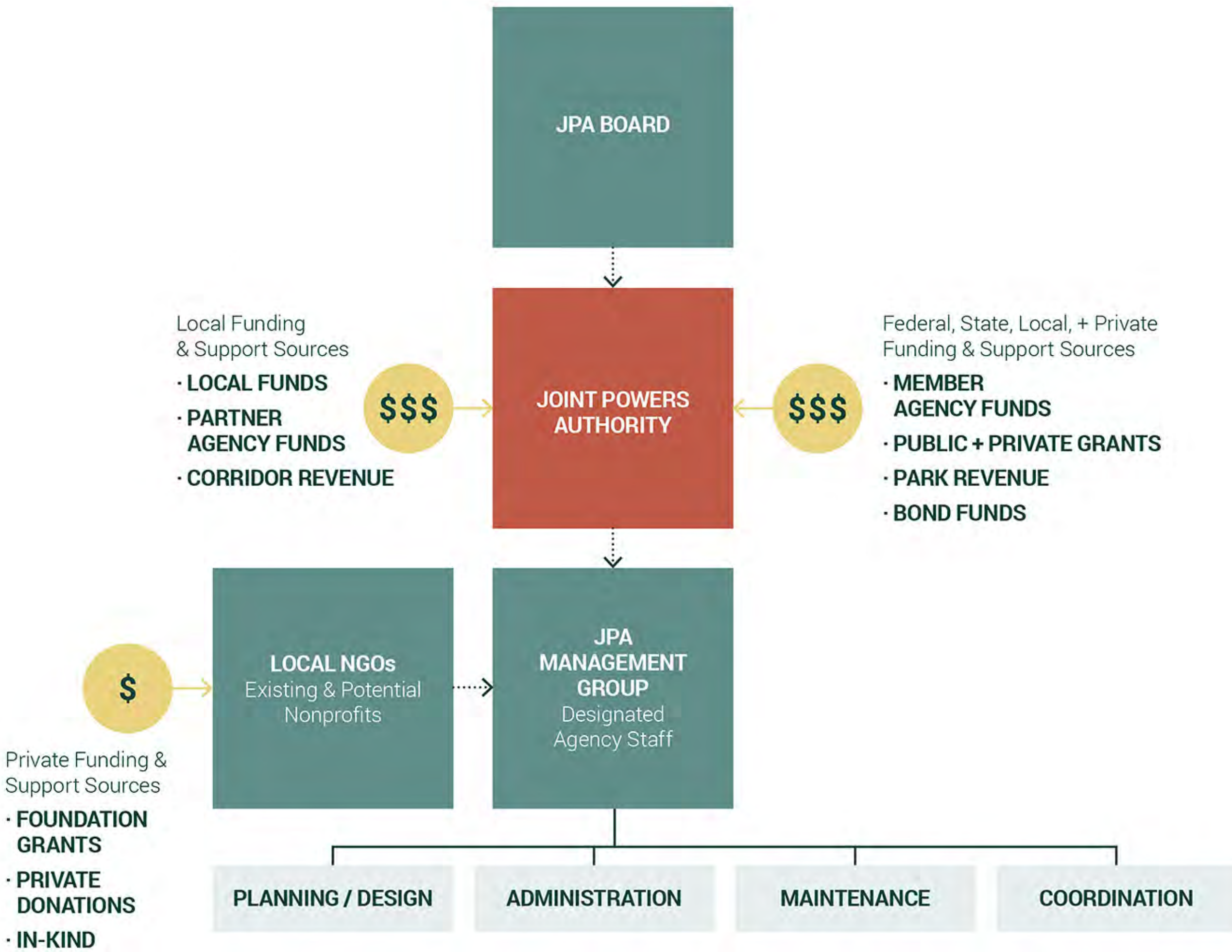
8.2 Flow of Money and Decisions

8.2.1 ORGANIZATIONAL STRUCTURE

The local counties and cities could formally partner by creating a JPA through a joint powers agreement. The JPA would be a new legal entity that could jointly exercise common powers of its member agencies, enabling it to more effectively and efficiently share resources and responsibility for the corridor. The local counties include Humboldt, Trinity, Mendocino, Sonoma, and Marin Counties. Local cities include Blue Lake, Arcata, Eureka, Fortuna, Rio Dell, Willits, Ukiah, Cloverdale, Healdsburg, Windsor, Santa Rosa, Rohnert Park, Petaluma, and Novato (Figure 8-1).

The new JPA would own the corridor in fee or easement and would be responsible for managing trail construction, operations, and maintenance. The JPA would be overseen by a separate board made up of appointed members from each member agency: two members from each of the counties, and one member from each of the cities. The Governor could also appoint an ex-officio member to sit on the board, which would provide some state representation. Board members would be required to have some background or expertise in trail planning or operations and maintenance. Member agencies would appoint or hire staff to manage the various responsibilities of the corridor, which could include a full-time trail coordinator, planning and engineering staff, administrative staff, and program management staff, and would likely not need to exceed 10 staff members. This level of staff involvement is considered to be sufficient for managing trail implementation and operations and is based on a review of other case studies. This JPA management group would oversee planning and design, administration, operations and maintenance, and any external agency or partner coordination.

Option 2: Joint Powers Authority Ownership



Other Potential Entities Providing Funding and Oversight

	Money	Policy	Oversight
Federal			
Federal Highway Administration	●		
National Park Service	●		
State			
California Legislature	●	●	
California Transportation Commission	●		●
California Department of Finance	●		
California State Transportation Agency	●	●	●
California Natural Resources Agency/Departments	●	●	●
Local & Non-Governmental Organizations (NGO)			
Local Counties & Cities	●		
Local NGOs	●		

Source: Alta 2020

Figure 8-1 JPA Ownership Organizational Chart

8.2.2 JPA FUNDING

The JPA's operating expenses could be funded by an annual fee from each member agency, which would be outlined in the formal joint powers agreement. Additionally, the JPA could receive revenue from corridor utilities and operations and apply for state and federal grant funds.

The JPA could also partner with a nonprofit group which would collect private donations for trail operations and maintenance and provide volunteer assistance for trail maintenance and programming.

8.3 Great Redwood Trail: Roles and Responsibilities

Responsibilities among member agencies of the JPA would be outlined in the joint powers agreement. One option would be to have the counties designate staff to oversee trail planning and design, and have the cities designate staff to develop and maintain the trail within their jurisdictions. The counties would need to maintain the trail in locations outside of city jurisdiction. Funding for all activities would be allocated through the JPA.

8.4 Role, Responsibility, and Liabilities of the State

The State could play a role in the JPA by appointing an ex-officio member to sit on the JPA's board, but it is not required. The JPA would own the corridor in fee or in easement, would be responsible for implementing the trail, and would assume all liability and risk associated with the trail. If a state agency were to be part of the JPA, the State would only be responsible for its portion of the joint powers agreement, not the corridor itself. This would limit State investment and risk in trail development and operations.

8.5 Great Redwood Trail: Funding Stream

The JPA could receive annual funds from each of its member agencies, state and federal grant funds, and corridor revenue. The JPA could also partner with a nonprofit which could provide additional funds through private donations.

PROS

- Limits State liability in trail development and maintenance by utilizing local agencies through a JPA
- Provides multiple sources of funding

CONS

- JPA requires consensus among multiple agencies which can be time consuming and difficult to achieve
- Government bureaucracy limits flexibility of staffing, contracting, purchasing, and management

9. Case Study 3

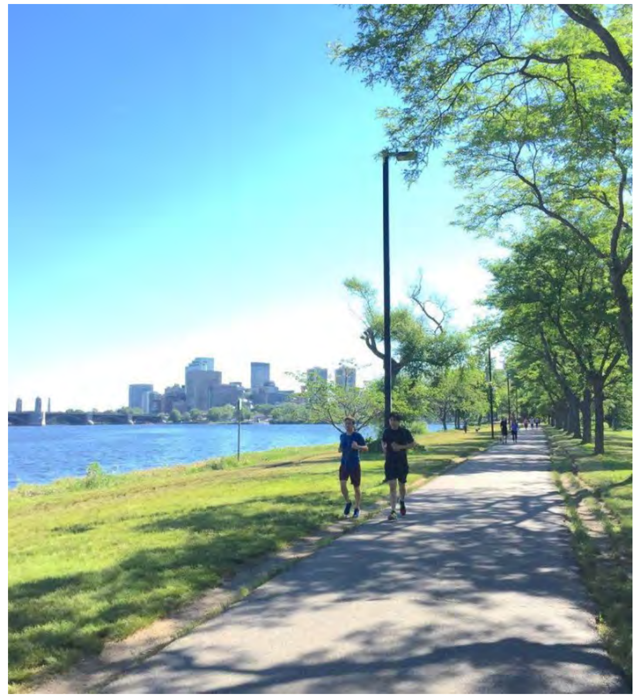
9.1 East Coast Greenway: East Coast Greenway Alliance

The East Coast Greenway runs 3,000 miles from Maine to Florida, connecting 15 states and 450 cities. The East Coast Greenway Alliance leads the development of this trail network, partnering with public and private entities to develop different sections of the trail. The mission of the Alliance is “to partner with local, state, and national agencies and organizations to promote the establishment, stewardship, and public enjoyment of a safe and accessible multi-user greenway linking cities and towns from Maine to Florida.”

9.1.1 ORGANIZATIONAL STRUCTURE

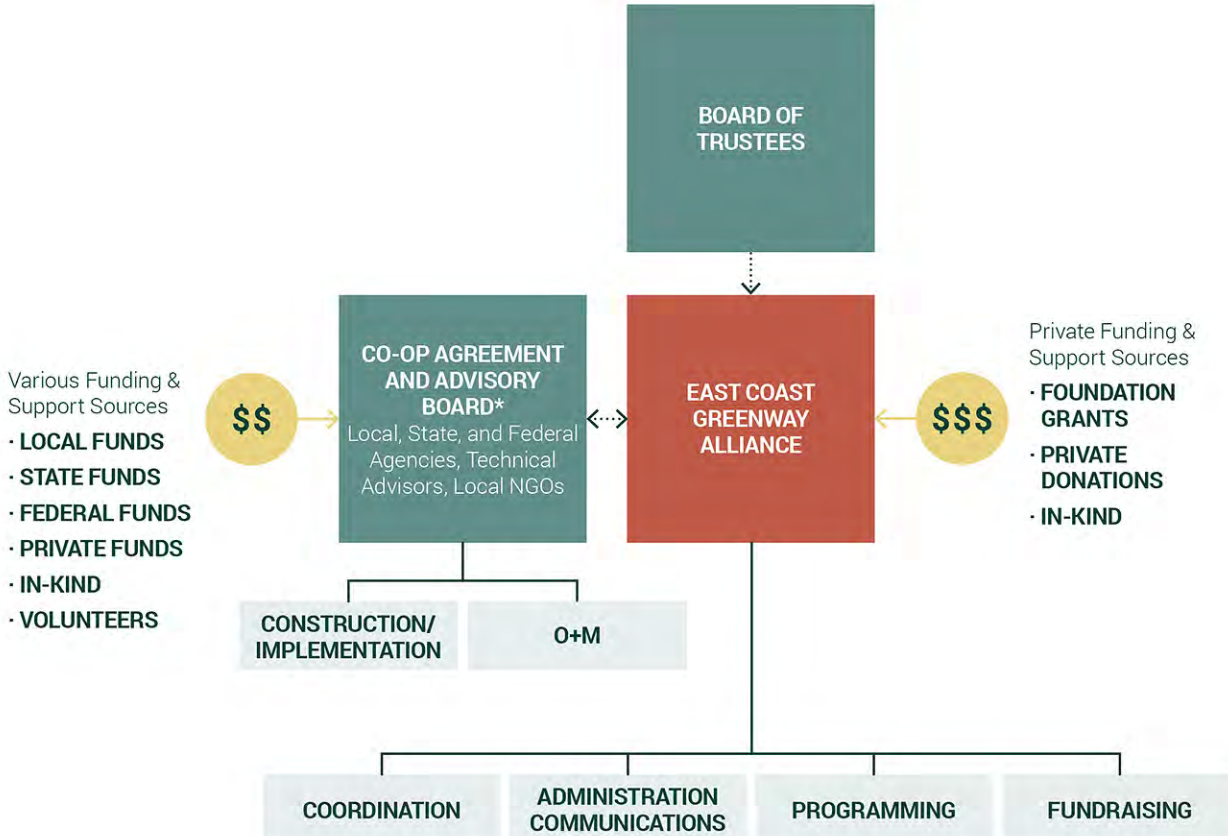
The East Coast Greenway Alliance is overseen by a Board of Trustees and an Advisory Board. The Board of Trustees is made up of 11-25 members, elected by a majority of the Trustees of the current board. Trustees are required to contribute a Trustee-level gift on an annual basis during their term. The Board of Trustees hires the Executive Director and supports the overall mission of the organization. The Board of Trustees also adopts the annual operating budget, approves the allocation of resources in the Alliance, and designates sections of greenway as an official part of the greater Greenway network. The Board is led by a Chairperson, who is elected by a majority vote of the Board. Additional Board officers include one or more Vice Chairpersons, a Secretary, and a Treasurer. The Treasurer is responsible for overseeing the financial resources of the Alliance. A certified public accountant performs an independent audit of the Alliance’s finances at the end of each fiscal year (Figure 9-1).

Additionally, an Advisory Board made up of specialists in fields relevant to trail planning and operations supports the Alliance’s mission. An Executive Director is responsible for the day-to-day operations of the Alliance and is supported by 12 staff members who serve as administrative, membership, programming, and regional operations staff.



9.1.2 FUNDING

The East Coast Greenway Alliance receives its funding from major donors, foundations, corporate support, membership fees, event fees, and in-kind donations. The majority (83 percent) of its expenses are spent on programs. Twelve percent of its expenses are spent on management and administration, and 5 percent are spent on fundraising. Its total revenue in 2018 was just under $1.2 million.



Potential Level of Funding

Note: All trails are owned and managed by agencies at the state and local levels.

Other Potential Entities Providing Funding and Oversight

	Money	Policy	Oversight
Federal			
Federal Highway Administration	●		
State			
State Departments of Transportation	●	●	●
Local & Non-Governmental Organizations (NGO)			
Metropolitan Planning Organizations, Counties, Cities	●	●	●
Local NGOs	●		

Source: Alta 2020

Figure 9-1 East Coast Greenway Alliance Organizational Chart

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10. Option 3: Nonprofit Organization and Local Jurisdiction Ownership

10.1 Overview

A third option would utilize both a nonprofit organization and local jurisdictions. The nonprofit may be an existing nonprofit organization that is passionate about the Great Redwood Trail, or may be a new nonprofit created to oversee trail implementation.

The nonprofit organization would be responsible for coordinating trail planning and design, implementation, and programming. Local jurisdictions such as the counties and cities would own the ROW and oversee trail construction, operations, and maintenance.

In this option, the trail manager duties are split among different entities. The nonprofit organization provides the strong centralized structure in terms of trail planning, coordination, and implementation. However, because nonprofits may not have a stable funding source, the expertise required to operate and maintain a trail, or the capacity to assume the risk associated with owning the ROW, ownership, operations, and maintenance are left to the local jurisdictions.

Although Option 3 provides an opportunity to receive funds from a wider array of sources, it would likely have less consistent funding than Options 1 and 2 and could result in a longer timeframe for trail implementation and less trail consistency (see Table 10-1).

Because this option does not provide one central trail owner, it poses a challenge for the railbanking process. To most efficiently railbank the corridor, the State should consider being the entity to railbank the corridor before transferring sections of the ROW over to individual local jurisdictions, because it is the best equipped existing entity to do so. However, taking on railbanking is not without risks. Pursuant to federal code, any entity that takes on the role of a trail manager must file a statement indicating the willingness to assume full responsibility for: 1) managing the right-of-way, 2) any legal liability arising out of the transfer or use of the right-of-way, and 3) the payment of any and all taxes that may be levied or assessed against the right-of-way.

Table 10-1 Option 3 Governance Criteria: Nonprofit and Local Jurisdictions

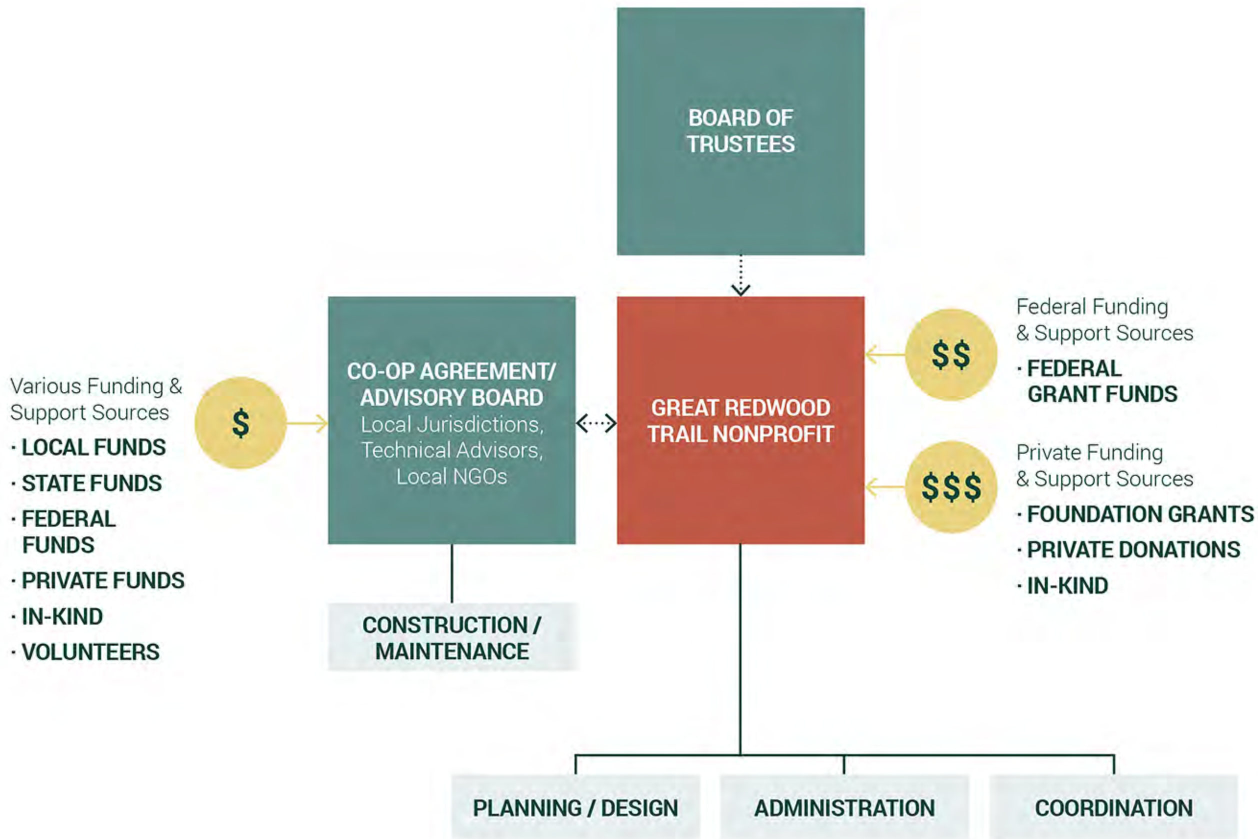
Measurable Criteria	Rating
State Risk	Low
Timeframe for Implementation	Slow
Existing Staff Expertise and Resources	Low
Trail Consistency	Low
Potential Funding Consistency	Low
Long-Term Operations and Maintenance Costs	Low
Maintenance Capabilities	Low

10.2 Flow of Money and Decisions

10.2.1 ORGANIZATIONAL STRUCTURE

The Great Redwood Trail Nonprofit could be loosely modeled after the East Coast Greenway Alliance. The nonprofit would guide the overall vision and implementation of the trail, and partner with various local agencies to build and maintain different sections of the trail. The nonprofit would be led by an Executive Director and overseen by a Board of Trustees and an Advisory Board. Additional staff could consist of regional operations, programs, communications, membership and fundraising, and administrative staff (Figure 10-1).

The Board of Trustees could be made up of 11-15 elected members committed to the vision of the trail who would be responsible for contributing a Trustee-level donation during their term. The Board of Trustees would appoint its Board Chair. The Advisory Board could be made up of state and local agency representatives as well as members of the public with demonstrated expertise in trail planning, design, or implementation. Decisions on which sections of the trail to implement first would be made by executive staff in partnership with the Board of Trustees and the Advisory Board, and would depend on funding, local and state partnerships, and local political support.



Other Potential Entities Providing Funding and Oversight

	Money	Policy	Oversight
Federal			
Federal Highway Administration	●		
National Park Service	●		
State			
California Legislature	●	●	
California Transportation Commission	●		●
California Department of Finance	●		
California State Transportation Agency	●	●	●
California Natural Resources Agency/Departments	●	●	●
Local & Non-Governmental Organizations (NGO)			
Local Counties & Cities	●		
Local NGOs	●		

Potential Level of Funding

Note: All trails are owned and managed by local agencies

Source: Alta 2020

Figure 10-1 Nonprofit and Local Jurisdiction Organizational Chart

Local jurisdictions, such as the counties and cities, would own the corridor ROW. These jurisdictions would also be responsible for trail construction, operations, and maintenance. While the nonprofit organization could also help oversee construction and maintenance, the potential for inconsistent funding and staff resources may make local jurisdictions better suited for these tasks.

10.2.2 FUNDING

The nonprofit organization could receive its funding from a number of private sources. These include foundation partners, corporate donors, major individual donors, membership fees, and in-kind donations. There may be a need for a significant initial investment to fund the establishment of the nonprofit.

These funds would be spent on trail planning and programming. The local jurisdictions would contribute local funds as well as apply for federal and state grant funds for trail construction, operations, and maintenance.

10.3 Great Redwood Trail: Roles and Responsibilities

In this option, the local jurisdictions would own the corridor and would be responsible for trail construction, maintenance, and operations.

The nonprofit organization would guide the overall vision of the trail and would partner with local agencies as well as other nonprofit partners to develop different sections. Local agencies include the counties and the cities. Potential nonprofit partners include the Wildlands Conservancy and Friends of the Eel River.

10.4 Role, Responsibility, and Liabilities of the State

To efficiently railbank the corridor, it would be beneficial for the State to consider managing the railbanking process so that there can be one centralized trail manager to initially assume the ROW. If this is the case, then the State would be liable for the corridor during this temporary period, including managing the right-of-way, legal liability arising out of the transfer or use of the right-of-way, and payment of taxes that may be levied or assessed. While this is not an obligation, it is a key consideration for the railbanking process.

Should this occur, the State should soon after substitute the local counties and cities as the trail managers for the sections of the trail within their jurisdictions.

The State may have some oversight over the nonprofit to the extent that state representatives participate as part of the Advisory Board.

10.5 Great Redwood Trail: Funding Stream

In addition to the private funds described under Section 10.2.2, the nonprofit could also seek local, state, and federal grants.

Local jurisdictions would contribute local funds, corridor revenue funds, and could apply for federal and state grant funds for trail construction, operations, and maintenance.

PROS

- Limits State liability in trail development and maintenance
- Provides multiple avenues to receive funding
- More flexibility with programming, hiring, contracting, and management strategies

CONS

- Trail implementation may take longer to complete and would be more incremental
- Potential for inconsistent funding
- Could result in inconsistent development along the corridor

11. Option 4: Continued NCRA Ownership

11.1 Overview

Option 4 considers the potential of transforming NCRA into a trail agency by changing its mandate. For the purposes of this report, "agency" is used as a broad term and can refer to any type of single state government organizational structure. Although this may be the most efficient solution to determining a management structure for the trail, the new agency may face similar issues with NCRA's current organizational structure (Figure 2-1). It would also assume NCRA's current debt, which would make trail implementation and management difficult. The new trail agency could potentially dispose of this debt by filing for bankruptcy or selling excess ROW to cover the outstanding debt.

As NCRA is not currently defined as a state or local agency, absent additional statute, this option would continue with the existing reporting structure. Unless the entity receives a sustainable funding stream, the new NCRA would be subject to the same budget shortfalls that have impacted NCRA for decades. Lastly, because NCRA's board is currently made up entirely of local representation, it would limit the State's ability to provide oversight in corridor operations (Table 11-1).

Table 11-1 Option 4 Governance Criteria: Continued NCRA Ownership

Measurable Criteria	Rating
State Risk	Moderate
Timeframe for Implementation	Slow
Existing Staff Expertise and Resources	Low
Trail Consistency	Medium
Potential Funding Consistency	Low
Long-Term Operations and Maintenance Costs	Medium
Maintenance Capabilities	Medium

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11.2 Great Redwood Trail: Roles and Responsibilities

In Option 4, the new NCRA agency would continue to own the corridor and oversee operations. For the agency to serve as an effective trail manager, it would require a sustainable funding stream that would enable the agency to hire required staff, including an in-house Counsel, additional administrative staff, and planning and engineering staff. The agency could also partner with local jurisdictions through cooperative agreements to implement and maintain different sections of the trail. It could also partner with a nonprofit organization that would help advocate for the trail and help guide its vision and programming.

11.3 Roles, Responsibilities, and Liabilities of the State

This option presents a moderate level of risk to the State if a state designated funding stream is provided for its operations. This would provide a clear reporting structure for the agency and provide a budget required for adequately managing the trail.

If the State does not reclassify the new NCRA as a state agency or provide a dedicated funding stream, the State would continue to serve its current role in NCRA operations. Without these changes, the new NCRA may fall into debt, given the limited resources available through corridor revenue and other grant funds.

11.4 Great Redwood Trail: Funding Stream

Currently, NCRA has limited financial resources, which mainly consist of local funds in the form of annual payments from lessees and income from equipment rentals. While these funds help cover some of NCRA's operating expenses, they are not sufficient. Some of these funds, like revenue from corridor utilities, would continue to be available to the new NCRA. Rail equipment rentals, however, would likely not be available to the new trail agency.

The new NCRA would also have access to federal and state grant funds, and could potentially pursue a local tax bond measure. Most critically, it would ideally also have access to a dedicated funding stream.

PROS

- Most efficient option for railbanking; would not require the creation of a new governance structure
- Less formal involvement required of existing agencies

CONS

- Limited financial resources with current structure
- Potential to assume NCRA's current debt
- High State risk and potential investment
- Trail implementation may take longer to complete due to limited financial resources

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12. Conclusion

A number of different trail governance structures can potentially be used to implement and manage the Great Redwood Trail. The four options discussed in this report include State ownership, JPA ownership, local jurisdiction and nonprofit ownership, and an extension of the current NCRA ownership as a new trail agency. These four options all have trade-offs in terms of cost, capacity, and access to available funding. They also all present different levels of risk to the State, as well as levels of risk to the quality and efficiency of trail implementation. While there are numerous other combinations of governance structures that could fit under these four ownership models, they would all be subject to the same trade-offs highlighted in this report.

The Great Redwood Trail could preserve the NCRA corridor as a new Active Transportation corridor, providing health and economic benefits to local communities and visitors alike. While there are several complexities and challenges associated with the corridor that any trail manager would need to overcome, including associated costs, railbanking efforts, environmental remediation efforts, operations, and maintenance, the four governance structure options presented in this report all have the potential to manage these tasks, regardless of the level of cost, efficiency, and quality trade-offs involved.