APPENDIX A. Project Layouts



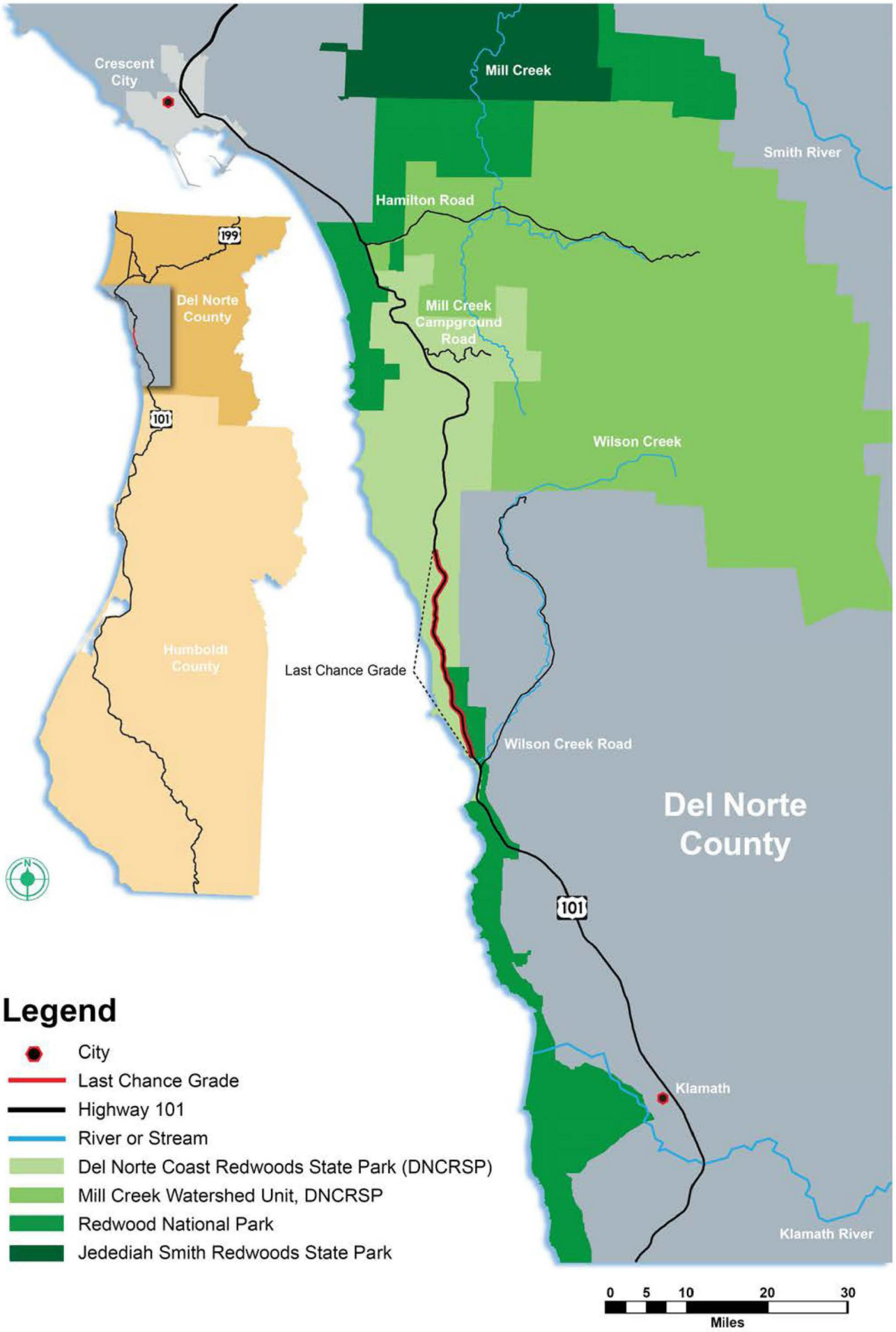


FIGURE 1 – Project Location Map

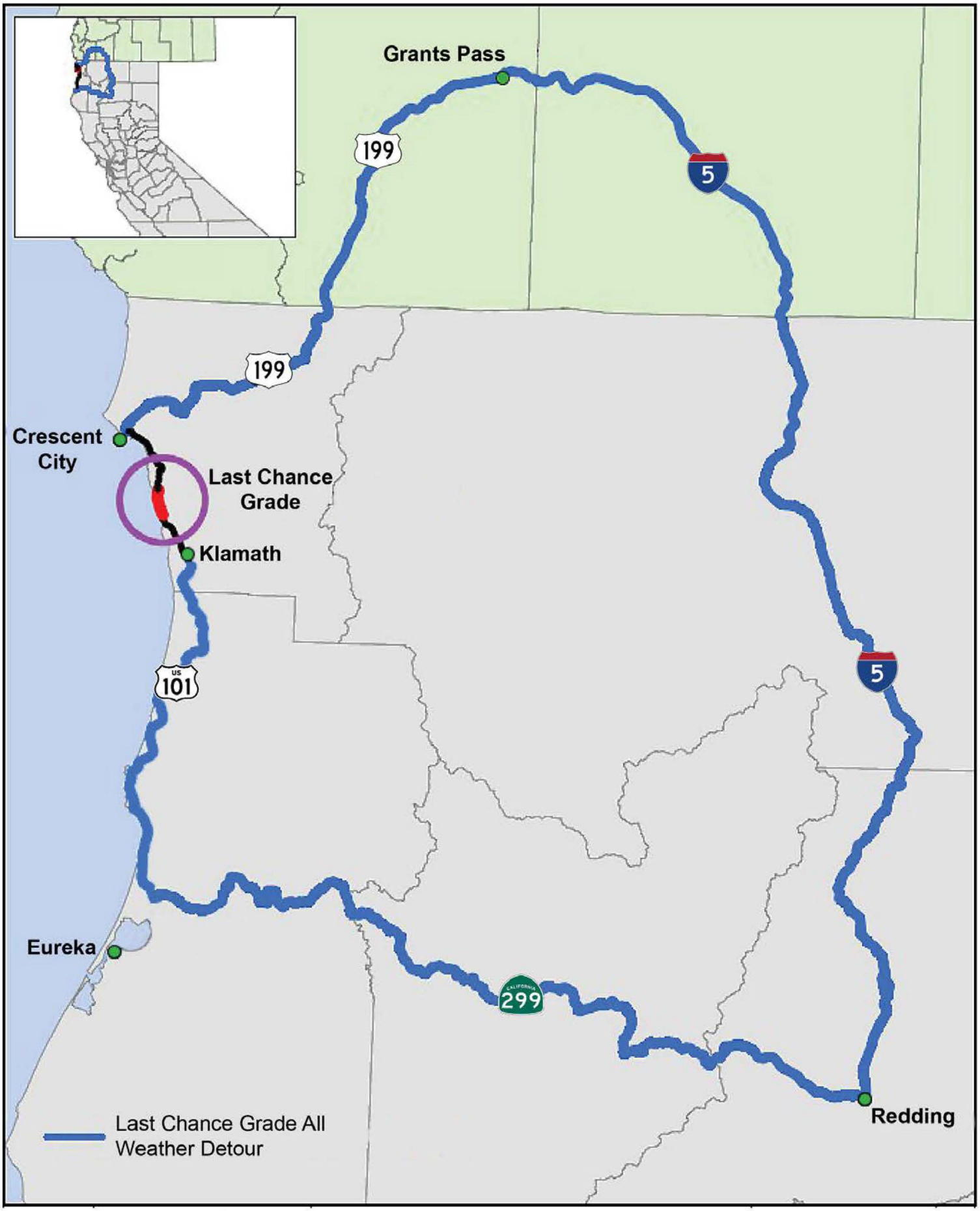


FIGURE 2 – Regional Location and Detour Map

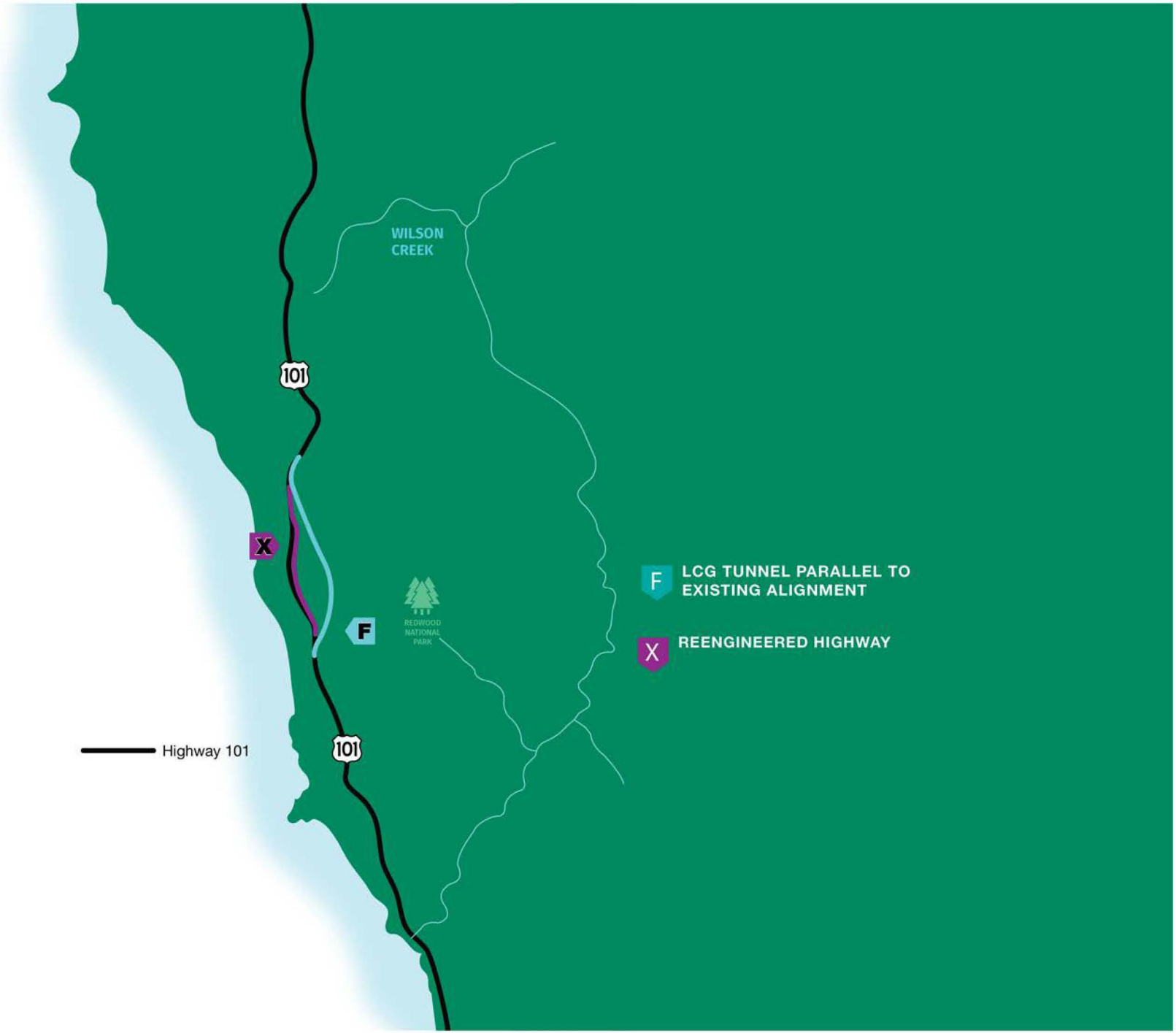


FIGURE 3a –Build Alternatives Overview

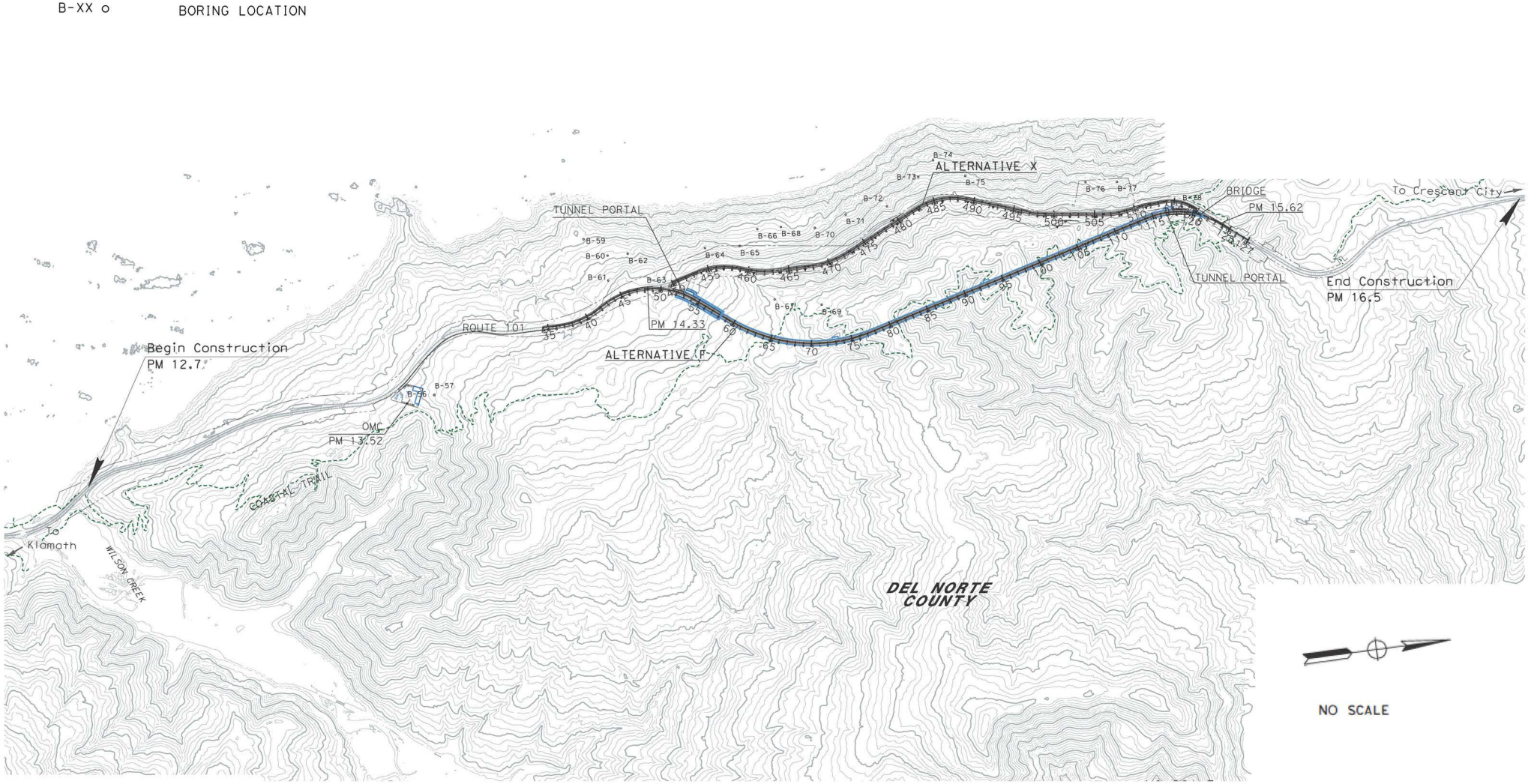


FIGURE 3b – Project Alternative Overview

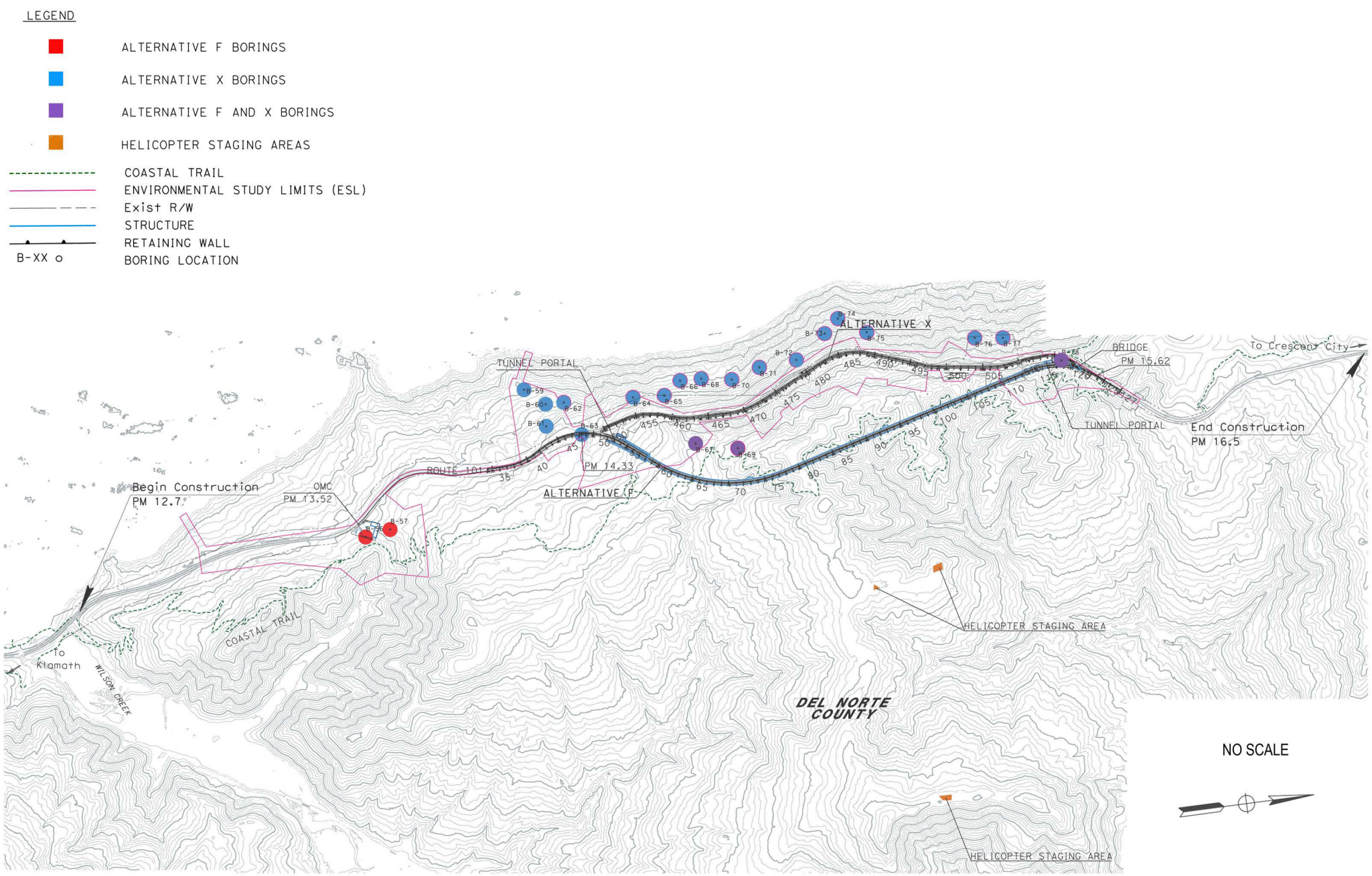


FIGURE 4 – Geotech Investigation Layout

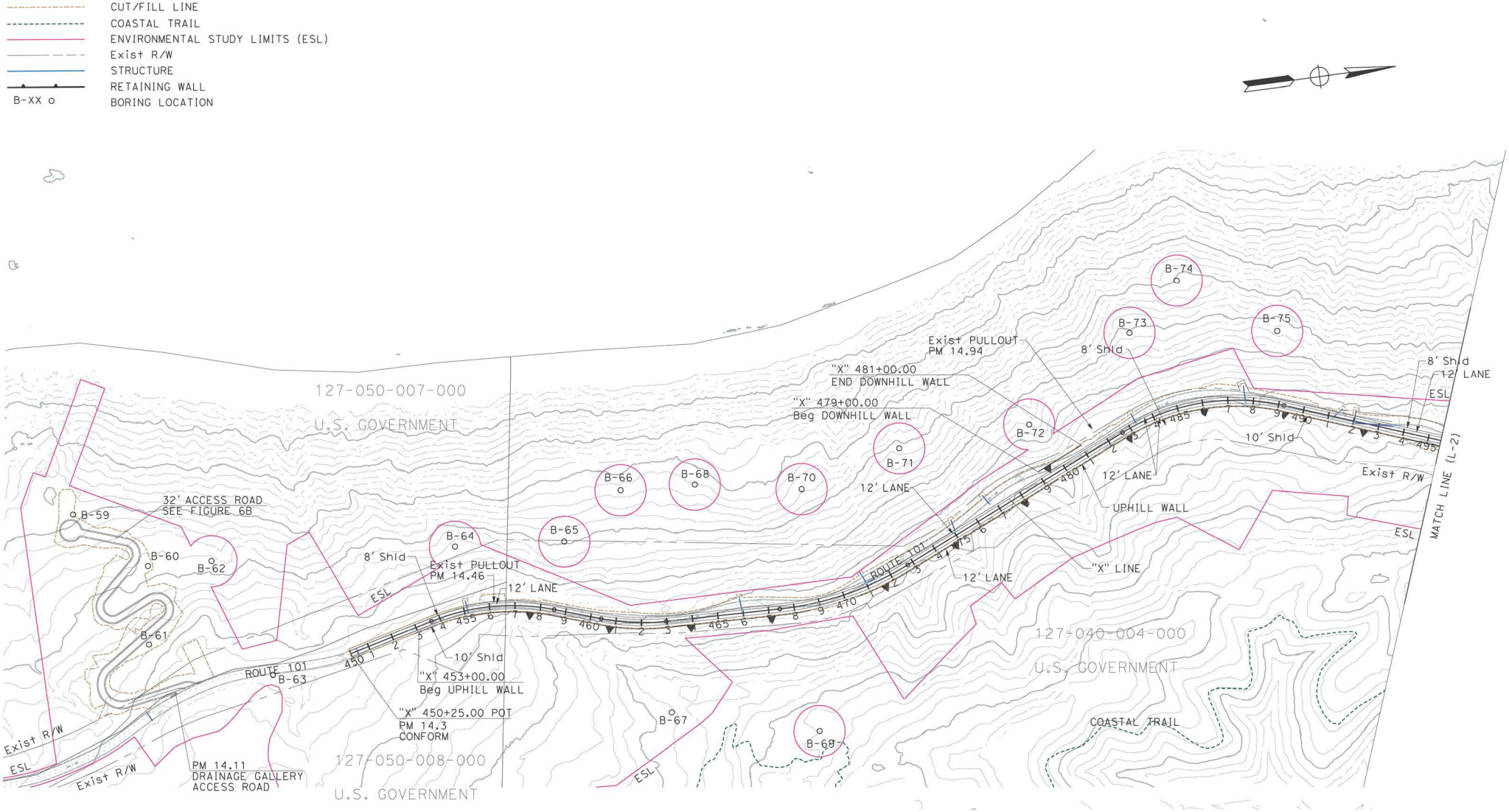
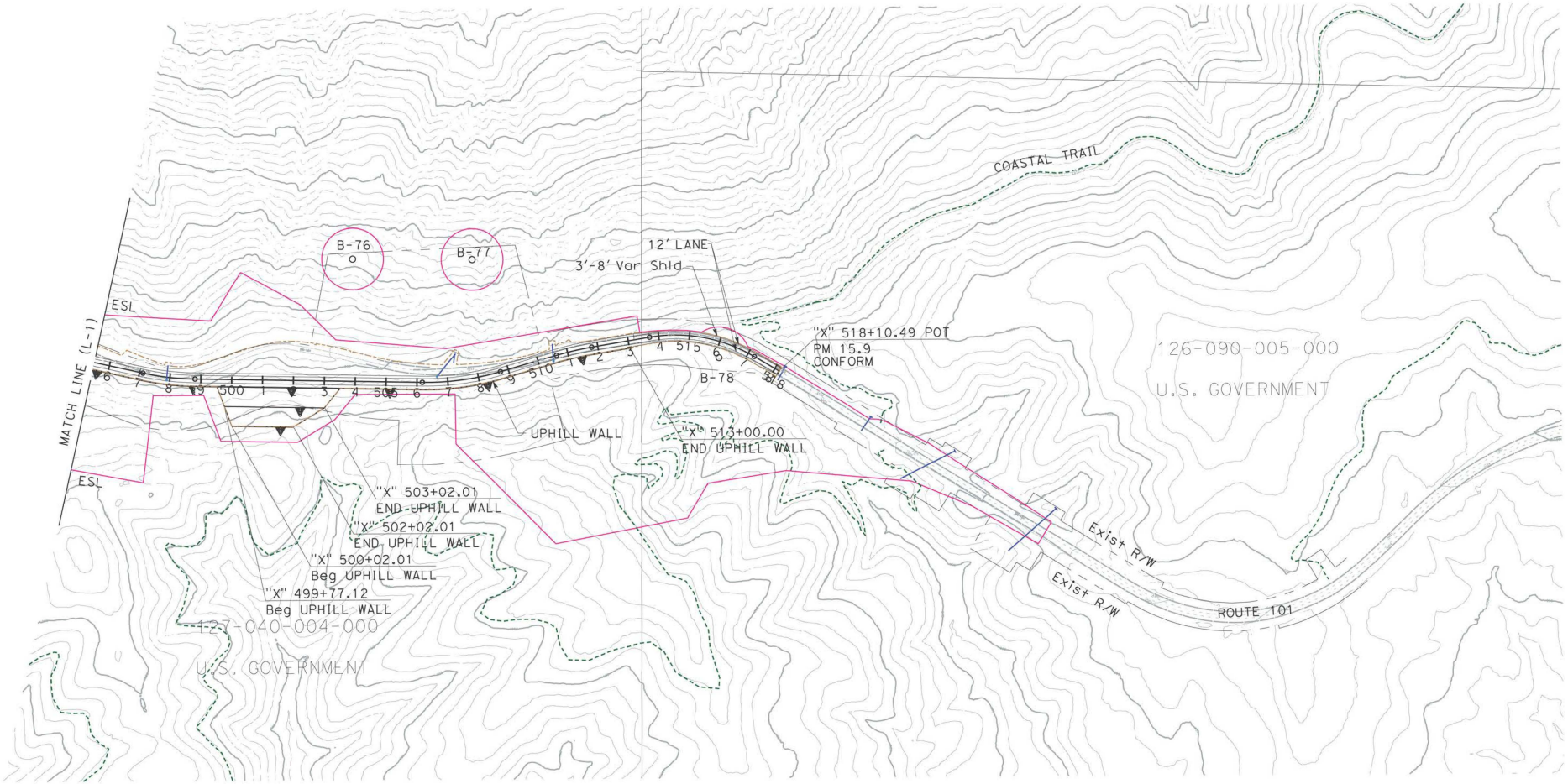


FIGURE 5a –Alternative X Detailed Layout

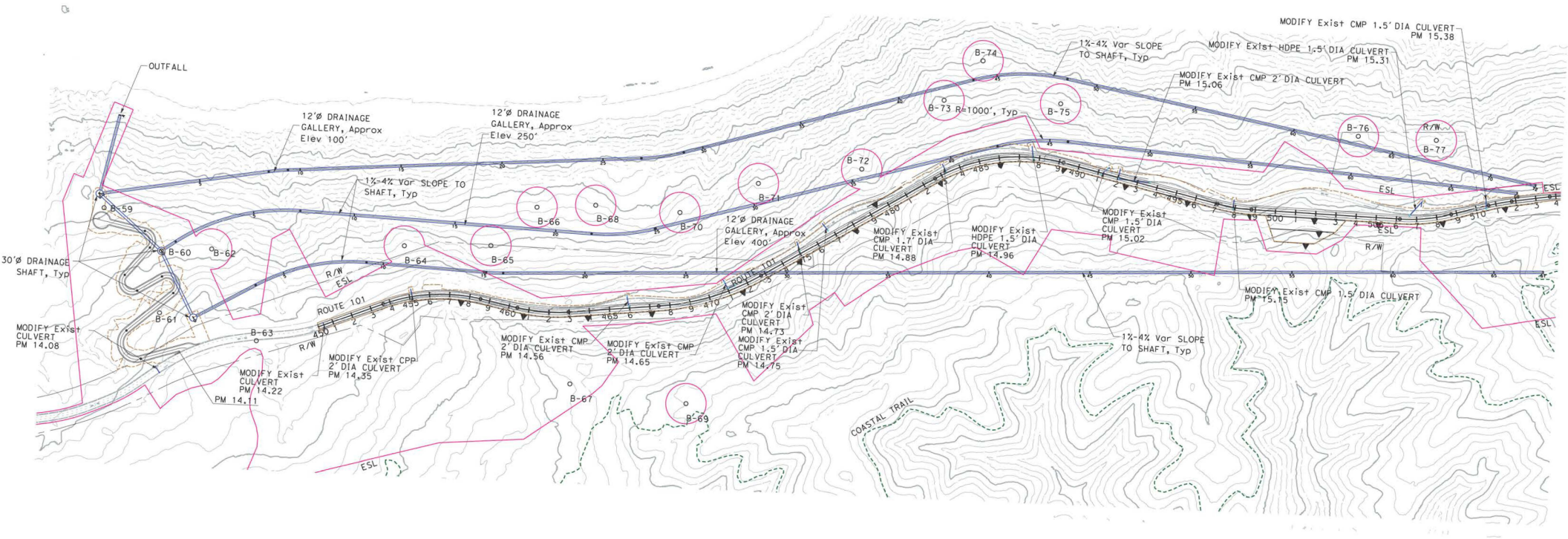
LEGEND:

- CUT/FILL LINE
- COASTAL TRAIL
- ENVIRONMENTAL STUDY LIMITS (ESL)
- Exist R/W
- STRUCTURE
- RETAINING WALL
- B-XX o BORING LOCATION



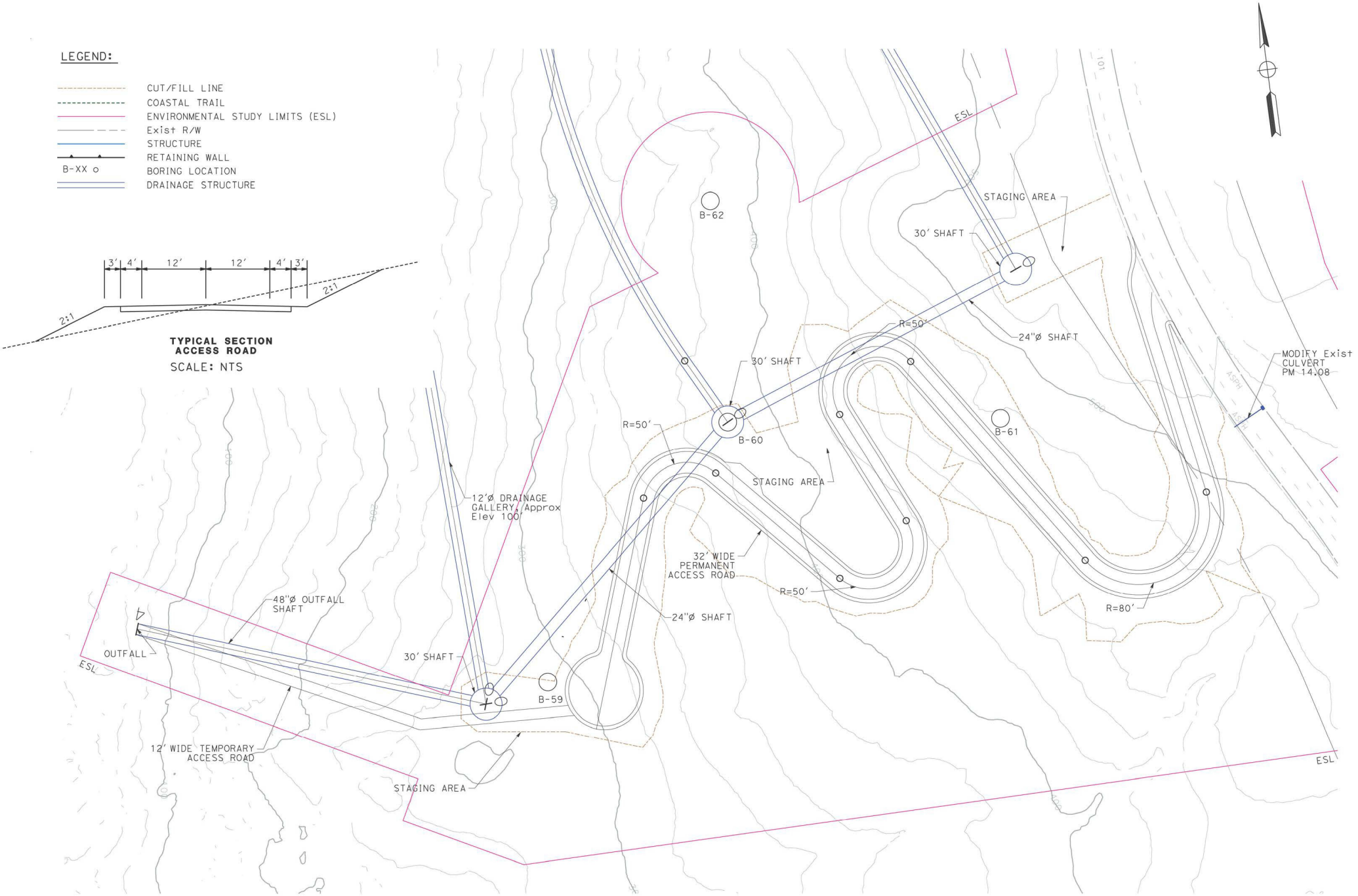
SCALE: 1" = 200'

FIGURE 5b –Alternative X Detailed Layout



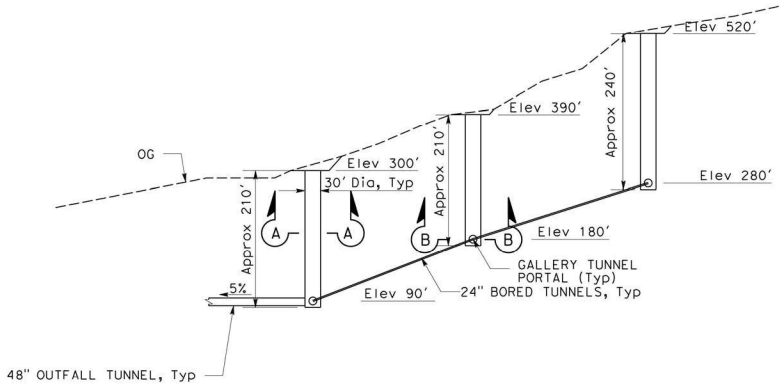
SCALE: 1" = 250'

FIGURE 6a – Alternative X Drainage Gallery Plan

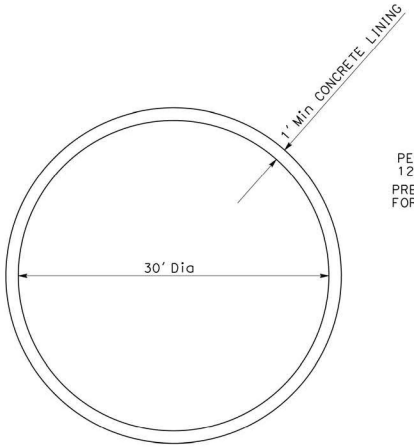


SCALE: 1" = 50'

FIGURE 6b – Alternative X Drainage Gallery Access Road, Outfall, and Shaft Layout

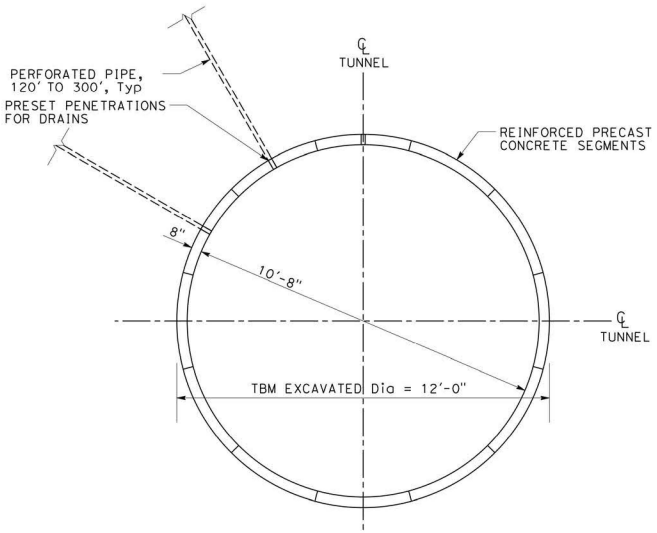


ELEVATION
NO SCALE



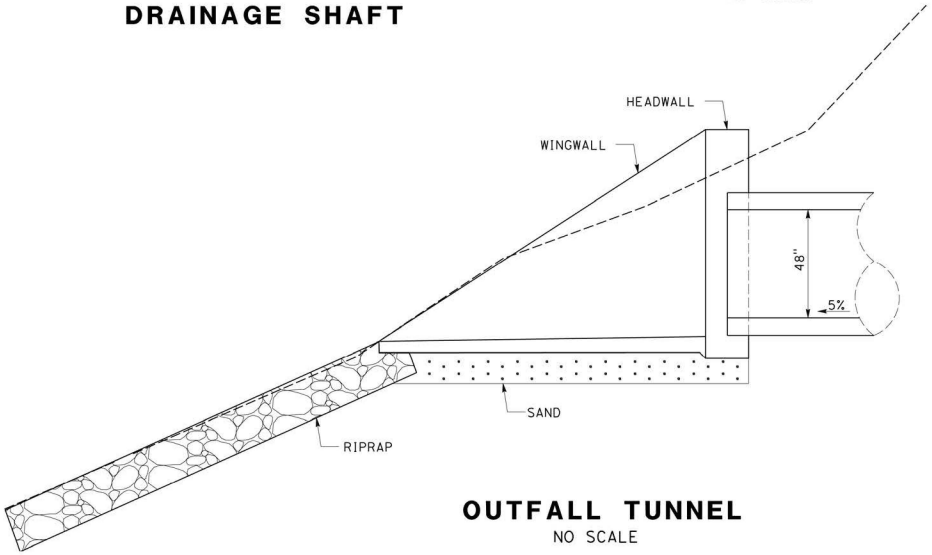
SECTION A-A
NO SCALE

DRAINAGE SHAFT



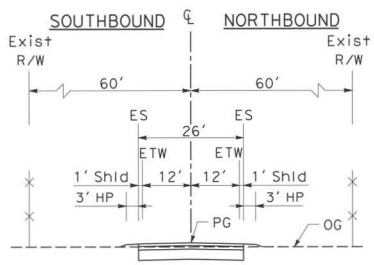
SECTION B-B
NO SCALE

DRAINAGE GALLERY



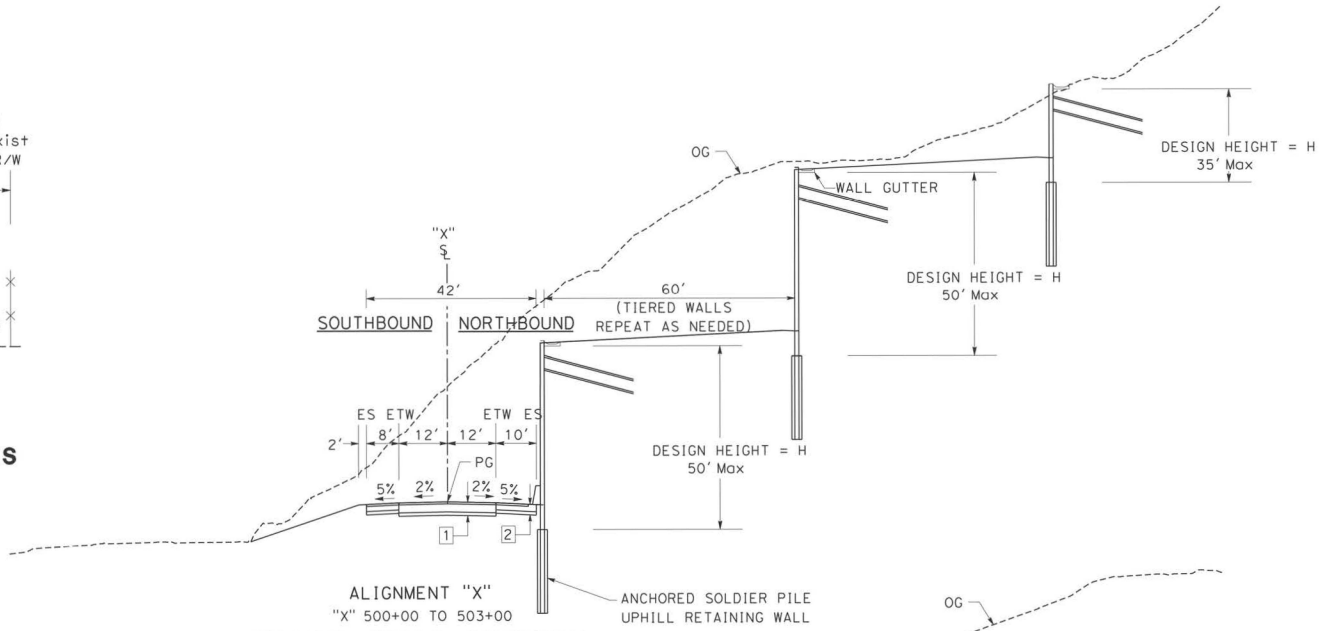
OUTFALL TUNNEL
NO SCALE

FIGURE 7a - Alternative X Drainage Gallery Cross-Sections

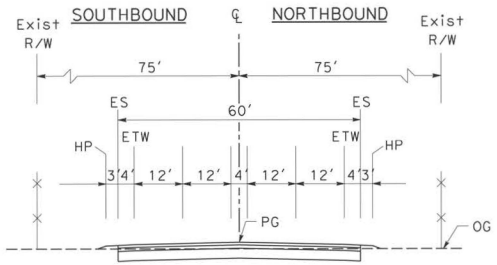


ROUTE 101
ALT X: PM 15.9
ALT F: PM 15.7

EXISTING CONDITIONS NORTH CONFORM

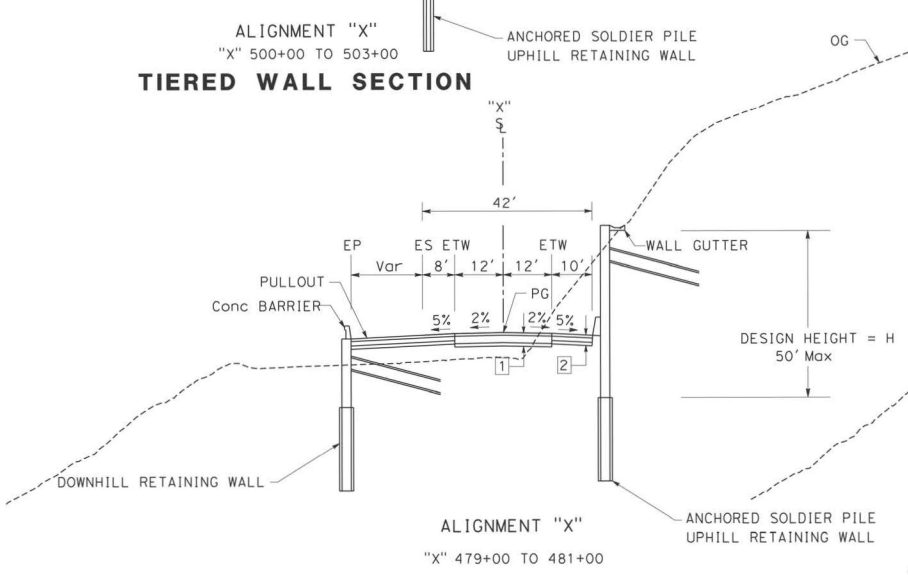


TIERED WALL SECTION

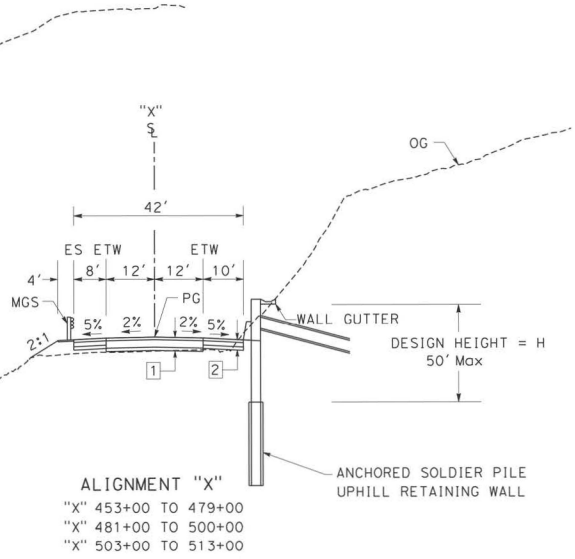


ROUTE 101
ALT X: PM 14.3
ALT F: PM 14.1

EXISTING CONDITIONS SOUTH CONFORM



DUAL WALL SECTION



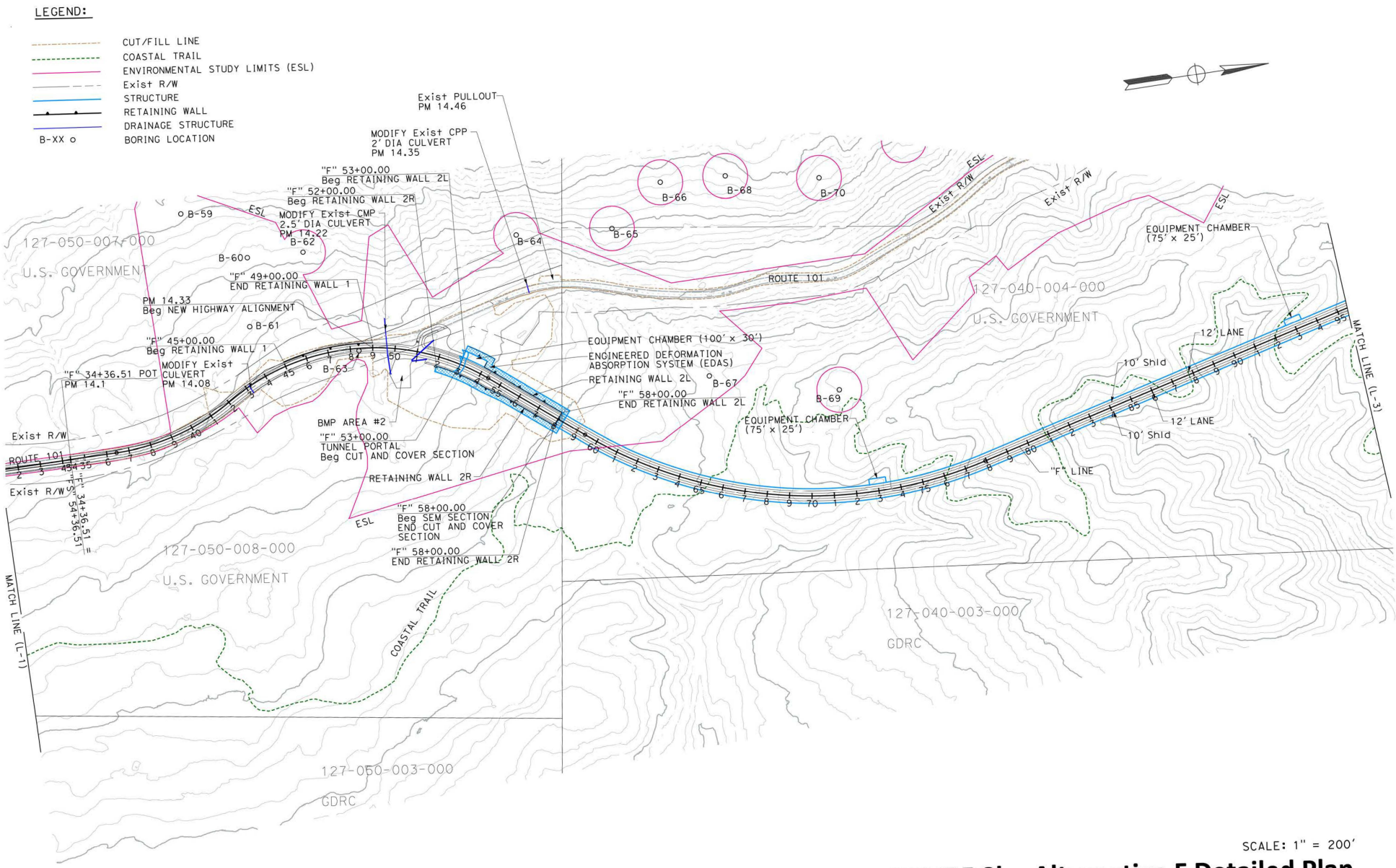
SINGLE WALL SECTION

FIGURE 7b– Alternative X Typical Cross Sections



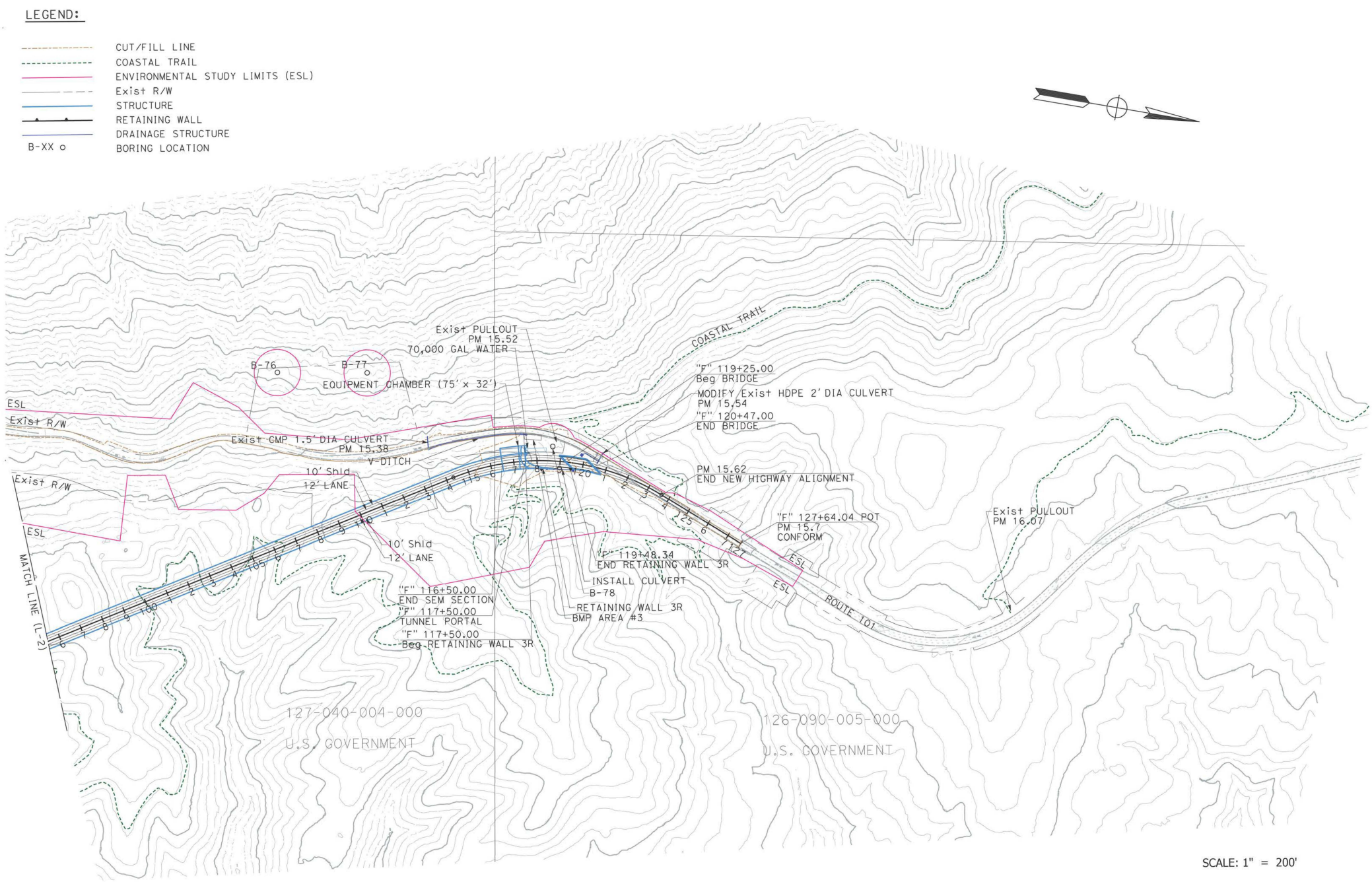
SCALE: 1" = 200'

FIGURE 8a – Alternative E, Detail



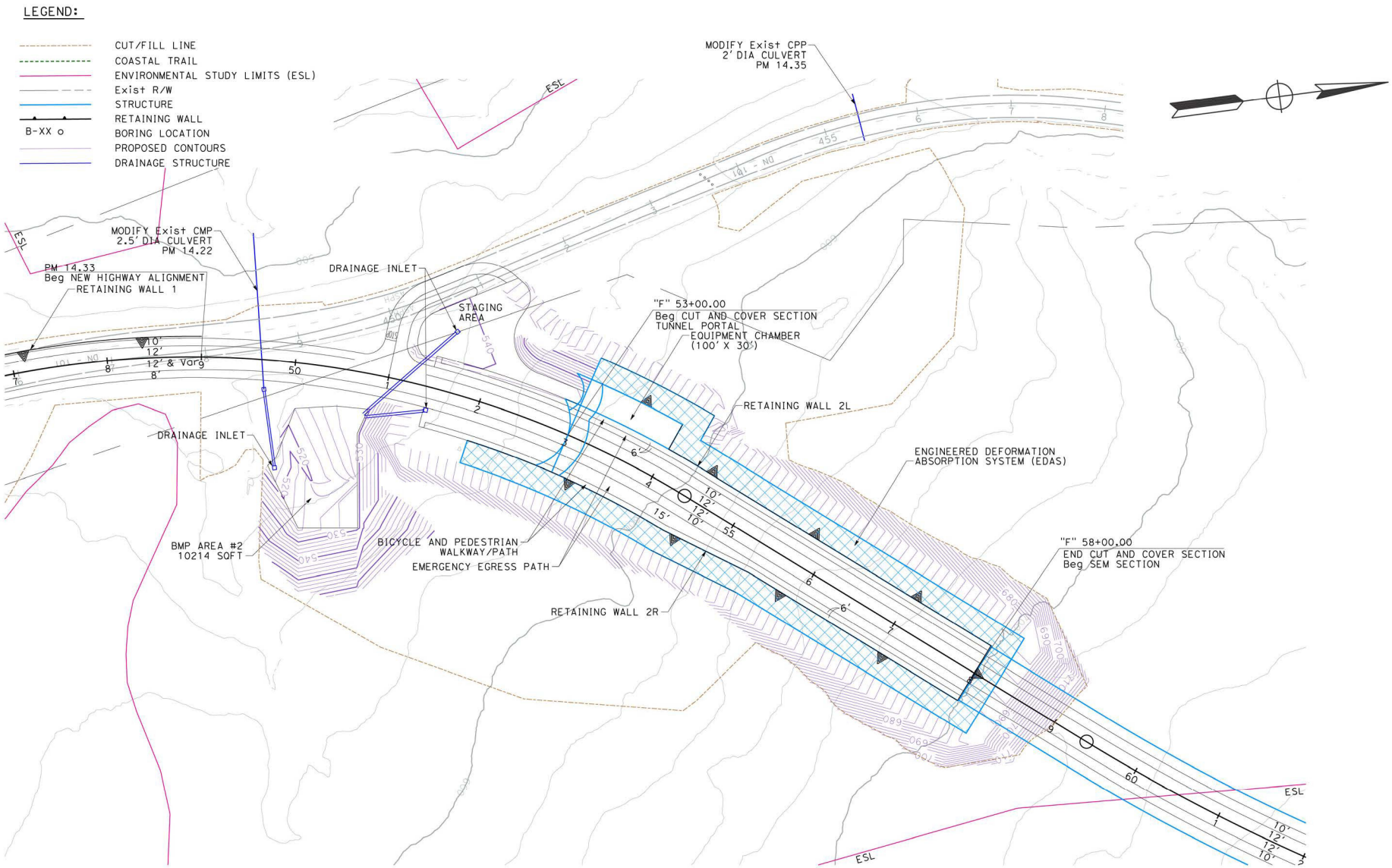
SCALE: 1" = 200'

FIGURE 8b - Alternative F Detailed Plan



SCALE: 1" = 200'

FIGURE 8c – Alternative F Detailed Plan



SCALE: 1" = 50'

FIGURE 9 - Alternative F South Portal Layout

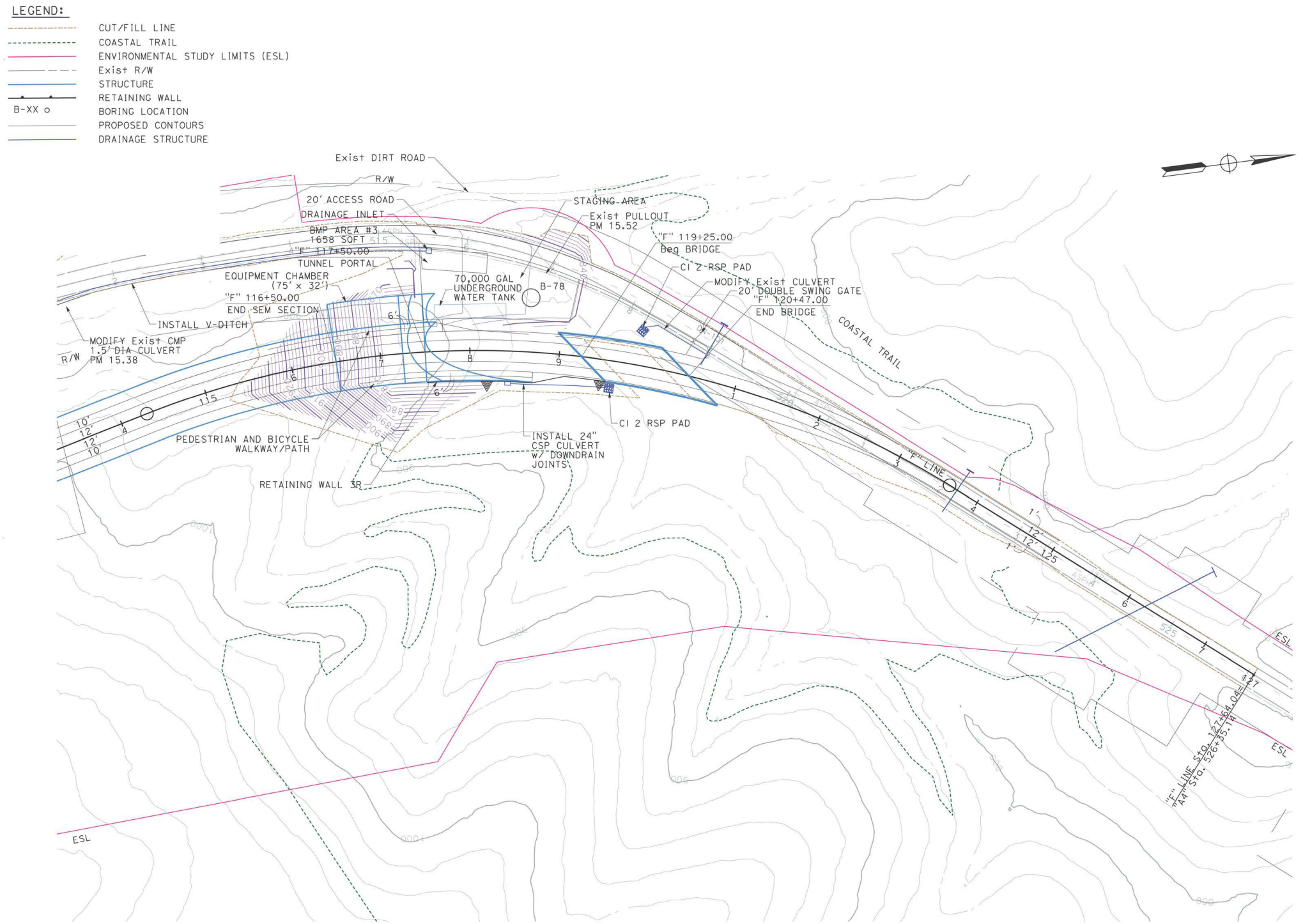


FIGURE 10 – Alternative F North Portal and Bridge Layout

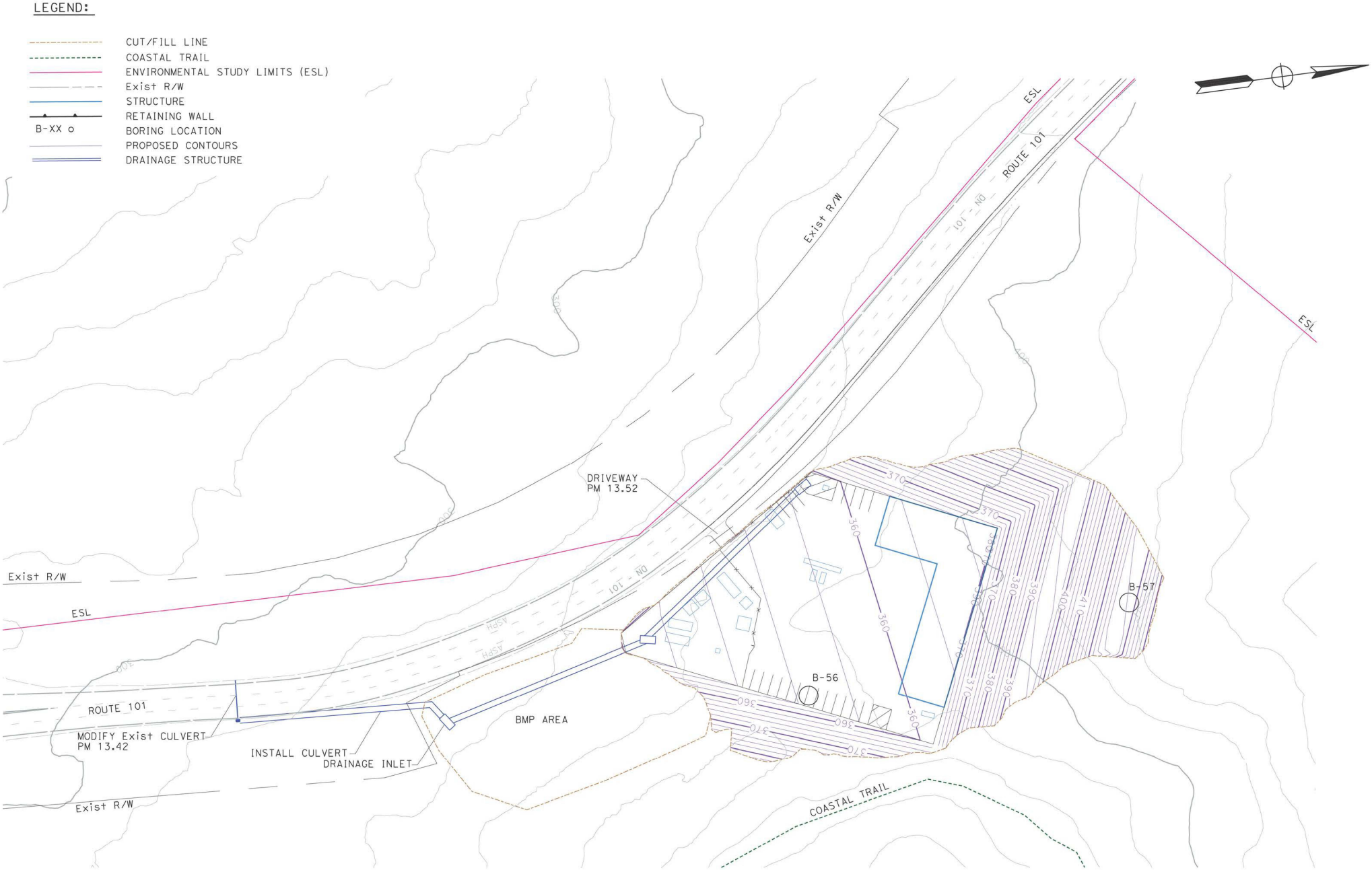
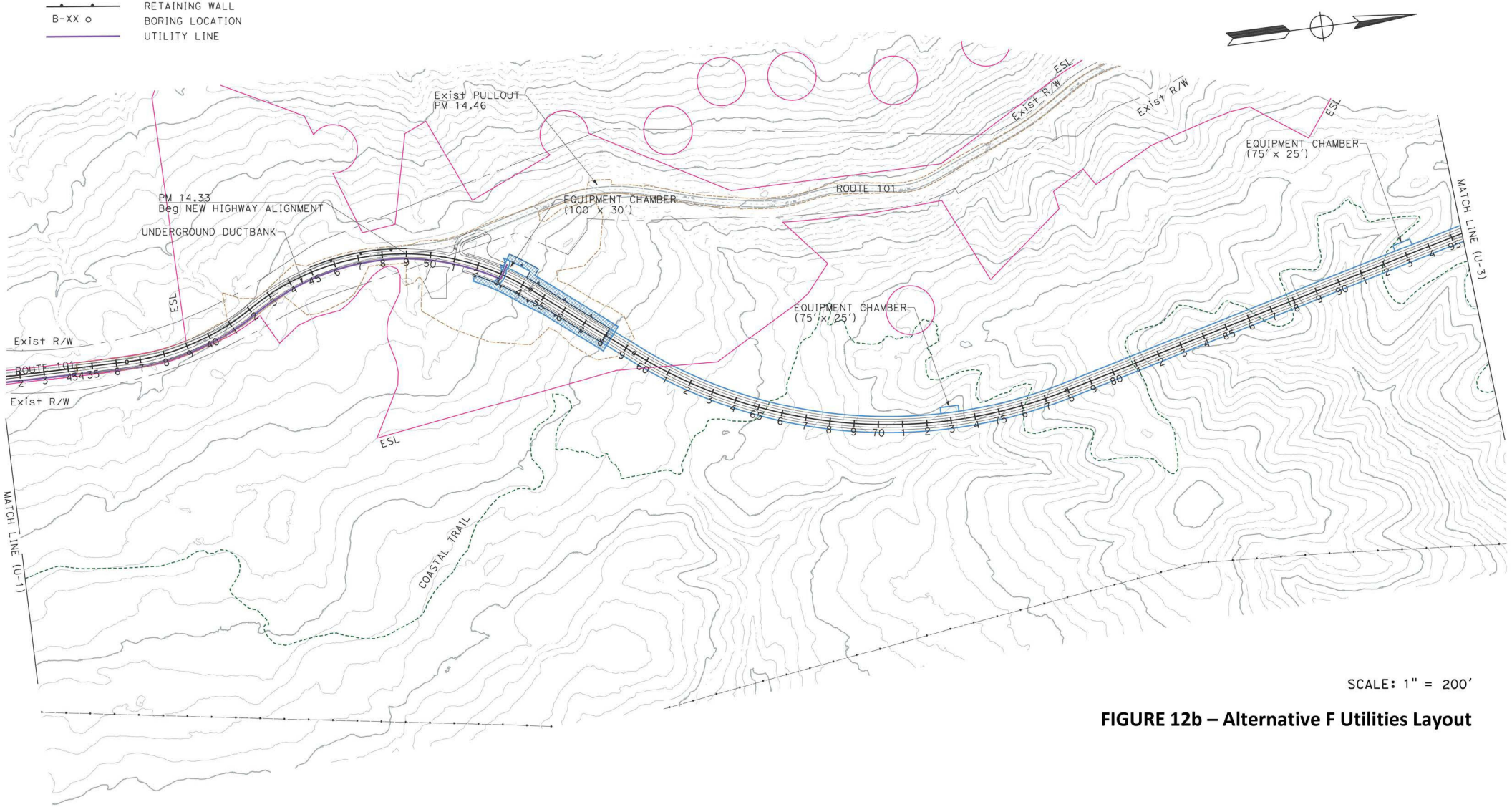


FIGURE 11 – Alternative F Maintenance Facility Layout

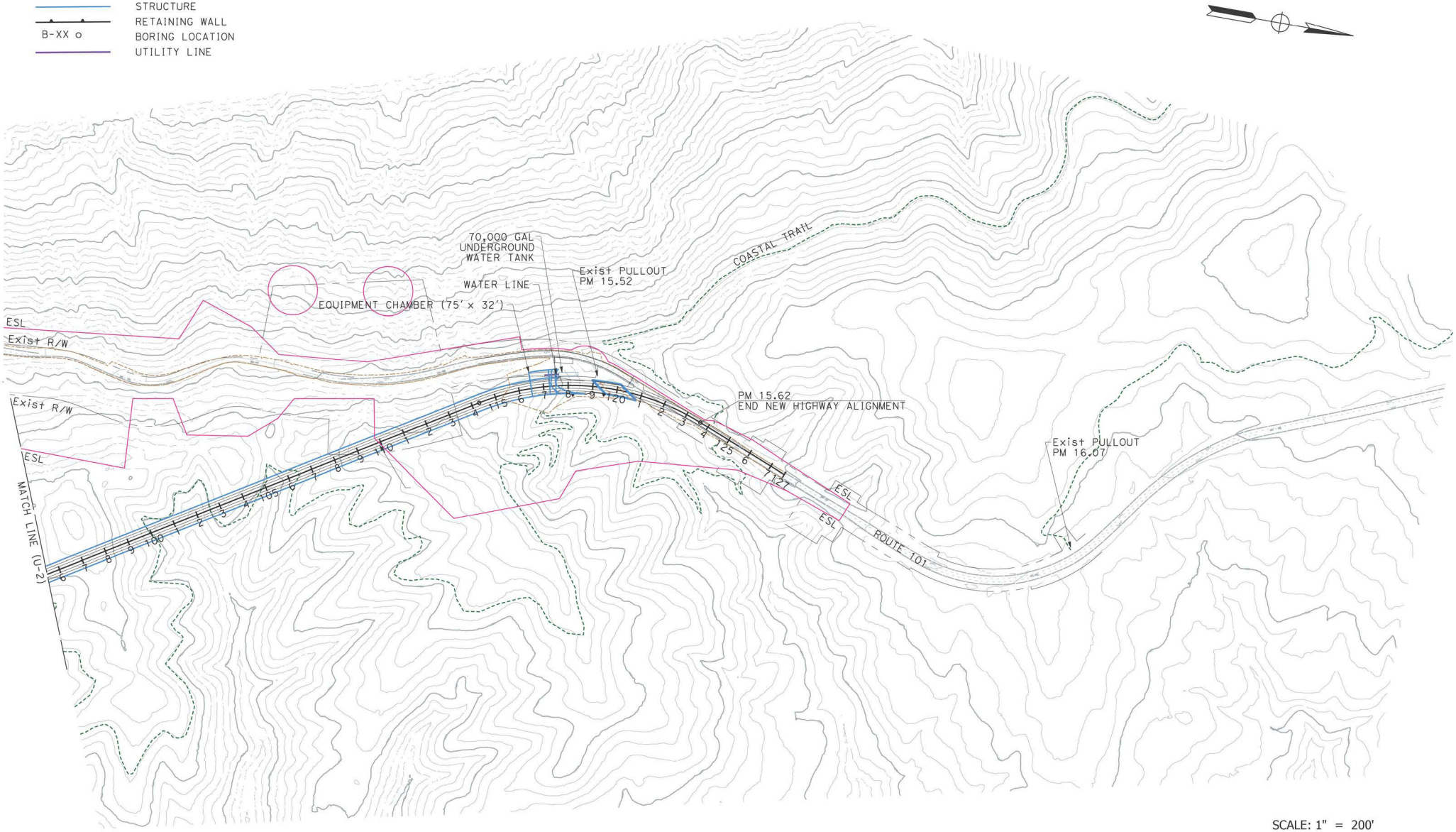


FIGURE 12a – Alternative F Utilities Layout



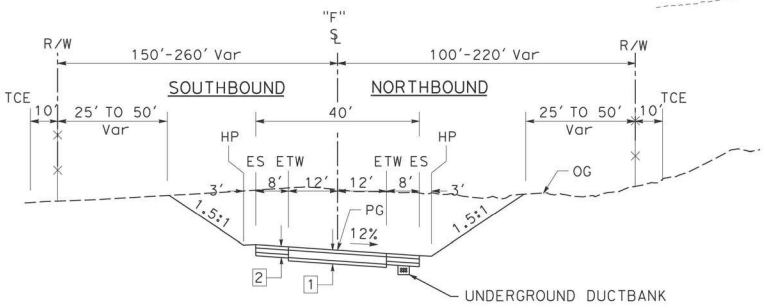
SCALE: 1" = 200'

FIGURE 12b – Alternative F Utilities Layout



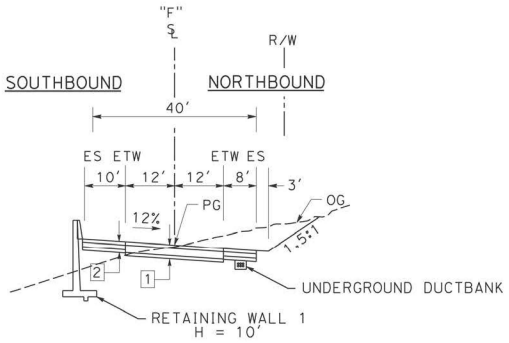
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FIGURE 12c – Alternative F Utilities Layout



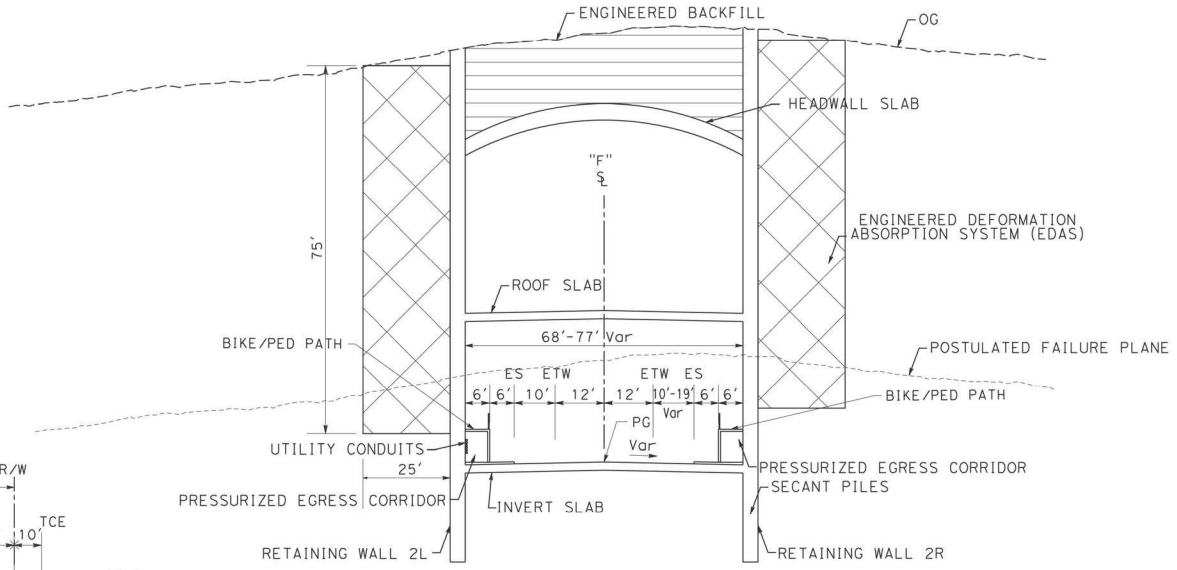
"F" 49+00.00 TO 52+00.00

CUT SECTION



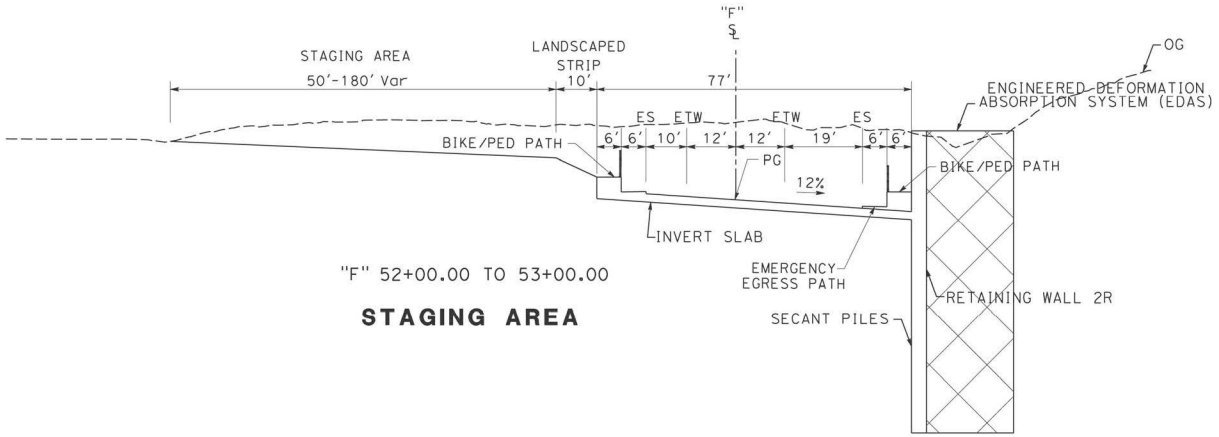
"F" 45+00.00 TO 49+00.00

FILL WALL SECTION



"F" 53+00.00 TO 58+00.00

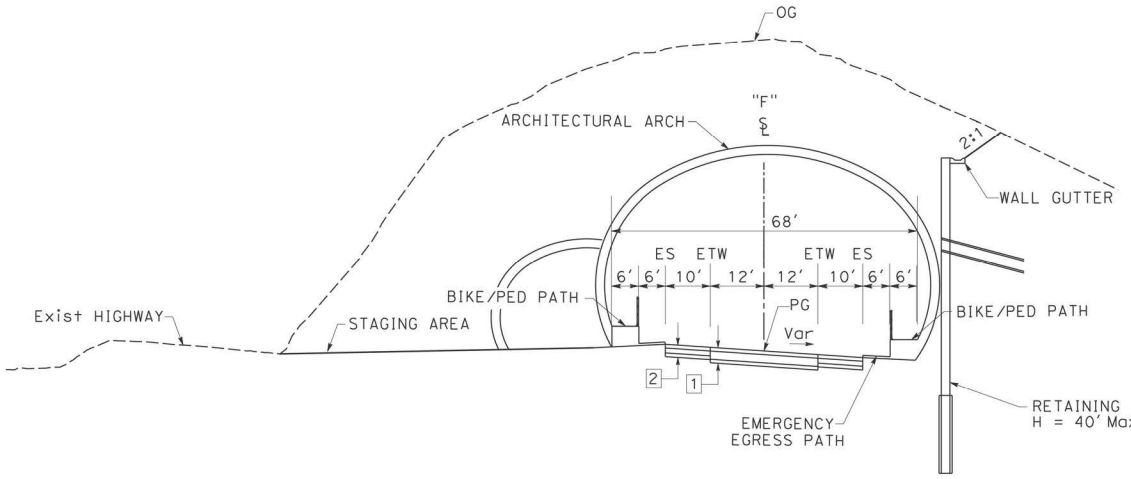
CUT AND COVER / ENGINEERED DEFORMATION ABSORPTION SYSTEM



"F" 52+00.00 TO 53+00.00

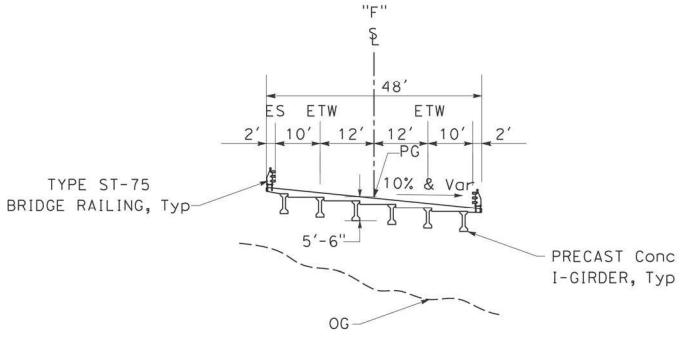
STAGING AREA

FIGURE 13a – Alternative F Typical Cross Sections



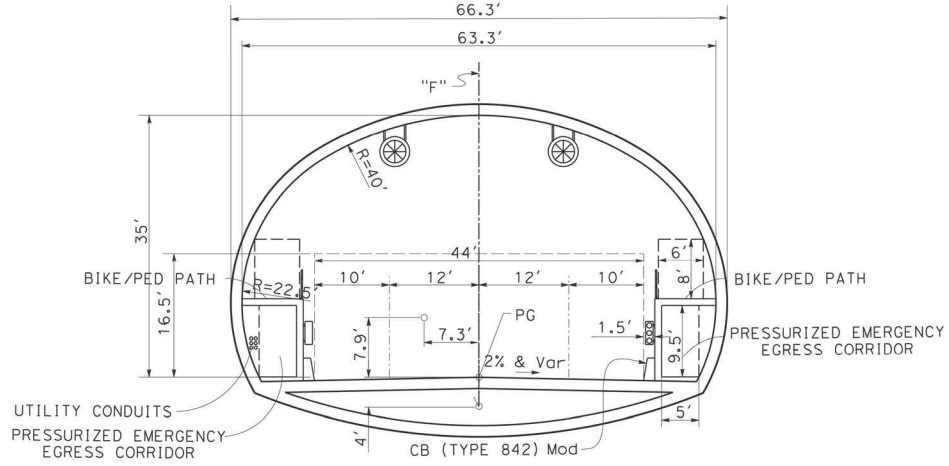
"F" 117+50.00 TO 119+25.00

TUNNEL APPROACH



"F" 119+25.00 TO 120+47.00

BRIDGE



"F" 58+00.00 TO 116+50.00

TUNNEL - SEM SECTION

FIGURE 13b – Alternative F Typical Cross Sections

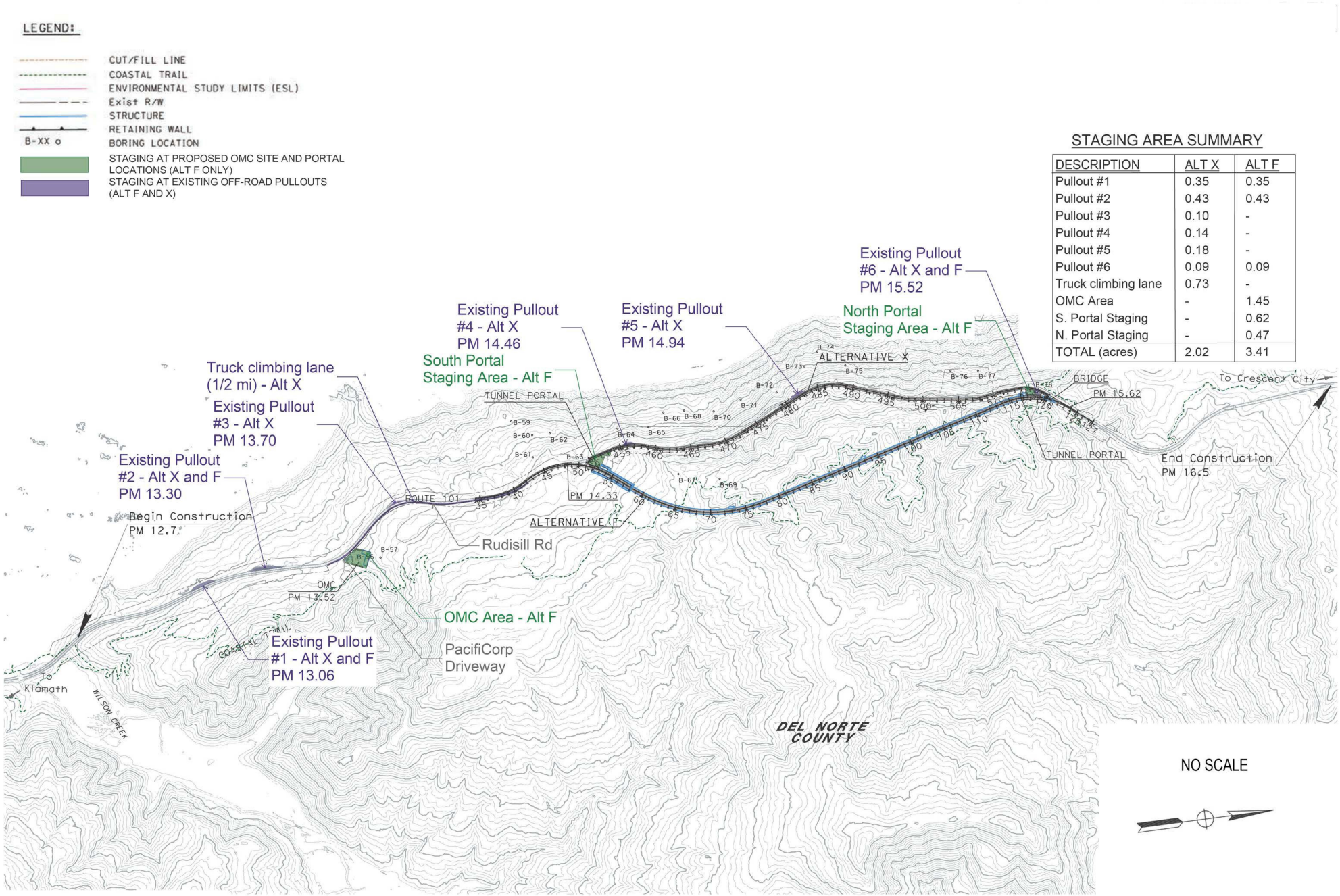
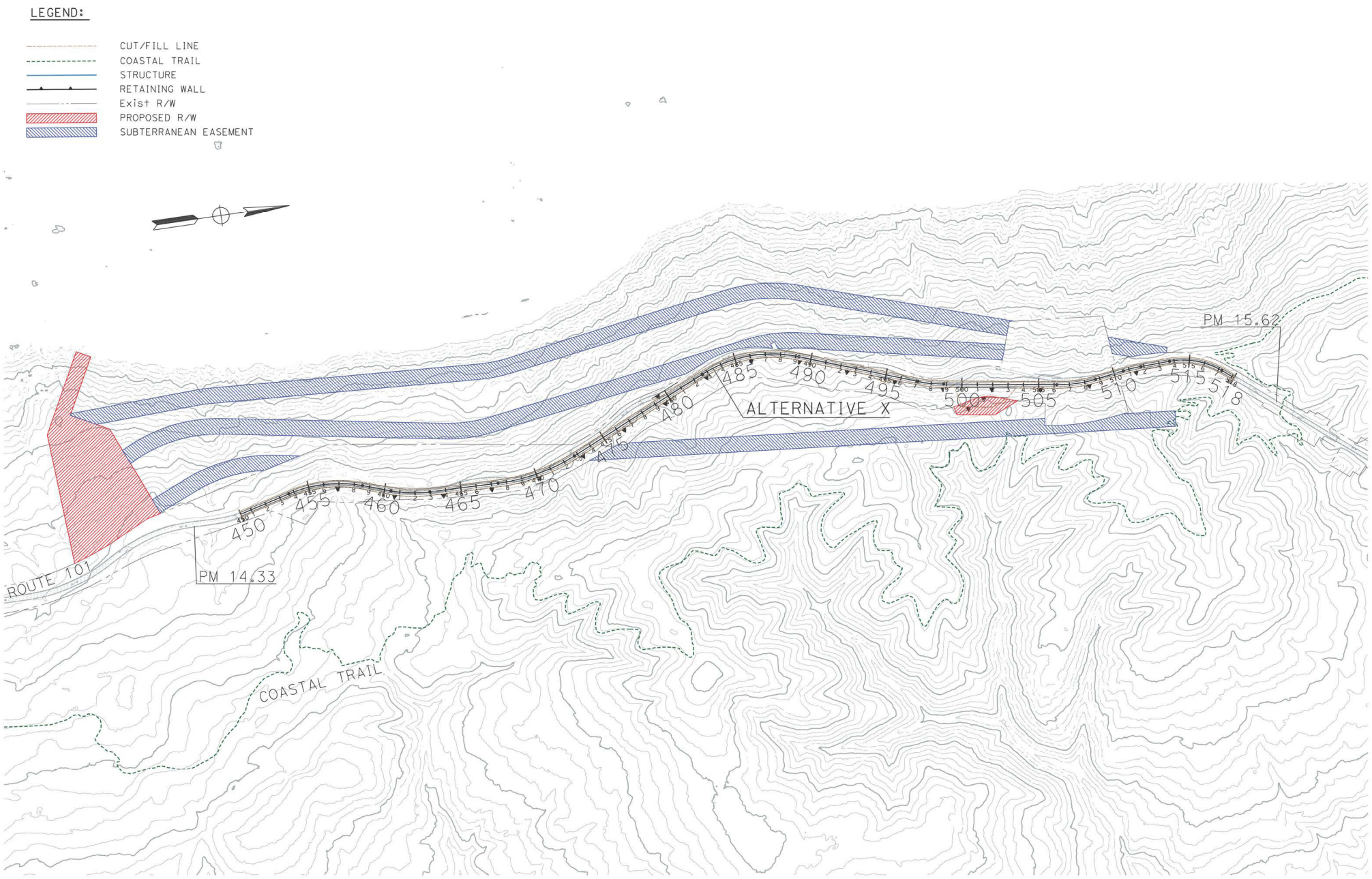
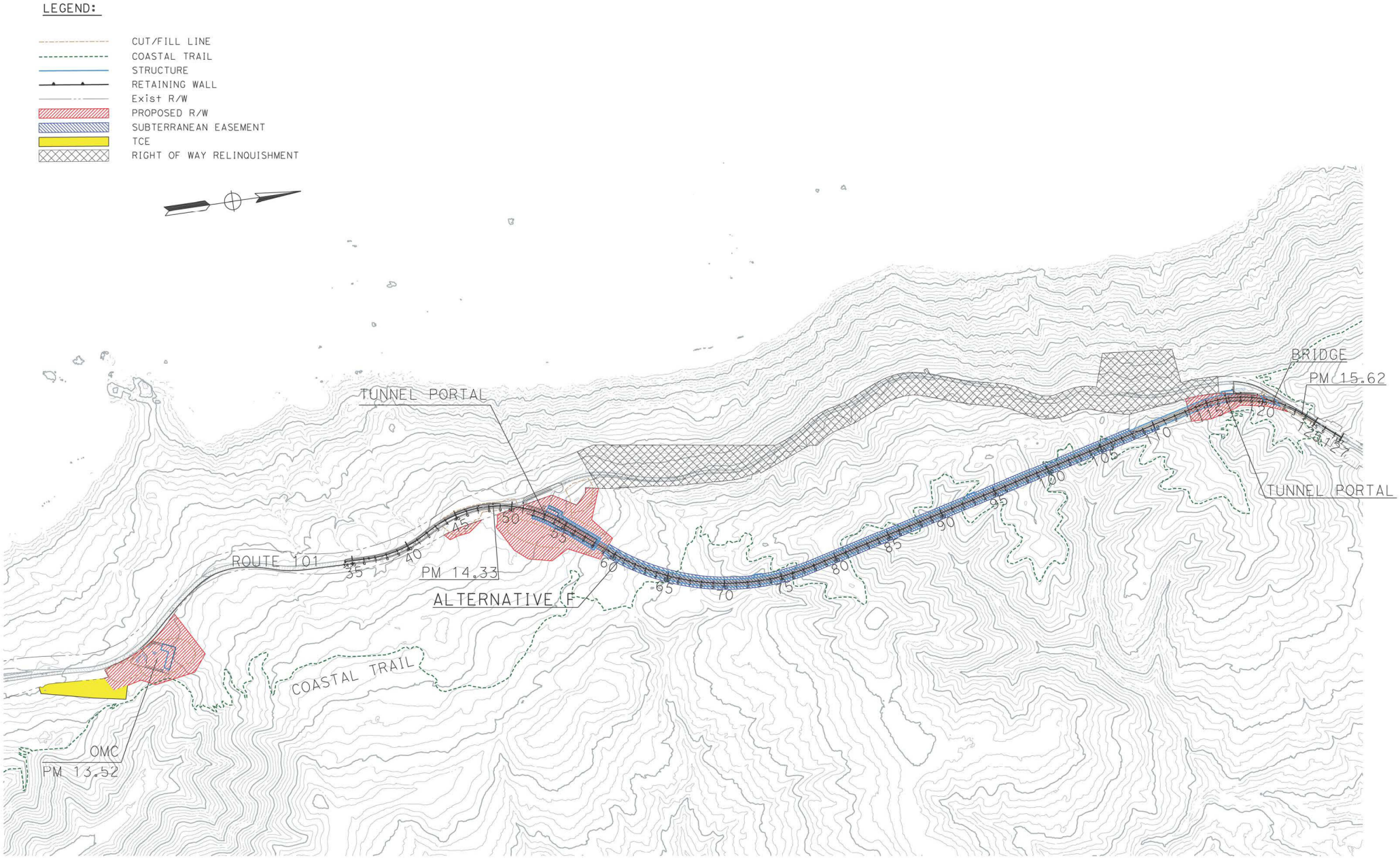


FIGURE 14 – Staging Areas Layout



SCALE: 1" = 300'

FIGURE 15a – Alternative X ROW



SCALE: 1" = 400'

FIGURE 15b – Alternative F ROW/Relinquishment



APPENDIX B. Section 4(f)



LAST CHANCE GRADE
PERMANENT RESTORATION PROJECT

DEL NORTE COUNTY, CALIFORNIA
DISTRICT 1 – DN – 101 (Post Miles 12.7 to 16.5)
EA 01-0F280 / EFIS 0115000099



Final Section 4(f)

May 2026

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated May 27, 2022, and executed by FHWA and Caltrans.



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ACRONYMS AND ABBREVIATIONS

ABBREVIATION / ACRONYM	DESCRIPTION
APE	Area of Potential Effects
BCA	Benefit/Cost Analysis
Caltrans	California Department of Transportation
CCT	California Coastal Trail
CDPR	California Department of Parks and Recreation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CRHR	California Register of Historical Resources
CSP	California State Parks
DBH	diameter at breast height
DNCRSP	Del Norte Coast Redwoods State Park
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESL	Environmental Study Limits
FHWA	Federal Highway Administration
FOE	Finding of Effect
GDRC	Green Diamond Resource Company
GIS	Geographic Information System
GMP	General Management Plan
GP	General Plan
GRA	Geotechnical Risk Assessment
LCG	Last Chance Grade
LWCF	Land and Water Conservation Fund
MAMU	marbled murrelet
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NOP	Notice of Preparation
NPS	National Park Service
NRHP	National Register of Historic Places
OMC	Operations and Maintenance Center
PA	Programmatic Agreement
PM(s)	Post Mile(s)
RNP	Redwood National Park
RNSP	Redwood National and State Parks

ABBREVIATION / ACRONYM	DESCRIPTION
ROW	right of way
SHPO	State Historic Preservation Officer
TCE	Temporary Construction Easement
TCL	Traditional Cultural Landscape
U.S. 101	United States Highway 101
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USC	United States Code

CHAPTER 1. INTRODUCTION

The Last Chance Grade (LCG) Permanent Restoration Project, often referred to as Last Chance Grade, is a project proposed by the California Department of Transportation (Caltrans) to develop a long-term solution to the instability and potential roadway failure at LCG between post miles (PMs) 12.7 and 16.5.

In support of the project, this analysis was prepared to address Section 4(f) of the U.S. Department of Transportation Act, which requires that proposed transportation use of any land from a significant publicly owned land of a public park, recreation area, wildlife and waterfowl refuge, or public or private historic site that is on or eligible for the National Register of Historic Places (NRHP) be avoided, if avoidance is feasible and prudent. In addition, a full evaluation of measures to minimize harm to that property must be made and documented.

This document identifies Section 4(f) resources in the LCG study area and describes the nature and extent of the potential effects on and uses of these properties, and discusses avoidance alternatives, measures to minimize harm, and coordination with the officials with jurisdiction.

1.1 Section 4(f) of the Department of Transportation Act

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project "…requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

1. There is no prudent and feasible alternative to using that land; and
2. The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use."

Section 4(f) further requires coordination with the Department of the Interior and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

Responsibility for compliance with Section 4(f) has been assigned to Caltrans pursuant to 23 USC 326 and 327, including determinations and approval of Section 4(f) evaluations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

1.1.1 Use of Section 4(f) Resources

The term "use"—as it relates to Section 4(f)—is an adverse impact to, or occupancy of, a Section 4(f) resource, and is defined in 23 Code of Federal Regulations (CFR) 774.17. In general, a "use" occurs when there is permanent incorporation, temporary occupancy, or constructive use of a Section 4(f) resource.

Permanent Incorporation

Land is considered permanently incorporated into a transportation project when right of way (ROW) has been acquired, or if sufficient property interests otherwise have been obtained, such as a permanent easement.

Temporary Occupancy

Temporary occupancy is considered a use when a Section 4(f) property is required for project construction-related activities, and the activity is considered to be adverse in terms of the preservation purpose of Section 4(f). If temporary occupancies of properties are minimal, such as temporary construction easements, they may not constitute a use. Under 23 CFR 774.13(d), there is no Section 4(f) use if the following criteria are met:

1. The duration is temporary; i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. The scope of the work is minor; i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property on either a temporary or permanent basis;

4. The land being used must be fully restored; i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

Constructive Use

A constructive use of a Section 4(f) resource occurs when a transportation project does not permanently incorporate or temporarily use a protected resource, but the proximity of the project results in impacts (e.g., noise, vibration, visual, access restrictions, ecological intrusions) that are so severe that the protected activities, features, or attributes that qualify the resource for protection under Section 4(f) are substantially impaired, even after the incorporation of mitigation (23 CFR 774.15).

1.2 Organization of the Section 4(f) Analysis

Because there are multiple Section 4(f) properties within the LCG project area, and these properties require separate assessments, this Section 4(f) has been organized as follows:

- **Chapter 2: *Project Description*.** This section describes the purpose and need of the project and provides a description of project alternatives.
- **Chapter 3: *Section 4(f) Resources*.** This section provides an overview of Section 4(f) resources considered in this analysis.
- **Chapter 4: *Redwood National And State Park Final Individual Section 4(f) Evaluation*.** This section describes the use of the parks, analyzes avoidance alternatives, assesses measures to minimize harm, and discusses coordination conducted for this resource.
- **Chapter 5: *Crescent City To Trinidad Wagon Road De Minimis Determination.*** This section describes the use of the wagon road, reviews the *de minimis* determination, and discusses coordination conducted for this resource.
- **Chapter 6: *Traditional Cultural Landscape Final Individual Section 4(F) Evaluation*.** This section describes the use of the traditional cultural landscape, analyzes avoidance alternatives, assesses measures to minimize harm, and discusses coordination conducted for this resource.

- **Chapter 7:** ***Resources Evaluated Relative To The Requirements Of Section 4(f): No-Use Determinations*****.** This section discusses resources that were investigated but determined not to trigger protection under Section 4(f).
- **Chapter 8:** ***Least Overall Harm Analysis*****.** This section describes what is needed to determine the alternative with the least overall harm, which is identified in the final Section 4(f).
- **Chapter 9:** ***Section 6(f) Consideration*****.** This section discusses why Section 6(f) is not triggered for this project.
- **Chapter 10:** ***References*****.** This section lists the references used in preparing this document.

CHAPTER 2. DESCRIPTION OF THE PROPOSED PROJECT

The following sections provide a brief overview of the Last Chance Grade Permanent Restoration Project, including the project's location, purpose and need, and a discussion of the project alternatives. More detailed information on these can be found in Chapters 1 and 2 of the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS).

2.1 Project Location

The proposed project is located on a section of U.S. Highway 101 (U.S. 101) known as Last Chance Grade in southern Del Norte County, California, approximately 10 miles south of Crescent City (Figure 1). Within the project limits (PMs 12.7 to 16.5), U.S. 101 is a two- to four-lane conventional highway that winds through mountainous terrain just east of the Pacific Ocean. It is bordered by Redwood National and State Parks (RNSP) and is the only viable route between Crescent City and Klamath.

2.2 Project Purpose and Need

The purpose of the LCG Permanent Restoration Project is to develop a long-term solution to the instability and potential roadway failure at LCG. The project would consider alternatives that provide a more reliable connection, reduce maintenance costs, and protect the economy, natural resources, and cultural landscapes.

A long-term sustainable solution at LCG is needed to address:

- Economic ramifications of a long-term failure and closure
- Risk of delay/detour to the traveling public
- Increasing maintenance and emergency project costs
- Increases in the frequency and severity of large storm events caused by climate change

See Chapter 1 of the EIR/EIS for more detailed information on the project's purpose and need.

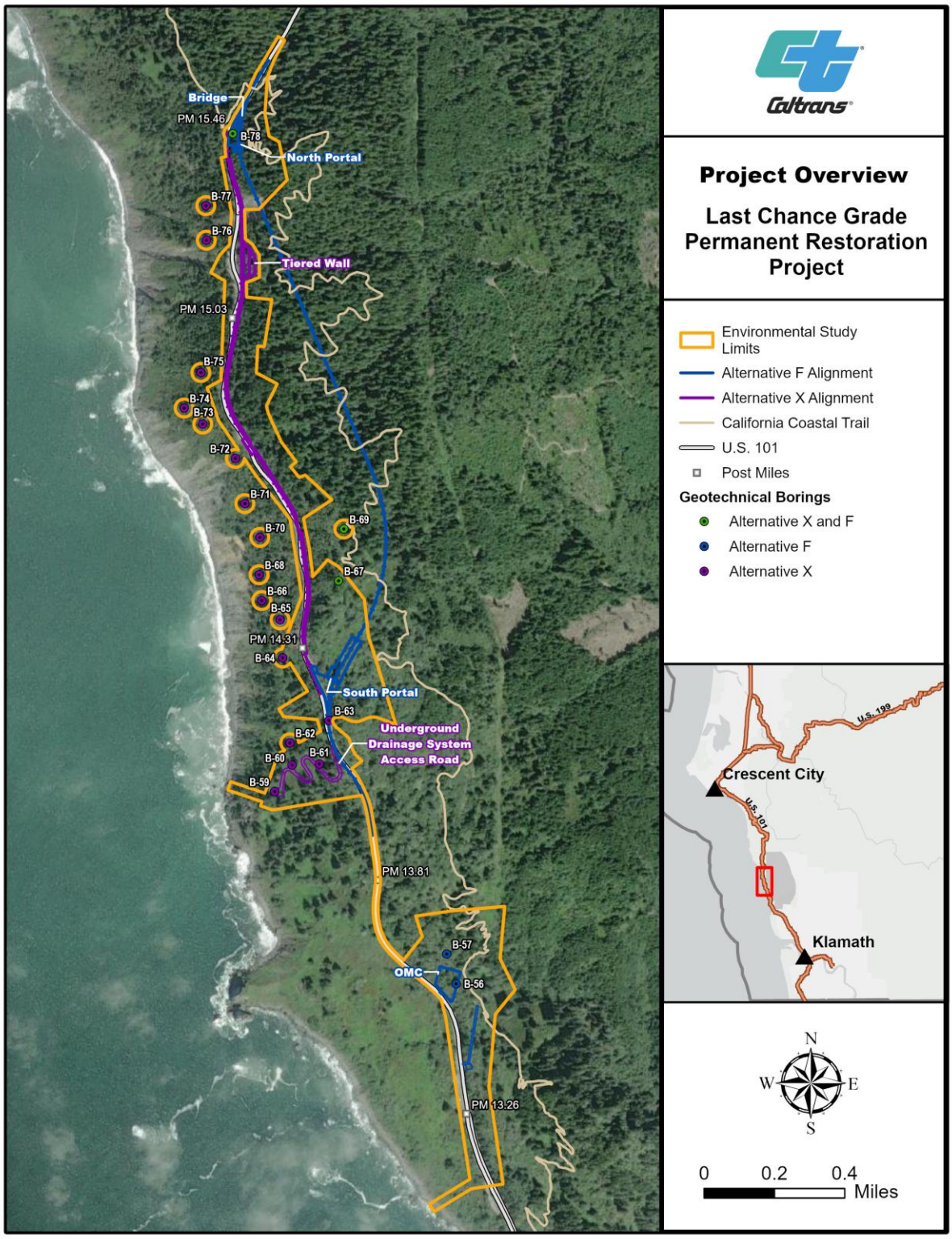


Figure 1. Project Location and Overview Map

2.3 Project Description

The LCG Permanent Restoration Project proposes two build alternatives—Alternative X and Alternative F—in addition to the No-Build Alternative (Figure 1). Both of the build alternatives would require geotechnical investigations to inform project design. A brief overview of geotechnical investigations and the build alternatives are discussed below; see Chapter 2 of the EIR/EIS for more detailed information.

2.3.1 Geotechnical Investigations

Though some previous geotechnical investigations have been conducted for the project, additional geotechnical work would be needed for the build alternatives to help inform project design. Geotechnical investigations would be completed prior to the construction of the main project components.

Alternative X is anticipated to require twenty boreholes (B-59 to B-78), while Alternative F would require five boreholes (B-56, B-57, B-67, B-69, and B-78). Any additional boreholes would be drilled within the project footprint.

Four borehole locations would be accessed by old or existing roads (B-56, B-57, B-63, and B-78), while the remainder would be accessed by helicopter, staged to the east on Green Diamond Resource Company (GDRC) property. Boreholes by roads may require some minor disturbance and vegetation trimming, while those accessed by helicopter would require creation of access trails and clearing of 50-by-50-foot areas for drilling activities. The potential helicopter drilling sites were identified based on openings in the forest canopy. Tree removal would be limited to trimming, or removal of small diameter trees if necessary.

Instrumentation, such as inclinometers, would be installed in the boreholes and monitored for several years prior to decommissioning.

2.3.2 Alternative X

Alternative X would involve reengineering a 1.6-mile-long section of the existing highway to minimize the risk of landslides. Main project components would include an underground drainage system, a series of retaining walls, and strategic eastward retreats (Figure 2 and Figure 3).

The underground drainage system would require the construction of three vertical shafts from which underground drainage galleries would be installed, parallel to the slope. This system

would ultimately redirect groundwater from the slope to the Pacific Ocean. A permanent access road would be constructed for access to this system.

An approximately 6,000-foot-long retaining wall would be constructed on the uphill (east) side of the highway. An approximately 300-foot section of wall would be tiered. On the downhill (west) side of the highway, a single wall, approximately 300 feet long, would be installed between existing walls.

Overall, the reengineered highway would be shifted to the east by up to 130 feet at spot locations.

It is anticipated that this alternative would require up to 11.16 acres of new right of way, and a subterranean easement of approximately 37.76 acres.

Construction is anticipated to start in 2031 and take 3 to 5 years to complete.

2.3.3 Alternative F

Alternative F would involve constructing a 6,000-foot (1.1-mile) tunnel to the east of the existing highway to avoid the most intense areas of known landslides and geologic instability. Main components would include a tunnel and its portals, a bridge, and an Operations and Maintenance Center (OMC) (Figure 4, Figure 5, and Figure 6).

At the southern end, the new alignment would diverge from the existing highway and cut into the hillside. The southern portal area would require retaining walls and the construction of a system to absorb earthflow movement. The tunnel itself would be a single cavern, with separated bike/pedestrian lanes and various safety features.

The tunnel would exit to the hillside in the north, requiring additional retaining walls, before crossing over a single-span, pre-cast concrete-girder bridge and reconnecting to the existing highway.

The OMC would be built south of the southern portal and would contain equipment and facilities for tunnel maintenance, operations, and emergency response.

It is anticipated this alternative would require approximately 18.70 acres of new right of way for the OMC and the tunnel portals. In addition, a subterranean easement of 12.07 acres would be needed for below-ground portions of the tunnel, and a temporary construction easement (TCE) of approximately 2.06 acres for utility work south of the OMC. Approximately 34.89 acres of existing right of way bypassed by the tunnel would be

decommissioned and potentially relinquished to RNSP. Relinquishment would depend on discussions with the parks.

Construction is anticipated to start in 2031 and take 6 to 8 years to complete.

2.3.4 No-Build Alternative

Under the No-Build Alternative, no work would be done on the existing highway; existing conditions would persist, including the continuation of emergency repairs and enhanced maintenance.

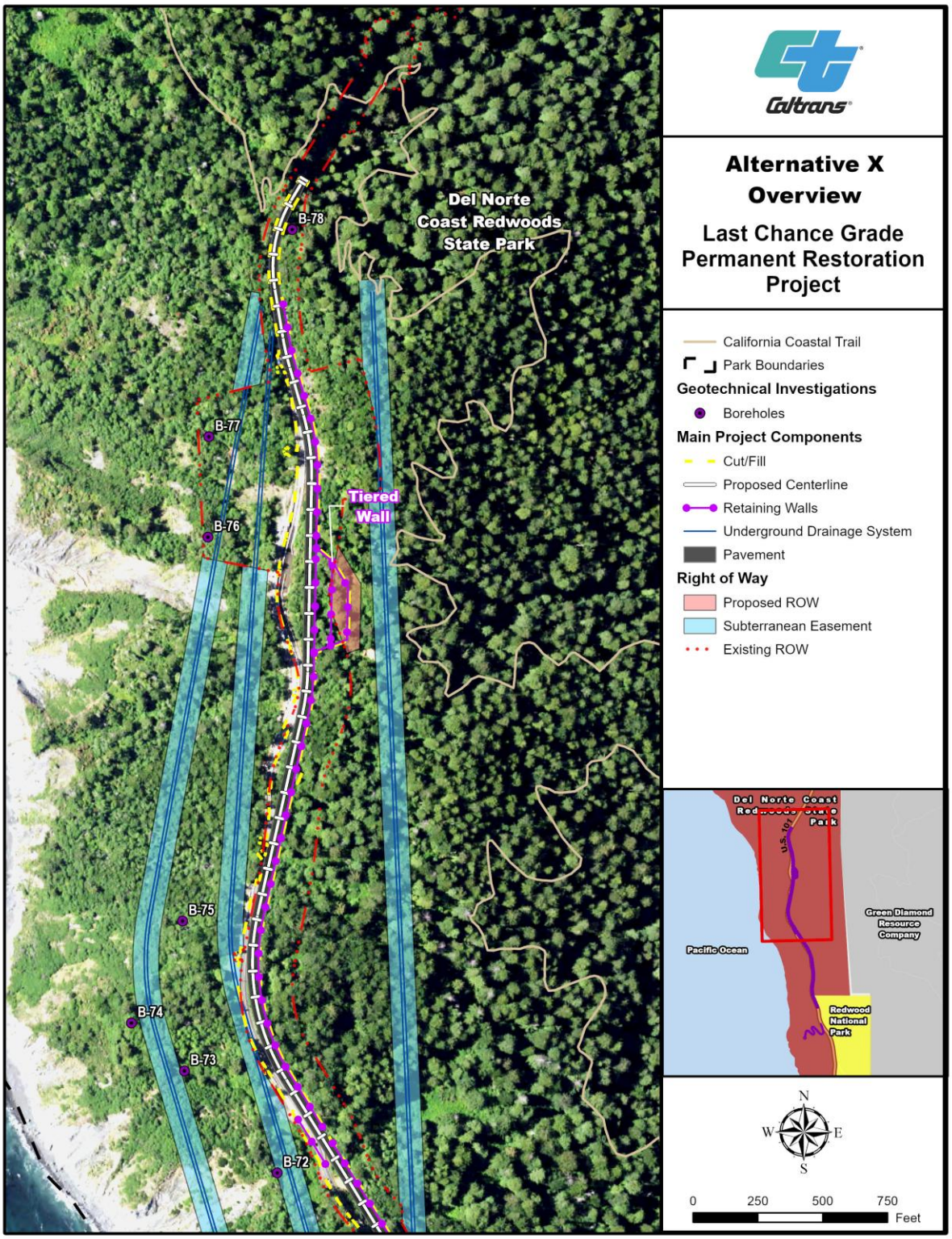


Figure 2. Alternative X Overview, North

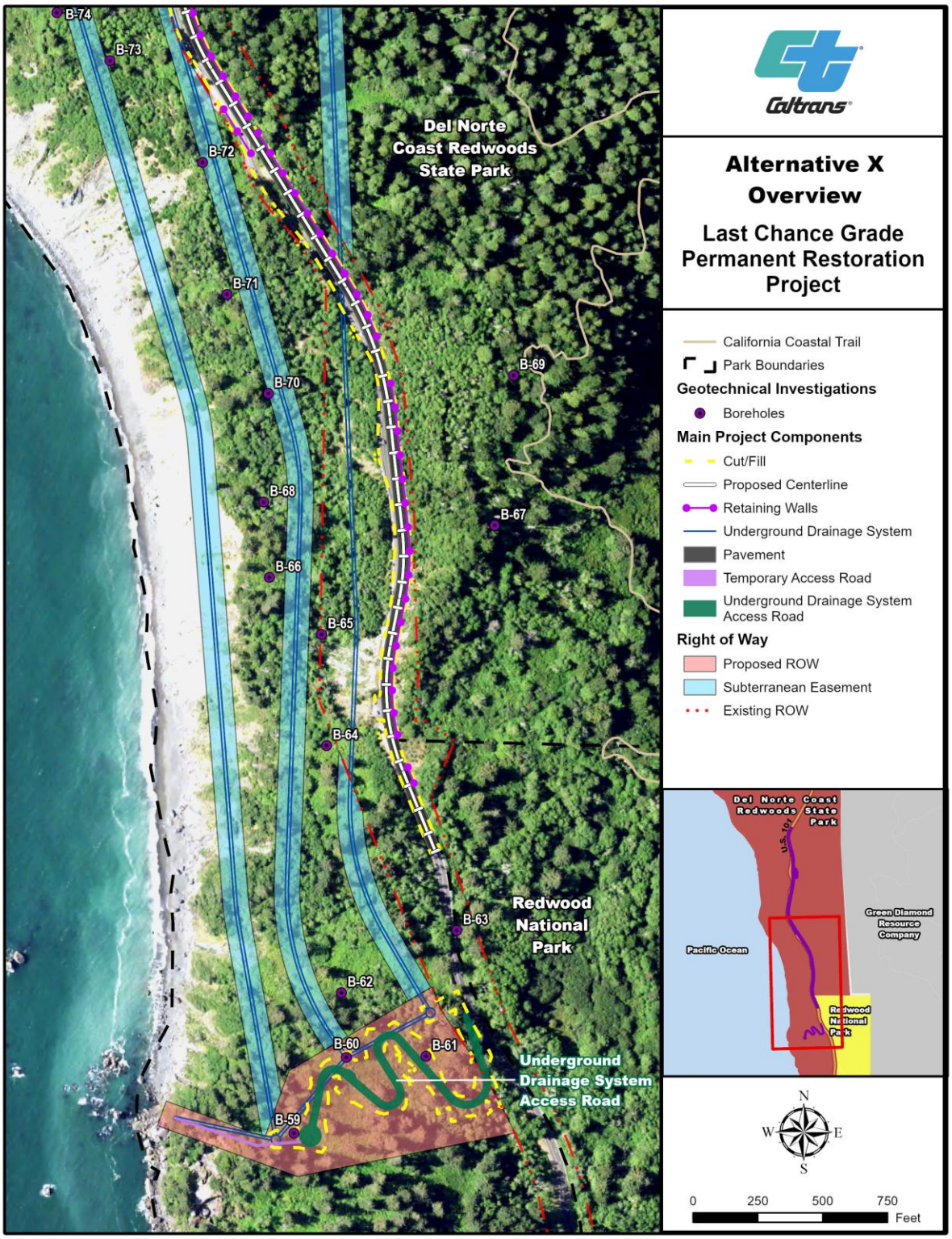


Figure 3. Alternative X Overview, South

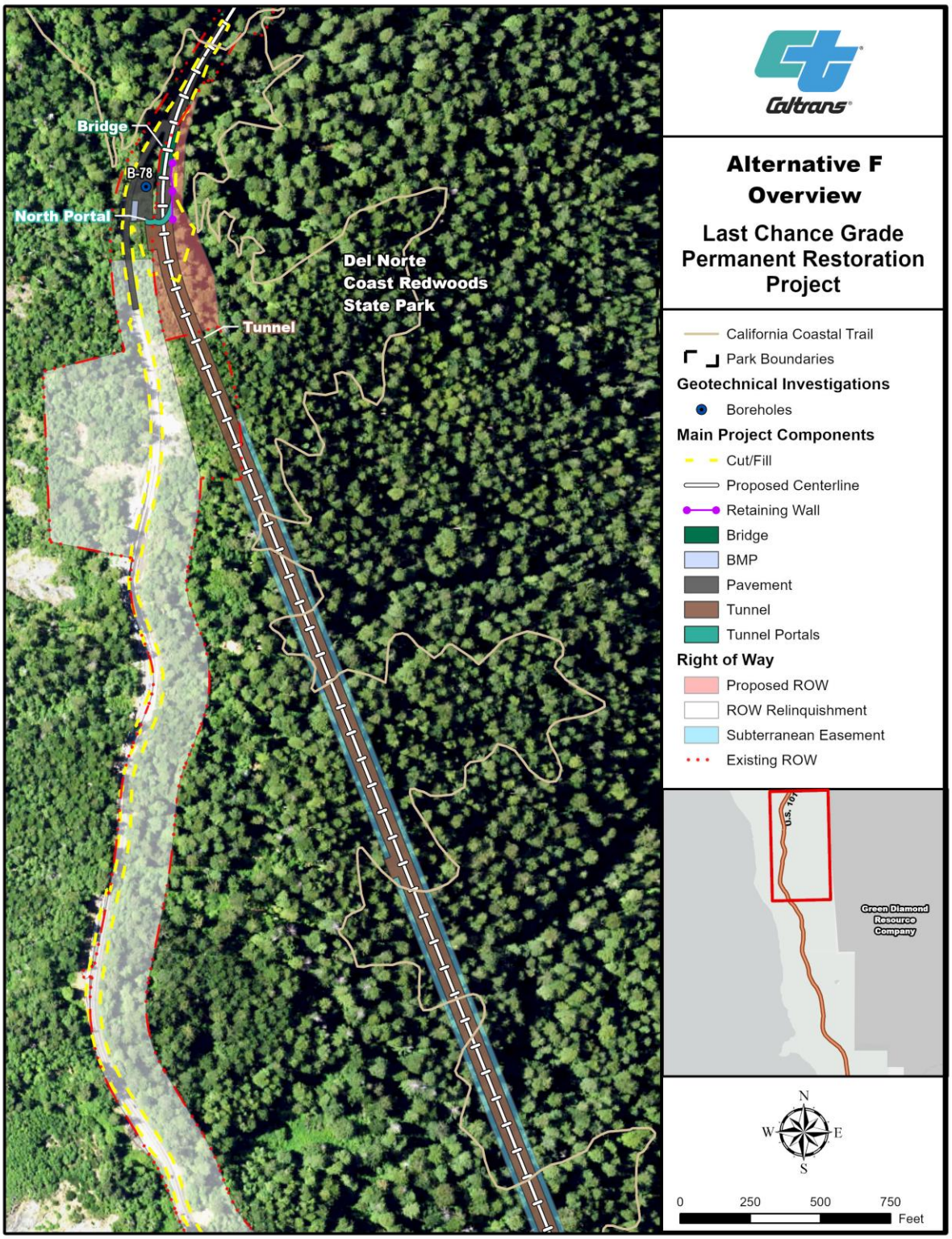


Figure 4. Alternative F Overview, North

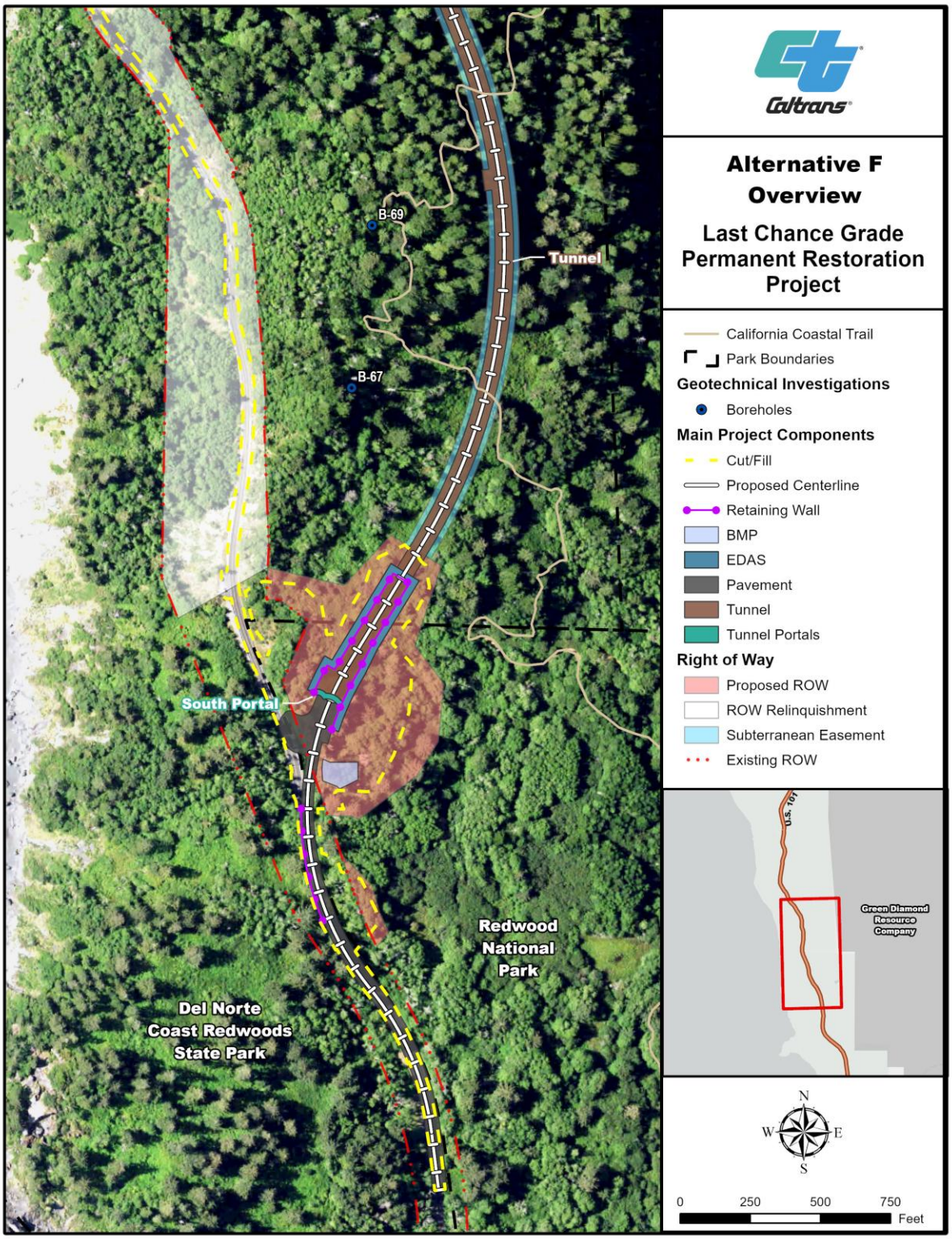


Figure 5. Alternative F Overview, Center

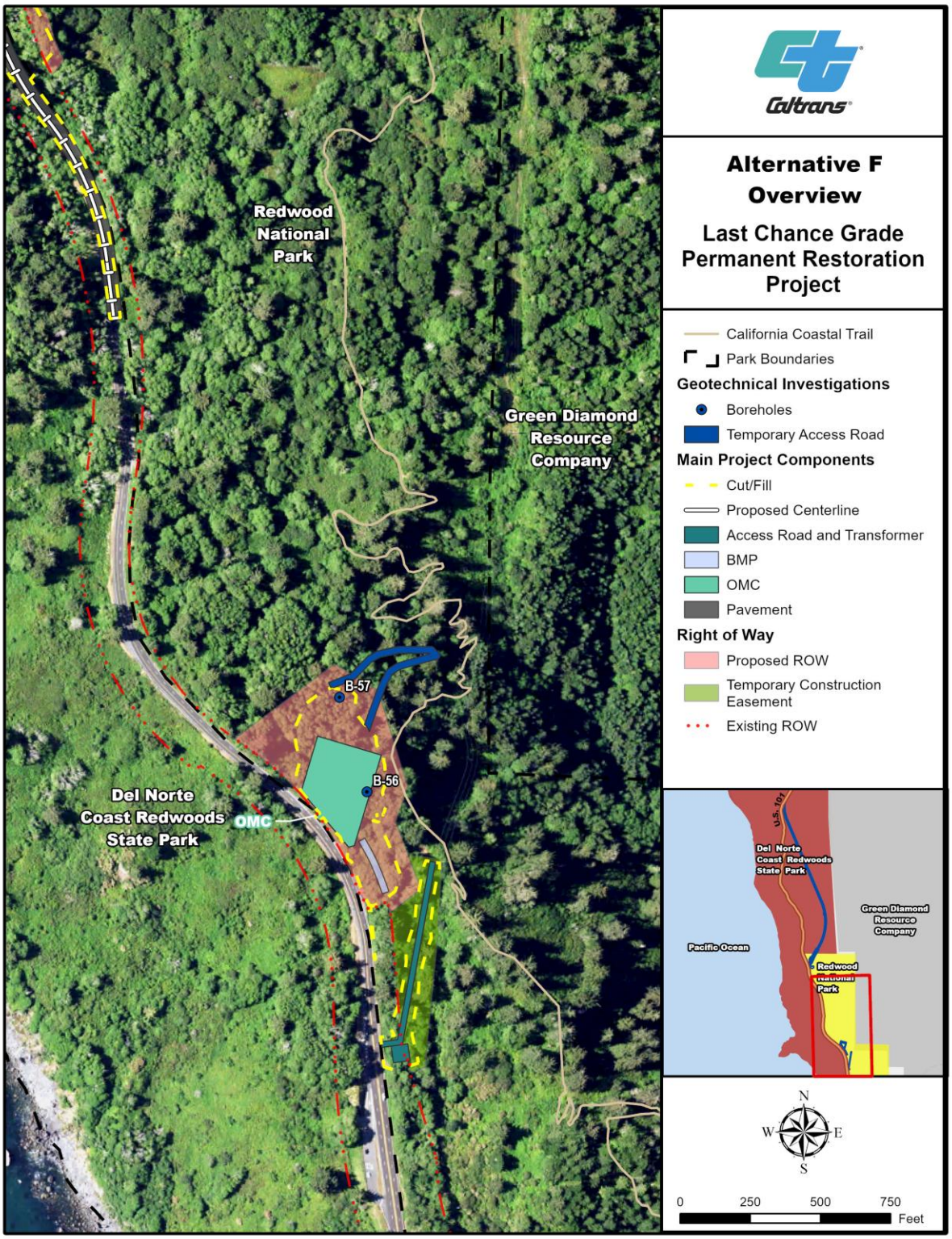


Figure 6. Alternative F Overview, South

CHAPTER 3. OVERVIEW OF SECTION 4(F) RESOURCES

This chapter provides an overview of Section 4(f) resources that were identified within the Last Chance Grade Permanent Restoration Project study area and summarizes the use of these resources. Resources that were within the vicinity of the project but did not trigger Section 4(f) are discussed in Chapter 7.

3.1 Determining Section 4(f) Resources

For Section 4(f) to apply to a federally funded transportation project, 1) the project must involve a resource that is protected by the provisions of Section 4(f) and 2), there must be a use of that resource.

Protected resources include publicly-owned public parks, recreational areas of national, state or local significance, wildlife or waterfowl refuges, or lands from a historic site of national, state or local significance.

"Historic sites" includes any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP) (23 CFR 774.17). Unlike other Section 4(f) properties, historic sites do not require public ownership to qualify for protection under Section 4(f). Archaeological sites may be exempt for Section 4(f) if the sites do not warrant protection in place (23 CFR 774.13).

3.2 Section 4(f) Resources in the Study Area

An inventory of Section 4(f) resources was conducted within and near the study area. The Environmental Study Limits (ESL)—the area where there could be potential direct and/or indirect project activities, with space to accommodate potential changes—was used as the study area for Section 4(f) resources (Figure 1). This area is larger than the project footprint, which is the area within the ESL that would be impacted by the project, both temporarily and permanently. In addition to the Caltrans right of way, the ESL includes portions of Redwood National and State Parks (which includes Redwood National Park [RNP] and Del Norte Coast Redwoods State Park [DNCRSP]), and Green Diamond Resource Company (GDRC) timberland.

Typically, the area of potential effects (APE) would be used for determining effects to historic sites under Section 4(f). An APE, as defined under Section 106 of the National Historic Preservation Act (NHPA) and codified in 36 CFR 800.16(d), includes the area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. However, for this project, the APE was finalized after completion of the draft environmental document, as coordinated with the State Historic Preservation Officer (SHPO). Because the APE was not defined prior to the draft environmental document, the ESL was used for reviewing historic sites for the purposes of Section 4(f).

Research was conducted to identify Section 4(f) resources within and near the ESL. Research included reviewing websites, published maps, and mapping and data from Geographic Information System (GIS) data layers.

A total of three Section 4(f) resources were identified within the ESL, as summarized in Table 1 below. This included one public park and recreation area and two historic sites. Additional potential resources near the project area that did not trigger the provisions of Section 4(f) are discussed in Chapter 7.

Table 1. Summary of Properties Subject to Section 4(f) Consideration

Type of Resource	Number of Resources Identified	Resource Name
Public Parks and Recreation Areas	1	Redwood National and State Parks (includes California Coastal Trail)
Wildlife and Waterfowl Refuges	0	N/A
Historic Sites	2	Crescent City to Trinidad Wagon Road; Traditional Cultural Landscape

3.3 Summary of Section 4(f) Use

Types of use, as defined by 23 CFR 774.17, include a type of direct use (permanent incorporation), temporary use (temporary occupancy that is adverse), and constructive use. These types of uses are described in Section 1.1.1.

The project would result in a temporary and/or permanent use of the three Section 4(f) resources identified above, as summarized in Table 2. The project would not have a constructive use of any resource.

Table 2. Summary of Section 4(f) Use by Alternative

Resource Name	Alternative X		Alternative F	
	Temporary Use	Permanent Use	Temporary Use	Permanent Use
Redwood National and State Parks	0.63–0.86 acre (DNCRSP)	11.16 acres (DNCRSP)	0.44 acre (0.33 acre RNP; 0.11 acre DNCRSP)	20.76 acres (17.68 acres RNP; 3.08 acres DNCRSP)
Crescent City to Trinidad Wagon Road	None	None	621 feet	786 feet
TCL Contributing Element: Redwoods and Other Conifers	None	116 trees	None	104 trees

Consistent with Question and Answer #28A of the FHWA Section 4(f) Policy Paper (FHWA 2012), subterranean easements and underground portions of tunnels have not been included as uses since those project activities would not: 1) disturb archaeological sites that are on or eligible for the National Register which warrant preservation in place; 2) cause disruption which would permanently harm the purposes for which the park, recreation, wildlife or waterfowl refuge was established; 3) substantially impair the historic values of a historic site.

However, because of the at-grade (surface) temporary and/or permanent uses of the Section 4(f) resources, two of the three identified resources each require an individual evaluation; these evaluations are included in Chapters 4 and 6. Chapter 5 discusses the *de minimis* determination for the use of the Crescent City to Trinidad Wagon Road.



CHAPTER 4. REDWOOD NATIONAL AND STATE PARKS FINAL INDIVIDUAL SECTION 4(F) EVALUATION

Redwood National and State Parks are publicly-owned recreational parks that are open to the public. Therefore, they trigger the provisions of Section 4(f). See Figure 7 and Figure 8 for an overview of RNSP in the project vicinity.

4.1 Section 4(f) Resource Description

Redwood National and State Parks are located in northwestern California, within Del Norte and Humboldt counties, and are primarily accessed from U.S. 101. RNSP are a complex of parks—one national and three state—that are cooperatively managed by the National Park Service (NPS) and the California Department of Parks and Recreation (CDPR) (also known as California State Parks [CSP]). Parks in the complex include:

- Prairie Creek Redwoods State Park (established 1923)
- Del Norte Coast Redwoods State Park (established 1925)
- Jedediah Smith Redwoods State Park (established 1929)
- Redwood National Park (established 1968)

In 1994, NPS and CDPR signed a Memorandum of Understanding to jointly manage the parks, and in 2000 the RNSP General Management Plan/General Plan (GMP/GP) was established to provide a clearly defined, coordinated direction for resource preservation and visitor use and a basic foundation for decision making and park management (NPS and CDPR 2000). As stated in the GMP/GP, the purpose of Redwood National and State Parks is to preserve significant examples of the primeval coastal redwood forests and the prairies, streams, seashore, and woodlands with which they are associated for the purposes of public inspiration, enjoyment, and scientific study, and to preserve all related scenic, historical, and recreational values. Because the RNSP is publicly owned and open to the public for recreational activities, the RNSP is protected by the provisions of Section 4(f).

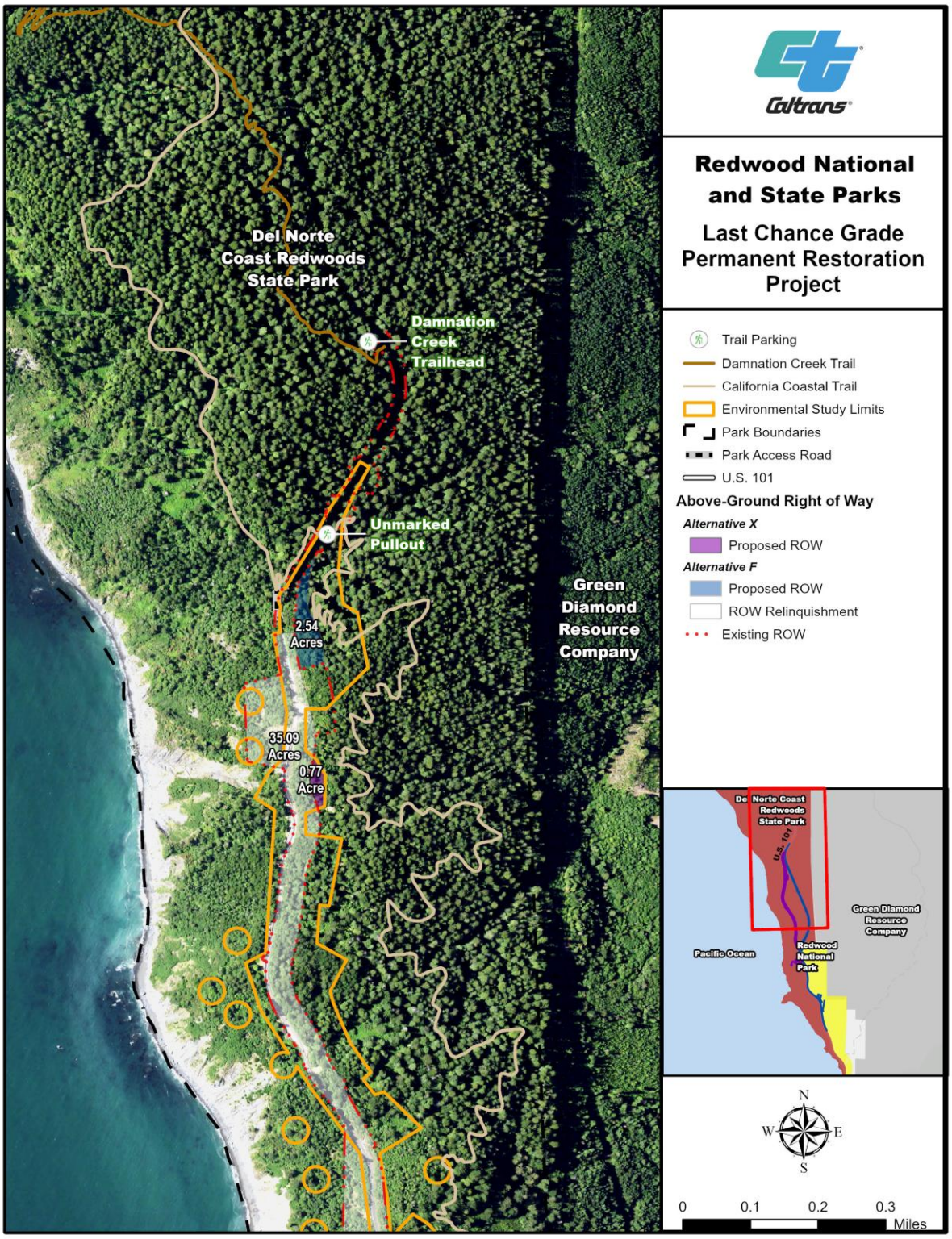


Figure 7. RNSP Overview, North

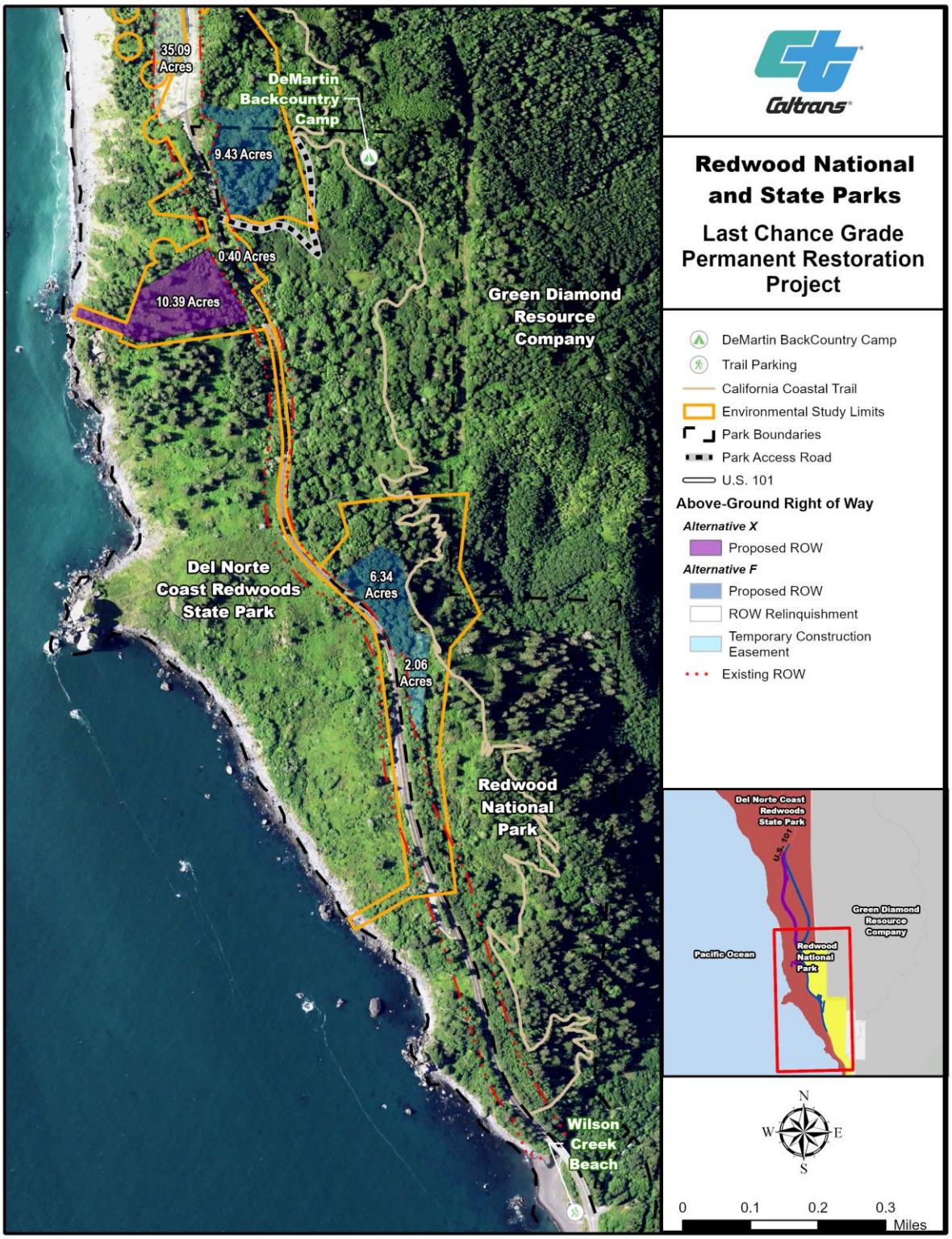


Figure 8. RNSP Overview, South

Currently, the parks total 131,983 acres, of which 71,715 acres is federal land and 60,268 acres is state land (NPS 2021). RNSP contains about 45% of the remaining protected old-growth redwoods in California, with almost 40,000 acres of old-growth forest. The parks were designated as a United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Site in 1980, with its outstanding universal values related to redwood forests (UNESCO 2012).

The LCG project's ESL includes land within two of the units that make up RNSP—DNCRSP and RNP—in addition to the Caltrans right of way and a small portion of Green Diamond Resource Company land. According to the RNSP GMP/GP, there are two management zones within the ESL outside of the transportation corridor: the Backcountry (Mechanized) Zone, primarily to the east of the highway, and the Primitive Zone to the west. Backcountry zones[1] are mostly natural, with generally pristine conditions and previously disturbed areas that have been or will be restored to natural conditions, while primitive zones are the most natural of all, and have areas with pristine conditions as well as areas with dense vegetation that are extremely difficult to enter or move through without trails.

While the parks are known and valued for their biological diversity, mature redwood ecosystem, and general lack of development, the parks have significant recreational value and there are some key developed recreational facilities within and near the ESL within RNSP boundaries. These include the California Coastal Trail (CCT), the Damnation Creek Trail, and the DeMartin Backcountry Camp. All of these have been included as part of the Section 4(f) for RNSP.

The CCT is an interconnected public trail system that is being developed along the California coastline from Oregon to Mexico. The "DeMartin" section of the CCT is the only recreational feature present within the LCG ESL. This section passes through both DNCRSP and RNP; it provides views of the forests of RNSP and serves as access to the DeMartin Backcountry Camp. The CCT is long, spanning the coastline within Del Norte County, and can be accessed from various locations. However, the closest access points are from U.S. 101, by either parking at Wilson Creek Beach, which is south of the ESL, or by parking in an unmarked pullout in the northern part of the ESL, where the trail crosses the highway. The trail can also be accessed by parking at the Damnation Creek trailhead and following that

[1] Backcountry mechanized and nonmechanized zones are similar. However, facilities in mechanized zones are less primitive than nonmechanized zones, and mechanized forms of visitor transport for recreation, such as bicycles, are allowed on trails designated for such use, while in nonmechanized zones, no form of mechanical transport for visitor recreation is allowed (NPS and CDPR 2000).

trail until it intersects with the CCT. The trail and its intersection with the CCT are both north of the ESL (Figure 7).

As stated above, the Damnation Creek Trail is north of the ESL, within DNCRSP. The trailhead is located in a pullout along U.S. 101. This is an out-and-back trail that passes through redwood forest, crossing the CCT approximately 0.7 miles in, and down to the ocean, though access to the coast has been closed for years due to the structural failure of a bridge approximately 1.75 miles in (NPS 2015).

The DeMartin Backcountry Camp is located along the CCT within RNP and is accessed by parking at one of the trailheads for the CCT and hiking in approximately 2-3 miles. Permits are required to camp in one of the 10 sites, which have access to composting pit toilets, food storage lockers, tables, and designated fire rings.

4.2 Proposed Use

Both project build alternatives are anticipated to have a use of RNSP. Both would involve permanent incorporation through the acquisition of right of way and would also have temporary uses of the properties associated with the project's geotechnical investigations.

Both alternatives would also require subterranean easements. However, for parks, Section 4(f) would only apply to the subterranean easement areas if it caused a disruption that would permanently harm the purpose for which the park was established (Federal Highway Administration [FHWA] 2012). Because the tunnels would not affect the property's major activities, features, or attributes, they would not constitute a use of the property.

Constructive use only occurs when a transportation project does not incorporate land from a Section 4(f) property but has severe proximity impacts (23 CFR 774.15). Because there is incorporation of RNSP land, there is no constructive use of this property (FHWA 2012).

The following sections provide further information on each alternative's use of RNSP.

4.2.1 Alternative X

Alternative X would involve both permanent and temporary use of RNSP. This includes the acquisition of approximately 11.16 acres of at-grade ROW for the construction and maintenance of the transportation facility, as well as temporary use of 0.63 to 0.86 at-grade acres associated with the project's geotechnical investigations.

Impacts to RNSP from Alternative X are detailed further below.

Temporary Use: Geotechnical Investigations

Geotechnical investigations would be conducted prior to construction of the alternative and would involve work on RNSP land, primarily in DNCRSP. The geotechnical investigations would not change access to park facilities or attributes of recreational developments for the reasons discussed below.

The investigations involve the drilling of 20 boreholes, 2 of which would be along U.S. 101 within the existing ROW (B-63 and B-78) and would not affect the parks. Fourteen of the remaining boreholes would be within DNCRSP (B-59 to B-62 and B-66 to B-75), and the remaining four (B-64, B-65, B-76, and B-77) would either be in DNCRSP or the existing ROW depending on final borehole placement, which would depend on site accessibility and safety and the avoidance of environmental resources (Figure 2 and Figure 3).

All boreholes potentially within DNCRSP would be accessed by a helicopter staged in clearings on GDRC land. Other than B-67 and B-69, the remaining boreholes would be west of the highway, on steep forested terrain that is not generally accessible. For drilling activities, 50-by-50-foot areas of vegetation would be trimmed, and minor ground disturbance would be needed for the drilling platform legs. As boreholes would be located in areas accessible to helicopters, effects to trees would be limited, and no larger-diameter trees would be removed. For the 14 to 18 boreholes in DNCRSP, approximately 0.80 to 1.03 acres of vegetation would be temporarily disturbed. However, three of the locations (B-59 to B-61), accounting for approximately 0.17 acre, would be in areas that would also be disturbed by main project components; therefore, areas with just temporary impacts would account for approximately 0.63 to 0.86 acre.

Trails would be needed for access to borehole locations. Disturbance associated with the trails would include vegetation trimming and moving and cutting downed debris. In addition, due to the steep terrain, measures such as temporary stairs (e.g., rebar with boards to hold soil) or ropes may be needed at some locations. These trails would be within the existing ROW and/or DNCRSP depending on final borehole location and access route. However, trails would only be wide and long enough to provide access to the borehole and are anticipated to have a limited overall footprint on park land.

The trails to the boreholes would need to be maintained for several years to allow monitoring of instrumentation, after which all materials would be removed and disturbed areas restored.

The geotechnical investigations would not change access to park facilities or cause a substantial impairment to the attributes of the recreational developments. However, because

the helicopter is flying over the parks from GRDC land, park users in the vicinity of the project may be affected by the noise from the helicopter, including those using the CCT or the DeMartin Backcountry Camp. In addition, one borehole, B-69, is close to the CCT—vegetation trimming at this location may be visible to the public, and there may be short delays for the safety of trail users along this section of the CCT when helicopters are dropping off or picking up equipment. Noise from drilling activities from B-69 and B-67 (which is also east of U.S. 101) may be audible to trail users. It is not anticipated that vegetation trimming would be visible or delays along the CCT would be needed for any other location, nor would the drilling activities at other locations be audible, as the other boreholes would be on the opposite side of U.S. 101 from the recreational features of the parks.

The CCT and the DeMartin Backcountry Camp are not high-use areas, and it is anticipated that the geotechnical investigations would be completed in the off-season (September to February) due to environmental restrictions. In addition, trimmed areas would be revegetated, and the vegetation to be trimmed (such as brambles) grows back quickly, within 6 to 12 months. Any noise associated with investigations would be temporary and short-term. Therefore, these investigations are anticipated to have limited, if any, impacts to the park recreational resources and park users.

Permanent Use: Main Project Components

Alternative X involves the reengineering of a 1.6-mile-long section of the existing highway. Main project components would include an underground drainage system and associated access roads, as well as strategic retreats to the east and associated construction of retaining walls.

Though Alternative X would primarily be along the existing alignment, approximately 11.16 acres of at-grade right of way would be required from DNCRSP. This acreage would mainly be to the west of the highway for access to the underground drainage galleries (approximately 10.39 acres), with a small portion to the east of the highway to accommodate the shifting of the highway to the east and construction of tiered walls (approximately 0.77 acre) (Figure 7 and Figure 8).

The ROW to be acquired are in undeveloped sections of steep, forested terrain that are generally inaccessible. All direct impacts, such as tree removal, would be within the acquired ROW.

Areas of at-grade acquisition would include 0.10 acre of late successional Douglas-fir forest, 0.03 acre of late successional redwood forest, 3.60 acres of late successional Sitka spruce

forest, 2.50 acres of red alder forest, 4.86 acres of coastal brambles, and 0.07 acres of other areas, such as erosional and rocky areas. These areas include approximately 84 trees over 24 inches in diameter at breast height (DBH), of which 25 would be removed, including 7 redwoods, 8 Sitka spruce, and 10 red alder.

Alternative X would not change access to the parks. As described above, the parks are accessed by pullouts along U.S. 101, which would not be affected by the project. During construction, park users would be subject to the same delays as all highway users, and delay times would depend on starting point and destination. For this alternative, it is anticipated there would be regular delays of up to 30 minutes at LCG, with the occasional longer closure (2–3 hours).

None of the developed recreational areas within the parks would be acquired. However, the portion of the CCT that crosses U.S. 101 in the northern part of the ESL is just north of the Alternative X project footprint. The unmarked pullout may be closed to parking for short durations due to traffic control for work on the northernmost portion of the project. Trail users crossing the highway at this location could be delayed or re-routed for safety. Any parking closures or delays to trail users at the pullout would be temporary, and not last the entire length of construction. Even though trail users may find their access to the trail at this location temporarily disrupted, there would be no work on the CCT itself, and the trail would remain accessible during construction. In addition, the main trail access points—Wilson Creek Beach to the south and the Damnation Creek trailhead to the north—would not be impacted by the project.

Under existing conditions, highway noise is audible to varying degrees along portions of the CCT and within the DeMartin Backcountry Camp, and during construction, park visitors at these locations may hear construction noise (Caltrans 2023c). However, this would depend on the work being done, and the location of the work. In addition, though there may occasionally be construction at night to limit impacts to the traveling public, no night work is planned other than tunnel boring associated with the drainage galleries, which would operate continuously. However, due to the location of this work, to the west of the highway and primarily underground, it is not anticipated that it would affect overnight campers in the DeMartin Backcountry Camp. In addition, Caltrans Standard Specification 14-8.02 restricts the maximum instantaneous sound level of noise at night to 86 A-weighted decibels and below at 50 feet. See Section 3.3.6 of the EIR/EIS for more information on noise.

Due to the location of the recreational features in relationship to the project, it is not anticipated that construction work and associated vegetation removal would be visible to

park users on the CCT. However, travelers on U.S. 101 would see construction activities and vegetation removal associated with the project. Effects of vegetation removal would be reduced through replanting post construction. Permanent visual changes would be related to changes in views from roadway retreats, and the installation of a large wall on the east side of the highway; measures would be included to reduce effects associated with these changes to the extent feasible. Additional information on visuals/aesthetics of the project as a whole are discussed in Section 3.2.9 of the EIR/EIS.

While construction of the project could disturb wildlife within the park, including through noise associated with construction and through habitat removal, the area is under frequent construction associated with maintenance and repair (see Chapter 1 of the EIR/EIS). Given this, and the suitable adjacent habitat in which to move to, substantial changes to most wildlife species are not anticipated within the park. However, the project may have additional impacts on some special status animal species; these are covered in Section 3.4.4 and 3.4.5 of the EIR/EIS.

Overall, Alternative X would require the acquisition of 11.16 at-grade acres of DNCRSP, which would be from undeveloped areas adjacent to the highway that are generally not publicly accessible. The park would remain accessible during construction, though there may be limited accessibility to CCT users in the northern portion of the ESL, and noise from construction may be audible to park users, depending on location and type of work. However, these impacts would be short-term and temporary and would not greatly affect park visitors.

4.2.2 Alternative F

Like Alternative X, Alternative F would involve both permanent and temporary use of RNSP. This includes the acquisition of approximately 18.70 acres of at-grade ROW (15.62 acres from NPS and 3.08 acres from CDPR) for the construction and maintenance of the transportation facility. In addition, an approximately 2.06-acre at-grade temporary construction easement would be needed for construction. Pending future project refinement, a maintenance easement may be needed for this location, which would require permanent access. Therefore, for the purposes of analysis, it is assumed that the TCE would be considered permanent incorporation, bringing the total permanent use to approximately 20.76 acres (Figure 7 and Figure 8). In addition to permanent uses, there would be temporary use of approximately 0.44 acre (approximately 0.33 from NPS and 0.11 from CDPR) for activities associated with geotechnical investigations.

Once the new highway alignment is operational, it is anticipated that the portion of U.S. 101 bypassed by the tunnel (up to 34.89 acres) would be decommissioned. This decommissioned area may be relinquished to the parks, depending on discussions with RNSP.

Impacts to RNSP from Alternative F are discussed further below.

Temporary Use: Geotechnical Investigations

Similar to Alternative X, Alternative F would require geotechnical investigations prior to the construction of primary project components, which would involve work in both RNP and DNCRSP.

The investigations would involve the drilling of five boreholes, one of which would be within the existing ROW (B-78) and would not affect parks. Of the remaining four, two would be within RNP (B-56 and B-57) and two within DNCRSP (B-67 and B-69) (Figure 5 and Figure 6).

Both of the boreholes in RNP are within the cut and fill area of the OMC. One, B-56, would be on or adjacent to an existing road, which may require minor limbing and trimming of vegetation due to the size of the drilling equipment and the exact placement of the borehole. The other, B-57, would require the use of an old, overgrown road, a portion of which is outside the OMC impact area and may require clearing and grading for access. Outside of the ROW acquisition area, there may be temporary impacts to approximately 0.33 acre. Because both boreholes are within areas of permanent incorporation, only the 0.33 acre associated with the access road would be considered a temporary use of the park.

The two Alternative F boreholes within DNCRSP—B-67 and B-69—would also be used for Alternative X, and impacts would be similar; see *Geotechnical Investigations* in Section 4.2.1 for additional information. These two locations are to the east of U.S. 101 and would be accessed by helicopter. Up to 0.11 acre of vegetation would be trimmed for drilling, in addition to minor ground disturbance for drilling platform legs. Trails would be needed to access the locations and would be maintained for several years before the locations are decommissioned and fully restored.

The geotechnical investigations would not change access to park facilities or attributes of the recreational developments. Though the borehole locations within RNP are near the CCT, they are not in locations generally accessed by the public and are not anticipated to affect the use of the CCT, though drilling activities may be audible on a short section of the trail. Within DNCRSP, as with Alternative X, B-69 is close to the CCT. Vegetation trimming may

be visible, and there may be short delays to trail users when helicopters are over the borehole location. Drilling activities may be audible to trail users at this location, and at B-67.

The CCT and the DeMartin Backcountry Camp are not high-use areas and, due to environmental restrictions, it is anticipated the geotechnical investigations would be completed in the off-season. In addition, trimmed areas would be revegetated, and the vegetation to be trimmed (such as brambles) grows back quickly, within 6–12 months. Any noise associated with investigations would be temporary and short-term. Therefore, these investigations are anticipated to have limited, if any, impacts to the parks and park users.

Permanent Use: Main Project Components

Alternative F would involve constructing a 1.1-mile-long tunnel. Main project components include the construction of the tunnel and tunnel portals, a bridge, and an OMC. This alternative would be along a new alignment, bypassing the existing highway to the east.

As described above, approximately 18.70 acres of at-grade ROW would be acquired from NPS and CDPR to the east of the highway for the construction and maintenance of the tunnel portals and the OMC. An additional 2.06 at-grade acres would be required from NPS just south of the OMC as an easement for utilities (Figure 7 and Figure 8). After construction, up to 34.89 acres of existing ROW would potentially be relinquished to RNSP, pending discussions, which would leave the parks with a net gain of up to 14.13 acres.

Areas to be acquired include approximately 0.22 acre of early and late successional Douglas-fir forest, 2.31 acres of early and late successional redwood forest, 2.04 acres of late successional Sitka spruce forest, 11.76 acre of red alder forest, 4.15 acres of coastal brambles, 0.20 acre of cascara, and minor amounts of ruderal and non-vegetated areas. The ROW acquisition areas include 199 large trees, 119 of which would be removed, including 29 redwoods, 6 Douglas-firs, 43 Sitka spruces, 7 western hemlocks, and 34 red alders.

Alternative F would not change access to the parks. The trails within the project vicinity are accessed by pullouts along U.S. 101, which would not be affected by the project. There is a road used for park maintenance just south of the proposed north portal, but the project would maintain access to this road. During construction, park visitors would be subject to the same delays as highway users, though these are anticipated to be minimal—occasional partial or full closures (30 minutes to 1 hour) would be needed for some activities, but otherwise the highway could operate uninterrupted throughout the construction period.

The CCT is the only developed recreational feature in the project's ESL, and portions of the trail would be close to work activities, particularly near the north portal, where it crosses the U.S. 101 and zigzags near the proposed portal. However, while the trail is not within areas of permanent incorporation, it is anticipated that the trail near U.S. 101 and associated pullout would be temporarily closed for work associated with connecting the new highway alignment to the existing roadway, which would be of short duration. The trail itself would remain open and accessible from the primary access points, including to the south at Wilson Creek Beach and to the north at the Damnation Creek Trailhead. In addition, a portion of the trail would be close to construction of the north portal. If deemed necessary for safety, there may be delays on this section of trail as people are guided through. Otherwise, the CCT would remain open and accessible during construction of the project.

As with Alternative X, park visitors using the CCT and the DeMartin Backcountry Camp may hear noise from construction, particularly in areas close to construction, such as near the northern portal or the OMC (Caltrans 2023c). However, this would depend on the work being done, and the location of the work. Any increase in noise would be temporary, not lasting beyond construction. Though tunneling activities may continue at night, this work would primarily be underground and it is therefore not anticipated that it would affect overnight campers in the DeMartin Backcountry Camp, and Caltrans Standard Specifications limit noise at night. After construction, operation of the OMC would require the occasional use of maintenance vehicles and heavy equipment. These types of equipment would only be used intermittently and during the daytime. Emergency generators would be used in the event of a power outage, but these would be housed in an enclosure to reduce noise levels. These noises may be heard on portions of the CCT, as it is close to U.S. 101 and the OMC, but the noise would only be intermittent and short-term and not anticipated to cause substantial disturbance.

In addition to noise, there may be visual impacts to hikers along a short section of the CCT at the northern portal (Caltrans 2023d). At this location, the trail is close to the highway, which is periodically visible through the trees. The realigned highway would be shifted even closer to the CCT; work activities associated with construction, including vegetation removal, would be visible to trail users. Upon completion, the highway, including structures such as the north portal and the bridge, would be visible on these portions of the trail, making the highway more prominent to trail users. However, the duration of exposure would be low, as only a small portion of the trail is in the vicinity of these features; less than a quarter to a half mile would periodically be exposed to changes (the DeMartin Section of the CCT, where the project is located, is approximately 10.7 miles long). Structures would have context-

sensitive visual character attributes, including curvilinear and more natural forms, colors, and textures, to soften visual changes. Areas of tree removal would reduce canopy cover and introduce natural light, and would be visible post-construction, but partially reduced by the remaining vegetation and/or revegetated areas between the highway and the trail. Additionally, loss of vegetation would be less noticeable after revegetated areas mature.

The OMC is also located close to the CCT. However, at the closest point, it is on the opposite side of a ridge, and so the OMC would not be visible. Portions of the trail on the same side of the ridge as the OMC are farther away, and views of the OMC location are obscured by vegetation. It is not anticipated that there would be visual changes at this location.

There would also be temporary and permanent effects to visuals for travelers along U.S. 101. These include views of construction equipment and construction activity, which would end upon project completion. In addition, areas of vegetation removal would be visible, though these changes would be reduced through revegetation post-construction. There would also be visual changes from realigning the highway through a tunnel and the associated loss of views of park lands, as well as changes related to the construction of features associated with the tunnel, such as the OMC. The tunnel and associated features would introduce new forms, lines and textures, though these features would be designed to be visually compatible with the setting to minimize impacts. See Section 3.2.9 of the EIR/EIS for additional information on the visual impacts of the overall project.

While construction of the project could disturb wildlife within the park, including through noise associated with construction and through habitat removal, the area is under frequent construction associated with maintenance and repair (see Chapter 1 of the EIR/EIS). Given this and the suitable adjacent habitat in which to move to, substantial changes to most wildlife species are not anticipated within the park. However, the project may have additional impacts on some special status animal species; these are covered in Section 3.4.4 and 3.4.5 of the EIR/EIS.

Overall, Alternative F would require the acquisition of at-grade right of way. This acquisition would be from undeveloped portions of the park—no portions of the CCT would be acquired. The park would remain accessible during construction, though there may be limited impacts to CCT users trying to cross the highway near the northern portal, and noise from construction activities may be audible. However, these impacts would be short-term and temporary, not lasting beyond construction. There would be a change in visual environment at the northern portal due to closer proximity of the highway; however, this is

on a short section of trail and would be reduced by the remaining vegetation and/or native plantings between the highway and the trail.

4.3 Avoidance Alternatives Analysis

The intent of Section 4(f) is to avoid and, where avoidance is not feasible and prudent, that the proposed action includes all possible planning to minimize harm to the affected resource(s). An analysis must be conducted to determine if a feasible and prudent avoidance alternative exists.

The sections below discuss the evaluation of avoidance alternatives, and whether the avoidance alternatives are feasible and prudent.

4.3.1 Avoidance Alternatives

The first step in determining whether a feasible and prudent avoidance alternative exists is to identify alternatives that avoid Section 4(f) properties. Avoidance alternatives are those that would not use any Section 4(f) property, no matter the degree of impact. An alternative that avoids one Section 4(f) property by using another is not an avoidance alternative.

U.S. 101 is the only viable route between Crescent City and Klamath in Del Norte County. However, the section of highway at Last Chance Grade (LCG) has a history of issues relating to the instability of the area, as it is located within a series of landslides and faces coastal erosion from below. Projects dating back to 1987 worked to find alternative solutions to the problems at LCG. These various alternatives are discussed in Chapter 2 of the EIR/EIS. However, while impacts to RNSP were taken into consideration in the discussion of alternatives, no alternative completely avoided RNSP. This is due to its size and position adjacent to the highway, and the costs and environmental impacts that would be required to completely avoid the resource.

As mentioned previously, U.S. 101 serves as the main access to RNSP. The park complex is large—131,983 acres—and borders long stretches of the highway. In the vicinity of LCG, the highway is surrounded by park property from approximately PM 11.0 to PM 23.4. Just north of LCG, the complex extends up to 7.5 miles east of U.S. 101, where it borders Six Rivers National Forest (Figure 9).

In the most recent alternatives analysis, as summarized in Chapter 2 of the EIR/EIS, several alternatives, including Alternatives A, B, C, D, E, G, and their variations, departed from the existing highway in a narrower section of parks, near Wilson Creek, and traveled north

within timberlands. However, these alternatives were all eliminated due to a combination of project costs, geotechnical risks, and environmental impacts, among other factors. Environmental impacts included impacts to parks and associated resources, such as natural vegetation communities, wildlife, wildlife connectivity, watershed integrity, and cultural landscapes.

Because ROW is limited, and the project is surrounded by parks, any shifting of the alignment or localized retreat would require the use of park land (Figure 9). The only other option for this area is to retreat behind the slide plane. However, to completely avoid use of the park, a major detour would be needed—the realigned highway would have to bypass at least 11 to 12 miles of the existing U.S. 101, in addition to retreating over 7.5 miles to the east. To avoid use of parks at the southern end of the project, a new alignment would have to start at Wilson Creek Road, near PM 12.6, where RNSP land is narrow and existing ROW may allow for the avoidance of park land, or south of the RNSP boundaries near PM 11.0. At the north, the shortest route would likely require connecting to U.S. 199 rather than U.S. 101, bypassing Crescent City (Figure 9).

At the southern end of a realignment starting at Wilson Creek, a high-level review of an alignment that bypasses RNSP (generally following Wilson Creek and skirting the RNSP boundary) would be approximately 27 miles long, and cost over $3 billion, with a cost per mile estimated at $114–132 million. A highway of this size could have a construction footprint of over 670 acres. In addition to extraordinary costs, any alignment near Wilson Creek would likely impact contributing elements of the Traditional Cultural Landscape present within the area, which would constitute a use of an additional Section 4(f) resource. Therefore, although it would bypass RNSP, any alternative with access along Wilson Creek would not be considered an avoidance alternative for the purposes of Section 4(f).

An alternative that starts south of RNSP boundaries, near PM 11.0, would be longer than an alignment starting at Wilson Creek, and therefore costlier and with a larger footprint. It may avoid the Traditional Cultural Landscape near Wilson Creek, but due to its length and footprint would have the potential to impact other resources eligible for protection under Section 106 of the NHPA and Section 4(f).

Regardless of the southern starting point, due to the length of the realignment and size of the associated footprint, there would likely be substantial impacts to wetlands and waters, riparian areas, and other sensitive natural communities, as any alignment would have to cross multiple waterways (such as Wilson Creek and its tributaries, and tributaries of the Smith River), as well as through forests within Six Rivers National Forest. In addition, there would

likely be substantial impacts to various special status animal species and their habitats, such as the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of coho salmon (federally and state listed as threatened) and their critical habitat, which are present in Wilson Creek and the Smith River, and northern spotted owl (federally and state listed as threatened), which has habitat within the vicinity of the realignment and critical habitat near the RNSP boundary that is adjacent to Six Rivers National Forest. In addition, an alignment of this length would likely add new barriers to wildlife movement.

The northern portion of any realignment would likely have to connect to U.S. 199, rather than U.S. 101, effectively bypassing Crescent City. While increasing the length of the road and associated travel time would likely have social and economic impacts, bypassing Crescent City could have additional severe social and economic impacts.

In addition to substantial costs and environmental impacts, to avoid the parks, any bypass of RNSP would have to pass through the Smith River National Recreation Area within Six Rivers National Forest, which borders long sections of RNSP and would be considered a Section 4(f) resource (Figure 9). Therefore, regardless of route, all possible realignment routes would eventually necessitate the use of a Section 4(f) property.

Therefore, based on the above, the No-Build Alternative is the only Section 4(f) avoidance alternative.

For the No-Build Alternative, no work would be done on the existing highway. Regular maintenance and operations would continue, with emergency restoration projects conducted as needed to address landslides and roadway failures. As the highway would remain within the existing ROW, there would be no use of park land; therefore, the No-Build Alternative would be the only avoidance alternative. However, it should be noted that engineering solutions such as retaining walls have not been able to provide long-term stability to the highway. Future failures of the road would likely necessitate emergency retreats, which would require the use of RNSP land.

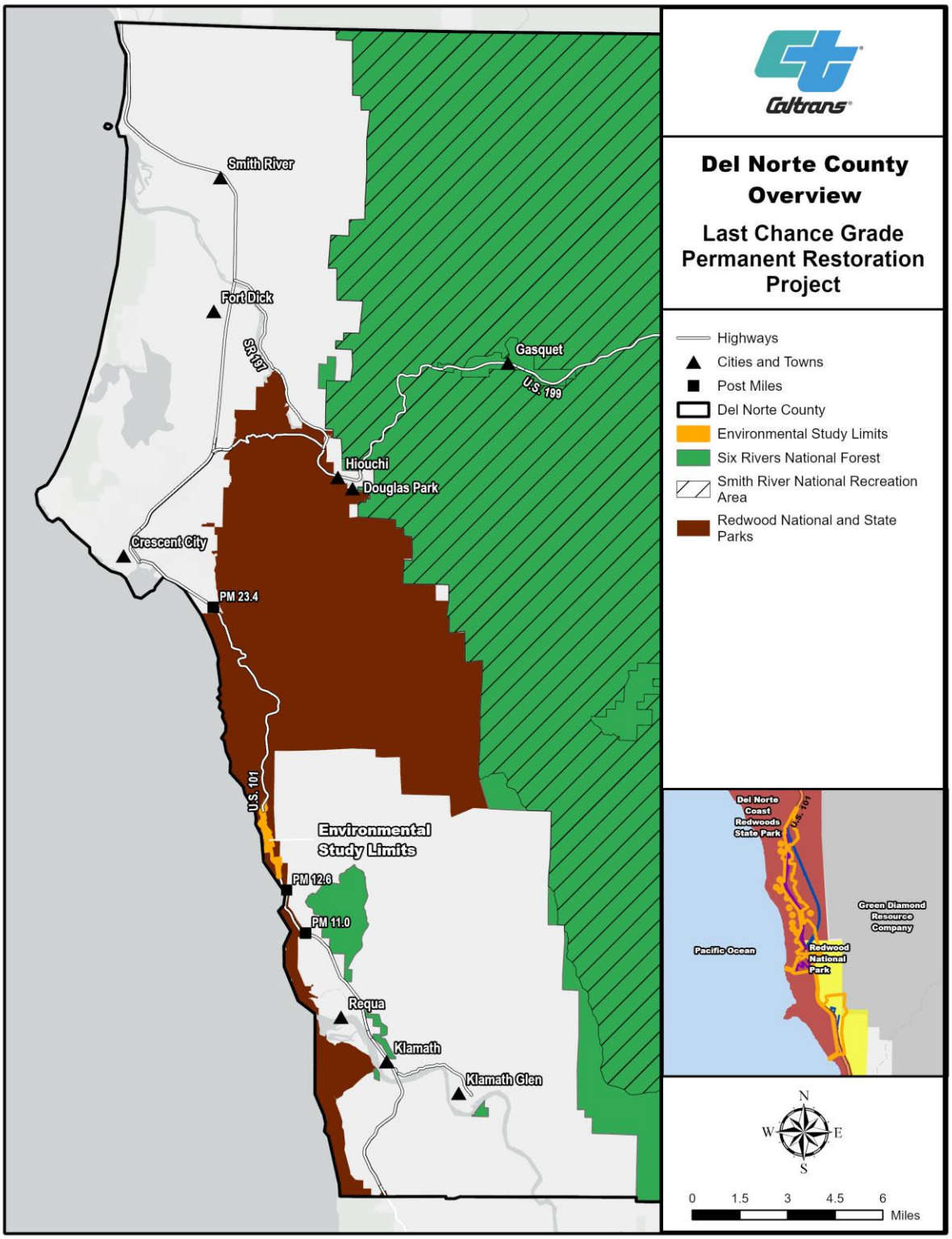


Figure 9. RNSP and Six Rivers National Forest in Del Norte County

4.3.2 Feasible and Prudent Analysis

The second step in the avoidance alternative analysis is to determine if any potential avoidance alternative is feasible and prudent. As defined in 23 CFR 774.17, feasible and prudent alternatives are those that avoid using any Section 4(f) resource and do not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) resource.

An alternative is not feasible if it cannot be built as a matter of sound engineering judgment.

An alternative is not prudent if:

1. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
2. It results in unacceptable safety or operational problems;
3. After reasonable mitigation, it still causes severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts to minority or low-income populations; or severe impacts to environmental resources protected under other Federal statutes;
4. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
5. It causes other unique problems or unusual factors; or
6. It involves multiple factors outlined above that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

The only potential avoidance alternative is the No-Build Alternative. The feasibility factor is not relevant to the No-Build Alternative. As to the prudent factor, the No-Build Alternative has been determined to not be prudent for the following reasons:

1. ***Compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need.*** The No-Build Alternative does not meet the purpose and need of the project, as it would not provide a long-term solution to the instability and potential roadway failure at LCG needed to address economic ramifications of a long-term failure and closure, risk of delay/detour to the traveling public, increasing maintenance and emergency project costs, and the increases in in frequency and severity of large storm events caused by climate change. U.S. 101 in this area would likely continue to experience slides and would be subject to closures, possibly even full closures. The possibility for more catastrophic roadway failure is

potentially greater due to the increase in frequency and severity of large storm events. As detailed in #3 below, closure of U.S. 101 at this location requires an approximate 449-mile detour as there are no parallel routes that service the area. The risk of economic ramifications and delays and detours to the traveling public would remain, as would the continuance of maintenance and emergency projects, and the associated costs.

2. ***Unacceptable safety or operational problems.*** Roadway failure and landslides present risks to the traveling public. Caltrans, in alignment with FHWA, is advancing a goal of having zero roadway fatalities and serious injuries by 2050; a key part of meeting this goal is being proactive in protecting and improving our roadway system for users and workers alike (Caltrans 2022b). The No-Build Alternative would continue to put highway workers and the traveling public at risk in the event of slides and roadway failures.

3. ***Causes other severe social, economic, or environmental impacts.*** With the No-Build Alternative, there is also the possibility that landslide movement could cause a major roadway failure, resulting in a long-term closure of the highway. Closures have occurred in the past, such as in 2021, when a February landslide forced the highway to shut down. Even when the highway reopened, repairs required hours-long delays through the summer months.

   Any closures at LCG require a detour of approximately 449 miles for those traveling between Crescent City and Klamath (Figure 10). This would have severe social and economic impacts on those who rely on the highway remaining open. The communities to the south of LCG would be more severely affected, as these areas are rural, requiring more frequent travel to the areas to the north of the project.

   An analysis of economic impacts found that an emergency one-year closure at LCG would include the loss of approximately 3,800 jobs and the reduction of business output by nearly half a billion dollars (Caltrans 2015a). Such a closure would also lead to an estimated $236 million in travel costs to be collectively borne by individuals, businesses, and government institutions.

4. ***Additional maintenance and operational costs of extraordinary magnitude.*** Emergency repairs and enhanced maintenance, which have cost millions (over $85 million between 1997 and 2021), would continue. There is no foreseeable end to such expenditures, and effects of storm events may exacerbate conditions.

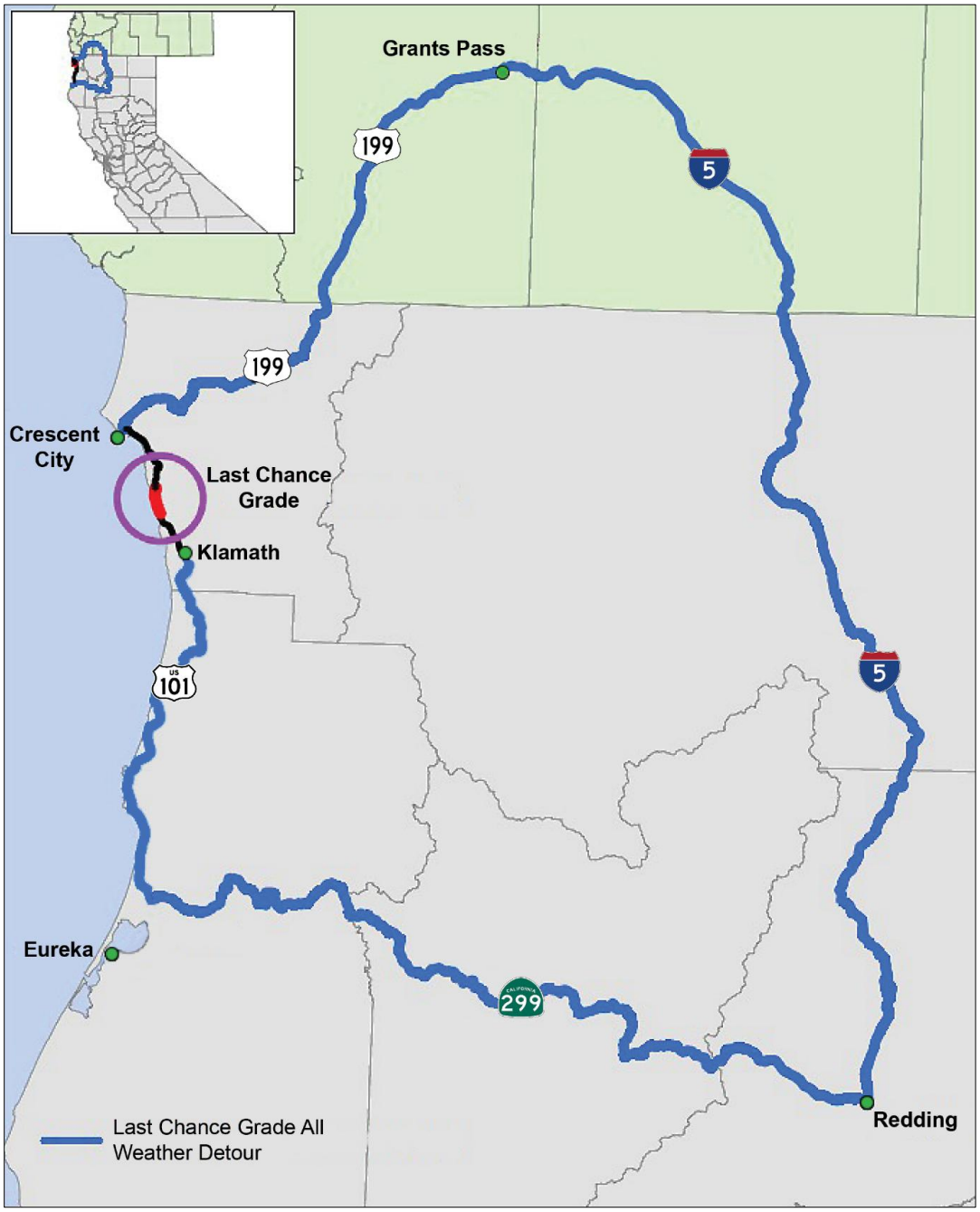


Figure 10. LCG Full-Closure Detour

5. ***Involves multiple factors outlined above that cumulatively cause unique problems or impacts of extraordinary magnitude.*** While each of the factors discussed above are in themselves reasons for the No-Build Alternative being not prudent, the cumulation of the factors provides even more weight to the determination that the No-Build Alternative is not prudent. The extraordinary expenses involved with repairing emergency after emergency rather than constructing a long-term solution, as well as the continued safety and economic risks, render the No-Build Alternative not prudent.

Based on the discussions above, there is no feasible and prudent avoidance alternative.

4.4 Measures to Minimize Harm

Under 23 CFR 774.3, a use of a Section 4(f) property must include all possible planning to minimize harm to the property; i.e., all reasonable measures to minimize harm must be included in the project.

Throughout the life of the project, Caltrans has been working to minimize impacts to park land. This has included coordinating with RNSP from an early stage, evaluating various alternatives with respect to parks, and refining project alternatives to minimize impacts to park resources.

For the LCG project, Caltrans has been coordinating with NPS and CDPR since 2014, including assessment of project alternatives. A brief summary is provided in Section 4.5 of this document, with more detail on coordination in Chapter 5 of the EIR/EIS.

Alternatives to address the instability at LCG have been considered in various projects since 1987. In reviewing alternatives, impacts to parks and park resources were evaluated, such as length of roadway in parks, impacts to redwood forests and other habitat types, creation of edge habitat, and wildlife impacts, among other factors such as construction and mitigation costs, time to construct, cut/fill, and risk of road closures.

Analysis of alternatives for the Last Chance Grade project itself started in 2015 with the Engineered Feasibility Study (Caltrans 2015b), which reviewed alternatives considered prior to 2015 as well as new build alternatives. Between the 2015 report and 2021, alternatives were analyzed and refined or eliminated, culminating in the Alternative Analysis Report in 2021 (Caltrans 2021), which recommended that Alternatives X and F be carried forward for further study. Summaries of these reports and the previous alignments considered are

discussed in more detail in Section 2.5 of the EIR/EIS. The Engineered Feasibility Study and Alternative Analysis Report are incorporated into this report by reference[2].

With respect to the current build alternatives, consideration has been given to further reducing impacts to parks and park resources, such as limiting the tiering of walls for Alternative X and shifting the north portal of Alternative F to avoid impacts to larger redwood trees. Background on the history and refinement of the build alternatives can be found in Section 2.4 of the EIR/EIS. In addition to refinements, project design has also taken into account other factors for both alternatives, including maintaining access to the parks' maintenance roads and limiting impacts to the CCT during construction.

In addition to designing the project to minimize impacts to the parks, standard measures included in the project would also serve to reduce impacts to park resources, including fencing/flagging around sensitive areas where no work would occur, preparing a revegetation plan, limiting work within root zones of large trees where feasible and, where possible, using root-friendly excavation and severance methods around the roots of large trees. More detail on these and other standard measures can be found in Section 2.6 of the EIR/EIS.

Other measures for the project to minimize harm to parks and park resources would include:

- Measures to offset temporary and permanent impacts on Section 4(f) recreational resources. This may include CCT improvements[3] or funding to support other park projects or trail management activities. Implementation of this measure would be determined in consultation with NPS and CDPR and would be finalized prior to ROW acquisition. This measure is referred to as Park-3 in Section 3.2.4 of the EIR/EIS.
- Posting signage at trailheads and on websites to notify park users of construction activities when there is work near the CCT. This measure is referred to as Park-2 in Section 3.2.4 of the EIR/EIS.
- Having an arborist on site during construction work around roots of large trees. This measure is referred to as Bio-2 in Section 3.4.1 of the EIR/EIS.

[2] The 2015 Engineered Feasibility Study, 2021 Alternatives Analysis Report (as attached to the project's 2022 Agency Coordination Plan), and other reports that assessed alternatives as described in the EIR/EIS are available for review on the LCG Project website's document library: https://lastchancegrade.com/.

[3] Improvements may be subject to additional environmental compliance requirements.

- A measure to offset potential effects to late successional forest would include forest restoration projects and the preservation of existing forest habitat. This measure is referred to as Bio-1 in Section 3.4.1 of the EIR/EIS.

4.5 Coordination

Since 2014, Caltrans has created active, working relationships with the agencies and groups that have management responsibilities for lands and resources that would be directly impacted by the project, including NPS and CDPR (Caltrans 2020).

Coordination with NPS and CDPR has been ongoing to address the issues at LCG, including project updates, alternative selection, project impacts, and project mitigation and minimization. Major communication points include:

- In 2015, a white paper was established for initial consensus on moving forward and finding the best project alternatives (Caltrans 2015c).
- Between December 2020 and April 2021, a series of three alternatives analysis workshops were held with stakeholders, including NPS and CDPR, to discuss the project purpose and need, range of alternatives, evaluation of alternatives, and alternative screening methodologies.
- In November 2021, Caltrans posted its Notice of Preparation (NOP) to prepare an EIR under the California Environmental Quality Act (CEQA) and a Notice of Intent (NOI) to prepare an EIS pursuant to the National Environmental Policy Act (NEPA), which were sent to appropriate agencies, including NPS and CDPR. In addition, under NEPA, invitations for NPS to be a participating and cooperating agency and CDPR to be a cooperating agency were also sent out in November, and both agencies accepted their role(s). An Agency Coordination Plan was prepared and sent to NPS and CDPR in January 2022, which discussed coordination points, responsibilities, and the target schedule for the project (Caltrans 2022a).
- Between November 2021 and May 2023, four meetings were held to provide project updates and discuss project impacts and potential avoidance, minimization, and mitigation measures.

In addition to the above, and various meetings to discuss project updates, impacts, and potential minimization measures, there have been meetings to discuss surveys in the project area, and the preferred alternative. These meeting points are provided in the coordination log in Chapter 5 of the EIR/EIS.

The Draft Section 4(f) document was provided to NPS and CDPR for coordination and comment in accordance with 23 CFR 774.5 prior to the Final EIR/EIS.

CHAPTER 5. CRESCENT CITY TO TRINIDAD WAGON ROAD DE MINIMIS DETERMINATION

The Crescent City to Trinidad Wagon Road is a linear cultural resource that extends well beyond the project's ESL. Because of the route's length, and the resources needed to evaluate it in its entirety, it is assumed that the road is eligible for the National Register of Historic Places (NRHP) for the purposes of this project. As such, this resource triggered the provisions of Section 4(f). A Draft Individual Section 4(f) Evaluation was prepared and circulated with the Draft EIR/EIS. However, based on the SHPO's Finding of No Adverse Effect on the wagon road, the impacts on this resource were determined to be *de minimis*.

This section of the document discusses *de minimis* impact determinations under Section 4(f). The Section 4(f) statute and regulations allow for a simplified approval process for projects that have only *de minimis* impacts on lands protected by Section 4(f). Once it is determined that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on that property, an analysis of avoidance alternatives is not required, and the Section 4(f) evaluation process is complete. FHWA's final rule on Section 4(f) *de minimis* findings is codified in 23 CFR 774.3 and CFR 774.17.

For historic sites, *de minimis* impact means that no historic property is affected by the project or that the project will have "no adverse effect" on the historic property in question.

Responsibility for compliance with Section 4(f) has been assigned to Caltrans pursuant to 23 USC 326 and 327, including d*e minimis* impact determinations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

5.1 Section 4(f) Resource Description

The Crescent City to Trinidad Wagon Road functioned as the primary overland route between Crescent City and northern Humboldt from its construction in 1894 until it was replaced in the 1920s.

In compliance with Section 106 of the NHPA, segments of a linear cultural resource are assessed to determine if they contribute to the resources' overall eligibility for the NRHP[4]. However, as only a small portion of the wagon road is within the ESL, it is outside the scope and scale of the project to record and assess the integrity of the entire length of the wagon road. As there was not enough information to support the wagon road's eligibility or lack thereof, the State Historic Preservation Officer (SHPO) did not concur that the wagon road is eligible. However, the SHPO did recommend assuming the road is eligible for the NRHP for the purposes of this project. See Appendix F of the EIR/EIS for correspondence with the SHPO. The resource is assumed to be eligible under Criterion A[5] at the local level for its significance as a primary transportation corridor connecting Crescent City with communities to the south. Its period of significance is 1894 to circa 1920, when it was bypassed.

Within the ESL, the wagon road is largely overgrown with vegetation, and many segments have undergone substantial change due to earth movements/landslides and alterations by landowners over time. Only discontinuous portions of the road remain, with a total of 31 segments documented within the larger Cultural Study Area surrounding the project area. Of these segments, only 10 are intact and show sufficient integrity to contribute to the eligibility of the wagon road (Caltrans 2022c). Within the ESL there are six contributing segments, both inside and outside of the existing ROW, but only three of these would be impacted by Alternative F, and none of them would be impacted by Alternative X.

5.2 Proposed Use

Alternative X is not anticipated to have a use of the wagon road, while Alternative F is anticipated to have both temporary and permanent uses.

Constructive use only occurs when there is no incorporation of a Section 4(f) property, but proximity impacts are severe (23 CFR 774.15). Because Alternative X does not involve incorporation, it was reviewed for constructive use. However, constructive use would not apply to Alternative F, as the alternative involves incorporation of the Section 4(f) property.

[4] Section 106 is the process used to identify historic properties to be considered under Section 4(f). The eligibility of resources for listing on the NRHP is identified under Section 106 (36 CFR 800,4), while historic sites for section 4(f) includes resources included in or eligible for inclusion in the National Register of Historic Places (NRHP) (23 CFR 774.17).

[5] As outlined in 36 CFR 60.4, resources that meet Criterion A are resources that possess integrity and that "are associated with events that have made a significant contribution to the broad patterns of our history."

Under Section 106 of the NHPA, it is anticipated that Alternative X would not affect the wagon road and it has been determined that Alternative F would result in a finding of No Adverse Effect[6]. Based on consultation with the SHPO, impacts on the wagon road from implementation of Alternative F would be *de minimis*.

See the following sections for additional information.

5.2.1 Alternative X

Alternative X would not involve a temporary or permanent use of the wagon road. Although the wagon road is within the ESL, it is not within the project footprint, which is the area the project is anticipated to impact, nor is it in the areas of ROW acquisition.

The wagon road is assumed to be eligible for the NRHP due to its significance as an early transportation corridor. Contributing segments are important for their intactness and integrity, which would not be sensitive to proximity impacts such as changes to visuals, air quality, noise, wildlife, water quality, hydrology, or other factors. Therefore, because there would be no proximity impacts that would affect the intactness and integrity of the presumed eligible wagon road segments and therefore no proximity impacts that rise to the level of substantial impairment under Section 4(f), there would be no constructive use of this Section 4(f) resource.

5.2.2 Alternative F

Alternative F would involve both permanent and temporary uses of the wagon road. This includes permanent incorporation of portions of three separate road segments—Segments 1, 10, and M—through the incorporation of new ROW. In addition, portions of Segments 10 and M would be subject to temporary occupancy from the geotechnical investigations required to characterize the subsurface conditions. However, because Alternative F would only impact 14% of contributing segments of the documented historic property[7], SHPO

[6] As defined under 36 CFR 800.5, an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

[7] Spatial data were used to estimate potential impacts. However, there were discrepancies between the lengths in the official records and the lengths in the spatial data. This is due, in part, to the limitations in global positioning system accuracy from the dense tree canopy and topography in the project area, which can limit the ability of field equipment's access to satellites. According to official records, Segment 1 is 865 feet compared to spatial data estimates of 852 feet and Segments 10 and M are a combined 935 feet, compared to spatial data estimates of 1,104 feet.

determined that Alternative F would have a finding of No Adverse Effect on the wagon road; therefore impacts on this Section 4(f) resource would be *de minimis*.

No other contributing segments of the wagon road would be impacted by the project, including through proximity impacts, as the road is not sensitive to changes other than direct disturbance that affects its integrity and intactness.

5.3 Measures to Minimize Harm

As mentioned previously, all reasonable measures to minimize harm to a Section 4(f) property must be included in a project.

As much of the wagon road near the project is within RNSP, efforts to minimize impacts to the parks, as discussed in Section 4.4, also help to minimize impacts to contributing segments of the wagon road. However, avoiding the wagon road completely, such as by relocating the north portal for Alternative F, would result in greater impacts to RNSP and potentially to redwood trees, a contributing element of the Traditional Cultural Landscape, another Section 4(f) resource.

The SHPO determined, on January 14, 2025, that the proposed undertaking would have a Finding of No Adverse Effect on the Crescent City to Trinidad Wagon Road, as outlined in 36 CFR 800.5. Therefore, no additional measures to minimize harm are included. The *de minimis* determination is not dependent on implementation of measures to minimize harm.

5.4 Coordination

Caltrans initiated consultation with the SHPO pursuant to Section 106 of NHPA in 2019. In November 2022, Caltrans evaluated the eligibility of the Crescent City to Trinidad Wagon Road and sought SHPO concurrence, and in January 2023, the SHPO recommended the wagon road be treated as eligible for the NRHP for the purposes of this project.

A Finding of Effect (FOE) was prepared for the proposed undertaking and provided to the SHPO for review prior to the final EIR/EIS. Under Section 106 of the NHPA, the SHPO determined on January 14, 2025, that the proposed undertaking would have no adverse effect on the Crescent City to Trinidad Wagon Road under Alternative F.

CHAPTER 6. TRADITIONAL CULTURAL LANDSCAPE FINAL INDIVIDUAL SECTION 4(F) EVALUATION

The Last Chance Grade project area is located within the *ˊO Men hee-puer/daa-ghestlh-tsˊaˊ* Historic District, a Traditional Cultural Landscape (TCL). Caltrans determined that the TCL is eligible for the NRHP, and SHPO concurred in July of 2024 (Appendix F, *Cultural Correspondence*). As such, this resource triggers the provisions of Section 4(f).

6.1 Section 4(f) Resource Description

Extensive consultation with five local tribes—the Yurok Tribe, Elk Valley Rancheria, Tolowa Dee-ni' Nation, Pulikla Tribe of Yurok People (formerly Resighini Rancheria), and Tolowa Nation—indicates the presence of a TCL[8] encompassing the project Area of Direct Impact, which is completely contained within the ESL. Ethnographic research and interviews were completed to determine the boundaries and contributing elements of this landscape, as defining these elements is solely based on the perspectives of those whose culture is tied to that landscape. The TCL encompasses the entire ESL and extends well beyond it. Contributing elements include old-growth redwoods and other conifers, beaches, coastal sea stacks, trails, a village complex, and other named locations and landmarks. The TCL is eligible for the NRHP under Criteria A, B, and D[9].

Of the known potential contributing elements identified by the local tribes, only old-growth redwoods and other conifers are within the ESL and Area of Direct Impact. Old-growth redwood trees are considered living beings that are directly connected to the cultural continuity of the local tribes, and are therefore considered eligible to the NRHP under Criterion B. In addition, the life of old-growth redwoods continues after they have fallen or been cut, as they are used for traditional purposes, which ties directly into the transference of

[8] According to NPS Preservation Brief 36, a cultural landscape is defined as a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values (NPS 1994).

[9] As outlined in 36 CFR 60.4, resources eligible for the inclusion in the National Register must have integrity. Under Criterion A, these resources "are associated with events that have made a significant contribution to the broad patterns of our history", while Criterion B are resources that "are associated with the lives of persons significant in our past," and Criterion D are resources "that have yielded or may be likely to yield, information important in prehistory or history."

traditional knowledge within tribes. Other old-growth trees, such as Douglas-fir and Sitka spruce, are of importance to the tribes, and are also contributing to the NRHP eligibility of the TCL under Criterion B.

There is no agreed-upon definition for an old-growth; for the project, all trees 2 feet (24 inches) in DBH and greater, considered "large trees", were mapped (Caltrans 2023a). In placing a thumb on the scale of protecting Section 4(f) resources, because there is no agreed-upon definition for an old-growth tree, for the purposes of the evaluation, all large conifers were considered contributing elements of the TCL. In addition, all conifers, whether inside the existing ROW or in areas of ROW acquisition, were counted and included in the calculation of use.

6.2 Proposed Use

Both Alternative X and Alternative F are anticipated to have a permanent use of the TCL due to impacts to contributing elements: redwoods and other conifers. The other contributing elements are outside of the ESL and, due to distance, topography and/or resource type, are not anticipated to be affected by proximity impacts.

Under Section 106, it is expected that both project alternatives would have an adverse effect on the TCL due to impacts to redwoods and other conifers.

See the following sections for a summary of potential use of conifers for each alternative.

6.2.1 Alternative X

Alternative X is anticipated to have a permanent use of large redwood trees and other conifers (2 feet [24 inches] in DBH and greater)—contributing elements of the TCL. Conifers are present within the ROW acquisition area needed for the tiered wall and the underground drainage system access road and would be affected by construction. In addition, large conifers within the existing ROW would be removed due to shifting of the highway, and wall construction and the associated cut/fill and ground disturbance.

Approximately 116 large conifers that are considered contributing elements to the TCL are anticipated to be removed for this alternative, including 95 trees between 2.0 and 3.9 feet in DBH, and 21 trees 4.0 feet and over in DBH. The total includes 15 trees within the area of ROW acquisition and 101 trees within the existing ROW. See Table 3 for a summary of large redwoods removed for the project by size and location.

Table 3. Summary of Conifer Trees Removed for Alternative X by Species

Conifer Species	Number of Trees within ROW Acquisition Areas			Number of Trees within the Existing ROW			Total Removed
	Tree 2.0' to 3.9' DBH	Tree 4.0' DBH or Greater	*Total*	Tree 2.0' to 3.9' DBH	Tree 4.0' DBH or Greater	*Total*	
Redwood	5	2	7	40	5	45	***52***
Douglas-fir	0	0	0	39	5	44	***44***
Sitka Spruce	2	6	8	9	3	12	***20***
Total	***7***	***8***	***15***	***88***	***13***	***101***	***116***

6.2.2 Alternative F

Alternative F is anticipated to have a permanent use of large redwood trees and other conifers—contributing elements of the TCL. Conifers within the existing ROW and those in the areas to be acquired are primarily located at the portals and would be affected by construction of the portals, bridge, and associated features and activities.

Approximately 104 conifers that are considered contributing elements to the TCL are anticipated to be removed for this alternative, including 65 trees between 2.0 and 3.9 feet in DBH and 39 trees 4.0 feet and over in DBH. This includes 85 large trees in the ROW to be acquired and 19 trees within the existing ROW. See Table 4 for a summary of large trees to be removed by size and location.

Table 4. Summary of Conifer Trees Removed for Alternative F by Species

Conifer Species	Number of Trees within ROW Acquisition Areas			Number of Trees within the Existing ROW			Total Removed
	Tree 2.0' to 3.9' DBH	Tree 4.0' DBH or Greater	*Total*	Tree 2.0' to 3.9' DBH	Tree 4.0' DBH or Greater	*Total*	
Redwood	15	14	29	8	2	10	***39***
Douglas-fir	3	3	6	3	0	3	***9***
Sitka Spruce	28	15	43	4	2	6	***49***
Western Hemlock	4	3	7	0	0	0	***7***
Total	***50***	***35***	***85***	***15***	***4***	***19***	***104***

6.3 Avoidance Alternatives Analysis

As discussed in Section 4.3.1, an analysis must be conducted to determine if the project has any feasible and prudent avoidance alternatives. Avoidance alternatives are those that would

not result in a use of any Section 4(f) property. If there are any avoidance alternatives, it must be determined if any of them are feasible and prudent, which means they can be built as a matter of sound engineering judgment and would not result in other issues, as listed in Section 4.3.2, such as not meeting the purpose and need of the project causing certain severe impacts, and/or resulting in unacceptable safety or operational problems. Section 4.3.1 documents potential feasible and prudent avoidance alternatives. The majority of large conifers in the vicinity of the project are within RNSP. Therefore, avoidance alternatives for RNSP would likely be similar to avoidance alternatives for this contributing element of the TCL. Based on the analysis, only the No-Build Alternative would avoid the use of RNSP. However, this alternative would not be prudent, as it does not meet the purpose and need of the project, among other factors (see Section 4.3.2). Therefore, because there are no alternatives that avoid all Section 4(f) resources that are also feasible and prudent, there is no feasible and prudent avoidance alternative. The Least Overall Harm Analysis is discussed in Chapter 8.

6.4 Measures to Minimize Harm

Under 23 CFR 774.3, all reasonable measures to minimize harm to a Section 4(f) resource must be included in the project.

As old-growth redwoods are an important feature within RNSP, which contains 45% of the remaining protected old-growth redwood forest in California, minimizing harm to the parks also serves to minimize impacts to this contributing element of the TCL. As discussed in Section 4.4 in this document and in Chapter 2 of the EIR/EIS, the impact to old-growth redwoods, in addition to other large conifers, was an important factor in evaluating the alternatives considered for the project and for refining the project design, such as shifting the north portal of Alternative F to avoid impacts to the largest trees.

In addition to considering impacts to larger trees in the project design, several standard measures included as part of the project would lessen impacts to large trees. These include measures such as flagging or fencing off environmentally sensitive areas (such as redwood forests) to prevent work within the area; restricting work within the structural root zones of large trees where feasible; and, when possible, using root-friendly excavation and severance methods around the roots of large trees. See Section 2.6 of the EIR/EIS for more information on the project's standard measures.

In addition to the above, an arborist would be on site during construction work around roots of large trees.

Additional measures for minimizing harm have been developed in consultation with the Yurok Tribe, Elk Valley Rancheria, Tolowa Dee-ni' Nation, Pulikla Tribe of Yurok People (formerly Resighini Rancheria), and Tolowa Nation and are included in a Memorandum of Agreement (MOA) between Caltrans and the SHPO.

The MOA contains the following measures to minimize harm and address the adverse effects on the TCL:

- Funding tribal programs
- Providing redwood and other trees of significance to tribes
- Providing for native plant gathering and salvage of natural resources
- Using tribal designs and patterns on new construction

Additionally, a Post Review Discovery and Monitoring Plan to address potential buried cultural resources or unanticipated discoveries that could be identified during construction is included as an attachment to the MOA.

6.5 Coordination

Caltrans began consultation for this project with the local tribes in 2014. This included close coordination with Tribal Historic Preservation Officers and other representatives from the Yurok Tribe, Elk Valley Rancheria, Tolowa Dee-ni' Nation, Pulikla Tribe of Yurok People (formerly Resighini Rancheria), Tolowa Nation, and National and State Parks. A cultural resource working group that included representatives from the five tribes and cultural resources staff from NPS and CDPR was formed in 2017 to address cultural resource concerns. This group meets on a quarterly basis. In addition, in 2018, Caltrans began attending tribal council meetings with each tribe on an annual basis. Consultation with tribes is ongoing.

In addition, as discussed in Section 5.4, Caltrans initiated consultation with the SHPO pursuant to Section 106 of the NHPA in 2019. On July 8, 2024, Caltrans determined that the TCL was eligible for listing on the NRHP. The SHPO concurred with this finding on July 29, 2024. On November 26, 2024, Caltrans determined the project would have an adverse effect on the TCL, and the SHPO concurred with this finding on January 14, 2025.

A summary of coordination with the local tribes and other agencies is summarized in Chapter 5 of the EIR/EIS, and correspondence with the SHPO is included in Appendix F.



CHAPTER 7. RESOURCES EVALUATED RELATIVE TO THE REQUIREMENTS OF SECTION 4(F): NO-USE DETERMINATIONS

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

This section of the document discusses parks, recreational facilities, wildlife refuges, and historic properties found within or next to the project area that do not trigger Section 4(f) protection because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, or 4) the project does not permanently use the property and does not hinder the preservation of the property.

Within the project vicinity, one wildlife and waterfowl refuge and eight potential historic-era cultural resources were assessed relative to the requirements of Section 4(f). Other than RNSP, there were no other parks or recreational facilities within or next to the project area.

7.1 Wildlife and Waterfowl Refuges

The California National Coastal Monument is located in the vicinity of the project. The monument is protected by the Bureau of Land Management as National Conservation Lands. The mission of National Conservation Lands is to conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations. The California Coastal Monument includes off-shore rocks that are exposed above mean high tide within 12 nautical miles of the mainland along the California coastline. While the monument can be viewed from the shore, there are no visitor facilities for the monument in the vicinity of the project.

The California National Monument is over 700 feet from the ESL. Due to the distance and proposed project activities closest to the resource, it would not be subject to permanent, temporary, or constructive use by either project alternative. Therefore, the provisions of Section 4(f) do not apply.

7.2 Historic Sites

Within the ESL and an additional 100-foot buffer, an additional eight potential historic-era cultural resources were evaluated in accordance with Section 106 of the NHPA. Of these, six sites were determined not to be eligible for the NRHP, while the remaining two were determined to be eligible or assumed to be eligible for inclusion in the NRHP.

The six ineligible sites include a road segment and drainage ditch, two log stacks, two former subdivisions, and a portion of the modern redwood highway. SHPO concurrence on the ineligibility of the road segment and drainage ditch was received in 2019, with the remaining resources receiving concurrence in 2023 (see Appendix F of the EIR/EIS). Because these sites are not eligible for the NRHP, they are not Section 4(f) properties; therefore, the provisions of Section 4(f) do not apply.

The two remaining resources include the Old Redwood Highway District and the Joseph DeMartin Barn Site.

A portion of the Old Redwood Highway District (P-08-000550/REDW00162)—Last Chance Grade to Damnation Creek Segment, which was constructed in 1919 and replaced the Crescent City to Trinidad Wagon Road, is present within and adjacent to the ESL, extending northwest from the current U.S. 101 alignment. This resource was previously listed in the NRHP in 1979, and in 2020, after NPS recorded and evaluated decommissioned segments within RNP, it was concluded that the roadway meets NRHP eligibility under Criterion A, with a period of significance from 1919 to 1952. However, because impacts on this segment would be avoided during construction through protection as an environmentally sensitive area, where no work would occur, the project would not result in a use of this Section 4(f) resource and the provisions of Section 4(f) do not apply.

The Joseph DeMartin Barn Site (CA-DNO-263H/P-08000258/REDW00100) is a historic-era ranching and barn site established by Joseph DeMartin in 1901, which continued under other ownership (Miriam Rudisill) until 1965. The site was not evaluated but, for the purposes of this project, it is assumed that it would be eligible for the NRHP, likely under Criterion D. Similar to Old Redwood Highway District (P-08-000550/REDW00162)—Last Chance Grade to Damnation Creek Segment, the site would be avoided during construction and, therefore, the project would not result in a use of this Section 4(f) resource and the provisions of Section 4(f) would not apply.

Additionally, pursuant to 23 CFR 774.3, as a resource determined eligible under Criterion D, the site would be important chiefly because of what can be learned by data recovery and has minimal value for preservation in place; this resource would be exempt from Section 4(f).



CHAPTER 8. LEAST OVERALL HARM ANALYSIS

8.1 Introduction

If there is no prudent and feasible avoidance alternative to the use of Section 4(f) property, an evaluation must be completed to determine which among the remaining build alternatives would cause the least overall harm to the Section 4(f) property. To determine which of the remaining build alternatives would cause the least overall harm considering the statute's preservation purpose, a comparison must be made of the seven factors (23 CFR 774.3 (c)(1)) concerning the alternatives under consideration. The first four factors relate to the net harm that each alternative would cause to the Section 4(f) property. The remaining three factors allow taking into account any substantial problem with any of the alternatives remaining under consideration on issues beyond Section 4(f). By balancing the seven factors, four of which concern the degree of harm to Section 4(f) properties, all relevant concerns are considered to determine which alternative would cause the least overall harm.

The seven are:

i. Ability to mitigate adverse impacts to each Section 4(f) resource (including any measures that result in benefits to the property);

ii. Relative severity of the remaining harm, after mitigation, to the protected activities attributes or features that qualify each Section 4(f) resource for protection;

iii. Relative significance of each Section 4(f) property;

iv. Views of the officials with jurisdiction over the Section 4(f) property;

v. Degree to which each alternative meets the purpose and need for the project;

vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and

vii. Substantial differences in costs among the alternatives.

After circulation of the Draft Section 4(f) evaluation in accordance with 23 CFR 774.5(a), Caltrans considered comments received on the evaluation and prepared and finalized the comparison of all factors listed in 23 CFR 774.3(c)(1) for all the alternatives. The analysis and identification of the alternative that has the least overall harm is documented below.

8.2 Least Overall Harm Analysis

To determine which of the build alternatives would cause the least overall harm, Caltrans must compare seven factors as set forth in 23 CFR 774.3(c)(1) concerning the alternatives under consideration. A comparison of each of the seven factors under each of the build alternatives is in Table 5 below. The project crosses RNSP, which includes both state and federal lands. Given RNSP is a jointly managed facility, NPS and CDPR directed Caltrans to evaluate the properties as one Section 4(f) property in the least overall harm analysis. Please see Chapter 4 for detailed descriptions of these resources, why they warrant protection under Section 4(f), and the proposed use for each alternative.

Table 5. Least Overall Harm Analysis Factor from 23 CFR 774.3 (c)(1)

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
1. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property)	To mitigate impacts on the RNSP, Caltrans would implement mitigation measure Bio-1, which would provide funding for the restoration of redwood forest ecosystems within RNSP lands. Additionally, Caltrans would implement Park-3, a measure to minimize temporary and permanent recreational impacts, that would provide funding to support other park projects or trail management activities. Alternative F would include the decommissioning (e.g., removal of structures such as the roadway, culverts, and retaining walls to the extent feasible) of the portion of the existing highway bypassed by the proposed tunnel. Decommissioning the existing highway at LCG creates an opportunity to connect the CCT across the old alignment, allowing unrestricted access to the trail from north to south. Currently, the CCT crosses U.S. 101, requiring CCT users to traverse the highway in order to hike the section of the trail east of the existing LCG alignment. With the highway removal, adjacent habitat areas would become contiguous, fostering a more park-like environment. Furthermore, benefits from decommissioning include elimination of the highway's potential impacts on adjacent	Measures to mitigate impacts on RNSP would be the same as for Alternative F. Similarly, the inability to fully mitigate impacts on RNSP is the same as under Alternative F, as certain adverse effects on park resources cannot be entirely avoided or mitigated. This alternative would also require acquisition of RNSP lands; however, there would be no decommissioning of the existing highway or potential relinquishment of land to RNSP. Alternative X would result in a net increase of 2.35 acres of impervious surface area and the addition of other transportation-related infrastructure within the boundaries of RNSP. These impacts could not be fully mitigated, as realigning the road is required for the alternative as designed. Although designed to meet the project's purpose and need, this alternative would be located entirely within active slide areas. In contrast, Alternative F's alignment, except for the tunnel's south portal and the OMC location, would avoid the most intense area of known landslides and geologic instability, thereby avoiding the portion of U.S. 101 most prone

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	parkland (e.g., noise, litter, pollutants). The decommissioned highway ROW may be relinquished to RNSP, which would result in a potential net gain of 14.13 acres of RNSP land. Together, these measures are anticipated to provide long-term benefits to the ecosystem and recreational opportunities within RNSP. However, fully mitigating adverse effects on the biological features of the park is not feasible, as modifications to character-defining features and the introduction of new elements cannot be avoided, minimized, or fully mitigated. Through consultation with the SHPO, Caltrans determined that the proposed undertaking would result in an adverse effect on the TCL. Subsequently, an MOA between Caltrans and the SHPO was developed in coordination with the tribes to address adverse effects on the TCL. Although Alternative F would result in an adverse effect in accordance with Section 106 of the NHPA, the proposed impacts are not expected to alter the resource's ability to convey its historical significance. The TCL would remain eligible for the NRHP and the California Register of Historical Resources (CRHR). As such, the TCL would remain protected by the provisions of Section 4(f). Because impacts on the Crescent City to Trinidad Wagon Road would be *de minimis*, no mitigation or minimization measures are required or planned, and the wagon road would maintain its historical significance.	to closure. As a result, Alternative X may require more frequent highway repairs, potentially resulting in increased RNSP visitor/highway traveler inconvenience. Alternative X would have the same ability to mitigate adverse effects on the TCL as Alternative F. Alternative X would not impact the Crescent City to Trinidad wagon road; therefore, no mitigation or minimization measures would be required, and the wagon road would maintain its historical significance.
2. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection.	The permanent impacts of this alternative would have a direct adverse impact on character-defining features of RNSP that cannot be avoided or fully mitigated. Currently, RNSP total 131,983 acres, of which 71,715 acres are federal land and 60,268 acres are state land	As with Alternative F, this alternative would have adverse impacts on character-defining features of RNSP, affecting 0.03 acre of late-successional redwood forest. This impact represents a permanent loss of habitat continuity and ecological

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	(NPS 2021). RNSP contains approximately 45% of the remaining protected old-growth redwoods in California, with almost 40,000 acres of old-growth forest. RNSP was designated as a UNESCO World Heritage Site in 1980, with its outstanding universal values related to redwood forests (UNESCO 2012). Although the project would not change RSNP's UNESCO World Heritage Site status, the permanent impacts on 1.09 acres of late-successional redwood forest, with its sensitive and unique ecological characteristics, would impact the protected activities, attributes, and features of RNSP despite mitigation measures. As discussed in Factor 1, forest restoration and continuity improvements aim to reduce these impacts. The TCL would remain eligible for the NRHP and the CRHR. As such, the TCL would remain protected by the provisions of Section 4(f). The impacts on the Crescent City to Trinidad Wagon Road are *de minimis* and no mitigation is proposed or required. The impacts resulting from Alternative F would not negate the significance of the qualities and attributes that qualify the wagon road as a Section 4(f) resource.	functions within this small area, albeit less severe than under Alternative F. As discussed in Factor 1, mitigation measures would include funding forest restoration. Similar to Alternative F, the TCL would remain eligible for the NRHP and the CRHR. As such, the TCL would remain protected by the provisions of Section 4(f). Alternative X would not impact the Crescent City to Trinidad Wagon Road. There would be no harm to the attributes that qualify the wagon road as a 4(f) resource.
3. The relative significance of each Section 4(f) property[10]	RNSP is a UNESCO-designated World Heritage Site due to its unique ecological significance. RNSP contains the largest contiguous stands of late-seral redwood forest and some of the tallest trees in the world. Only 235 natural sites worldwide have been designated by UNESCO, and only 12 of them are within the United States. The significance of the forest within RNSP is illustrated by the UNESCO	Same as Alternative F.

[10] According to the FHWA Policy Paper (2012) Question 2A, for the purpose of Section 4(f), a historic site is significant only if it is on or eligible for listing in the NRHP.

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	designation and the small percentage of remaining late-seral redwood forest stands across their historic range. The *´O Men hee-puer/Daa-ghestlh-ts´a´* Historic District is an 11,000-acre TCL consisting of multiple natural and culturally significant features that possess religious and cultural values to the five tribes. Caltrans evaluated the district and determined it eligible for listing on the NRHP at the local level of significance under Criteria A, B, and D, with a period of significance from time immemorial to the present. Important features contributing to the landscape's eligibility include beaches, sea stacks, trails, villages, old-growth redwood trees, and many other important named landmarks and locations. For the purposes of the project, the Crescent City to Trinidad Wagon Road, while not formally listed, is being treated as eligible for the NRHP. The wagon road is an example of historic infrastructure that was in use until U.S. 101 was constructed in the early 1900s.	
4. The views of the officials with jurisdiction over each Section 4(f) property	In the case of historic sites, the officials with jurisdiction are the SHPO, or, if the property is located on tribal land[11], the Tribal Historic Preservation Officer. Therefore, the SHPO has jurisdiction over the TCL and the Crescent City to Trinidad Wagon Road. In the case of public parks, the officials with jurisdiction are the officials of the agency or agencies that own or administer the property. CDPR and NPS have jurisdiction over RNSP properties. A copy of the Draft Individual Section 4(f) Evaluation was sent to CDPR and NPS in June 2023. Both	The SHPO, CDPR, and NPS did not provide any substantive comments on the Section 4(f) Evaluation, and, given this is not the selected preferred alternative, no further Section 4(f) coordination with the agencies on this alternative has occurred to date.

[11] Tribal lands means all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities (16 USC § 470w).

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	agencies responded indicating they had no comments at that time. As an attachment to the EIR/EIS, the Draft Individual Section 4(f) Evaluation was sent to CDPR, NPS, and SHPO on December 15, 2023. No substantive comments were received from the agencies by the February 13, 2024, deadline. Per 23 CFR 774, because substantive comments were not received within 15 days after the comment deadline, Caltrans may assume a lack of objection and proceed with the action. After the comment period, a request was made to CDPR and NPS for written support of Alternative F being selected as the preferred alternative. Written support has not been received; however, CDPR and NPS attended a Huffman Stakeholder's meeting on May 16, 2024, in which considerations for selection of the preferred alternative were presented, and a subsequent meeting on June 12, 2024, in which Alternative F was presented as the preferred alternative. Subsequently, Caltrans met with CDPR and NPS on June 20, 2024, and July 18, 2024. During the Huffman Stakeholder's meeting and the two subsequent meetings, both CDPR and NPS verbally expressed support of Alternative F being the selected preferred alternative. The SHPO provided concurrence on July 29, 2024, on the eligibility determination made for the TCL, and on January 24, 2025, the SHPO provided concurrence on the Finding of Adverse Effects. In January 2023, the SHPO recommended the wagon road be treated as eligible for the NRHP for the purposes of this project. The SHPO determined on January 14, 2025, that the proposed undertaking would have no adverse effect on the	

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	Crescent City to Trinidad Wagon Road under Alternative F.	
5. The degree to which each alternative meets the purpose and need for the project	As discussed in Section 2.3.3 of the Final EIR/EIS, a Geotechnical Risk Assessment (GRA) concluded that Alternative F is approximately twice more likely to perform well compared to Alternative X. In addition, Alternative F is expected to offer greater resilience to storm events and better performance during large magnitude earthquakes. Given these findings, the geological activity and instability of the project, and Alternative F's avoidance of most of the active landslide areas, it was concluded this alternative would better fulfill the project purpose and need related to long-term stability, reliability, and performance. As a result, this alternative would be expected to provide greater socioeconomic benefits for the area (e.g., goods movement, local resident commutes, reduced visitor/ tourism and economic disruptions). In achieving these objectives, Alternative F also supports long-term protections for the surrounding Section 4(f) resources by minimizing disruptions and preserving the integrity of adjacent parklands. For these reasons, Alternative F has been selected as the preferred alternative.	Alternative X would meet the project purpose and need; however, a GRA concluded that the likelihood of good performance for Alternative X is approximately half that of Alternative F. Alternative X was not selected as the preferred alternative.
6. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)	The representative resources not protected under Section 4(f) used for comparison under Factor 6 were taken from Table S-1. Summary of Potential Environmental Impacts of the Build Alternatives. in the Executive Summary of the Final EIR/EIS. According to the summary, both build alternatives would result in adverse impacts on natural and cultural resources.	
Adverse Effects on Resources not Protected by Section 4(f)		
Aesthetic Resources	Tunnel portals, OMC, new lighting. Impacts are anticipated to be low due to visual screening of the OMC with roadside vegetation, the proposed green roof, and vegetated cut slopes instead of concrete retaining walls, which were all steps developed to minimize visual impacts associated with the OMC. The portals	Shifting a portion of the existing alignment to the east, extensive retaining wall system. Existing roadbed to the west of the shifted alignment would be removed and revegetated. Context-sensitive treatments would be implemented to minimize impacts from the new

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	themselves are expected to have relatively small impacts, as the construction area around the portals would be revegetated once construction is complete, permanent fixtures such as guard rails would be colored to blend into the surrounding environment, and other aesthetic treatments, including the addition of tribal designs and patterns, would be implemented to further reduce the visual impact on aesthetic resources within the project area. Alternative F is not expected to change the scenic designation for this section of U.S. 101 and would be consistent with scenic highway protection measures.	retaining wall system, including the use of timber lagging and stained concrete walers that would help the retaining walls blend into the natural colors and textures of the existing landscape. Although the new retaining wall system would be substantially taller and longer than existing walls in the area, they would be visually compatible with other walls along the corridor. Although Alternative X would affect the visual setting of the project area, implementation of Alternative X would not change the scenic designation for this section of U.S. 101 and would be consistent with scenic highway protection measures. Impacts are anticipated to be low.
Water Quality and Stormwater Runoff	Disturbed soil area of 29.57 acres during construction. Would result in a net reduction of 0.9 acre of impervious surface area. Standard best management practices and water quality measures, including permit conditions as applicable, would protect water quality during construction. Stormwater treatment would be developed if determined to be necessary as final designs are developed. No adverse impacts on water quality or from stormwater runoff are anticipated.	Disturbed soil area of 20.85 acres during construction. Would result in a net increase of 2.35 acres of impervious surface area. Standard best management practices and water quality measures, including permit conditions as applicable, would protect water quality during construction. Stormwater treatment would be developed if determined to be necessary as final designs are developed. No adverse impacts on water quality or from stormwater runoff are anticipated.
Animal Species and Sensitive Natural Communities	Temporary and permanent adverse impacts on Sensitive Natural Communities that may contain suitable habitat for bald eagles, marbled murrelet (MAMU) and its critical habitat, northern spotted owl, Humboldt marten, coho salmon, amphibians, purple martin, Vaux's swift, fisher, ringtail, Sonoma and white-footed voles, bats, and migratory birds. Alternative F minimizes the above-ground area	Excluding coho salmon, same as Alternative F. Under Alternative X, no direct or indirect impacts on coho salmon are expected to occur. Overall, Alternative X would impact more habitat for animal species than Alternative F, although Alternative F would impact higher-quality habitat than Alternative X.

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	required for the project, reducing environmental impacts. Because tree removal and other habitat modifications would occur outside of the nesting and breeding season, impacts on individuals of these species, excluding MAMU and special status bats, are expected to be low. Consultation with the U.S. Fish and Wildlife Service determined that Alternative F would result in a *may affect, likely to adversely affect* determination for MAMU per the federal Endangered Species Act. For special status bats, tree removal has the potential to result in adverse impacts. Proposed mitigation, including forest restoration and preservation, and measures to avoid and minimize impacts on special status bats and other animal species would reduce impacts on animal species and Sensitive Natural Communities and other habitat by improving remaining habitat within RNSP and preserving and restoring additional habitat. However, despite these measures, impacts on Sensitive Natural Communities, MAMU, and special status bats would be adverse.	
Wetland and Other Waters	Permanent wetlands and waters impacts of 0.121 acre and temporary wetland and waters impacts of 0.015 acre. Permanent riparian impacts of 0.214 acre and temporary riparian impacts of 0.038 acre. On- and off-site permit-driven compensation is being developed to address wetland and waters impacts. No adverse impacts are anticipated.	Permanent wetland and waters impacts of 0.002 acre and temporary wetland and waters impacts of 0.014 acre. No permanent or temporary riparian impacts. On- and off-site permit-driven compensation is being developed to address wetland and waters impacts. No adverse impacts are anticipated.
7. Substantial differences in costs among the alternatives	Cost estimates for Alternative F are $2.5 billion (2026 dollars)[12] and $3.5 billion (2035 dollars, year of anticipated midpoint of construction).	Cost estimates for Alternative X are $580 million (2022 dollars) and $880 million (2031 dollars, year of anticipated start of construction). Costs do not

[12] The cost estimate for Alternative F was updated in 2026 based on increased contingency costs. Because Alternative X was not selected as the preferred alternative, the cost estimate was not updated, but remains less than Alternative F.

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	Costs do not include mitigation dollars. Estimated annual maintenance costs range from $2 to $3 million per year (2022 dollars). The long-term maintenance costs associated with the Energy Dissipation Absorption System are difficult to quantify, as its replacement timeline is unknown. It is designed to last up to 75 years; however, this depends on the rate of earth movement. For context, Energy Dissipation Absorption System column construction alone is estimated at $26 million in 2023 dollars, or approximately $36 million in 2039 dollars. Additional costs, including environmental compliance and mitigation, are not included in this estimate. Per the GRA, good performance from Alternative F is approximately twice as likely than from Alternative X. This would likely result in more predictable maintenance costs. A Benefit/Cost Analysis (BCA)[13] indicated a ratio of 3.32 for Alternative F, signifying it as an efficient investment. Benefits associated with this alternative that are unquantified in the BCA would include: • Acquisition of approximately 18.70 acres of RNSP land, with a net increase of approximately 14.13 acres to RNSP after Caltrans potentially relinquishes the ROW. This would provide additional recreational opportunities, including improved access and trail development. • Improved habitat quality by placement of approximately 6,000	include mitigation dollars, which are anticipated to be less than under Alternative F. Estimated annual maintenance costs range from $2 to $5 million per year (2022 dollars). Per the GRA, good performance from Alternative X is approximately half as likely than from Alternative F. This could potentially result in unknown additional maintenance costs, as the years go on. A BCA indicated a ratio of 3.76 for Alternative X, signifying it as an efficient investment. Compared to Alternative F, the unquantified benefits associated with this alternative would include: • Only 0.03 acre of late-successional redwood forest would be removed. • No redwood trees over 4-foot diameter at breast height would be removed from within late-successional redwood forest. • Fewer acres of late-successional Sitka spruce forest removed. • Fewer acres of wetlands affected. • No waters or riparian areas affected. • No potential impacts on fish. • Fewer acres of parkland acquired.

[13] A BCA is a systematic process for identifying, quantifying, and comparing expected benefits and costs of an investment, action, or policy. Projects or alternatives of projects determined to have BCA ratios greater than 1 are said to be efficient investments, in that each dollar invested in the project returns more than $1.00 in benefits. Projects determined to have a BCA ratio less than 1 are inefficient investments because the costs of the project are greater than incremental benefits created by the project. Projects with a BCA ratio of exactly 1—benefits are determined to be exactly the same as costs—are said to be at cost efficiency. Higher values indicate more efficient investments.

Factor	Alternative F (Tunnel) (Preferred Alternative)	Alternative X (Reengineered Highway)
	feet of highway below ground, reducing the risk of wildlife-vehicle collisions; improved connectivity; decreased noise levels; reduced pollution; and improved water quality.	

8.3 Identification of the Least Overall Harm Alternative

A least overall harm analysis has been conducted, balancing the seven factors set forth in 23 CFR 774.3 (c)(1) for the build alternatives. Following this analysis, Alternative F (preferred alternative) has been identified as the Least Overall Harm Alternative.

Factors 1 and 2. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property), and the relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection.

While the ability to mitigate adverse impacts on each Section 4(f) property and the relative severity of the remaining harm to RNSP after mitigation would tend to favor Alternative X, Alternative F offers a unique benefit through the removal of the existing highway, resulting in a potential net increase in park acreage, improved habitat continuity, reduction of impervious surface, and a reduction in highway impacts on adjacent parkland through tunneling and road removal. Alternative F would remove 34.89 acres of existing roadway, but would require 18.70 acres of new ROW and another 2.06 acres to provide utilities to the OMC, resulting in a potential net gain of 14.13 acres. While Alternative F would have comparatively more impacts on late-seral forest habitat than Alternative X, the two alternatives would have approximately the same impacts on the TCL. Given that Alternative F would remove the existing alignment, resulting in a potential net increase of just over 14 acres to the park, it would also increase acreage of undisturbed areas within the TCL as compared to Alternative X. It should be noted that the potentially relinquished property would be largely inaccessible to humans due to topography and landslides, but will act as a direct habitat connection between the late-seral forest to the east and the Pacific Ocean. A comprehensive mitigation strategy has been developed to support long-term preservation of forest habitat and restoration of impacted resources, reflecting a commitment to minimizing harm over the project's duration, despite impacts. The proposed mitigation would fund restoration of a minimum of 335 acres of park land. Restoration is intended to accelerate the development of mid- to late-seral characteristics in second-growth redwood forests in order

to improve habitat and forest and stream health, and reduce fuel loads to increase forest resilience to fire.

Factor 3. The relative significance of each Section 4(f) property.

The relative significance of each Section 4(f) property is recognized equally under both alternatives. Under Section 106, the impacts on the TCL would be adverse under both alternatives; however, impacts associated with both alternatives are limited in scope, affecting only a small portion of the TCL.

The TCL has been determined eligible for inclusion in the NRHP by the SHPO and it has been determined that the project would have an Adverse Effect on the TCL. However, it was determined that the impacts would not prevent the TCL from continuing to provide its importance and cultural significance to the tribes connected to the landscape. Post project implementation, the TCL would remain eligible for inclusion in the NRHP.

For the purposes of the project, the Crescent City to Trinidad Wagon Road, while not formally listed, is being treated as eligible for the NRHP. The wagon road was the primary route between Crescent City and Trinidad and is an example of historic infrastructure that was in use until U.S. 101 was constructed in the early 1900s. The wagon road was analyzed by the SHPO, who determined Alternative F would not have an adverse effect on the resource. Alternative X would not impact the Crescent City to Trinidad Wagon Road.

RNSP as a whole is considered a UNESCO World Heritage Site, one of only 12 natural sites in the United States with that designation. Although Alternative F would affect more large trees than Alternative X, under both alternatives, RNSP would remain a UNESCO World Heritage Site. Both alternatives would not affect the integrity of the park overall or prevent it from continuing to provide access to the characteristics that contributed to its original designation as a UNESCO World Heritage Site.

Factor 4. The views of the officials with jurisdiction over each Section 4(f) property.

RNSP officials have repeatedly noted the importance and significance of the status of the park as a UNESCO World Heritage Site and the gravity of the removal of late-seral trees given the small remaining percentage of these forests as compared to their historical extent. In verbal communications at working group meetings and other forums, these officials, while supporting the project conceptually, have stated the necessity for robust mitigation for impacts on the RNSP. However, no substantive comments were received from the agencies on the Draft Section 4(f) Evaluation. After the comment period ended, a request was made to CDPR and NPS for written support of Alternative F being selected as the preferred

alternative. Written support has not been received; however, Caltrans has met with CDPR and NPS on several occasions after the alternative selection and both CDPR and NPS verbally expressed support for Alternative F being the selected preferred alternative.

The SHPO provided concurrence on July 29, 2024, on the eligibility determination made for the TCL, and on January 14, 2025, it provided concurrence on the Finding of Adverse Effects.

In January 2023, the SHPO recommended the Crescent City to Trinidad Wagon Road be treated as eligible for the NRHP for the purposes of this project. The SHPO determined on January 14, 2025, that the proposed undertaking would have no adverse effect on the Crescent City to Trinidad Wagon Road under Alternative F.

Factor 5. The degree to which each alternative meets the purpose and need for the project.

Alternative F has been identified as the preferred alternative because it is expected to: 1) better meet the project's purpose, which is to develop a long-term solution to the instability and potential roadway failure at LCG, and 2) provide greater long-term economic and social benefits to the region than Alternative X. While both Alternative X and Alternative F would improve the reliability of the highway, the 2024 GRA concluded that good performance from Alternative F is approximately twice as likely as compared to Alternative X. More specifically, the probability of increased maintenance activities, repair projects, and traffic impacts (lane closures and full closures) resulting from geotechnical threats related to deep landslides, nested landslides, rockslides, rockfall, and gully erosion is expected to be approximately two times lower for Alternative F than for Alternative X. Alternative F is also expected to be more resilient to storm events and to perform better during a large magnitude earthquake than Alternative X. Given this determination and the geological instability and activity of the project area, as well as Alternative F's avoidance of most active landslide areas, Alternative F meets the purpose and need better for long-term stability, reliability, and performance.

Factor 6. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f).

The analysis concluded Alternative X would be environmentally superior, after mitigation, to Alternative F for the majority of environmental parameters, with generally lower adverse impacts than Alternative F after implementation of avoidance, minimization, and mitigation measures. However, the long-term benefits, stability, and performance of Alternative F are anticipated to outweigh these initial environmental impacts. While not fully mitigating all

impacts, the mitigation measures are comprehensive and intended to significantly reduce the project's long-term environmental impacts.

Factor 7. Substantial differences in costs among the alternatives.

Both alternatives were determined to be efficient investments, according to the BCA. The estimated construction cost for Alternative F is significantly higher than that of Alternative X but is anticipated to be fully funded. This higher investment is anticipated to contribute to greater long-term benefits, stability, and reduced risk of future maintenance and emergency repair costs.

CHAPTER 9. CONCLUSION

Given the project's purpose and need of developing a long-term sustainable solution 1) for potential economic impacts associated with a long-term highway failure, 2) for delays and detours for the traveling public, 3) for ongoing and unpredictable maintenance and emergency project costs, and 4) to mitigate for potential increases in the frequency and severity of large storm events, Factor 5 was considered the most important factor for determining the least overall harm analysis. The GRA indicated that Alternative F (tunnel) has approximately twice the likelihood of performing well compared to Alternative X. Given this assessment and the geological instability and activity of the project area, as well as Alternative F's avoidance of most of the active landslide areas, Alternative F better meets the purpose and need for long-term stability, reliability, and performance. Therefore, Alternative F has been determined to be the least overall harm alternative, as the need for future work and impacts related to ongoing maintenance and repair are half as likely as for Alternative X.

Based on the analysis in the EIR/EIS and consultation with the SHPO, RNSP would retain its UNESCO designation and the TCL would continue to provide its cultural significance and continue to be considered eligible for listing in the NRHP.

For more information, please see Section 2.3.3, *Identification of a Preferred Alternative*, of this Final EIR/EIS. Past alternatives were reviewed and rejected based on the level of impacts associated with longer bypass routes around and through RNSP, and the corresponding impacts on the TCL. Alternative F was revised multiple times to reduce impacts on forest habitat and wetlands at the north portal, avoid impacts on fish-bearing streams at the south portal, reduce the footprint of the OMC, and improve the overall reliability of the roadway.

Overall, while there are impacts on Section 4(f) resources resulting from the proposed construction of Alternative F, the extent of the impacts after mitigation would not negate the resource's Section 4(f) characteristics that led to the designation of RNSP or the TCL.

Based on the above considerations, there is no feasible and prudent alternative to the use of land from CDPR and NPS and the identified TCL. The proposed action includes all possible planning to minimize harm to RNSP and the TCL resulting from such use and causes the least overall harm in light of the statute's preservation purpose.



CHAPTER 10. SECTION 6(F) CONSIDERATION

The Land and Water Conservation Fund (LWCF) Act was established by Congress in 1964 to fulfill a bipartisan commitment to safeguard natural areas, water resources and cultural heritage, and to provide recreation opportunities to all Americans. The LWCF program provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. Section 6(f) of this Act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the Department of Interior's National Park Service.

CDPR was contacted about LWCF-funded lands in the Last Chance Grade area, and confirmed that the lands around LCG were not acquired with the LWCF and no development of public outdoor recreation areas and facilities have used LWCF grants.

NPS lands in the area may have been acquired by LWCF funds. However, the "conversion analysis" required under Section 6(f) only applies to the state assistance program—it does not apply to federal lands. A separate process, through the grant of a highway deed, would be needed for acquisition of park lands



CHAPTER 11. REFERENCES

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APPENDIX C. Title VI Policy Statement



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TITLE VI/NON-DISCRIMINATION POLICY STATEMENT

It is the policy of the California Department of Transportation (Caltrans), in accordance with Title VI of the Civil Rights Act of 1964 and the assurances set forth in the Caltrans' Title VI Program Plan, to ensure that no person in the United States shall on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. Related non-discrimination authorities, remedies, and state law further those protections, including sex, disability, religion, sexual orientation, age, low income, and Limited English Proficiency (LEP).

Caltrans is committed to complying with 23 C.F.R. Part 200, 49 C.F.R. Part 21, 49 C.F.R. Part 303, and the Federal Transit Administration Circular 4702.1B. Caltrans will make every effort to ensure nondiscrimination in all of its services, programs, and activities, whether they are federally funded or not, and that services and benefits are fairly distributed to all people, regardless of race, color, or national origin (including LEP). In addition, Caltrans will facilitate meaningful participation in the transportation planning process in a non-discriminatory manner.

The overall responsibility for this policy is assigned to the Caltrans Director. The Caltrans Title VI Coordinator is assigned to the Caltrans Office of Civil Rights Deputy Director, who then delegates sufficient responsibility and authority to the Office of Civil Rights' managers, including the Title VI Branch Manager, to effectively implement the Caltrans Title VI Program. Individuals with questions or requiring additional information relating to the policy or the implementation of the Caltrans Title VI Program should contact the Title VI Branch Manager at title.vi@dot.ca.gov or at (916) 639-6392, or visit the following web page: https://dot.ca.gov/programs/civil-rights/title-vi.

Dina El-Tawansy (Sep 12, 2025 16:52:12 PDT)

DINA A. EL-TAWANSY
Director



APPENDIX D. Final Mitigation Summary and Environmental Commitments Record



Introduction

The purpose of this Final Mitigation Monitoring and Reporting Program (MMRP) is to provide a summary of measures that would offset the potential impacts associated with the Last Chance Grade (LCG) Permanent Restoration Project. The project is located on U.S. 101 in Del Norte County between Post Miles (PM) 12.7 and 16.5 and travels through Redwood National and State Parks. The purpose of the project is to develop a long-term solution to the instability and potential roadway failure at LCG. The project would result in temporary and permanent impacts to resources administered by the California Department of Parks and Recreation (CDPR), National Park Service (NPS), California Coastal Commission (CCC), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), North Coast Regional Water Quality Control Board (NCRWQCB), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (USFWS).

Project Impacts and Proposed Mitigation

Both alternatives would temporarily and permanently impact wetlands and/or waters, Environmentally Sensitive Habitat Areas (ESHAs), and late successional forest. Suitable locations may exist within the project area that could provide opportunities to offset impacts on these resources. There are no mitigation banks or in-lieu fee programs currently available in the project area. As a result, measures to offset impacts would be performed through permittee-responsible mitigation.

In order to be sure that all of the environmental measures identified are executed at the appropriate times, the mitigation program (as articulated on the proposed Environmental Commitments Record [ECR] which follows) would be implemented. During project design, avoidance, minimization, and/or mitigation measures would be incorporated into the project's final plans, specifications, and cost estimates, as appropriate. All permits would be obtained prior to implementation of the project. During construction, environmental and construction/engineering staff would ensure that the commitments contained in this ECR are fulfilled. Following construction and appropriate phases of project delivery, long-term mitigation maintenance and monitoring would take place, as applicable. As the following ECR is a living document, some fields have not been completed, and would be filled out as each of the measures are implemented or as new commitments are identified (e.g., measures identified through the regulatory permitting process). The final MMRP for the project would be completed and submitted to the appropriate administering agencies as an attachment to the permit applications for the project.

The monitoring period for impacts to wetlands and other waters is expected to be between five and ten years. Likely success criteria would include at least 85% cover of appropriate native vegetation, and any wetland re-establishment or mitigation areas would meet the 3-parameter wetland definition by the final monitoring year.

The monitoring period and success criteria for the mitigation of impacts to late successional redwood, Sitka spruce, and Douglas-fir forest would be determined in a Habitat Mitigation and Monitoring Plan. This plan would be established prior to application of project permits and would take into consideration input from project stakeholders and identification of requirements from state/federal regulators.

Environmental Commitments Record

Task and Brief Description	Responsible Branch/Staff	Timing/Phase
Measures to Avoid or Minimize Non-Significant Impacts		
Bio-2: During construction, when the roots of large diameter trees are being severed, an arborist shall be on-site to assess the extent of damage to the Structural Root Zone (SRZ) and Root Health Zone (RHZ) to ensure that any roots damaged during grading or construction shall be exposed to sound tissue and cut cleanly with a saw, and to make a decision on tree removal.	Resident Engineer (RE), Environmental Construction Liaison (ECL), Arborist	During Construction
Bio-3: In temporary impacts areas, permeable fill materials would be used where feasible.	RE, ECL	During/Post Construction
Bio-4: In compliance with state and federal wetlands policies, which establish guidelines for wetland conservation (e.g., no net loss), Caltrans anticipates pursuing permit-driven compensation for impacts on wetlands, as well as on riparian and other waters. Compensation may include a combination of on- and off-site restoration efforts. Compensation efforts, and appropriate ratios, would be determined in coordination with appropriate agencies. Ratios are typically a minimum of 1:1 and are often dependent on the quality of the wetlands, and on whether an impact is temporary or permanent.	RE, ECL, Biologist	During/Post Construction
Bio-5: Noise control practices would be followed to minimize construction noise and disturbance to sensitive habitat areas: • Require that all construction equipment powered by gasoline or diesel engines have sound control devices such as exhaust mufflers that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation. • Use equipment powered by electric motors instead of gasoline- or diesel-powered engines where feasible. • Prevent excessive noise by shutting down idle vehicles or equipment, when feasible.	RE/ECL	During/Pre-Construction
Cultural-1: Implement treatments in the project Memorandum of Agreement (MOA) to address adverse effects on the contributing elements of the Traditional Cultural Landscape (TCL). Treatments to address adverse effects on the contributing elements of the TCL have been developed in consultation with the Elk Valley Rancheria, Pulikla Tribe of Yurok People (formerly Resighini Rancheria), Tolowa Dee-ni' Nation, Tolowa Nation, Yurok Tribe, National Park Service (NPS), California Department of Parks and Recreation (CDPR), and the State Historic Preservation Officer (SHPO). Treatments to address TCL effects include: • Funding for Tribal Programs	RE, ECL, Archaeologist	Pre/During/Post Construction

Task and Brief Description	Responsible Branch/Staff	Timing/Phase
• Providing Redwood and Other Trees of Significance to Tribes • Native Plant Gathering and Salvage of Natural Resources Prior to Construction • Tribal Designs and Patterns within Project Limits		
Park-1: Where feasible, boreholes near the California Coastal Trail (CCT) would be placed in areas that would be screened from view from trail users.	RE, ECL	During Construction
Park-2: Signage would be posted at trailheads and on websites to notify park users of construction activities when there is work near the CCT.	RE, ECL	Pre/During Construction
Park-3: Measures would be implemented to offset temporary and permanent impacts on Section 4(f) recreational resources. This may include CCT improvements or funding to support other park projects or trail management activities[1]. Implementation of this measure would be determined in consultation with NPS and CDPR and would be finalized prior to right-of-way (ROW) acquisition.	RE, ECL	Pre-Construction
Visual-1: All replanting would use a variety of techniques, such as native seeding, and container stock plantings, to provide a natural feel for the planting area(s).	RE, ECL, Biologist, Landscape Architect	During/Post Construction
Visual-2: As feasible, construction topsoil would be salvaged and stockpiled for use within planting areas to increase vegetation success.	RE, ECL	During/Post Construction
Visual-3: As needed, a Caltrans-approved landscape architect or other appropriate specialist would be on-site during activities to oversee clearing and grubbing activities, tree and landscape preservation, structural aesthetic applications, and revegetation. The landscape architect would be on call as a resource for any aesthetic-related concerns that arise during construction.	RE, ECL, Landscape Architect	During Construction
Mitigation for Significant Impacts under CEQA		
Bio-1: Caltrans would undertake one or more mitigation projects to compensate for the loss of late successional (mature to old-growth) redwood, Douglas-fir, and Sitka spruce conifer forest and associated large trees. The mitigation project(s) would attempt to offset impacts based on acreage removed and temporal loss of function. Typically, mitigation for Caltrans projects is established by applying ratios to compensate for the temporal loss of function of impacted habitat (e.g., 2:1, 3:1, etc.). However, these ratios are for resources where functional equivalency can be achieved within the foreseeable future. Mitigating for late successional forests is more complex, as the unique character and qualities of these forests cannot be replaced in the near-term. These forests, particularly those that	Mitigation Specialist, Caltrans Project Development Team	Pre/During/Post Construction

[1] Improvements may be subject to additional environmental compliance requirements.

Task and Brief Description	Responsible Branch/Staff	Timing/Phase
support long-lived species such as coast redwood, can take hundreds of years to establish on their own. Mitigation strategies for late successional forest communities would include forest restoration and preservation or forest restoration only. These mitigation strategies have been refined based on comments received on the DED and would continue to take into consideration input from project stakeholders. Mitigation would be initiated prior to the completion of project construction. Details pertaining to each mitigation strategy are outlined below: • **Mitigation Strategy One:** Fund forest restoration projects that accelerate the development of late successional characteristics in younger-aged stands and preserve forested lands to further habitat continuity for late successional forests and/or publicly managed lands and special status species. Funding thinning projects in dense, early successional stands would accelerate tree growth, increase tree vigor, increase biodiversity for botanical and wildlife species, buffer remaining late successional stands from high intensity stand-damaging fires, and increase carbon sequestration. Current available research supports that thinning young stands could accelerate the formation of late successional characteristics and functions in approximately 100 years for Sitka spruce, 150 years for Douglas-fir, and 200 years for redwood stands, though this is highly variable based on the treated stand's age, location, and position within the landscape. In addition to funding thinning projects, this mitigation strategy would include: o An endowment for the long-term management of treated stands, including additional actions to accelerate the development of late successional characteristics such as additional thinning, crown modification to improve structural complexity, etc. o A research endowment to fund studies to guide forest management, monitor the efficacy of the thinning treatments, and identify appropriate adaptive management strategies. Specific objectives related to forest thinning treatments for mitigation include, but are not limited to: o Accelerate the recovery of previously logged young successional conifer stands to mature forest structure and function. o Create connectivity between the remaining fragments of late successional forest communities. o Improve stream habitat, reduce erosion, restore hydrology, and enhance landscape resiliency.		

Task and Brief Description	Responsible Branch/Staff	Timing/Phase

Impacts to sensitive natural communities and ESHA are typically mitigated at a 3:1 ratio; however, given the time it may take for treated stands to reach functional equivalency of the stands impacted by the project, the amount of mitigation required may be based on the length of time it would take to restore functional equivalency of late successional forest impacted by the proposed project, i.e., the number of years it would take for the treated stands to reach the functional equivalency of the impacted habitat. Therefore, mitigation would be 100:1 for late successional Sitka spruce forest, 150:1 for late successional Douglas-fir forest, and 200:1 for late successional coast redwood forest.

Based on the anticipated impact quantities and ratios discussed above, Caltrans would fund the restoration of a minimum of 335 acres of forest habitat at Redwoods Rising[2], a landscape-scale restoration project managed by Redwood National and State Parks (RNSP). This mitigation strategy has been identified through coordination and consultation with RNSP. Although the total area was determined through species-specific ratios as shown below, it is anticipated that forest restoration would be completed based on the total acreage shown in Table 3-20. Funding such restoration would occur prior to the commencement of construction activities through a Cooperative Agreement or similar agreement with RNSP.

Table 3-20. Mitigation Strategy 1: Forest Restoration at Redwoods Rising

Natural Community	Impact (Acres)	Mitigation Ratio	Mitigation Total (Acres)
Redwood Late Successional	1.09	200:1	218
Douglas-Fir Late Successional	0.02	150:1	3
Sitka Spruce Late Successional	1.13	100:1	113
Total	**2.24**	**N/A**	**335[1]**

[1] The sum of restoration acres (334) is rounded up to 335.

Preservation would be accomplished through the purchase of existing forest habitat, comprised of the aforementioned forest types, in Del Norte and/or Humboldt counties that is threatened by logging or development, with the intent of conveying the preserved habitat to an agency or organization that would manage it in perpetuity. Forest habitat within the coastal zone and located adjacent to late successional forests and/or publicly managed lands would be prioritized for preservation. Preservation of forest habitat adjacent to late

[2] https://www.nps.gov/redw/redwoodsrisingmain.htm

Task and Brief Description	Responsible Branch/Staff	Timing/Phase
successional forests and/or publicly managed lands would provide buffer habitat, reducing edge effects such as encroachment of invasive species, wildfire, and other external disturbances. Preservation would be implemented using the same ratios as forest restoration, presented in Table 3-20, resulting in preservation of a minimum of 335 acres. This preservation would be coordinated to provide the greatest benefit to existing late successional forests, and/or publicly managed lands, and special status species. Caltrans would develop a Long-term Management Plan identifying specific goals, objectives, and associated tasks based on the specific needs of the preserved forested habitat. Costs for implementation of the Long-term Management Plan would be developed in close coordination with project partners via a Property Analysis Record, to be held within an endowment and managed by an entity qualified to hold and manage endowments consistent with California Government Code Section 65968(e). While the table below shows specific acres for each community, the final specific ratio of individual species on a preservation parcel(s) may vary. Preservation of existing forest habitat for mitigation would also include: ○ An endowment for the long-term management/maintenance of preserved habitats. ○ A deed restriction or conservation easement that restricts future land use practices that could adversely affect the protected habitat, thereby ensuring protection of the habitat in perpetuity. As stated above, this mitigation strategy proposes forest restoration in combination with preservation of forested habitats. However, acquiring land with forest habitat suitable for preservation presents several challenges including, but not limited to, availability of land for purchase, willingness of property owners to sell at fair market value, issues arising during the due diligence process, and identification of an entity qualified and willing to hold the property and/or conservation easement(s) and conduct long-term management. If progress becomes stalled and Mitigation Strategy One is determined to be infeasible, Mitigation Strategy Two would then be pursued. • **Mitigation Strategy Two**: Fund forest restoration projects that accelerate the development of late successional characteristics in younger-aged stands. Mitigation Strategy Two would fund additional restoration beyond what is proposed under Mitigation Strategy One to account for the inability to effectively implement preservation. Based on the anticipated impact quantities and ratios discussed in Table 3-20, Caltrans would fund the additional restoration of 335 acres of forest habitat in addition to the 335 acres discussed in Mitigation Strategy One for a total of 670 acres of forest restoration.		

Task and Brief Description	Responsible Branch/Staff	Timing/Phase
Funding such restoration would occur prior to the commencement of construction activities through a Cooperative Agreement or similar agreement with RNSP. Similar to Mitigation Strategy One, in addition to funding thinning projects, this mitigation strategy would include: ○ An endowment for the long-term management of treated stands, including additional actions to accelerate the development of late successional characteristics such as additional thinning, crown modification to improve structural complexity, etc. ○ A research endowment to fund studies to guide forest management, monitor the efficacy of the thinning treatments, and identify appropriate adaptive management strategies.		
Bio-6: Tree removal would be conducted outside of the maternity season (typically March 1 through September 1) and the winter torpor period (December 1 through February 28), to the extent possible. The limited operating periods may be modified at the recommendation of a biologist based on regional bat roosting data, site-specific roost status, and/or annual climate variation.	RE, ECL, Biologist	During Construction
Bio-7: Prior to tree removal, a qualified bat biologist would examine trees to be removed or trimmed for suitable bat roosting habitat. Trees greater than 24 inches diameter at breast height (DBH) or any size with habitat features (e.g., tree cavities, basal hollows, loose or peeling bark, larger snags) would be further evaluated for the potential to support roosting habitat, and the area within accessible cavities (and on the outside of the tree, as feasible) for bat sign (e.g., guano, culled insect parts, staining), as feasible. The qualified bat biologist would be approved by Caltrans and be knowledgeable on bat life history, species identification, and identification of potential roosting habitat. Where suitable cavity bat roosting habitat is identified, the qualified bat biologist would further evaluate the potential use of the tree by bats by conducting an evening emergence survey and/or using a directional night-vision camera to view into the cavity to identify presence of bats at cavities accessible from the ground. Emergence surveys would be conducted no more than 2 weeks prior to start of tree removal activities. Surveys would be conducted 30 minutes before sunset to 1 hour after sunset (or until there is no visibility) and during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Acoustic detectors may be used to detect emerging bats and identify species. If bats are documented and the site is conducive, the roost is safely accessible from the ground, and it is feasibly appropriate (limited access points), an exclusion device may be installed prior to tree removal. Any exclusion device would be installed under the guidance of a	RE, ECL, Biologist	Pre/During Construction

Task and Brief Description	Responsible Branch/Staff	Timing/Phase
qualified biologist and when weather is fair. No exclusion would occur during the maternity season.		
Bio-8: If the bat biologist determines during the preconstruction tree surveys (Bio-7) that the tree is suitable for bat roosting, the biologist would use feasible site-specific means to modify and disturb the habitat to allow bats to wake and leave the roost prior to tree felling. These disturbances may include (1) modifying habitat conditions such as removing smaller non-habitat trees at least a day prior to removing habitat trees; (2) creating a vibrational disturbance over the course of a few minutes with a chainsaw, knocking the tree with a sledgehammer, using equipment to shake the tree, or removing the tree in pieces (sections or limbs) over the course of a few days; (3) changing the structure of the potential roost by lifting bark to modify temperature, wind, light, and precipitation; and/or (4) using ultrasound deterrents. The tree disturbance would be monitored by the construction monitor (Bio-9).	RE, ECL, Biologist	Pre/During/ Construction
Bio-9: A qualified construction monitor would be present on site to conduct monitoring during removal of the trees identified during preconstruction surveys (Bio-7) as having the potential to support bat roosting in tree cavities. Following tree removal, the construction monitor would search downed vegetation for dead and injured bats. Injured bats would be transported to the nearest wildlife rehabilitation facility (Humboldt Wildlife Care Center near Arcata). The qualified construction monitor would be approved by Caltrans and be knowledgeable on bat life history, species identification, and roosting habitat.	RE, ECL, Biologist	Pre/During/ Construction
Other Environmental Commitments		
Tree Root Study: A Tree Root Study would be funded to look at above- and below-ground biomass, tree health, and other parameters to monitor the response to project-related construction. This study would be done in collaboration with CalPoly Humboldt or other qualified personnel and would take place over multiple years, pre- and post-construction.	Environmental/ Stewardship	Pre/During/ Post Construction
USFWS Biological Opinion Conservation Measure: Caltrans, in conjunction with Redwood National and State Parks and applicable utility companies, will develop and implement a plan to bury existing powerlines in Elk Prairie, which present a known threat to murrelets. This action will offset direct or indirect impacts to murrelets that result from the removal of nest trees, by providing relief from murrelet strikes with utility infrastructure. Compliance with this measure will be achieved by Caltrans funding up to one million dollars towards the completion of such effort and will be conditioned upon State Parks entering into a financial agreement with Caltrans. Pending the completion of the financial agreement between Caltrans and Redwood National and State Parks, Caltrans will ensure funding of this action will occur prior to the completion of the proposed project.	Biologist, Mitigation Specialist, Caltrans Project Development Team	Pre/During Construction

Anticipated Agency Permits and Environmental Review

Depending on the measures implemented, a proposed mitigation may require its own environmental clearance, mitigation requirements, and potential approvals by the agencies listed below. While the mitigation projects themselves would likely be self-mitigating, additional mitigation measures would be captured on-site within the mitigation projects themselves, to the maximum extent feasible.

1. State Historic Preservation Officer – Section 106 Concurrence for potential impacts associated with mitigation activities
2. California Coastal Commission – Coastal Development Permit
3. North Coast Regional Water Quality Control Board – 401 Water Quality Certification.
4. U.S. Army Corps of Engineers – 404 Nationwide Permit
5. National Marine Fisheries Service – Letter of Concurrence
6. U.S. Fish and Wildlife Service – Endangered Species Act Section 7 Biological Opinion
7. California Department of Fish and Wildlife 1602 Lake and Streambed Alteration Agreement

APPENDIX E. Notice of Preparation, Notice of Intent, and Notice of Availability



Notice of Preparation of an Environmental Impact Report
Last Chance Grade Permanent Restoration Project

The California Department of Transportation (Caltrans) District 1 is Lead Agency for the California Environmental Quality Act (CEQA) process for the Last Chance Grade Permanent Restoration Project (Project). As Lead Agency under CEQA, Caltrans is issuing this Notice of Preparation (NOP) for an Environmental Impact Report (EIR) consistent with all CEQA requirements.

Caltrans is also serving as federal lead agency under the National Environmental Policy Act (NEPA), as assigned by the Federal Highway Administration (FHWA) and has separately published a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) in the ***Federal Register*** announcing its intention to initiate the federal environmental review process for this Project, pursuant to NEPA.

The purpose of this NOP is to notify agencies, organizations, and individuals of this intent, and request input on the scope and content of the proposed joint EIR/EIS.

Scoping Period for Receipt of Comments
Comments must be received by 5:00 p.m. PST on **December 6, 2021**.
Please submit written comments by either of the following ways.

1. By mail to:
Caltrans District 1
Attn: Steve Croteau
1656 Union Street
Eureka, CA 95501

2. By email to: ScopingComments@lastchancegrade.com

Virtual Scoping Meeting
A virtual scoping meeting will be held on **THURSDAY, NOVEMBER 18** from 6:00 to 7:30 PM PST. At the meeting, Caltrans will provide a brief overview of the project and the environmental review process. Attendees will have an opportunity to ask questions. However, questions and discussion at the meeting will not be considered scoping comments. All scoping comments must be submitted by mail or e-mail. Attendance at the virtual scoping meeting is **not** necessary to submit comments.

Please visit **lastchancegrade.com** for more information about the project and to join the virtual scoping meeting via Zoom. If you wish to join by phone only, call **+1-669-900-6833** and use **Meeting ID: 898 2790 5460**.

Project Description
Caltrans is the lead agency under CEQA and NEPA, as assigned by FHWA for the project. As shown in Figure 1, Last Chance Grade is the 3.5-mile-long section of U.S. Highway 101 (US 101) in Del Norte County (post mile [PM] 12.0 to 15.5) that runs between Wilson Creek to about 9 miles south of Crescent City. The Project area is almost entirely within portions of Redwood National and State Parks.

The Project would realign the highway in response to landslide and roadway failures which have caused damage for decades. The objectives of the project are to:

- Provide a more reliable connection

- Reduce maintenance costs
- Protect the economy, natural resources, and cultural resources.

A geologic study in 2000 conducted for Caltrans by the California Geological Survey mapped over 200 historical and active landslides (both deep-seated and shallow) within the corridor between Wilson Creek and Crescent City. Over the years, Caltrans has conducted a considerable number of construction projects and maintenance activities in the Last Chance Grade area to keep the roadway open. Since 1997, landslide mitigation efforts, including retaining walls, drainage improvements, and roadway repairs have cost over $85 million. A long-term sustainable solution at Last Chance Grade is needed to address:

- Economic ramifications of a long-term failure and closure
- Risk of delay/detour to traveling public
- Increasing maintenance and emergency project costs
- Increase in frequency and severity of large storm events caused by climate change

Over the past several years, Caltrans has considered multiple alignment alternatives with input from numerous project partners in seeking a long-term feasible and sustainable solution suitable for the unique geologic and natural features of the project area. As a result of these past alternatives screening processes, Caltrans has elected to move forward with the environmental review of two build alternatives, alternatives X and F (Figure 2).

Alternative X would involve reengineering the existing roadway. Within a portion of Alternative X, the roadway would retreat inland (to the east) by approximately 130 feet to improve geotechnical stability and longevity. Alternative X would involve constructing a series of retaining walls (single and terraced) to minimize the potential for landslides on the roadway. Depending on feasibility, drainage improvements might also be included for this alternative.

Alternative F would construct a 10,000 foot-long tunnel that would diverge from the existing roadway near PM 14.06 and reconnect to US 101 near PM 15.5, thereby avoiding the portion of existing roadway most prone to landslides and geologic instability.

The EIR/EIS will also study a **No Project Alternative**, which would entail no new long-term feasible and sustainable solution for Last Chance Grade but would instead be a continuation of ongoing maintenance and repair activities needed to enable ongoing roadway operations.

Permits and approvals from the following agencies may be required but are not limited to: U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), National Marine Fisheries Service (NMFS), North Coast Regional Water Quality Control Board (RWQCB), the California Coastal Commission, and California Department of Fish and Wildlife (CDFW).

Potential Environmental Effects/Topics to Be Evaluated

Based on preliminary surveys and information, Caltrans identified the following main subject areas for analysis in the EIR/EIS. The EIR/EIS will consider impacts associated with construction and ongoing operation. The scope of environmental analysis could be modified based on input from this NOP, the NOI, project scoping, or the project development process.

Environmental effects anticipated for study include, but are not limited to:

- Aesthetics
- Agriculture and Forestry
- Air Quality
- Biological Resources ((including trees, plants, animals, and wetlands/aquatic features))
- Cultural Resources
- Energy
- Geology /Soils (including paleontology)
- Greenhouse Gas Emissions
- Hazards & Hazardous Materials
- Hydrology / Water Quality
- Land Use / Planning
- Mineral Resources
- Noise
- Population / Housing
- Public Services
- Recreation
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities / Service Systems
- Wildfire
- Cumulative Impacts

The EIR/EIS also will address NEPA-required issues such as compliance with applicable federal executive orders (e.g., Environmental Justice) and federal regulations (e.g., Section 4(f) of the Department of Transportation Act).

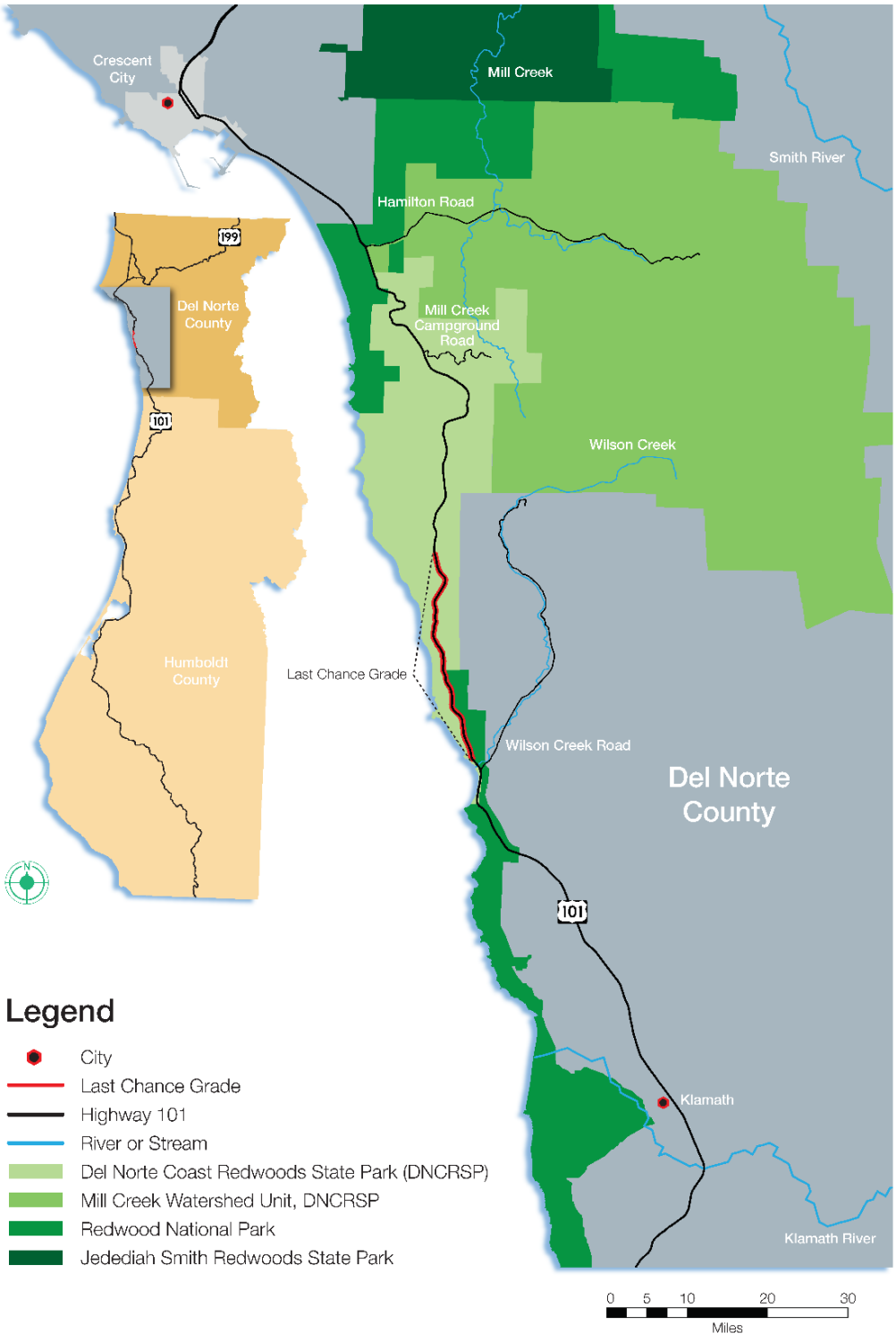


FIGURE 1 – Location Map

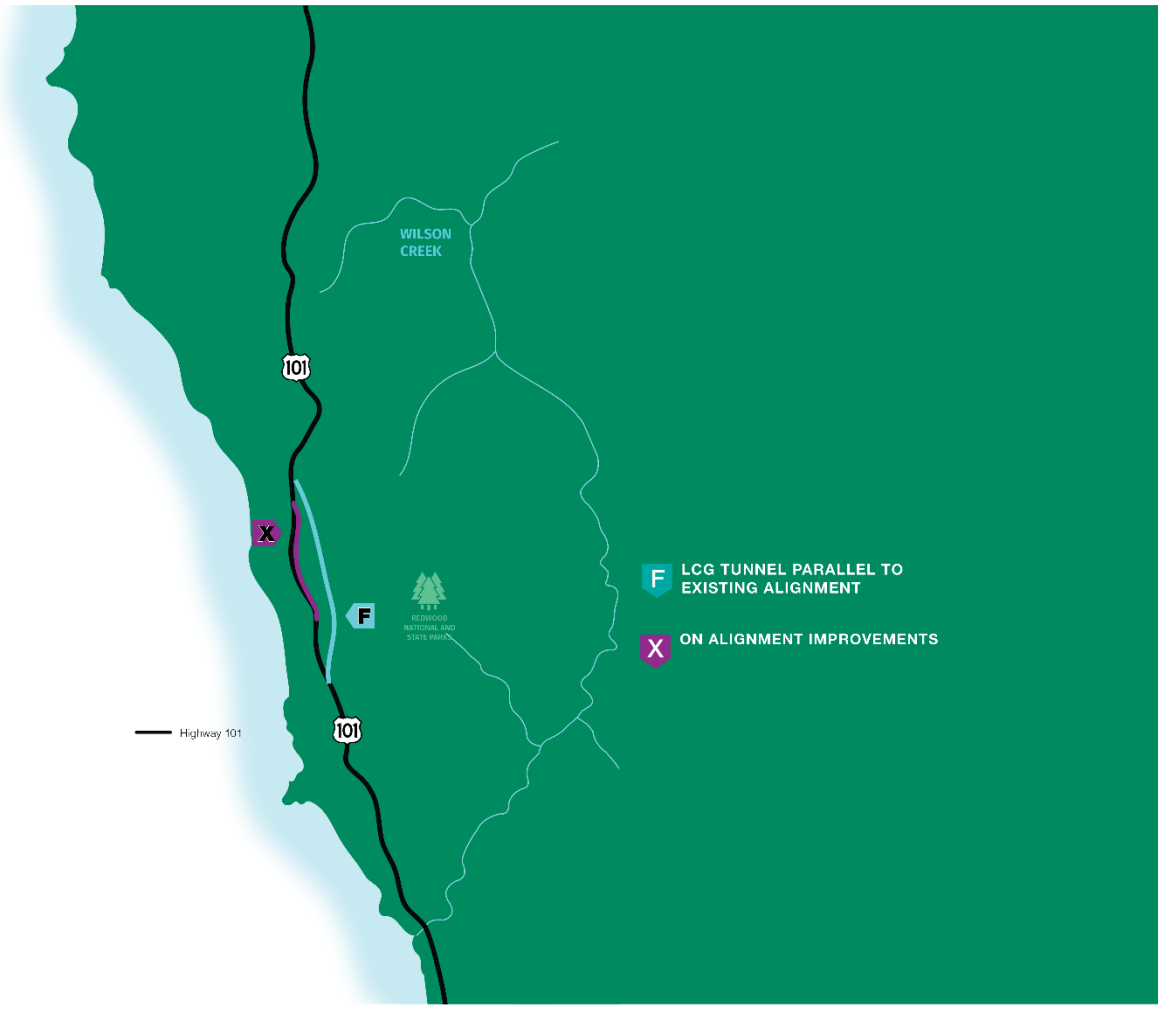


FIGURE 2 –Build Alternatives to be Considered in the Draft EIR/EIS

DEPARTMENT OF TRANSPORTATION **[4910-RY]**

Federal Highway Administration

Notice of Intent to prepare a draft Environmental Impact Statement for the Last Chance Grade Permanent Restoration Project on Interstate 101, in Del Norte County, California

AGENCY: Federal Highway Administration (FHWA), U.S. Department of Transportation (DOT)

ACTION: Notice of Intent (NOI) to prepare a Draft Environmental Impact Statement (Draft EIS) for the Last Chance Grade Restoration Project on Interstate 101 (I-101).

SUMMARY: The FHWA, on behalf of the California Department of Transportation (Caltrans), is issuing this notice to advise the public that a Draft EIS will be prepared for the Last Chance Grade Permanent Restoration Project (Project), a proposed roadway improvement project on I-101, in Del Norte County, California. A separate Notice of Preparation of the Draft Environmental Impact Report (Draft EIR) has been issued by Caltrans to meet the requirements of the California Environmental Quality Act (CEQA).

DATES: This notice will be accompanied by a 30-day public scoping comment period from November 5, 2021 to December 6, 2021. The deadline for public comments is 5:00 p.m. (PST) on December 6, 2021. The Virtual scoping meeting will be held from 6:00 pm to 7:30 pm PST on Thursday, November 18, 2021.

ADDRESSES: Project information is available on the internet at lastchancegrade.com.

FOR FURTHER INFORMATION CONTACT: For Caltrans: contact Steve Croteau, Senior Environmental Planner, Caltrans District 1, 1656 Union Street, Eureka, CA 95501, telephone 707-572-7149, or email ScopingComments@lastchancegrade.com. For FHWA, contact David Tedrick, telephone (916) 498-5024, or email david.tedrick@dot.gov.

SUPPLEMENTARY INFORMATION:

Effective July 1, 2007, the FHWA assigned, and Caltrans assumed, environmental responsibilities for this project pursuant to 23 U.S.C. 327. Caltrans as the assigned National Environmental Policy Act (NEPA) agency and CEQA lead agency, will prepare a joint EIR/EIS on a proposal for improvements along a portion of I-101 known as "Last Chance Grade" in Del Norte County, California.

Last Chance Grade is the 3.5-mile-long section of I-101 (post mile [PM] 12.0 to 15.5) that runs between Wilson Creek to about 9 miles south of Crescent City. The Project area is almost entirely within portions of Redwood National and State Parks.

The Project would realign the highway in response to landslide and roadway failures which have caused damage for decades. The purpose of the project is to:

- Provide a more reliable connection
- Reduce maintenance costs
- Protect the economy, natural resources, and cultural resources.

A geologic study in 2000 conducted for Caltrans by the California Geological Survey mapped over 200 historical and active landslides (both deep-seated and shallow) within the corridor between Wilson Creek and Crescent City. Over the years, Caltrans has conducted a considerable number of construction projects and maintenance activities in the Last Chance Grade area to keep the roadway open. Since 1997, landslide

mitigation efforts, including retaining walls, drainage improvements, and roadway repairs have cost over $85 million. A long-term sustainable solution at Last Chance Grade is needed to address:

- Economic ramifications of a long-term failure and closure
- Risk of delay/detour to traveling public
- Increasing maintenance and emergency project costs
- Increase in frequency and severity of large storm events caused by climate change

Over the past several years, Caltrans has considered multiple alignment alternatives with input from numerous project partners in seeking a long-term feasible and sustainable solution suitable for the unique geologic and natural features of the project area. As a result of these past alternatives screening processes, Caltrans has elected to move forward with the environmental review of two action alternatives, Alternatives X and F.

Alternative X would involve reengineering the existing roadway. Within a portion of Alternative X, the roadway would retreat inland (to the east) by approximately 130 feet to improve geotechnical stability and longevity. Alternative X would involve constructing a series of retaining walls (single and terraced) to minimize the potential for landslides on the roadway. Depending on feasibility, drainage improvements might also be included for this alternative.

Alternative F would construct an approximately 10,000-foot-long tunnel that would diverge from the existing roadway near PM 14.06 and reconnect to US 101 near PM 15.5, thereby avoiding the surface portion of existing roadway most prone to landslides and geologic instability.

The Draft EIR/EIS will also study a No Project Alternative, which would entail no new long-term feasible and sustainable solution for Last Chance Grade but would instead be a continuation of ongoing maintenance and repair activities needed to enable ongoing roadway operations.

Letters describing the proposed action and soliciting comments will be sent to appropriate Federal, State, Participating Agencies, Tribal governments, and local agencies, and to private organizations and citizens who have previously expressed or are known to have interest in this proposal. The Scoping period to submit comments is from November 5, 2021 to December 6, 2021. A public scoping meeting will be held virtually from 6:00 pm to 7:30 pm PST on November 18, 2021 from link at lastchancegrade.com. Comments on the NOI may be submitted by email: ScopingComments@lastchancegrade.com; or letter to 1656 Union Street, Eureka, CA, 95501 with Attention to Steve Croteau, Senior Environmental Planner. In addition, a public hearing will be held once the Draft EIR/EIS is completed. Public notice will be given with the time and place of the meeting and hearing.

To ensure that the full range of issues related to this proposed action are addressed and all significant issues identified, comments and suggestions are invited from all interested parties. Comments or questions concerning this proposed action and the EIS should be directed to Caltrans at the address provided above.

(Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.)

Issued on: October 28, 2021

Rodney Whitfield <Electronically Signed>

Director

Financial Services

Federal Highway Administration

California Division

PUBLIC NOTICE

Notice of Availability of the Draft Environmental Impact Report/Environmental Impact Statement/Section 4(f) Evaluation and Announcement of Public Open House

Last Chance Grade Permanent Restoration Project
U.S. Highway 101 — Del Norte County

PUBLIC OPEN HOUSE

A virtual public Open House will be held via Zoom on:

Date: Wednesday, January 24, 2024
Time: 5:30 p.m. – 7:00 p.m.
Place: Access meeting at www.lastchancegrade.com

PUBLIC COMMENT PERIOD

A Draft Environmental Impact Report/Environmental Impact Statement for the Last Chance Grade Permanent Restoration Project is now available for public review and comment as of December 15, 2023.

Comment Deadline: February 13, 2024

WHAT IS BEING PLANNED?

The California Department of Transportation (Caltrans) proposes to permanently restore a section of highway, known as Last Chance Grade, located on U.S. Highway 101 in Del Norte County (post miles [PMs] 12.7 to 16.5). Last Chance Grade is a 3.5-mile-long section of highway approximately 10 miles south of Crescent City. The project would permanently restore the highway in response to landslide activities that have created roadway damage and frequent highway closures for decades.

WHY THIS PUBLIC NOTICE?

Caltrans has studied the effect this project may have on the environment and prepared a Draft Environmental Impact Report/ Environmental Impact Statement and Draft Section 4(f) Evaluation that identifies the project's potential impacts and potential avoidance, minimization, and mitigation measures. The build alternatives would result in significant and unavoidable impacts related to late successional forest and marbled murrelet and its designated critical habitat. Potentially significant impacts related to special status bat species and greenhouse gas emissions would be reduced to less-than-significant levels after implementation of mitigation measures. The project site is not located on any list of hazardous materials waste sites compiled pursuant to Section 65962.5 of the Government Code.

This notice is to let you know of the availability of the draft environmental document for you to read and review, and the opportunity to provide comments. A virtual public Open House as described above will be held to give you the opportunity to learn more about the project and to talk with Caltrans staff before the final design is selected.

WHAT'S AVAILABLE

The Draft Environmental Impact Report/Environmental Impact Statement is available for review at the project website www.lastchancegrade.com, or at the Caltrans District 1 Office, 1656 Union Street, Eureka, CA weekdays from 8:00 a.m. to 5:00 p.m., and at the Del Norte County Library, 190 Price Mall, Crescent City, CA.

WHERE YOU COME IN

Do you believe the project's potential impacts have been adequately addressed by the draft environmental document? Do you have additional information that should be included? Would you care to make any other comments on the project? Please submit your comments in writing no later than February 13, 2024, to Steve Croteau, North Region Environmental, Department of Transportation, P.O. Box 3700, Eureka, CA 95502-3700, or DEDcomments@lastchancegrade.com.

After considering and replying to comments on the draft environmental document, Caltrans will make a decision on the project and proceed with the project's design.

CONTACT

For more information about this project or about the Open House, please contact Jaime Matteoli, Caltrans Project Manager, at (707) 498-0961 or jaime.matteoli@dot.ca.gov. For other state highway matters in the area, please contact the Caltrans District 1 Public Information Office at 707-445-6600 or by email district.1.pio@dot.ca.gov.

SPECIAL ACCOMMODATIONS

Individuals who require special accommodation (e.g., American Sign Language interpreter, documentation in alternate forms, etc.) are requested to write or call Myles Cochrane, Public Information Officer, Caltrans District 1, P.O. Box 3700, Eureka, CA 95502-3700, 707-498-4272. Telecommunication Devices for the Deaf (TDD) users may contact the California Relay Service TDD line at 711.

APPENDIX F. Cultural Resource Correspondence



California Department of Transportation

DIVISION OF ENVIRONMENTAL ANALYSIS
1120 N STREET
P.O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (510) 504-1937
FAX (916) 653-7757
TTY (916) 653-4086

November 23, 2022

Julianne Polanco
State Historic Preservation Officer
1725 23rd Street, Suite 100
Sacramento, CA 95816-1700

RE: Determination of Eligibility for the Last Chance Grade Permanent Restoration Project on United States Highway 101, Del Norte County, California (FHWA_2019_1015_002)

Dear Ms. Polanco:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), is continuing consultation with the State Historic Preservation Officer (SHPO) regarding the Last Chance Grade Permanent Restoration Project on US Highway 101, in Del Norte County, California (Undertaking). At the request of the National Park Service, Caltrans is conducting compliance with Section 106 of the National Historic Preservation Act pursuant to its implementing regulations at 36 CFR § 800.

Caltrans District 1 proposes to develop a long-term solution to the instability and potential roadway failure at Last Chance Grade (LCG) by constructing a new alignment. The existing alignment requiring replacement is located between post miles (PM) 12.7 and 16.5 on US highway 101 in Del Norte County. There are currently two built alternative alignments under consideration. A description of each alternative is available in the enclosed Historic Property Survey Report (HPSR).

Enclosed with this letter are an HPSR with attached Archaeological Survey Report (ASR), Historic Resources Evaluation Report (HRER), and Ethnographic Overview of the proposed project Study Area.

Caltrans' consultation and identification efforts have resulted in the documentation of six potential historic properties with the Undertaking's Environmental Study Limits (ESL) that require evaluation. **Caltrans has determined that the following property is eligible for listing on the National Register of Historic Places and requests your concurrence, pursuant to 36 CFR §800.4(c)(2):**

- **Crescent City to Trinidad Wagon Road (P-08-000470/ REDW00169).**

This property was the primary route between Crescent City and Trinidad from its construction in 1894 until the advent of the Redwood Highway in the 1920s. The wagon road currently exists as discrete segments that vary in length and condition. A total of 31 segments of the wagon road were identified within the cultural study area for the current project. Segments 1 through 13 were originally recorded in 2019 as part of the identification efforts for Phase 2B geotechnical studies. In 2020, the record was

updated to include seventeen additional segments (A-Q). In 2022, Caltrans identified one additional segment (C-1).

Caltrans has determined that the following properties are not eligible for listing on the National Register of Historic Places and requests your concurrence, pursuant to 36 CFR §800.4(c)(2):

- **Ocean View Terraces Subdivision (TD-1). T**he remains of a residential development (ca. 1950-1983) situated east of US 101 at PM 13.51 in Del Norte County on land currently owned by NPS.
- **Del Norte Palisades Subdivision (TD-4).** A mid-century residential development situated east of US 101 at P.M. 13.83 in Del Norte County on land currently owned by NPS.
- **Log Stack TO118-17.** A historic-era stacked redwood log feature associated with the "modern" Redwood Highway.
- **Log Stack TO118-18.** A historic-era stacked redwood log feature associated with the "modern" Redwood Highway.
- **Modern Redwood Highway (US 101), PM 12.5-13.3 (P-08-000552). T**he currently in-use Redwood Highway (US 101). Caltrans previously evaluated a segment between PM 13.3 and 22.58 and found that it did not meet NRHP/CRHR criteria. SHPO concurred with this determination on May 15, 2014 (SHPO Reference # FHWA_2014_0320_001). The current project update adds PM 12.5 through 13.3.

The enclosed HRER provides support for these proposed determinations. If you require any additional information or have any questions or concerns please do not hesitate to contact me or Caltrans District 1 Project Archaeologists Stacey Zolnoski at (707) 815-6815 or Stacey.Zolnoski@dot.ca.gov. Thank you for your assistance with this Undertaking.

Sincerely,

Julia Huddleson, for Kathryn Rose

KATHRYN ROSE
Office Chief, Acting
Cultural Studies Office
Caltrans Division of Environmental Analysis

enc: Historic Property Survey Report, with Attachments, for the Last Chance Grade Permanent Restoration Project on US Highway 101 in Del Norte County, California

cc: David Price, Section 106 Coordinator, Caltrans Cultural Studies Office
Stacey Zolnoski, Project Archaeologist, Caltrans District 1

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Armando Quintero, *Director*

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January 5, 2023

VIA EMAIL

In reply refer to: FHWA_2019_1015_002

Ms. Kathryn Rose, Office Chief, Acting
Cultural Studies Office
Caltrans Division of Environmental Analysis
PO Box 942874
Sacramento, CA 94274

Subject: Determinations of Eligibility for the Proposed Last Chance Grade Permanent Restoration Project on US Highway 101, Del Norte County, CA

Dear Ms. Rose:

Caltrans, as assigned by the Federal Highway Administration, is continuing consultation regarding the above project in accordance with Section 106 of the National Historic Preservation Act and implementing regulations codified at 36 CFR Part 800. As part of your documentation, Caltrans submitted a Historic Property Survey Report (HPSR), an Archaeological Survey Report, an Ethnographic Research Report, and a Historic Resources Evaluation Report for the proposed project.

Caltrans District 1 proposes to develop a long-term solution to the instability and potential roadway failure at Last Chance Grade (LCG) by constructing a new alignment. The existing alignment requiring replacement is located between post miles (PM) 12.7 and 16.5 on US highway 101 in Del Norte County. There are currently two built alternative alignments under consideration. A description of each alternative is available in the HPSR.

Pursuant to 36 CFR 800.4(c)(2), Caltrans requests concurrence that the Crescent City to Trinidad Wagon Road (P-08-000470) is eligible for the National Register of Historic Places (NRHP) under Criterion A for its association with the development of Crescent City and as the only major overland wagon road until the Redwood Highway was constructed in the late 1910s and 1920s. The period of significance is 1894 to circa 1920s.

Caltrans has also determined that the following properties are not eligible for the NRHP and is requesting concurrence:

- Ocean View Terraces Subdivision (TD-1)
- Del Norte Palisades Subdivision (TD-4)
- Log Stack TO118-17
- Log Stack TO118-18
- Modern Redwood Highway

Based on review of the submitted documentation, the SHPO has the following comments:

1. With regards to the Crescent City to Trinity Wagon Road, I do not have enough information currently to either agree or disagree with Caltrans' determination of eligibility for the NRHP. I recommend that Caltrans treat the property as eligible for the purposes of the project. For segments with compromised integrity, Caltrans can take these factors into account as part of the effects analysis.
2. I concur that the five properties listed above are not eligible for the NRHP.

If you have any questions, please contact Natalie Lindquist at natalie.lindquist@parks.ca.gov .

Sincerely,



Julianne Polanco
State Historic Preservation Officer

California Department of Transportation

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July 8, 2024

Ms. Julianne Polanco
State Historic Preservation Officer
California Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 94296-001

Re: Determination of Eligibility for the *'O Men hee-puer/Daa-ghestlh-ts'a' Historic District* for the Last Chance Grade Permanent Restoration Project on United States Highway 101, Del Norte County, California (FHWA_2019_1015_002)

Dear Ms. Polanco:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), is continuing consultation with the State Historic Preservation Officer (SHPO) regarding the Last Chance Grade Permanent Restoration Project on US Highway 101, in Del Norte County, California (Undertaking). As the Undertaking is partially located on lands owned and administered by Redwood National Park, the Caltrans First Amended Section 106 Programmatic Agreement (January 2014) does not apply. Consultation for compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended) (NHPA) is occurring under its implementing regulations at 36 CFR § 800. Caltrans is consulting on the determination of eligibility for the *'O Men hee-puer/Daa-ghestlh-ts'a' Historic District*.

Caltrans District 1 proposes to develop a long-term solution to the instability and potential roadway failure at Last Chance Grade (LCG) by constructing a new alignment. The existing alignment requiring replacement is located between post miles (PM) 12.7 and 16.5 on US highway 101 in Del Norte County. A description of the Undertaking is available in Attachment A of the enclosed *Supplemental Historic Property Survey Report for the National Register Evaluation of the 'O Men hee-puer/Daa-ghestlh-ts'a' Historic District* (sHPSR). Caltrans initiated consultation for this Undertaking on October 14, 2019. A summary of previous consultation with your office can be found in the attached sHPSR, pages 1-2, and in the sHPSR Attachment C.

The enclosed sHPSR includes an Ethnographic Research Design and Evaluation Reports as Attachments D and E, which fully discussed the research and proposed determination of eligibility. Caltrans completed in-depth ethnographic research and

interviews, which resulted in the identification and evaluation of the *'O Men hee-puer/Daa-ghestlh-ts'a' Historic District* for the National Register of Historic Places (NRHP).

Caltrans has determined that the *'O Men hee-puer/Daa-ghestlh-ts'a' Historic District* is eligible for listing on the NRHP at the local level under Criteria A, B, and D, with a period of significance of time immemorial. Contributing elements are listed in full in Attachment E of the HPSR; contributing elements include a village complex, Wilson Creek Beach, sea stacks, Native American trails, old growth redwood trees, and multiple other named locations and landmarks. The district has been determined a Traditional Cultural Property and is a Traditional Cultural Landscape. **Caltrans requests your concurrence on this determination, pursuant to 36 CFR §800.4(c)(2).**

We respectfully request a response within 30 days of receipt of this submittal. If you have any questions or need additional information, please contact the Acting Section 106 Coordinator, Jeffrey Carr (Jeffrey.carr@dot.ca.gov), or Stacey Zolnoski, Caltrans project Archaeologist (stacey.zolnoski@dot.ca.gov or (707) 815-6815). Thank you for your assistance with this Undertaking.

Sincerely,

David Price
Chief, Cultural Studies Office
Caltrans Division of Environmental Analysis

Enc: *Supplemental Historic Property Survey Report for the National Register Evaluation of the 'O Men hee-puer/Daa-ghestlh-ts'a' Historic District*, for the Last Chance Grade Permanent Restoration Project on US Highway 101 in Del Norte County, California

cc: Jeffrey Carr, Acting Section 106 Coordinator, Caltrans Cultural Studies Office
Stacey Zolnoski, Project Archaeologist, Caltrans District 1

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Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
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Armando Quintero, *Director*

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July 29, 2024

VIA EMAIL

In reply refer to: FHWA_2019_1015_002

David Price
Chief, Cultural Studies Office
California Department of Transportation
Division of Environmental Analysis
1120 N. Street
P.O. Box 942874
Sacramento, CA 94274-0001

Subject: Determination of Eligibility for the *'O Men hee-puer/Daa-ghestlh-ts'a'* Historic District for the Last Chance Grade Permanent Restoration Project on United States Highway 101, Del Norte County, California

Dear Mr. Price:

The State Historic Preservation Officer (SHPO) is in receipt of a consultation letter dated July 8, 2024, from the California Department of Transportation (Caltrans) Cultural Studies Office (CSO) for the above referenced undertaking. Caltrans, as assigned by the Federal Highway Administration (FHWA), is continuing consultation with the SHPO to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulation at 36 CFR 800. Caltrans is consulting on a determination of eligibility for the *'O Men hee-puer/Daa-ghestlh-ts'a'* Historic District.

Caltrans District 1 proposes to develop a long-term solution to the instability and potential roadway failure at Last Chance Grade (LCG) by constructing a new alignment. The existing alignment requiring replacement is located between post miles (PM) 12.7 and 16.5 on US highway 101 in Del Norte County.

Along with their letter, Caltrans has provided the Supplemental Historic Property Survey Report (sHPSR) for the National Register of Historic Places (NRHP) evaluation of the 'O Men hee-puer/Daa-ghestlh-ts'a' Historic District. The enclosed sHPSR includes an Ethnographic Research Design and Evaluation Reports as Attachments D and E, which fully discuss the research and proposed determination of eligibility of the *'O Men hee-puer/Daa-ghestlh-ts'a'* Historic District for the NRHP.

Caltrans completed in-depth ethnographic research and interviews, which resulted in the identification and evaluation of the *'O Men hee-puer/Daa-ghestlh-ts'a'* Historic District for the NRHP. Caltrans has determined that the *'O Men hee-puer/Daa-ghestlh-*

ts'a' Historic District is eligible for listing on the NRHP at the local level under Criteria A, B, and D, with a period of significance of time immemorial. Contributing elements are listed in full in Attachment E of the sHPSR; contributing elements include a village complex, Wilson Creek Beach, sea stacks, Native American trails, old growth redwood trees, and multiple other named locations and landmarks. The district has been determined a Traditional Cultural Property and is a Traditional Cultural Landscape.

Caltrans has requested SHPO review and concurrence on the determination of eligibility made for the *'O Men hee-puer/Daa-ghestlh-ts'a'* Historic District pursuant to 36 CFR § 800.4(c)(2).

Following review of the submittal, **I concur** with the determination of eligibility made for the *'O Men hee-puer/Daa-ghestlh-ts'a'* Historic District.

If you require further information, please contact Robert Fitzgerald, Associate State Archaeologist, at Robert.Fitzgerald@parks.ca.gov, or Natalie Lindquist, Historian II, at Natalie.Lindquist@parks.ca.gov.

Sincerely,



Julianne Polanco
State Historic Preservation Officer

California Department of Transportation

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November 26, 2024

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 94296-001

Re: Finding of Adverse Effect for the Last Chance Grade Permanent Restoration Project in Del Norte County, California (FHWA_2019_1015_002)

Dear Ms. Polanco:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), is continuing consultation with the State Historic Preservation Officer (SHPO) regarding the proposed Last Chance Grade Permanent Restoration Project on US Highway 101 in Del Norte County (Undertaking) to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulations at 36 CFR 800.

Caltrans, District 1 proposes to develop a long-term solution to the instability and potential roadway failure at the Last Chance Grade (LCG) by constructing a new alignment. The existing alignment requiring replacement is located between post miles (PM) 12.7 and 16.5 on US Highway 101 in Del Norte County. A description and map of the project are available in the attached Finding of Adverse Effect (FAE) document. The enclosed FAE also includes the Area of Potential Effects (APE) and an Environmentally Sensitive Area (ESA) Action Plan.

Caltrans last consulted with your office on June 18, 2024, regarding the National Register eligibility of the 'O Men hee-puer/Daa-ghestlh-ts'a' Historic District. You concurred with Caltrans' finding on July 29, 2024. Since then, Caltrans has selected a preferred alternative, Alternative F, and has finalized the APE. Caltrans seeks your concurrence of the adequacy of the identification efforts (summarized on pages 2 to 4 in the attached FAE) pursuant to 36 CFR §800.4(b) and the adequacy of the APE delineation (attachment A of the attached FAE) pursuant to 36 CFR §800.4(a).

Additionally, Caltrans has determined that the Undertaking will result in an adverse effect to historic properties. Four historic properties are in the APE, two of which will be adversely affected. The other two will be protected as ESAs in order to avoid adverse effects.

The Undertaking will adversely affect the following historic properties:

- Approximately 30 acres of the **'O Men hee-puer/Daa-ghestlh-ts'a' Historic District**. 'O Men hee-puer / Daa-ghestlh-ts'a' Historic District, a cultural landscape and traditional cultural property, is eligible for the NRHP under Criteria A, B, and D at the local level, with a period of significance of time immemorial to the present. SHPO concurred with this finding on July 29, 2024.

- Three contributing segments (1, 10, M) of the **Crescent City to Trinidad Wagon Road (P-08-000470/REDW00169)** will be affected. The wagon road shall be considered eligible to the NRHP under Criterion A at the local level of significance, with a period of significance from 1894 to 1920. The resource shall be considered eligible to the NRHP for the purposes of the Undertaking, as recommended by the SHPO on January 5, 2023.

The Undertaking will avoid adverse effects to the following historic properties through the implementation of an ESA Action Plan (attachment E of the FAE):

- **Old Redwood Highway Historic District (P-08-000555/ REDW00162)** was previously listed in the NRHP in 1979 and, in 2020, the National Park Service recorded and evaluated decommissioned segments within Redwood National Park. It was concluded that the roadway meets NRHP eligibility under Criteria A at the local level, with a period of significance from 1919 to 1952.

- **Joseph DeMartin Barn Site (CA-DNO-263H/ P-08-000258/ REDW0100)** is a historic-era ranching and barn site, with a period of significance from 1901 to 1965. The site was not evaluated but will be considered eligible under Criteria D at the local level, for the purposes of the Undertaking due to the large size of the resource and limited potential for effects.

Finally, Caltrans, as assigned by FHWA, intends to have a permanent use for Section 4(f) to historic properties 'O Men hee-puer/Daa-ghestlh-ts'a' Historic District and the Crescent City to Trinidad Wagon Road. This determination is based upon your concurrence in the Section 106 finding, pursuant to Section 6009(a) of SAFETEA-LU.

In summary, Caltrans is seeking your concurrence on the following:

- Delineation of the APE for the undertaking and identification of historic properties therein is adequate [36 CFR §800.4(a); 36 CFR §800.4(b)]
- The Finding of Adverse Effect is appropriate for the Undertaking [36 CFR §800.5(a)]

We respectfully request a response within 30 days of receipt of this submittal. If you have any questions or need additional information, please contact the Section 106 Coordinator, Julia Prince-Buitenhuys (Julia.Prince-Buitenhuys@dot.ca.gov or (916) 826-4194), or Stacey Zolnoski, Caltrans project Archaeologist (Stacey.Zolnoski@dot.ca.gov or (707) 815-6815). Thank you for your assistance with this Undertaking.

Sincerely,

David Price

David Price
Office Chief
Cultural Studies Office
Division of Environmental Analysis
California Department of Transportation

Enc: Finding of Adverse Effects with attachments for the Last Chance Grade Permanent Restoration Project in Del Norte County.

Cc: Julia Prince-Buitenhuys, Section 106 Coordinator, Caltrans Cultural Studies Office
Stacey Zolnoski, Project Archaeologist, Caltrans District 1

DEPARTMENT OF PARKS AND RECREATION
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December 31, 2024

VIA EMAIL

In reply refer to: FHWA_2019_1015_002

Ms. Julia Prince-Buitenhuys
Cultural Studies Office
Division of Environmental Analysis
PO Box 942873, MS-27
Sacramento, CA 94273-0001

Subject: Finding of Adverse Effect for the Proposed Last Chance Grade Permanent Restoration Project, Del Norte County, California

Dear Ms. Prince-Buitenhuys:

Caltrans is continuing consultation regarding the above project in accordance with the in accordance with Section 106 of the National Historic Preservation Act and implementing regulations codified at 36 CFR Part 800. As part of your documentation, Caltrans submitted a Finding of Adverse Effect Report, and an Environmentally Sensitive Area (ESA) Action Plan for the above project.

Caltrans last consulted on June 18, 2024 regarding the eligibility of the `O Men hee-puer/Daa-ghestlh-ts'a' Historic District. The State Historic Preservation Officer (SHPO) concurred on July 29, 2024. Since then Caltrans selected a preferred alternative, Alternative F, and finalized the area of potential effect (APE) for the project.

As part of its identification efforts Caltrans identified four historic properties within the APE for the project. Caltrans found that the undertaking will adversely affect the following properties:

- `O Men hee-puer/Daa-ghestlh-ts'a' Historic District
- Crescent City to Trinidad Wagon Road

Caltrans also found that the undertaking will have no adverse effect on the following historic properties through the implementation of an ESA Action Plan:

- Old Redwood Highway Historic District
- Joseph DeMartin Barn Site

Based on my review of the submitted documentation, I have the following comments:

1. The APE as currently delineated appears appropriate.
2. Caltrans' identification efforts appear adequate.
3. I do not object to Caltrans' finding of adverse effect for the overall project. I agree that the project will have an adverse effect on the `O Men hee-puer/Daa-ghestlh-ts'a' Historic District. I also agree that the project will have no adverse effect on the Old Redwood Highway Historic District and the Joseph DeMartin Barn Site.
4. I do not agree with Caltran's finding of adverse on the Crescent City to Trinidad Wagon Road. The undertaking as currently described will affect 14% of the contributing segments of the documented wagon road. In looking at the three contributing segments that will be affected, it does not appear that their loss will have a substantial effect on the integrity of the wagon road as 86% of the contributing segments will remain extant.

If you have any questions, please contact Natalie Lindquist at natalie.lindquist@parks.ca.gov .

Sincerely,



Julianne Polanco
State Historic Preservation Officer

California Department of Transportation

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January 10, 2025

Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816-1700

RE: Finding of Adverse Effect for the Last Chance Grade Permanent Restoration Project, State Route 101, Del Norte County, CA, Post Miles 12.7-16.5 (FHWA_2019_1015_002)

Dear Ms. Polanco:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), is continuing consultation with the State Historic Preservation Officer (SHPO) regarding the Last Chance Grade Permanent Restoration Project (Undertaking), located in Del Norte County, State Route (SR) 101, Post Miles (PM) 12.7 to 16.5. Caltrans is consulting with you in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulations at 36 CFR Part 800.

Enclosed for your review is a revised Finding of Adverse Effect (FAE) Document that includes the Area of Potential Effects (APE) and an Environmentally Sensitive Area (ESA) Action Plan. Caltrans is consulting with you under Stipulation X.C.1 regarding our finding of adverse effect for the Undertaking. A full project description is located in the enclosed FAE document.

Caltrans proposed a finding of adverse effect for the Undertaking on November 26, 2024. Caltrans had determined that the Undertaking would cause adverse effects to two historic properties: the 'O Men hee-puer/Daa-ghestlh-ts'a' Historic District and The Crescent City to Trinidad Wagon Road (P-08-000470/REDW00169). You responded on December 31, 2024, agreeing that the APE and identification efforts were adequate and that the Undertaking would cause adverse effects to the 'O Men hee-puer/Daa-ghestlh-ts'a' Historic District. However, you objected to Caltrans' determination that the Undertaking would adversely affect the Crescent City to Trinidad Wagon Road due to the fact that it would impact only 14% of the contributing segments of the documented historic property.

After review of your comments and further consultation with consulting parties, Caltrans agrees with your December 31, 2024 response and has determined that the Undertaking will not cause adverse effects to the Crescent City to Trinidad Wagon road for the reasons described therein. We have revised the enclosed FAE documentation to accurately reflect this modification.

Caltrans has applied the Criteria of Adverse Effect set forth in 36 CFR § 800.5(a)(l) and determined that the Undertaking will adversely affect one historic property in the APE: the 'O Men hee-puer/Daa-ghestlh-ts'a' Historic District. **Caltrans has determined that a Finding of Adverse Effect is appropriate for the Undertaking and is consulting with you pursuant to 36 CFR Part 800.5(d)(2).** If you do not object to the proposed finding, Caltrans will continue consultation on resolution of adverse effect, pursuant to 36 CFR Part 800.6.

We look forward to your response within 30 days of receipt of this submittal. If you have any questions, please feel free to contact Julia Prince-Buitenhuys, Section 106 Coordinator (Julia.prince-buitenhuys@dot.ca.gov; (916) 826-4194). Thank you for your assistance with this undertaking.

Sincerely,

David Price
Chief, Cultural Studies Office
Caltrans Division of Environmental Analysis

Enc: Finding of Adverse Effect for the Last Chance Grade Permanent Restoration Project, Del Norte County, with Attachments

c: Julia Prince-Buitenhuys, Section 106 Coordinator, Caltrans Cultural Studies Office

Stacey Zolnoski, Project Archaeologist, Caltrans District 1

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Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
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Armando Quintero, *Director*

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January 14, 2025

VIA EMAIL

In reply refer to: FHWA_2019_1015_002

Ms. Julia Prince-Buitenhuys
Cultural Studies Office
Division of Environmental Analysis
PO Box 942873, MS-27
Sacramento, CA 94273-0001

Subject: Finding of Adverse Effect for the Proposed Last Chance Grade Permanent Restoration Project, Del Norte County, California

Dear Ms. Prince-Buitenhuys:

Caltrans is continuing consultation regarding the above project in accordance with the in accordance with Section 106 of the National Historic Preservation Act and implementing regulations codified at 36 CFR Part 800. As part of your documentation, Caltrans submitted a Finding of Adverse Effect Report (FAE), and an Environmentally Sensitive Area (ESA) Action Plan for the above project.

Caltrans proposed a finding of adverse effect for the Undertaking on November 26, 2024. Caltrans had determined that the Undertaking would cause adverse effects to two historic properties: the ‘O Men hee-puer/Daa-ghestlh-ts’a’ Historic District and The Crescent City to Trinidad Wagon Road (P-08-000470/REDW00169). The State Historic Preservation Officer (SHPO) responded on December 31, 2024, agreeing that the APE and identification efforts were adequate and that the Undertaking would cause adverse effects to the ‘O Men hee-puer/Daa-ghestlh-ts’a’ Historic District. However, the SHPO objected to Caltrans’ determination that the Undertaking would adversely affect the Crescent City to Trinidad Wagon Road due to the fact that it would impact only 14% of the contributing segments of the documented historic property.

After review of the SHPO’s comments and further consultation with consulting parties, Caltrans agrees with the December 31, 2024 response and has determined that the Undertaking will not cause adverse effects to the Crescent City to Trinidad Wagon road for the reasons described therein. Caltrans revised the FAE documentation to accurately reflect this modification.

Caltrans has applied the Criteria of Adverse Effect set forth in 36 CFR § 800.5(a)(I) and determined that the Undertaking will adversely affect one historic property in the APE: the ‘O Men hee-puer/Daa-ghestlh-ts’a’ Historic District.

Based on my review of the submitted documentation, I do not object to Caltrans’ finding that the project will have an adverse effect on the `O Men hee-puer/Daa-ghestlh-ts’a’ Historic District.

If you have any questions, please contact Natalie Lindquist at natalie.lindquist@parks.ca.gov .

Sincerely,



Julianne Polanco
State Historic Preservation Officer

California Department of Transportation

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September 15, 2025

Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816-1700

RE: Proposed Memorandum of Agreement for the Last Chance Grade Permanent Restoration Project, Del Norte County, Highway 101, California (FHWA_2019_1015_002)

Dear Ms. Polanco:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), is continuing consultation with the State Historic Preservation Officer (SHPO) regarding the Last Chance Grade Permanent Restoration Project (Undertaking), located in Del Norte County, Highway 101, Post Miles (PM) 12.7 to 16.5. Caltrans is consulting with you in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulations at 36 CFR Part 800.

Caltrans consulted with you previously regarding the Finding of Adverse Effect for the Undertaking due to adverse effects to the *'O Men hee-puer/Daa-ghestlh-ts'a'* Historic District. On January 14, 2025, you indicated that you did not object to the proposed finding. Since then, Caltrans has been consulting with the Elk Valley Rancheria, Pulikla Tribe of Yurok People, Tolowa Dee-ni' Nation, the Yurok Tribe, and Tolowa Nation (Tribes) to develop mitigation that will resolve adverse effects to the tribal values inherent in the historic district. **Caltrans has developed the enclosed draft Memorandum of Agreement (MOA) to ensure resolution of adverse effects of the Undertaking and is requesting your review and comment.**

The MOA proposes multiple treatments to resolve effects to the historic district, including facilitating tribal programs, providing redwood and other trees of significance to tribes, native plant gathering and salvage of natural resources prior to construction, and incorporating tribal designs and patterns into the construction. Due to the unique nature of the mitigation Caltrans is proposing, we anticipate further consultation with the Tribes and other consulting parties, including you, will be necessary to develop stipulations that appropriately capture the process and outcomes desired for all parties. **Caltrans is concurrently consulting with your office and the other consulting parties on the current draft of the MOA.** We anticipate comments from other parties and would appreciate your concurrent input as well. This will help us better shape the MOA to resolve the adverse effects in a way that is respectful and meaningful to all parties**.**

We request your comments within 45 days of receipt of this submittal. Once we have received all comments, Caltrans shall continue consultation with you on an updated draft and include information on how all comments from consulting parties were addressed.

If you have any questions, please feel free to contact me or Stacey Zolnoski (Project Archaeologist; Stacey.zolnoski@dot.ca.gov; (707) 815-6815). Thank you for your assistance with this undertaking.

Sincerely,



JULIA PRINCE-BUITENHUYS
Section 106 Coordinator
Cultural Studies Office
Caltrans Division of Environmental Analysis

Enc: Memorandum of Agreement for the Last Chance Grade Permanent Restoration Project, with Attachments

c: Stacey Zolnoski, Project Archaeologist, Caltrans District 1
Emiliano Pro, Environmental Branch Chief, Caltrans District 1
Kristina Crawford, Cultural Branch Chief, Caltrans District 1

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Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
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May 14, 2026

In reply refer to: FHWA_2019_1015_002

Ms. Julia Prince-Buitenhuys
Section 106 Coordinator
Caltrans Cultural Studies Office
1120 N Street
Sacramento CA 95814

VIA EMAIL

RE: Proposed Memorandum of Agreement for the Last Chance Grade Permanent Restoration Project, Del Norte County, Highway 101, California

Dear Ms. Prince-Buitenhuys,

On May 13, 2026, the State Historic Preservation Officer (SHPO) received an email transmitting the final, signed *Memorandum of Agreement between the California Department of Transportation and the California State Historic Preservation Officer regarding the Last Chance Grade Permanent Restoration Project, Del Norte County, California (MOA).*

The MOA has been signed. Pursuant to 36 CFR § 800.6(b)(iv), SHPO recommends that Caltrans submit a copy of the executed agreement to the Advisory Council on Historic Preservation.

If you have any questions or concerns, please contact Supervisor, Archaeology and Environmental Compliance Unit Brendon Greenaway at Brendon.Greenaway@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

MEMORANDUM OF AGREEMENT
BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING THE LAST CHANCE GRADE PERMANENT RESTORATION PROJECT, DEL NORTE COUNTY, CALIFORNIA

WHEREAS, the Federal Highway Administration (FHWA) has assigned and the California Department of Transportation (Caltrans), including all subordinate divisions defined below, has assumed FHWA responsibility for environmental review, consultation, and coordination under the provisions of the *Memorandum of Understanding between the Federal Highway Administration and the California Department of Transportation's Participation in the Project Delivery Program Pursuant to 23 U.S.C. 327 (MOU)*, which became effective May 27, 2022 and applies to this undertaking; and

WHEREAS, pursuant to the MOU, Caltrans is deemed to be a federal agency for all highway-aid projects it has assumed, and in that capacity Caltrans has assigned the role of "agency official" to the Caltrans Division of Environmental Analysis (DEA) Chief for the purpose of compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106), and its implementing regulations at Title 36 Code of Federal Regulation Part 800 (36 CFR § 800), and is responsible for oversight of District environmental responsibilities. To provide for effective compliance, day-to-day responsibilities and coordination of the Section 106 process are further delegated to the DEA Cultural Studies Office (CSO) Chief; and

WHEREAS, Caltrans proposes to implement the federally and state funded Last Chance Grade Permanent Restoration Project (Undertaking), which would construct a long-term solution to instability and potential roadway failure caused by landslides on the 2-lane rural highway, U.S. Highway 101, between post miles 12.7 and 16.5 in Del Norte County. **Attachment 1** to this agreement provides a detailed project Description; and

WHEREAS, the Area of Potential Effects (APE) for the Undertaking includes maximum existing or proposed rights-of-way for the Undertaking, easements (temporary and permanent), all improved properties subject to temporary or permanent changes in access (ingress and egress), and areas where visual changes could occur outside the required right-of-way. The APE was designed in accordance with 36 CFR § 800.4(a), as defined in 36 CFR § 800.16(d), and includes all areas for which the Undertaking may directly or indirectly cause alterations in the character of use of historic properties. The APE encompasses the entirety of the approximately 11,000-acre *ʻO Men hee-puer / Daa-ghestlh-tsʻaʼ Historic District.* It also encompasses all activities described in Attachment 1. The maximum depths of the APE are 400 feet for geotechnical boring and 200 feet for the length of the tunnel. The maximum height of construction will be the 50-foot retaining walls at the south portal; and

WHEREAS, Caltrans has determined that there are two historic properties within the APE. The '*O Men hee-puer/ Daa-ghestlh-ts'a' Historic District* was determined eligible for listing on the

National Register of Historic Places (NRHP) at the local level under Criterion A for association with important historical events and traditional narratives that contributed to broad patterns of Yurok and Tolowa history; Criterion B for association with important Yurok and Tolowa people and supernatural beings; and Criterion D because the landscape has and likely continues to yield important information about Yurok and Tolowa history, tribal heritage, and traditional beliefs and practices which continue today. Important historic context and themes include the trend of encroachment and colonization, removal of Native populations, persistence and practice of beliefs that maintain the importance of the place under continued cultural disruption, and the nature of boundaries between groups and the rules governing those interactions. The period of significance is time immemorial and contributing elements include a village complex, Wilson Creek beach, sea stacks, trails, old-growth Redwood trees and other named locations and landmarks. The district retains integrity of location, association, feeling, setting and materials. The State Historic Preservation Officer (SHPO) concurred with this determination in January 2023; and

WHEREAS, the 1894 Crescent City to Trinidad Wagon Road (P-08-000470; REDW00169) is considered as eligible to the NRHP for the purposes of the Undertaking only, under Criterion A at the local level as the first north-south wagon road along the Northern California coastline between Crescent City and Trinidad, with a period of significance from 1894 to 1920. It was determined that the Undertaking would not adversely affect the wagon road because impacts to three contributing segments would not substantially affect the integrity of the resource as a whole. The SHPO concurred with this finding in December 2024; and

WHEREAS, two adjacent properties, P-08-000550 and P-08-000258, will be protected through the establishment of Environmentally Sensitive Areas (ESA). A segment of the Old Redwood Highway District (P-08-000550; REDW00162) is listed on the NRHP under Criterion A, with a period of significance from 1919 to 1952. An existing gate serves as the ESA boundary to prevent entry by construction personnel, and no construction activities are proposed in this area, therefore there is no potential to affect this resource. The Joseph DeMartin Barn Site (CA-DNO-263H; P-08-000258; REDW00100) is considered eligible to the NRHP under Criteria D, for the purposes of the Undertaking due to the large size of the resource and limited potential for effects. An ESA shall be incorporated into the project plans so there is no potential to affect this resource. The SHPO concurred with this finding in December 2024 and

WHEREAS, Caltrans has determined, and the SHPO has concurred, that the Undertaking will adversely affect the '*O Men hee-puer/ Daa-ghestlh-ts'a' Historic District.* The Undertaking will cause direct physical damage to 29.58 acres of the historic district and important natural resources including removal of old growth Redwood and other trees of significance. The construction of a mile-long tunnel through the landscape will change the character of the physical features within the properties setting. Construction will also diminish the integrity of setting, feeling and association by impacting the intangible relationships of these elements within the historic district. The removal of existing segments of US 101 has potential to limit or remove existing access to potential opportunistic gather locations along the alignment; and

WHEREAS, Caltrans has consulted with the SHPO in accordance with 36 CFR § 800, regarding the Undertaking's potential effects on historic properties and has prepared this memorandum of agreement (MOA) pursuant to 36 CFR §800.5(b) and 36 CFR § 800.6, and will file a copy of this MOA with the Advisory Council on Historic Preservation (ACHP); and

WHEREAS, Caltrans, in consultation with the SHPO, has determined that the Undertaking's adverse effects cannot be avoided, and that implementation of the treatments set forth in the Stipulations of this agreement will satisfactorily resolve the Undertaking's adverse effects to the '*O Men hee-puer/ Daa-ghestlh-ts'a' Historic District*; and

WHEREAS, Caltrans invited the ACHP to participate by e-106 filing on March 3, 2022, and the ACHP declined to participate in consultation on March 16, 2022; and

WHEREAS, the National Park Service (NPS), having jurisdiction over a portion of the land in the APE of the Undertaking and being obligated to comply with Section 106 and its implementing regulations (36 CFR §800), has agreed that Caltrans shall act as the lead federal agency on behalf of FHWA pursuant to 36 CFR § 800.2(a)(2). NPS has been invited to be a concurring party to this MOA; and

WHEREAS, Caltrans has consulted with the California Department of Parks and Recreation (DPR), having jurisdiction over a portion of the land in the APE, and DPR has been invited to be a concurring party to this MOA; and

WHEREAS, Caltrans has consulted with federally recognized tribes Elk Valley Rancheria, California; Pulikla Tribe of Yurok People (formerly Resighini Rancheria); Tolowa Dee-ni' Nation; and the Yurok Tribe pursuant to 36 CFR § 800.2(c)(2), and the non-federally recognized Tolowa Nation pursuant to 36 CFR § 800.2(c)(5) (collectively, Tribes), regarding the Undertaking. Caltrans has invited the Tribes to be invited signatories to this MOA pursuant to 36 CFR §§ 800.6(c)(2)(i) and (ii); and

WHEREAS, Caltrans District 1 (District 1) has a responsibility to fulfill terms of this MOA and has been invited to participate in this MOA as an invited signatory;

NOW, THEREFORE, Caltrans and the SHPO agree that if the Undertaking proceeds, it shall be implemented in accordance with the following stipulations to resolve the adverse effects on historic properties, and further agree that these stipulations shall govern the Undertaking and all its parts until this MOA expires or is terminated.

STIPULATIONS

Caltrans shall ensure that the following stipulations are carried out:

I. AREA OF POTENTIAL EFFECTS

A. If modifications to the Undertaking subsequent to the execution of this MOA necessitate revision of the APE, District 1 will notify the MOA parties of the revisions as soon as feasible and request comment within thirty (30) calendar days. District 1 will take all comments into account and submit a final map of the revisions, consistent with the requirements of 36 CFR § 800.16(d), no later than thirty (30) calendar days following the end of the comment period. District 1 will not conduct any additional studies necessitated by the revisions prior to distribution of the revised APE Map. Any amendments to the APE that necessitate amendments to the MOA shall follow Stipulation IV.D of this MOA.

B. Any additional required identification and evaluation efforts necessitated due to changes to the APE will be undertaken consistent with the requirements of 36 CFR § 800.

II. TREATMENTS FOR THE 'O MEN HEE-PUER/ DAA-GHESTLH-TS'A' HISTORIC DISTRICT

Prior to the completion of the Undertaking, Caltrans shall ensure that adverse effects to the '*O Men hee-puer/ Daa-ghestlh-ts'a' Historic District* (Traditional Cultural Landscape; TCL) are resolved through the following minimization and mitigation strategies:

A. **Funding for Tribal Programs**

1. District 1 will provide funding to Elk Valley Rancheria, California; Pulikla Tribe of Yurok People (formerly Resighini Rancheria); Tolowa Dee-ni' Nation; the Yurok Tribe, and Tolowa Nation (collectively, the Tribes) individually for the development and funding of agreed upon Tribal Value Mitigation Programs (TVMP) that are measures to mitigate the adverse effects of the Undertaking on the TCL and it's contributing elements. Funding shall be provided under existing agreement mechanisms, such as Memoranda of Understanding or Cooperative Agreements, and will comply with all applicable state and federal requirements. The scale and parameters of the TVMPs shall be calculated based on the contributing values of the TCL and formula, as established in *Cultural Values and Maximum Compensation Formula (***Attachment 2)**. The TVMPs to be funded shall be established through written proposals as follows in this Stipulation:

    a. District 1 shall consult with each tribe individually for 3 years from the execution of the MOA to develop tribe-specific TVMPs. District 1 shall host a minimum of 6 consultation meetings with each tribe to develop the proposals.

        i. District 1 shall consult with each respective tribe for not more than six months from the date of the execution of this MOA to establish a schedule for completing TVMP proposals within the three-year timeframe. The TVMP schedule will include the timing of meetings, steps of document review, and other milestones identified during consultation. Upon

finalization, District 1 will provide each written TVMP schedule to CSO and the SHPO.

ii. District 1 and the Tribes shall adhere to the TVMP schedules. Each party will consult prior to the date of the event on the need to reschedule any meetings, reviews, or milestones to ensure the 3-year timeframe is met.

iii. If, prior to the completion of a TVMP, a tribe ceases to communicate with District 1 for a period of longer than six months, does not attend meetings or provide timely document reviews within the final six months of the TVMP schedule, or does not engage in consultation to revise the TVMP schedule as needed to ensure the 3-year timeframe is met, District 1 will attempt communication not more than three times with the tribe to reschedule and/or finalize the TVMP. If there is no response within thirty days of the final attempt to reestablish communication, District 1 shall reinitiate consultation with the MOA parties regarding the resolution of adverse effects per 36 CFR 800.6.

iv. District 1 will maintain detailed logs for all engagement, which will be available upon request by a tribe or the SHPO. The logs will remain confidential between the individual tribe, Caltrans, and the SHPO.

b. TVMPs shall be written and must document how the actions prescribed in the proposal mitigate adverse effects to the character defining features and contributing cultural values described in **Attachment 2**. Each TVMP must include a description of the mitigation program(s) and detailed scope of work, location, staff hours and other costs required to complete the program(s), and a schedule for the completion of milestones and deliverables.

i. The cultural values described in **Attachment 2** are associated with the TCL's eligibility for the NRHP and were identified through tribal consultation. TVMPs must be related to adverse effects to these values to be approved for funding.

ii. Should consultation between District 1 and a tribe result in a decision to not complete a proposal for a program within 3 years of the execution of this MOA, District 1 shall notify the tribe, CSO, and the SHPO within 30 days of the decision and reinitiate consultation regarding the resolution of adverse effects, per 36 CFR 800.6. District 1, in coordination with the tribe, shall provide an alternative mitigation option or propose that no alternative is necessary and request comment or approval on the proposal. The tribe, CSO, and the SHPO shall have 30 days to provide comment. District 1 may extend the consultation period upon request for additional time within the 30-day period. If parties are unable to reach agreement through this process, objections shall be resolved through the process outlined in Stipulation IV.B of this MOA.

c. Each proposed TVMP will be reviewed and approved by the tribe, District 1, CSO, and SHPO, to ensure that it meets the terms of this MOA as defined in Stipulation II.A.1 and Attachment 2. The review and approval process shall be as follows:

   i. Draft proposals shall be subject to consultation between District 1 and the tribe. Once a draft proposal has been completed and receives preliminary approval from the district, District 1 shall provide the completed draft proposal to CSO and the SHPO for a concurrent 30-day review period.

   ii. Should CSO or the SHPO provide comments, District 1 shall consult with the tribe on the draft proposal and comments. District 1 shall then provide CSO and the SHPO with documentation indicating whether and how the proposal was modified in accordance with comments received and consultation with the tribe. If parties are unable to reach agreement through the review and approval process after one round of consultation, objections shall be resolved through the process outlined in Stipulation IV.B of this MOA.

   iii. District 1 shall notify and provide copies of the finalized and approved proposal to CSO and the SHPO within 30 days of finalization and approval.

d. Maximum funding for each tribe will be determined according to the values and formula outlined in **Attachment 2** of this MOA. Individual tribes may develop one or more TVMPs with total combined costs at or under the maximum funding amount.

e. Once a proposal for each program is approved and construction funds of the Undertaking (the Last Chance Grade Permanent Restoration Project) have been programmed, District 1 shall provide the funding to each Tribe for the proposal. District 1 shall notify MOA signatories upon providing of funding to the Tribes for each program within 60 days of the funds transfer. Hereafter, updates on the progress of TVMPs shall be included in the annual reporting under Stipulation IV.F.

f. At the request of the Tribes, all proposals and details of each TVMP to be funded will remain confidential between Caltrans, the SHPO and the Tribe participating in each program. Individual tribes may share details of their program and/or proposal at their own discretion.

g. Actions prescribed by TVMPs shall be subject to all applicable laws and regulations. If a final TVMP has the potential to affect historic properties, those actions shall be considered an extension of the of this undertaking for the purposes of Section 106 and be subject to consultation pursuant to 36 CFR 800 as defined below. This consultation will take into consideration the sovereignty and confidentiality concerns of individual tribes.

i. If District 1 determines that a TVMP has no potential to cause effects to historic properties, as per 36 C.F.R. § 800.3(a)(1), it shall not be subject to further Section 106 review. District 1 shall document its determination in the annual report, pursuant to Stipulation V.F.

ii. If District 1 determines that the TVMP has the potential to affect historic properties, they shall identify the appropriate consulting parties, including Tribes and other interested parties who may attach religious and cultural significance to historic properties that may be affected by a TVMP, and then shall proceed to conduct a review of the TVMP pursuant to 36 C.F.R. §§ 800.2(c)(2)(ii) and (c)(2)(B) and 36 C.F.R. §§ 800.4(a)(3) and (a)(4).

iii. District 1, in consultation with the SHPO and consulting parties identified in Stipulation II.A.1.g.ii above, will determine and document the APE specific to the TVMP (TVMP APE) pursuant to 36 C.F.R. § 800.4(a).

iv. District 1, in consultation with the SHPO and consulting parties identified in Stipulation 2.1.g.ii above, will identify historic properties pursuant to 36 C.F.R. §§ 800.4(b) and (c).

v. As part of determining the appropriate level of effort to identify historic properties that may be affected by a TVMP, pursuant to C.F.R. § 800.4(b)(1), District 1 may propose to the SHPO and consulting parties to consider a property eligible to the National Register for the purposes of this undertaking and conduct an application of the National Register criteria based on the nature and extent of potential effects to the property, taking into account past planning, research and studies, the magnitude and nature of the undertaking, and the likely nature and location of the property within the APE. In such cases, District 1 shall submit a level of effort proposal to the SHPO, CSO, and appropriate consulting parties and request comments or approval within 30 calendar days. District 1 shall take all comments into account and provide a revised proposal to the SHPO for a 15-day comment period. . Should the SHPO object, District 1 shall follow the process provided in Stipulation IV.B of this MOA.

vi. District 1 shall transmit its determinations of eligibility and supporting documentation to the SHPO, CSO, and appropriate consulting parties for a 30-day consultation period and shall seek the SHPO's concurrence. As part of the consultation, District 1 shall provide a summary of the views and opinions of the consulting parties on the eligibility of any resources within the TVMP APE received during consultation.

vii. Should the tribe or SHPO object to the determination of eligibility, District 1 will consult with the SHPO and the consulting parties to reach resolution. If resolution is not achieved, they will proceed in accordance with 36 C.F.R. 800.4(c)(2).

viii. For all properties identified within the TVMP APE that are determined to be NRHP eligible, District 1 shall assess potential effects of the TVMP to the historic properties consistent with 36 C.F.R. 800.4(d), and if application of the criteria of adverse effect is included, in accordance with 36 C.F.R. 800.5(a)(1))(i)-(vii).

ix. If District 1 finds that the TVMP actions will result in no adverse effect, it will submit its no adverse effect finding to the consulting parties, CSO, and SHPO, pursuant to 36 C.F.R. 800.5(b) and 800.5(c) for thirty (30) days to review, and seek the SHPO's concurrence. If no objection is received, Caltrans' Section 106 obligation will be fulfilled under this MOA with respect to that TVMP. District 1 will document in the annual report, pursuant to Stipulation V.F.

x. Should the SHPO object to Caltrans' finding of effect, District 1 will consult with the SHPO and the appropriate consulting parties to reach resolution. If resolution is not achieved, Caltrans will proceed with the process at Stipulation IV.B.

xi. District 1 and the tribes will not carry out TVMP activities that are determined to result in additional adverse effects or mitigation requirements beyond those provided for in this MOA.

(a) If it is determined that a proposed TVMP action would result in adverse effects to historic properties, District 1 and the tribe shall consult to determine an alternative action commensurate with the originally proposed action. District 1 and the tribe shall consult with CSO and SHPO to revise the TVMP accordingly, following the process provided in Stipulation II.A.1.c of this agreement.

xii. Caltrans may combine all steps in the Section 106 process into one consultation and request an expedited 30-day review pursuant to 36 CFR § 800.3(g). SHPO and Consulting Parties shall consider the request for expedited consultation. If any party requests additional time for review, that party shall inform District 1, CSO, SHPO, and all other parties of the additional time necessary.

h. **TVMP Actions on Tribal Reservation Lands**

i. If District 1, in consultation with the SHPO and THPO, determine that a final TVMP has the potential to affect historic properties on tribal reservation lands, the respective THPO may be added, with their

consent, as a Signatory Party to this MOA through the process provided in Stipulation IV.D.

ii. Pursuant to 36 CFR § 800.2 (c)(2)(i)(A), should a TVMP occur on tribal lands under section 101(d)(2) of the National Historic Preservation Act (NHPA), and the tribe has assumed the responsibilities of the SHPO for section 106 on said Tribal lands, the THPO appointed or designated in accordance with the act shall be the official representative for the purposes of Section 106. The agency official shall consult with the THPO in lieu of the SHPO regarding TVMP undertakings occurring on or affecting historic properties on tribal lands.

B. **Providing Redwood and Other Trees of Significance to Tribes**

1. District 1 will provide Redwood, Sitka spruce, Red alder, Douglas-fir and Western hemlock trees that are under the control of Caltrans at the time of their removal as part of the Undertaking to the Tribes.

2. The allotment of the various trees to the tribes will be determined in consultation with the tribes to ensure equitable and appropriate distribution based on need and capacity for trees.

3. District 1 will be responsible for the removal and transport of the trees to a predetermined location(s) provided by each tribe.

4. MOA signatories will be notified once conditions of this stipulation have been met before completion of Construction.

C. **Native Plant Gathering and Salvage of Natural Resources Prior to Construction**

1. District 1 will coordinate with the Tribes to provide access to gather plants of cultural significance that are under the control of Caltrans and within the project footprint prior to construction. Multiple opportunities will be provided prior to construction to salvage any natural resources that would otherwise be destroyed.

2. District 1 will provide updates through the annual reporting process outlined in Stipulation IV.G. District 1 will notify the Signatories of fulfillment of all gathering and salvage opportunities within 60 days of the final opportunity.

D. **Tribal Designs and Patterns within Project Limits**

1. District 1 will work closely with interested tribes to incorporate tribal designs and patterns into the project design within the project limits. Once agreed upon, tribal designs and patterns will be incorporated into the project design plans. MOA parties will be notified once design plans with tribal designs and patterns are finalized and updates will be provided through the annual reporting process

outlined in Stipulation IV.G. District 1 will notify and provide images to the MOA parties of the final designs and patterns upon completion of construction.

E. **Post Review Discovery and Monitoring Plan**

1. A Post Review Discovery and Monitoring Plan (PRDMP; **Attachment 3**) will be implemented to ensure proper treatment of known and potential historic properties within the APE during construction. Should previously unidentified properties be identified or unanticipated effects to a known property occur, the PRDMP outlines the research design for evaluating potential historic properties that are archaeological in nature, the consultation process on eligibility, effects assessment should the property be found or considered eligible for the NRHP, data recovery procedures should it be deemed an appropriate treatment, and Archaeological and Tribal monitoring roles, responsibilities, and procedures.

2. It is Caltrans policy to avoid adverse effects to historic properties wherever possible, however, if District 1 determines, after construction of the Undertaking has commenced, that the Undertaking will affect a previously unidentified property that may be eligible for listing in the NRHP or affect a known historic property in an unanticipated manner, District 1 shall address the discovery or unanticipated effect in accordance with the PRDMP. Caltrans at its discretion may hereunder consider any discovered property to be eligible for listing in the NRHP in accordance with 36 CFR § 800.13(c).

3. Should a previously unidentified property be identified that meets the thresholds for evaluation and treatment in the PRDMP, District 1 shall notify CSO, the SHPO, the tribes, and the landowner within 48 hours of the find. District 1 shall provide information, to the extent information is available, on the description or nature and location of the find; action(s) taken to protect the find; the assessment or consideration of eligibility of the find individually and/or as a contributor to the TCL; summary of consultation with the Tribes and other relevant consulting parties; avoidance and minimization efforts, if feasible, that take effects into account; and/or mitigation measures if the property will be adversely affected. The parties will have 72 hours to respond with comments, if any. District 1 shall take into account all comments provided when proceeding with agreed-on treatments. In case of an objection, Stipulation IV.B of the MOA shall be followed.

4. District 1 will produce a draft final technical report documenting the monitoring effort and the results of any additional treatments conducted during implementation of the PRDMP. Should a discovery proceed to data recovery, a separate report describing the results of that work will also be produced. Any draft final technical report shall be circulated to the Tribes and other consulting parties for a 45-day review. District 1 shall take any comments into account in revising the draft final technical report and provide the Tribes and other consulting parties with written documentation indicating whether and how the documents will be modified

in accordance with any comments received. Objections will be resolved using the process outlined in V.B.

5. District 1 shall provide any draft final technical reports to the SHPO and CSO for a 45-day review period. District 1 shall take any comments into account in revising the draft final technical reports and provide the MOA parties with written documentation indicating whether and how the documents will be modified in accordance with any comments received. Objections will be resolved using the process outlined in V.C. Should the SHPO have no comments on the draft final technical report, the report shall be considered final. Final copies of the technical report shall be provided to all MOA parties.

6. Upon the completion of a reburial of a Post-Review Discovery, District 1 shall provide notification of the completion of the reburial to the SHPO, CSO, tribes, and the appropriate landowner should the post-review discovery occur on property owned by the National Park Service or California State Parks. Records of the reburial location shall be in the confidential DPR 523 forms provided in the technical report described in Stipulations II.E.4 and II.E.5.

III. TREATMENT OF HUMAN REMAINS OF NATIVE AMERICAN ORIGIN

A. As legally mandated, human remains and related items discovered on State-owned land during the implementation of the terms of this agreement and the Undertaking will be treated in accordance with the requirements of Health and Safety Code Section 7050.5(b). If pursuant to Health and Safety Code Section 7050.5(c) the coroner determines that the human remains are or may be those of a Native American origin, then the discovery shall be treated in accordance with the provisions of Public Resources Code Sections 5097.98 (a)(d). The appropriate landowner, District 1 or DPR, shall ensure, to the extent possible, that the views of the Most Likely Descendent(s), as determined by the California Native American Heritage Commission, is taken into consideration when decisions are made about the disposition of Native American human remains and associated objects.

B. As legally mandated, human remains, and related items discovered on federal lands during the implementation of the terms of this Agreement and the Undertaking will be treated in accordance with the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (23 USC 3001). All activities within the vicinity of the discovery will be stopped and both the Caltrans Archaeologist and the Redwood National Park Archaeologist will be consulted on how to proceed. The procedures for dealing with the discovery of human remains, funerary objects, or sacred objects on Federal land are described in the regulations that implement NAGPRA 43 CFR Part 10. The Undertaking's implementation/construction in the vicinity of the discovery may not resume until Redwood National Park complies with the 43 CFR Part 10 regulations and provides

notification to proceed. The responsible Federal agency official (43 CFR 10.2(2)) will be Redwood National Park.

IV. ADMINISTRATIVE PROVISIONS

A. STANDARDS

1. Definitions. The definitions provided at 36 CFR § 800.16 are applicable throughout this MOA.

2. Parties to this agreement are defined as follows:

    a. Signatory parties have the sole authority to execute, amend, or terminate this MOA.

    b. Invited signatory parties have the same rights to terminate or amend this MOA as the other signatories.

    c. Concurring parties signing this MOA do so to acknowledge their agreement or concurrence with the MOA but have no legal authority under the MOA to terminate or amend this MOA. Concurring with the terms of this MOA does not constitute their agreement with the Undertaking.

3. Professional Qualifications. Caltrans will ensure that only individuals meeting the Secretary of the Interior's Professional Qualification Standards (48 Federal Register [FR] 44738-39) (PQS) in the relevant field of study carry out or review appropriateness and quality of the actions and products required by Stipulation II in this agreement. However, nothing in the stipulation may be interpreted to preclude Caltrans or any agent or contractor thereof from using the properly supervised services of persons who do not meet the PQS.

4. Documentation Standards. Written documentation of activities prescribed by Stipulation II of this agreement shall conform to Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740), as well as to applicable standards and guidelines established by the SHPO.

B. RESOLVING OBJECTIONS

1. Should any party to this agreement object at any time in writing to the manner in which the terms of this agreement are implemented, to any action carried out or proposed with respect to implementation of the MOA (other than the Undertaking itself), or to any documentation prepared in accordance with and subject to the terms of this agreement, Caltrans shall immediately notify the other MOA parties of the objection, request their comments on the objection within fifteen (15) calendar days following receipt of Caltrans' notification, and proceed to consult with the objecting party for no more than thirty (30) calendar days to resolve the objection.

2. If the objection is resolved during the 30-day consultation period, Caltrans may proceed with the disputed action in accordance with the terms of such resolution.

3. If at the end of the 30-day consultation period Caltrans determines that the objection cannot be resolved through such consultation, then Caltrans shall forward all documentation relevant to the objection to the ACHP, including Caltrans' proposed response to the objection. The ACHP shall provide Caltrans with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, Caltrans shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories, and concurring parties, and provide them with a copy of this written response. Caltrans will then proceed according to its final decision.

4. If the ACHP does not provide its advice regarding the dispute within the 30-day time period, Caltrans may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, Caltrans shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA and provide them to the ACHP with a copy of such written response.

5. Caltrans' responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

6. Caltrans may authorize any action subject to objection under this stipulation to proceed after the objection has been resolved in accordance with the terms of this stipulation.

C. **CONFIDENTIALITY**

The MOA parties acknowledge that the historic properties covered by this MOA are subject to the provisions of Section 304 of the NHPA and Section 6254.10 of the California Government Code (Public Records Act), relating to the disclosure of archaeological site information and, having so acknowledged, will ensure that all actions and documentation prescribed by this MOA are consistent with said sections.

D. **AMENDMENTS**

1. Any signatory party to this MOA may propose that this MOA be amended, whereupon all signatory parties shall consult for no more than thirty (30) calendar days to consider such amendment. Caltrans may extend this consultation period, if necessary. The amendment will be effective on the date a copy signed by all of the original signatories is filed by Caltrans with the ACHP. If the signatories cannot agree to appropriate terms to amend the MOA, any signatory may terminate the agreement in accordance with Stipulation IV.E, below.

2. No party shall alter any attachment to this MOA, or other document that has been reviewed and commented on pursuant to this MOA (except to finalize documents commented on in draft form), without first affording the parties to this MOA the opportunity to review the proposed change and determine whether it shall require that this MOA be amended. If one or more party determines that an amendment is needed, the parties to this MOA shall consult in accordance with Stipulation IV.D.1 to consider such an amendment. Within thirty (30) calendar days of revising any Attachment, Caltrans shall append any revised document to this MOA and share the final revised document with parties to this MOA.

E. **TERMINATION**

1. If this MOA is not amended as provided for in Section IV.D, or if a Signatory or Invited Signatory proposes termination of this MOA for other reasons, the party proposing termination shall, in writing, notify the other MOA parties, explain the reasons for proposing termination, and consult with the other parties for at least thirty (30) calendar days to seek alternatives to termination. Such consultation shall not be required if Caltrans proposes termination because the Undertaking no longer meets the definition set forth in 36 CFR § 800.16(y).

2. Should such consultation result in an agreement on an alternative to termination, the signatory parties shall proceed in accordance with the terms of that agreement.

3. Should such consultation fail, the signatory party proposing termination may terminate this MOA by promptly notifying the other MOA parties in writing. Termination hereunder shall render this MOA without further force or effect.

4. If this MOA is terminated hereunder, and if Caltrans determines that the Undertaking will nonetheless proceed, then Caltrans shall comply with the requirements of 36 CFR § 800.3-800.6 or request the comments of the ACHP pursuant to 36 CFR § 800.

F. **REPORTING REQUIREMENTS AND RELATED REVIEWS**

1. District 1 shall prepare an Annual Report documenting actions carried out pursuant to this MOA. The reporting period shall commence one year from the date of execution and is due annually at the end of each calendar year. The Annual Report shall be distributed to all consulting parties to this MOA.

2. The Annual Report shall address the following: any scheduling changes proposed, amendments to the MOA, status of treatment and mitigation activities, any circumstances that are affecting or may affect the ability of Caltrans to continue to meet the terms of the MOA, any disputes and objections received, and how they were resolved, and any additional parties who have become signatory or concurring parties to this MOA in the past year.

3. District 1 shall coordinate a meeting of the Signatories and Consulting Parties to be scheduled within ninety (90) calendar days of distribution of the Annual Report, or another mutually agreed upon date, to discuss activities carried out pursuant to this MOA during the preceding year and activities scheduled for the upcoming year. This meeting, should it be deemed unnecessary, may be cancelled by mutual consent of the Signatory Parties.

G. **DURATION**

1. The duration of this MOA shall be no more than five (5) years following the date of execution by the Signatories, or upon completion of the Undertaking, whichever comes first. If the terms are not satisfactorily fulfilled at that time, Caltrans shall consult with the MOA parties to extend it or to reconsider its terms at least sixty (60) calendar days prior to its expiration. Reconsideration may include continuation of the MOA as originally executed, amendment of the MOA, or termination. In the event amendment of the MOA is appropriate, Caltrans will comply with Stipulation IV.D of this MOA. In the event of termination, Caltrans will comply with Stipulation IV.E of this MOA.

H. **ANTI-DEFICIENCY ACT**

1. Caltrans' obligations under this Agreement are subject to the availability of appropriated funds, and the stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act. Caltrans shall make reasonable and good faith efforts to secure the necessary funds to implement this Agreement in its entirety.

2. If compliance with the Anti-Deficiency Act alters or impairs Caltrans' ability to implement the stipulations of this Agreement, Caltrans shall consult in accordance with the amendment and termination procedures found at Stipulation IV of this Agreement.

I. **EFFECTIVE DATE**

This MOA will take effect on the date that it has been executed by the Signatory Parties.

EXECUTION of this MOA by Caltrans and the SHPO, its filing with the ACHP in accordance with 36 CFR § 800.6(b)(1)(iv), and subsequent implementation of its terms, shall evidence, pursuant to 36 CFR § 800.6(c), that this MOA is an agreement with the ACHP for purposes of Section 110(1) of the NHPA, and shall further evidence that Caltrans has afforded the ACHP an opportunity to comment on the Undertaking and its effects on historic properties, and that Caltrans has taken into account the effects of the Undertaking on historic properties.

MEMORANDUM OF AGREEMENT
BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING THE LAST CHANCE GRADE PERMANENT RESTORATION PROJECT, DEL NORTE COUNTY, CALIFORNIA

SIGNATORY PARTIES:

California Department of Transportation

By Jeremy Ketchum _____ 05/13/2026

Jeremy Ketchum, Chief — Date
Division of Environmental Analysis

California Office of Historic Preservation

By _____ 5/14/2026

Julianne Polanco — Date
State Historic Preservation Officer

MEMORANDUM OF AGREEMENT
BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING THE LAST CHANCE GRADE PERMANENT RESTORATION PROJECT, DEL NORTE COUNTY, CALIFORNIA

INVITED SIGNATORIES:

California Department of Transportation, District 1

By _____ 5/14/2026

Matt Brady
District 1 Director

Date

MEMORANDUM OF AGREEMENT
BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING THE LAST CHANCE GRADE PERMANENT RESTORATION PROJECT, DEL NORTE COUNTY, CALIFORNIA

INVITED SIGNATORIES:

Elk Valley Rancheria, California

By _____ _____
Dale Miller Date
Tribal Chairperson

Pulikla Tribe of Yurok People

By _____ _____
Fawn C. Murphey Date
Tribal Chairperson

Tolowa Dee-ni' Nation

By _____ _____
Jeri Lynn Thompson Date
Tribal Chairperson

Yurok Tribe

By _____ _____
Joseph James Date
Tribal Chairperson

Tolowa Nation

By _____ _____
Asa Mattice Date
Tribal Chairperson

MEMORANDUM OF AGREEMENT
BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING THE LAST CHANCE GRADE PERMANENT RESTORATION PROJECT, DEL NORTE COUNTY, CALIFORNIA

CONCURRING PARTIES:

California Department of Parks and Recreation, North Coast Redwoods District

By _____ _____

Victor Bjelaiac — Date

North Coast Redwoods District Superintendent

Redwood National Park

By _____ _____

Leonel Arguello — Date

Acting Superintendent



APPENDIX G. Species Lists



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Crescent City (4112472) OR Hiouchi (4112471) OR Gasquet (4112378) OR Sister Rocks (4112462) OR Childs Hill (4112461) OR Cant Hook Mtn. (4112368) OR Requa (4112451) OR Klamath Glen (4112358) OR Fern Canyon (4112441) OR Ah Pah Ridge (4112348))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Abronia umbellata var. breviflora pink sand-verbena	G4G5T2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	5 10	61 S:8	1	1	3	3	0	0	4	4	8	0	0
Acipenser medirostris pop. 2 green sturgeon - northern DPS	G2T1 S1	None None	AFS_VU-Vulnerable CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	367 367	1 S:1	0	1	0	0	0	0	0	1	1	0	0
Actinemys marmorata northwestern pond turtle	G2 SNR	Proposed Threatened None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	38 410	1160 S:3	2	1	0	0	0	0	0	3	3	0	0
Anarhynchus nivosus nivosus western snowy plover	G3T3 S3	Threatened None	CDFW_SSC-Species of Special Concern	10 10	140 S:1	0	0	0	0	0	1	1	0	1	0	0
Ancotrema voyanum hooded lancetooth	G1G2 S1S2	None None		1,345 1,345	173 S:1	0	0	0	0	0	1	1	0	1	0	0
Anthoxanthum nitens ssp. nitens vanilla-grass	G5T5 S2	None None	Rare Plant Rank - 2B.3	10 10	6 S:1	0	0	0	0	0	1	1	0	1	0	0
Aplodontia rufa humboldtiana Humboldt mountain beaver	G5T2T3 SNR	None None		5 30	28 S:2	0	0	0	0	0	2	2	0	2	0	0
Arabis mcdonaldiana McDonald's rockcress	G3 S3	Endangered Endangered	Rare Plant Rank - 1B.1 SB_BerrySB-Berry Seed Bank SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	500 500	27 S:1	1	0	0	0	0	0	0	1	1	0	0
Arborimus pomo Sonoma tree vole	G3 S3	None None	CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	300 800	222 S:6	0	0	0	0	0	6	6	0	6	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Ardea herodias great blue heron	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	20 80	156 S:2	0	1	0	0	0	1	1	1	2	0	0
Ascaphus truei Pacific tailed frog	G4 S3S4	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	50 2,100	491 S:66	1	1	0	0	0	64	32	34	66	0	0
Asplenium trichomanes ssp. trichomanes maidenhair spleenwort	G5T5 S1	None None	Rare Plant Rank - 2B.1	600 600	1 S:1	0	0	0	0	0	1	0	1	1	0	0
Atractelmis wawona Wawona riffle beetle	G3 S1S2	None None		45 257	80 S:3	0	0	0	0	0	3	3	0	3	0	0
Boechera koehleri Koehler's stipitate rockcress	G3G4 S3	None None	Rare Plant Rank - 1B.3 USFS_S-Sensitive	400 660	29 S:4	1	0	0	0	0	3	3	1	4	0	0
Bombus caliginosus obscure bumble bee	G2G3 S1S2	None None	IUCN_VU-Vulnerable	1 500	181 S:9	0	0	0	0	0	9	8	1	9	0	0
Bombus occidentalis western bumble bee	G3 S1	None Candidate Endangered	IUCN_VU-Vulnerable USFS_S-Sensitive	25 50	306 S:4	0	0	0	0	0	4	4	0	4	0	0
Bonasa umbellus ruffed grouse	G5 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	340 720	5 S:4	0	0	0	0	0	4	4	0	4	0	0
Brachyramphus marmoratus marbled murrelet	G3 S2	Threatened Endangered	CDF_S-Sensitive IUCN_EN-Endangered	200 1,400	110 S:25	0	1	0	0	0	24	24	1	25	0	0
Branta hutchinsii leucopareia cackling (=Aleutian Canada) goose	G5T3 S3	Delisted None	CDFW_WL-Watch List	20 200	19 S:2	0	0	0	0	0	2	2	0	2	0	0
Calamagrostis crassiglumis Thurber's reed grass	G5Q S2	None None	Rare Plant Rank - 2B.1		15 S:3	0	0	0	0	0	3	3	0	3	0	0
Calamagrostis foliosa leafy reed grass	G3 S3	None Rare	Rare Plant Rank - 4.2	4,000 4,000	22 S:1	0	0	0	0	0	1	1	0	1	0	0
Calicium adspersum spiral-spored gilded-head pin lichen	G3G4 S1	None None	Rare Plant Rank - 2B.2 USFS_S-Sensitive	650 650	1 S:1	0	0	0	0	0	1	1	0	1	0	0
Calystegia atriplicifolia ssp. buttensis Butte County morning-glory	G5T3 S3	None None	Rare Plant Rank - 4.2	350 1,960	121 S:3	1	1	0	0	0	1	2	1	3	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Cardamine angulata seaside bittercress	G4G5 S3	None None	Rare Plant Rank - 2B.2	40 755	38 S:21	4	9	3	2	0	3	1	20	21	0	0
Cardamine nuttallii var. gemmata yellow-tubered toothwort	G5T3Q S2	None None	Rare Plant Rank - 3.3	70 2,800	17 S:6	0	1	0	0	0	5	6	0	6	0	0
Carex arcta northern clustered sedge	G5 S1	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern		13 S:1	0	0	0	0	0	1	1	0	1	0	0
Carex lenticularis var. limnophila lagoon sedge	G5T5 S1	None None	Rare Plant Rank - 2B.2		4 S:1	0	0	0	0	0	1	1	0	1	0	0
Carex leptalea bristle-stalked sedge	G5 S1	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern	1,450 1,450	8 S:1	0	0	1	0	0	0	1	0	1	0	0
Carex lyngbyei Lyngbye's sedge	G5 S3	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern	4 15	37 S:2	0	0	0	0	0	2	2	0	2	0	0
Carex praticola northern meadow sedge	G5 S2	None None	Rare Plant Rank - 2B.2	50 50	14 S:1	0	0	0	0	0	1	1	0	1	0	0
Carex serpenticola serpentine sedge	G4 S2	None None	Rare Plant Rank - 2B.3	390 2,280	17 S:7	0	0	0	0	0	7	7	0	7	0	0
Carex viridula ssp. viridula green yellow sedge	G5T5 S2	None None	Rare Plant Rank - 2B.3	10 10	8 S:2	0	0	0	0	0	2	2	0	2	0	0
Cascadia nuttallii Nuttall's saxifrage	G4? S1	None None	Rare Plant Rank - 2B.1	125 250	2 S:2	0	0	0	0	0	2	1	1	2	0	0
Castilleja elata Siskiyou paintbrush	G3 S2S3	None None	Rare Plant Rank - 2B.2	200 2,400	36 S:12	0	1	0	0	0	11	12	0	12	0	0
Castilleja litoralis Oregon coast paintbrush	G3 S2S3	None None	Rare Plant Rank - 2B.2	14 280	44 S:6	0	0	2	0	0	4	2	4	6	0	0
Cerorhinca monocerata rhinoceros auklet	G5 S3	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	235 235	10 S:1	0	0	0	0	0	1	1	0	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Circus hudsonius northern harrier	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	15 55	82 S:3	0	1	2	0	0	0	0	3	3	0	0
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	G3 S2.1	None None		10 10	60 S:1	0	0	0	0	0	1	1	0	1	0	0
Coastal Brackish Marsh Coastal Brackish Marsh	G2 S2.1	None None			30 S:1	0	0	0	0	0	1	1	0	1	0	0
Cochlearia groenlandica Greenland cochlearia	G4 S1	None None	Rare Plant Rank - 2B.3	5 5	1 S:1	0	0	0	0	0	1	1	0	1	0	0
Coenonympha tullia yontockett Yontocket satyr	G5T1T2 S1S2	None None		10 10	1 S:1	0	0	0	0	0	1	1	0	1	0	0
Coptis laciniata Oregon goldthread	G4? S3?	None None	Rare Plant Rank - 4.2	340 1,903	122 S:6	0	0	0	0	0	6	3	3	6	0	0
Corynorhinus townsendii Townsend's big-eared bat	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	170 170	635 S:1	0	0	0	0	0	1	1	0	1	0	0
Cottus klamathensis polyporus Lower Klamath marbled sculpin	G4T2T4 S2S4	None None	CDFW_SSC-Species of Special Concern	50 50	20 S:1	0	0	0	0	0	1	1	0	1	0	0
Cypseloides niger black swift	G4 S3	None None	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFWS_BCC-Birds of Conservation Concern	160 160	46 S:1	0	0	0	0	0	1	1	0	1	0	0
Darlingtonia Seep Darlingtonia Seep	G4 S3.2	None None		615 1,000	70 S:2	0	0	0	0	0	2	2	0	2	0	0
Discelium nudum naked flag moss	G4G5 S1	None None	Rare Plant Rank - 2B.2		2 S:1	0	0	0	0	0	1	1	0	1	0	0
Downingia willamettensis Cascade downingia	G4 S2	None None	Rare Plant Rank - 2B.2	191 191	8 S:1	0	0	0	0	0	1	1	0	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Elanus leucurus white-tailed kite	G5 S3S4	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	10 10	190 S:1	0	0	0	0	1	0	1	0	0	1	0
Empetrum nigrum black crowberry	G5 S1?	None None	Rare Plant Rank - 2B.2	10 45	4 S:3	0	0	0	0	1	2	3	0	2	0	1
Erethizon dorsatum North American porcupine	G5 S3	None None	IUCN_LC-Least Concern	14 1,347	525 S:29	0	0	0	0	0	29	5	24	29	0	0
Eriogonum nudum var. paralinum Del Norte buckwheat	G5T2 S1	None None	Rare Plant Rank - 2B.2	5 178	4 S:4	0	0	0	0	0	4	1	3	4	0	0
Eriogonum pendulum Waldo wild buckwheat	G4 S2S3	None None	Rare Plant Rank - 2B.2	800 1,850	28 S:3	0	0	0	0	0	3	3	0	3	0	0
Erysimum concinnum bluff wallflower	G3 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	10 50	30 S:5	0	1	0	1	0	3	3	2	5	0	0
Erythronium hendersonii Henderson's fawn lily	G4 S2	None None	Rare Plant Rank - 2B.3 USFS_S-Sensitive	200 200	7 S:1	0	0	0	0	0	1	1	0	1	0	0
Erythronium howellii Howell's fawn lily	G3G4 S2	None None	Rare Plant Rank - 1B.3	400 2,300	11 S:4	0	0	0	0	0	4	4	0	4	0	0
Erythronium oregonum giant fawn lily	G5 S3?	None None	Rare Plant Rank - 2B.2 SB_UCSC-UC Santa Cruz	1,700 2,480	37 S:4	0	2	0	0	0	2	0	4	4	0	0
Erythronium revolutum coast fawn lily	G4G5 S3	None None	Rare Plant Rank - 2B.2 SB_UCSC-UC Santa Cruz	375 2,535	172 S:7	0	5	0	1	0	1	0	7	7	0	0
Eucyclogobius newberryi tidewater goby	G3 S3	Endangered None	AFS_EN-Endangered CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	4 4	127 S:1	1	0	0	0	0	0	0	1	1	0	0
Eumetopias jubatus Steller sea lion	G3 S2	Delisted None	IUCN_NT-Near Threatened MMC_SSC-Species of Special Concern	10 10	38 S:2	0	1	0	0	0	1	0	2	2	0	0
Falco peregrinus anatum American peregrine falcon	G4T4 S3S4	Delisted Delisted	CDF_S-Sensitive	109 109	77 S:1	1	0	0	0	0	0	0	1	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Fissidens pauperculus minute pocket moss	G3? S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	120 500	22 S:3	0	0	0	0	0	3	3	0	3	0	0
Fratercula cirrhata tufted puffin	G5 S1S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	235 235	17 S:1	0	0	0	0	0	1	1	0	1	0	0
Gentiana setigera Mendocino gentian	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive USFS_S-Sensitive	400 3,000	11 S:2	0	0	0	0	0	2	2	0	2	0	0
Gilia capitata ssp. pacifica Pacific gilia	G5T3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	16 1,900	91 S:13	1	1	1	0	0	10	7	6	13	0	0
Gilia millefoliata dark-eyed gilia	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	10 75	54 S:8	0	0	7	0	0	1	5	3	8	0	0
Gonidea angulata western ridged mussel	G3 S2	None None	IUCN_VU-Vulnerable	5 22	158 S:2	0	0	0	0	0	2	2	0	2	0	0
Haliaeetus leucocephalus bald eagle	G5 S3	Delisted Endangered	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern USFS_S-Sensitive	292 800	334 S:2	0	0	0	0	0	2	1	1	2	0	0
Hesperevax sparsiflora var. brevifolia short-leaved evax	G4T3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	13 54	72 S:5	1	2	1	0	0	1	0	5	5	0	0
Hydrobates furcatus fork-tailed storm-petrel	G5 S1	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	12 235	8 S:3	0	0	0	0	1	2	3	0	2	0	1

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Iliamna latibracteata California globe mallow	G3 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden USFS_S-Sensitive	500 500	40 S:1	0	0	0	0	0	1	1	0	1	0	0
Juga chacei Chace juga	G1 S1	None None	USFS_S-Sensitive	13 988	11 S:9	0	0	0	0	0	9	8	1	9	0	0
Kopsiopsis hookeri small groundcone	G4? S1S2	None None	Rare Plant Rank - 2B.3	1,750 1,980	21 S:3	0	1	1	0	0	1	1	2	3	0	0
Lanx alta highcap lanx	G2G3 S3	None None		116 157	13 S:2	0	0	0	0	0	2	1	1	2	0	0
Lasionycteris noctivagans silver-haired bat	G4 S3S4	None None	IUCN_LC-Least Concern	170 370	139 S:2	1	0	0	0	0	1	2	0	2	0	0
Lasthenia californica ssp. macrantha perennial goldfields	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	100 100	59 S:1	0	0	0	0	0	1	1	0	1	0	0
Lathyrus japonicus seaside pea	G5 S2	None None	Rare Plant Rank - 2B.1 IUCN_LC-Least Concern	0 20	24 S:10	0	3	2	1	0	4	2	8	10	0	0
Lathyrus palustris marsh pea	G5 S2	None None	Rare Plant Rank - 2B.2	8 40	13 S:5	1	2	0	0	0	2	4	1	5	0	0
Lewisia oppositifolia opposite-leaved lewisia	G3 S2	None None	Rare Plant Rank - 2B.2 USFS_S-Sensitive	1,750 4,000	14 S:4	0	0	1	0	0	3	2	2	4	0	0
Lilium occidentale western lily	G1G2 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_BerrySB-Berry Seed Bank	10 40	16 S:7	0	1	4	2	0	0	5	2	7	0	0
Limnephilus atercus Fort Dick limnephilus caddisfly	G3G4 S1S2	None None		50 70	2 S:2	0	0	0	0	0	2	2	0	2	0	0
Lomatium martindalei Coast Range lomatium	G5 S2	None None	Rare Plant Rank - 2B.3	1,650 3,900	9 S:2	0	0	0	0	0	2	2	0	2	0	0
Lysimachia europaea arctic starflower	G5 S1	None None	Rare Plant Rank - 2B.2	10 50	4 S:4	1	0	0	1	0	2	4	0	4	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Margaritifera falcata western pearlshell	G3G4 S1S2	None None	IUCN_NT-Near Threatened	130 130	78 S:1	0	0	0	0	0	1	1	0	1	0	0
Martes caurina humboldtensis Humboldt marten	G4G5T1 S1	Threatened Endangered	CDFW_SSC-Species of Special Concern USFS_S-Sensitive	50 3,600	44 S:4	0	0	0	0	0	4	4	0	4	0	0
Mitellastra caulescens leafy-stemmed mitrewort	G5 S4	None None	Rare Plant Rank - 4.2	1,000 1,000	21 S:1	0	0	0	0	0	1	1	0	1	0	0
Monadenia fidelis pronotis rocky coast Pacific sideband	G4G5T1 S1	None None	IUCN_DD-Data Deficient	40 40	1 S:1	0	0	0	0	0	1	1	0	1	0	0
Moneses uniflora woodnymph	G5 S2	None None	Rare Plant Rank - 2B.2	180 500	7 S:3	0	0	0	0	0	3	2	1	3	0	0
Monotropa uniflora ghost-pipe	G5 S2	None None	Rare Plant Rank - 2B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	50 1,665	115 S:71	1	15	34	11	0	10	3	68	71	0	0
Myotis evotis long-eared myotis	G5 S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern	122 979	139 S:2	0	0	0	0	0	2	2	0	2	0	0
Myotis thysanodes fringed myotis	G4 S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive	940 940	86 S:1	0	0	1	0	0	0	1	0	1	0	0
Myotis yumanensis Yuma myotis	G5 S4	None None	BLM_S-Sensitive IUCN_LC-Least Concern	20 380	265 S:6	1	3	0	0	0	2	6	0	6	0	0
Nannopterum auritum double-crested cormorant	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	5 9	39 S:5	0	0	0	0	0	5	5	0	5	0	0
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	G3 S3.2	None None		4 4	53 S:1	0	0	0	0	0	1	1	0	1	0	0
Nycticorax nycticorax black-crowned night heron	G5 S4	None None	IUCN_LC-Least Concern	22 22	37 S:1	0	0	0	0	0	1	0	1	1	0	0
Oenothera wolfii Wolf's evening-primrose	G2 S1	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_BerrySB-Berry Seed Bank	0 100	29 S:13	0	5	3	2	0	3	7	6	13	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Oncorhynchus clarkii coast cutthroat trout	G4 S3	None None	AFS_VU-Vulnerable CDFW_SSC-Species of Special Concern USFS_S-Sensitive	4 200	45 S:13	0	1	0	0	0	12	12	1	13	0	0
Oncorhynchus mykiss irideus pop. 49 steelhead - northern California DPS winter-run	G5T3Q S3	Threatened None	AFS_TH-Threatened CDFW_SSC-Species of Special Concern	97 130	96 S:3	0	0	1	0	0	2	2	1	3	0	0
Packera bolanderi var. bolanderi seacoast ragwort	G4T4 S2S3	None None	Rare Plant Rank - 2B.2	105 2,066	72 S:18	1	2	0	0	0	15	6	12	18	0	0
Packera hesperia western ragwort	G3 S1	None None	Rare Plant Rank - 2B.2 USFS_S-Sensitive	2,040 2,290	4 S:4	4	0	0	0	0	0	0	4	4	0	0
Pandion haliaetus osprey	G5 S4	None None	CDF_S-Sensitive CDFW_WL-Watch List IUCN_LC-Least Concern	17 650	504 S:27	11	8	1	0	0	7	24	3	27	0	0
Pekania pennanti Fisher	G5 S2S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	840 4,090	555 S:6	1	1	0	0	0	4	6	0	6	0	0
Phacelia argentea sand dune phacelia	G2 S1	Threatened None	Rare Plant Rank - 1B.1 SB_BerrySB-Berry Seed Bank	10 80	16 S:11	0	10	0	0	0	1	2	9	11	0	0
Pinguicula macroceras horned butterwort	G4 S2	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCSC-UC Santa Cruz	80 1,200	26 S:12	0	0	1	0	0	11	11	1	12	0	0
Piperia candida white-flowered rein orchid	G3? S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	470 2,200	222 S:6	0	2	2	0	0	2	2	4	6	0	0
Platismatia lacunosa crinkled rag lichen	G4 S2?	None None	Rare Plant Rank - 2B.3	193 213	4 S:2	0	0	0	0	0	2	2	0	2	0	0

Summary Table Report

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California Natural Diversity Database

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Plethodon elongatus Del Norte salamander	G4 S3	None None	CDFW_WL-Watch List IUCN_NT-Near Threatened	80 2,100	151 S:46	1	0	0	0	0	45	46	0	46	0	0
Polemonium carneum Oregon polemonium	G3G4 S2	None None	Rare Plant Rank - 2B.2	1,000 1,000	16 S:1	0	0	0	0	0	1	1	0	1	0	0
Polites mardon mardon skipper	G2 S1	None None	USFS_S-Sensitive	1,720 1,720	2 S:1	0	0	0	0	0	1	1	0	1	0	0
Pomatiopsis chacei marsh walker	G1 S2	None None		34 168	6 S:5	0	0	0	0	2	3	5	0	3	2	0
Potamogeton foliosus ssp. fibrillosus fibrous pondweed	G5T2T3 S1S2	None None	Rare Plant Rank - 2B.3	50 50	1 S:1	0	0	0	0	0	1	1	0	1	0	0
Prosartes parvifolia Siskiyou bells	G2 S2	None None	Rare Plant Rank - 1B.2 SB_UCSC-UC Santa Cruz USFS_S-Sensitive	2,415 2,740	14 S:3	0	1	0	0	0	2	0	3	3	0	0
Pyrrocoma racemosa var. congesta Del Norte pyrrocoma	G5T4 S2	None None	Rare Plant Rank - 2B.3	800 2,250	13 S:5	0	0	0	0	0	5	5	0	5	0	0
Ramalina thrausta angel's hair lichen	G5? S2S3	None None	Rare Plant Rank - 2B.1	160 1,345	21 S:9	0	0	2	0	0	7	5	4	9	0	0
Rana aurora northern red-legged frog	G4 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	10 800	292 S:56	0	2	2	1	0	51	26	30	56	0	0
Rana boylii pop. 1 foothill yellow-legged frog - north coast DPS	G3T4 S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern USFS_S-Sensitive	25 2,000	1610 S:40	0	0	0	0	0	40	15	25	40	0	0
Rhyacotriton variegatus southern torrent salamander	G3? S2S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	100 2,000	416 S:69	1	1	3	0	0	64	40	29	69	0	0
Rhynchospora alba white beaked-rush	G5 S2	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern	1,831 1,831	17 S:1	0	1	0	0	0	0	0	1	1	0	0

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Romanzoffia tracyi Tracy's romanzoffia	G4 S2	None None	Rare Plant Rank - 2B.3	235 235	9 S:3	0	0	0	0	0	3	3	0	3	0	0
Rosa gymnocarpa var. serpentina Gasquet rose	G5T3T4 S2	None None	Rare Plant Rank - 1B.3 SB_BerrySB-Berry Seed Bank SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	1,200 1,200	7 S:1	0	0	0	0	0	1	1	0	1	0	0
Sabulina howellii Howell's sandwort	G3 S3	None None	Rare Plant Rank - 1B.3 BLM_S-Sensitive	125 1,960	24 S:5	1	0	0	0	0	4	4	1	5	0	0
Sagittaria sanfordii Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	10 10	143 S:1	0	0	0	0	0	1	1	0	1	0	0
Sanguisorba officinalis great burnet	G5? S2	None None	Rare Plant Rank - 2B.2	15 400	22 S:5	1	0	0	0	0	4	4	1	5	0	0
Scaphinotus behrensi Behrens' snail-eating beetle	G2G4 S2S4	None None		114 114	4 S:1	0	0	0	0	0	1	0	1	1	0	0
Sedum citrinum Blue Creek stonecrop	G2 S2	None None	Rare Plant Rank - 1B.2 SB_UCSC-UC Santa Cruz	2,414 4,000	12 S:6	0	3	0	0	0	3	0	6	6	0	0
Sedum patens Smith River stonecrop	G2 S2	None None	Rare Plant Rank - 1B.2	350 611	6 S:6	0	0	0	0	0	6	0	6	6	0	0
Sidalcea malachroides maple-leaved checkerbloom	G3 S3	None None	Rare Plant Rank - 4.2	100 980	136 S:4	0	0	2	0	0	2	4	0	4	0	0
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	G4G5T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_UCSC-UC Santa Cruz	18 87	60 S:2	0	0	0	0	0	2	0	2	2	0	0
Sidalcea oregana ssp. eximia coast checkerbloom	G5T1 S1	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	20 35	19 S:3	0	0	0	0	0	3	3	0	3	0	0
Silene hookeri Hooker's catchfly	G4 S2	None None	Rare Plant Rank - 2B.2	1,700 2,376	31 S:4	0	0	0	0	0	4	2	2	4	0	0
Silene scouleri ssp. scouleri Scouler's catchfly	G5T4T5 S2S3	None None	Rare Plant Rank - 2B.2	1,000 1,000	23 S:2	0	0	0	0	0	2	2	0	2	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Silene serpentinicola serpentine catchfly	G3 S3	None None	Rare Plant Rank - 1B.2 SB_UCSC-UC Santa Cruz USFS_S-Sensitive	158 2,241	55 S:23	1	4	0	0	0	18	8	15	23	0	0
Speyeria zerene hippolyta Oregon silverspot butterfly	G5T1 S1	Threatened None		20 50	3 S:2	0	2	0	0	0	0	2	0	2	0	0
Spirinchus thaleichthys longfin smelt	G5 S1	None Threatened	IUCN_LC-Least Concern	0 0	11 S:1	0	0	0	0	0	1	1	0	1	0	0
Streptanthus howellii Howell's jewelflower	G2G3 S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	2,100 2,100	28 S:2	0	0	0	0	0	2	1	1	2	0	0
Sulcaria spiralifera twisted horsehair lichen	G3G4 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	45 45	18 S:3	0	0	0	0	0	3	3	0	3	0	0
Thaleichthys pacificus eulachon	G4 S1	Threatened None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern		10 S:1	0	0	0	0	0	1	0	1	1	0	0
Thermopsis robusta robust false lupine	G2 S2	None None	Rare Plant Rank - 1B.2 SB_UCSC-UC Santa Cruz USFS_S-Sensitive	2,275 2,400	99 S:3	0	0	3	0	0	0	0	3	3	0	0
Triquetrella californica coastal triquetrella	G2 S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	80 80	13 S:1	0	0	0	0	0	1	1	0	1	0	0
Usnea longissima Methuselah's beard lichen	G5 S4	None None	Rare Plant Rank - 4.2	160 1,550	206 S:10	0	2	2	2	0	4	10	0	10	0	0
Vaccinium scoparium little-leaved huckleberry	G5 S3	None None	Rare Plant Rank - 2B.2	1,815 1,815	27 S:2	0	0	0	0	0	2	1	1	2	0	0
Viola langsdorffii Langsdorf's violet	G4G5 S1	None None	Rare Plant Rank - 2B.1	0 35	2 S:2	1	0	0	0	0	1	2	0	2	0	0
Viola palustris alpine marsh violet	G5 S1S2	None None	Rare Plant Rank - 2B.2	10 15	10 S:3	1	0	0	0	0	2	3	0	3	0	0
Viola primulifolia ssp. occidentalis western white bog violet	G5T2 S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	400 2,300	19 S:7	0	5	0	0	0	2	2	5	7	0	0

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

137 matches found. Click on scientific name for details

Search Criteria: , Quad is one of [4112461:4112462:4112472:4112471:4112378:4112368:4112358:4112451:4112348:4112441]

▲ SCIENTIFIC NAME	COMMON NAME	FED LIST	STATE LIST	STATE RANK	CA RARE PLANT RANK
Abronia umbellata var. *breviflora*	pink sand-verbena	None	None	S2	1B.1
Angelica lucida	sea-watch	None	None	S3	4.2
Antennaria suffrutescens	evergreen everlasting	None	None	S3	4.3
Anthoxanthum nitens ssp. *nitens*	vanilla-grass	None	None	S2	2B.3
Arabis mcdonaldiana	McDonald's rockcress	FE	CE	S3	1B.1
Arctostaphylos hispidula	Howell's manzanita	None	None	S3	4.2
Arctostaphylos nortensis	Del Norte manzanita	None	None	S2	4.3
Arnica cernua	serpentine arnica	None	None	S4	4.3
Arnica spathulata	Klamath arnica	None	None	S3	4.3
Asplenium trichomanes ssp. *trichomanes*	maidenhair spleenwort	None	None	S1	2B.1
Boechera koehleri	Koehler's stipitate rockcress	None	None	S3	1B.3
Calamagrostis crassiglumis	Thurber's reed grass	None	None	S2	2B.1

Calamagrostis foliosa	leafy reed grass	None	CR	S3	4.2
Calicium adspersum	spiral-spored gilded-head pin lichen	None	None	S1	2B.2
Callitropsis nootkatensis	Alaska cedar	None	None	S3	4.3
Calystegia atriplicifolia ssp. *buttensis*	Butte County morning-glory	None	None	S3	4.2
Cardamine angulata	seaside bittercress	None	None	S3	2B.2
Cardamine nuttallii var. *gemmata*	yellow-tubered toothwort	None	None	S2	3.3
Carex arcta	northern clustered sedge	None	None	S1	2B.2
Carex lenticularis var. *limnophila*	lagoon sedge	None	None	S1	2B.2
Carex leptalea	bristle-stalked sedge	None	None	S1	2B.2
Carex lyngbyei	Lyngbye's sedge	None	None	S3	2B.2
Carex praticola	northern meadow sedge	None	None	S2	2B.2
Carex scabriuscula	Siskiyou sedge	None	None	S4	4.3
Carex serpenticola	serpentine sedge	None	None	S2	2B.3
Carex viridula ssp. *viridula*	green yellow sedge	None	None	S2	2B.3
Cascadia nuttallii	Nuttall's saxifrage	None	None	S1	2B.1
Castilleja ambigua var. *ambigua*	johnny-nip	None	None	S3S4	4.2
Castilleja brevilobata	short-lobed paintbrush	None	None	S3	4.2
Castilleja elata	Siskiyou paintbrush	None	None	S2S3	2B.2
Castilleja litoralis	Oregon coast paintbrush	None	None	S2S3	2B.2
Chrysosplenium glechomifolium	Pacific golden saxifrage	None	None	S3	4.3
Cochlearia groenlandica	Greenland cochlearia	None	None	S1	2B.3
Coptis laciniata	Oregon goldthread	None	None	S3?	4.2

Cypripedium californicum	California lady's-slipper	None	None	S4	4.2
Cypripedium montanum	mountain lady's-slipper	None	None	S4	4.2
Darlingtonia californica	California pitcherplant	None	None	S4	4.2
Dicentra formosa ssp. *oregana*	Oregon bleeding heart	None	None	S3	4.2
Discelium nudum	naked flag moss	None	None	S1	2B.2
Doellingeria glabrata	Siskiyou aster	None	None	S3	4.3
Downingia willamettensis	Cascade downingia	None	None	S2	2B.2
Empetrum nigrum	black crowberry	None	None	S1?	2B.2
Epilobium rigidum	Siskiyou Mountains willowherb	None	None	S3	4.3
Erigeron cervinus	Siskiyou daisy	None	None	S4	4.3
Eriogonum nudum var. *paralinum*	Del Norte buckwheat	None	None	S1	2B.2
Eriogonum pendulum	Waldo wild buckwheat	None	None	S2S3	2B.2
Eriogonum ternatum	ternate buckwheat	None	None	S4	4.3
Erysimum concinnum	bluff wallflower	None	None	S2	1B.2
Erythronium citrinum var. *citrinum*	lemon-colored fawn lily	None	None	S3	4.3
Erythronium hendersonii	Henderson's fawn lily	None	None	S2	2B.3
Erythronium howellii	Howell's fawn lily	None	None	S2	1B.3
Erythronium oregonum	giant fawn lily	None	None	S3?	2B.2
Erythronium revolutum	coast fawn lily	None	None	S3	2B.2
Fissidens pauperculus	minute pocket moss	None	None	S2	1B.2
Gentiana setigera	Mendocino gentian	None	None	S2	1B.2
Gilia capitata ssp. *pacifica*	Pacific gilia	None	None	S3	1B.2
Gilia millefoliata	dark-eyed gilia	None	None	S2	1B.2

Glehnia littoralis ssp. *leiocarpa*	American glehnia	None	None	S2S3	4.2
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	None	None	S3	1B.2
Horkelia howellii	Howell’s horkelia	None	None	S3	4.3
Horkelia sericata	silky horkelia	None	None	S3	4.3
Hosackia gracilis	harlequin lotus	None	None	S3	4.2
Iliamna latibracteata	California globe mallow	None	None	S2	1B.2
Iris bracteata	Siskiyou iris	None	None	S3	3.3
Iris innominata	Del Norte County iris	None	None	S3	4.3
Iris tenax ssp. *klamathensis*	Orleans iris	None	None	S4	4.3
Iris thompsonii	Thompson's iris	None	None	S3	4.3
Kopsiopsis hookeri	small groundcone	None	None	S1S2	2B.3
Lasthenia californica ssp. *macrantha*	perennial goldfields	None	None	S2	1B.2
Lathyrus delnorticus	Del Norte pea	None	None	S3	4.3
Lathyrus japonicus	seaside pea	None	None	S2	2B.1
Lathyrus palustris	marsh pea	None	None	S2	2B.2
Leptosiphon latisectus	broad-lobed leptosiphon	None	None	S4	4.3
Lewisia oppositifolia	opposite-leaved lewisia	None	None	S2	2B.2
Lilium bolanderi	Bolander's lily	None	None	S3S4	4.2
Lilium kelloggii	Kellogg's lily	None	None	S3	4.3
Lilium occidentale	western lily	FE	CE	S1	1B.1
Lilium pardalinum ssp. *vollmeri*	Vollmer's lily	None	None	S3	4.3
Listera cordata	heart-leaved twayblade	None	None	S4	4.2
Lomatium howellii	Howell's lomatium	None	None	S4	4.3
Lomatium martindalei	Coast Range lomatium	None	None	S2	2B.3

Lycopodium clavatum	running-pine	None	None	S3	4.1
Lysimachia europaea	arctic starflower	None	None	S1	2B.2
Micranthes howellii	Howell's saxifrage	None	None	S3	4.3
Micranthes marshallii	Marshall's saxifrage	None	None	S3	4.3
Mitellastra caulescens	leafy-stemmed mitrewort	None	None	S4	4.2
Moneses uniflora	woodnymph	None	None	S2	2B.2
Monotropa uniflora	ghost-pipe	None	None	S2	2B.2
Oenothera wolfii	Wolf's evening-primrose	None	None	S1	1B.1
Oxalis suksdorfii	Suksdorf's wood-sorrel	None	None	S3	4.3
Packera bolanderi var. *bolanderi*	seacoast ragwort	None	None	S2S3	2B.2
Packera hesperia	western ragwort	None	None	S1	2B.2
Packera macounii	Siskiyou Mountains ragwort	None	None	S3	4.3
Perideridia gairdneri ssp. *gairdneri*	Gairdner's yampah	None	None	S3S4	4.2
Phacelia argentea	sand dune phacelia	FT	None	S1	1B.1
Pinguicula macroceras	horned butterwort	None	None	S2	2B.2
Piperia candida	white-flowered rein orchid	None	None	S3	1B.2
Pityopus californicus	California pinefoot	None	None	S4	4.2
Platismatia lacunosa	crinkled rag lichen	None	None	S2?	2B.3
Pleuropogon refractus	nodding semaphore grass	None	None	S4	4.2
Poa piperi	Piper's blue grass	None	None	S3	4.3
Polemonium carneum	Oregon polemonium	None	None	S2	2B.2
Potamogeton foliosus ssp. *fibrillosus*	fibrous pondweed	None	None	S1S2	2B.3
Prosartes parvifolia	Siskiyou bells	None	None	S2	1B.2

Pyrrocoma racemosa var. *congesta*	Del Norte pyrrocoma	None	None	S2	2B.3
Ramalina thrausta	angel's hair lichen	None	None	S2S3	2B.1
Rhynchospora alba	white beaked-rush	None	None	S2	2B.2
Ribes laxiflorum	trailing black currant	None	None	S3	4.3
Romanzoffia tracyi	Tracy's romanzoffia	None	None	S2	2B.3
Rosa gymnocarpa var. *serpentina*	Gasquet rose	None	None	S2	1B.3
Sabulina howellii	Howell's sandwort	None	None	S3	1B.3
Sagittaria sanfordii	Sanford's arrowhead	None	None	S3	1B.2
Salix delnortensis	Del Norte willow	None	None	S4	4.3
Sanguisorba officinalis	great burnet	None	None	S2	2B.2
Sanicula peckiana	Peck's sanicle	None	None	S3	4.3
Sedum citrinum	Blue Creek stonecrop	None	None	S2	1B.2
Sedum patens	Smith River stonecrop	None	None	S2	1B.2
Sidalcea elegans	Del Norte checkerbloom	None	None	S2?	3.3
Sidalcea malachroides	maple-leaved checkerbloom	None	None	S3	4.2
Sidalcea malviflora ssp. *patula*	Siskiyou checkerbloom	None	None	S2	1B.2
Sidalcea oregana ssp. *eximia*	coast checkerbloom	None	None	S1	1B.2
Silene hookeri	Hooker's catchfly	None	None	S2	2B.2
Silene scouleri ssp. *scouleri*	Scouler's catchfly	None	None	S2S3	2B.2
Silene serpentinicola	serpentine catchfly	None	None	S3	1B.2
Streptanthus howellii	Howell's jewelflower	None	None	S2	1B.2
Sulcaria spiralifera	twisted horsehair lichen	None	None	S2	1B.2
Tauschia glauca	glaucous tauschia	None	None	S4	4.3

Thermopsis robusta	robust false lupine	None	None	S2	1B.2
Tiarella trifoliata var. *trifoliata*	trifoliate laceflower	None	None	S2S3	3.2
Triquetrella californica	coastal triquetrella	None	None	S2	1B.2
Usnea longissima	Methuselah's beard lichen	None	None	S4	4.2
Vaccinium scoparium	little-leaved huckleberry	None	None	S3	2B.2
Vancouveria chrysantha	Siskiyou inside-out-flower	None	None	S3	4.3
Veratrum insolitum	Siskiyou false-hellebore	None	None	S4	4.3
Viola langsdorffii	Langsdorf's violet	None	None	S1	2B.1
Viola palustris	alpine marsh violet	None	None	S1S2	2B.2
Viola primulifolia ssp. *occidentalis*	western white bog violet	None	None	S2	1B.2

Showing 1 to 137 of 137 entries

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Suggested Citation:
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		ESA ANADROMOUS FISH					ESA ANADROMOUS FISH CRITICAL HABITAT					ESA SEA TURTLES			ESA WHALES	ESSENTIAL FISH HABITAT				MMPA SPECIES	
Quad Name	Quad Number	Coho SONCC (T)	Chinook CC (T)	Steelhead NC (T)	Eulachon (T)	Southern DPS Green Sturgeon (T)	Coho SONCC (T)	Chinook CC (T)	Steelhead NC (T)	Eulachon (T)	Southern DPS Green Sturgeon (T)	East Pacific Green Sea Turtle (T)	Olive Ridley Sea Turtle (T/E)	Leatherback Sea Turtle (E)	Whales[1]	Coho	Chinook	Groundfish	Coastal Pelagic	MMPA Cetaceans[2]	MMPA Pinnipeds[3]
Ah Pah Ridge	41123-D8	X	X	X	X		X			X						X	X	X			
Cant Hook Mountain	41123-F8	X					X									X	X				
Childs Hill	41124-F1	X			X	X	X				X	X	X	X	X	X	X	X	X	X	X
Crescent City	41124-G2	X			X	X	X				X	X	X	X	X	X	X	X	X	X	X
Fern Canyon	41124-D1	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Gasquet	41123-G8	X					X									X	X				
Hiouchi	41124-G1	X					X									X	X				
Klamath Glen	41123-E8	X			X		X			X						X	X	X			
Requa	41124-E1	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
Sister Rocks	41124-F2	X			X	X	X				X	X	X	X	X	X	X	X	X	X	X

Source: NMFS Unofficial Species Tool, queried July 28, 2022, January 23, 2023 and February 9, 2026

CC= California Coastal
DPS= Distinct Population Segment
E= Endangered Species Act Endangered
ESA= Federal Endangered Species Act
MMPA= Marine Mammal Protection Act
NC= Northern California
SONCC= Southern Oregon /Northern California Coast
T= Endangered Species Act Threatened

[1] ESA whales include: blue whale (E), fin whale (E), humpback whale (E), southern resident killer whale (E), North Pacific right whale (E), sei whale (E), sperm whale (E).
[2] MMPA cetaceans include: Baird's Beaked Whale, Blue Whale (E), Cuvier's Beaked Whale, Dwarf Sperm Whale, False Killer Whale, Fin Whale (E), Gray Whale (Western North Pacific) (E), Gray Whale (Eastern North Pacific) (E), Hubb's Beaked Whale, Humpback Whale (E), Killer Whale (Southern Resident DPS) (E), Killer Whale, Minke Whale, North Pacific Right Whale (E), Pygmy Sperm Whale, Sei Whale (E), Short Finned Pilot Whale, Sperm Whale (E), Stejneger's Beaked Whale.
[3] MMPA pinnipeds include: Dall's Porpoise, Harbor Porpoise, Northern Right Whale Dolphin, Pacific White Sided Dolphin, Risso's Dolphin, Short Beaked Common Dolphin, Striped Dolphin, California Sea Lion, Guadalupe Fur Seal (T), Northern Elephant Seal, Northern Fur Seal, Pacific Harbor Seal, Steller Sea Lion.

NMFS Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To: 02/09/2026 17:24:50 UTC
Project Code: 2025-0078127
Project Name: 0F280 Last Chance Grade

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

PROJECT SUMMARY

Project Code: 2025-0078127
Project Name: 0F280 Last Chance Grade
Project Type: Road/Hwy - New Construction
Project Description: Last Chance Grade Project
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.627432400000004,-124.11127484411873,14z



Counties: Del Norte County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Pacific Marten, Coastal Dps *Martes caurina* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9081 General project design guidelines: https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf	Threatened

BIRDS

NAME	STATUS
California Condor *Gymnogyps californianus* Population: Pacific Northwest NEP No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8193 General project design guidelines: https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf	Experimental Population, Non-Essential
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467 General project design guidelines: https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf	Threatened
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123 General project design guidelines: https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf	Threatened
Short-tailed Albatross *Phoebastria (=Diomedea) albatrus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035 General project design guidelines: https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS	Threatened

NAME STATUS

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/3911
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf

REPTILES

NAME STATUS

Northwestern Pond Turtle *Actinemys marmorata* Proposed Threatened
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/1111
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf

FISHES

NAME STATUS

Tidewater Goby *Eucyclogobius newberryi* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/57
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf

INSECTS

NAME STATUS

Monarch Butterfly *Danaus plexippus* Proposed Threatened
There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/9743
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/O3KGEIZ2EFGJJJ2BR4ZYIW5IAM/documents/generated/11172.pdf

Suckley's Cuckoo Bumble Bee *Bombus suckleyi* Proposed Endangered
Population:
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/10885

CRITICAL HABITATS

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* https://ecos.fws.gov/ecp/species/4467#crithab	Final

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

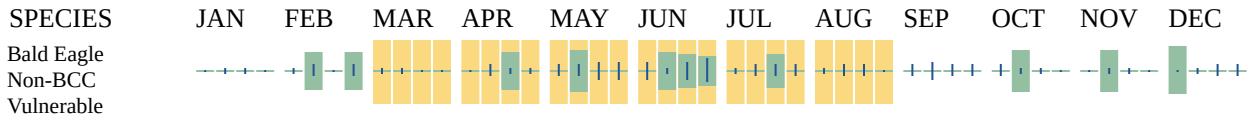
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird *Selasphorus sasin* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31

NAME	BREEDING SEASON
Black Oystercatcher *Haematopus bachmani* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	Breeds Apr 15 to Oct 31
Black Turnstone *Arenaria melanocephala* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10557	Breeds elsewhere
Black-vented Shearwater *Puffinus opisthomelas* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9623	Breeds elsewhere
Brandt's Cormorant *Urile penicillatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11903	Breeds Apr 15 to Sep 15
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10955	Breeds Mar 1 to Jul 31
Cassin's Auklet *Ptychoramphus aleuticus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6967	Breeds Mar 21 to Sep 21
Cassin's Finch *Haemorhous cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Chestnut-backed Chickadee *Poecile rufescens rufescens* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11913	Breeds Mar 1 to Jul 31
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10575	Breeds Jun 1 to Aug 31
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere

NAME	BREEDING SEASON
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Oregon Vesper Sparrow *Pooecetes gramineus affinis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/5141	Breeds Apr 21 to Aug 31
Rufous Hummingbird *Selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Tufted Puffin *Fratercula cirrhata* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/430	Breeds May 5 to Oct 5
Western Grebe *Aechmophorus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Western Gull *Larus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11969	Breeds Apr 21 to Aug 25
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds elsewhere
Wrentit *Chamaea fasciata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10668	Breeds Mar 15 to Aug 10

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

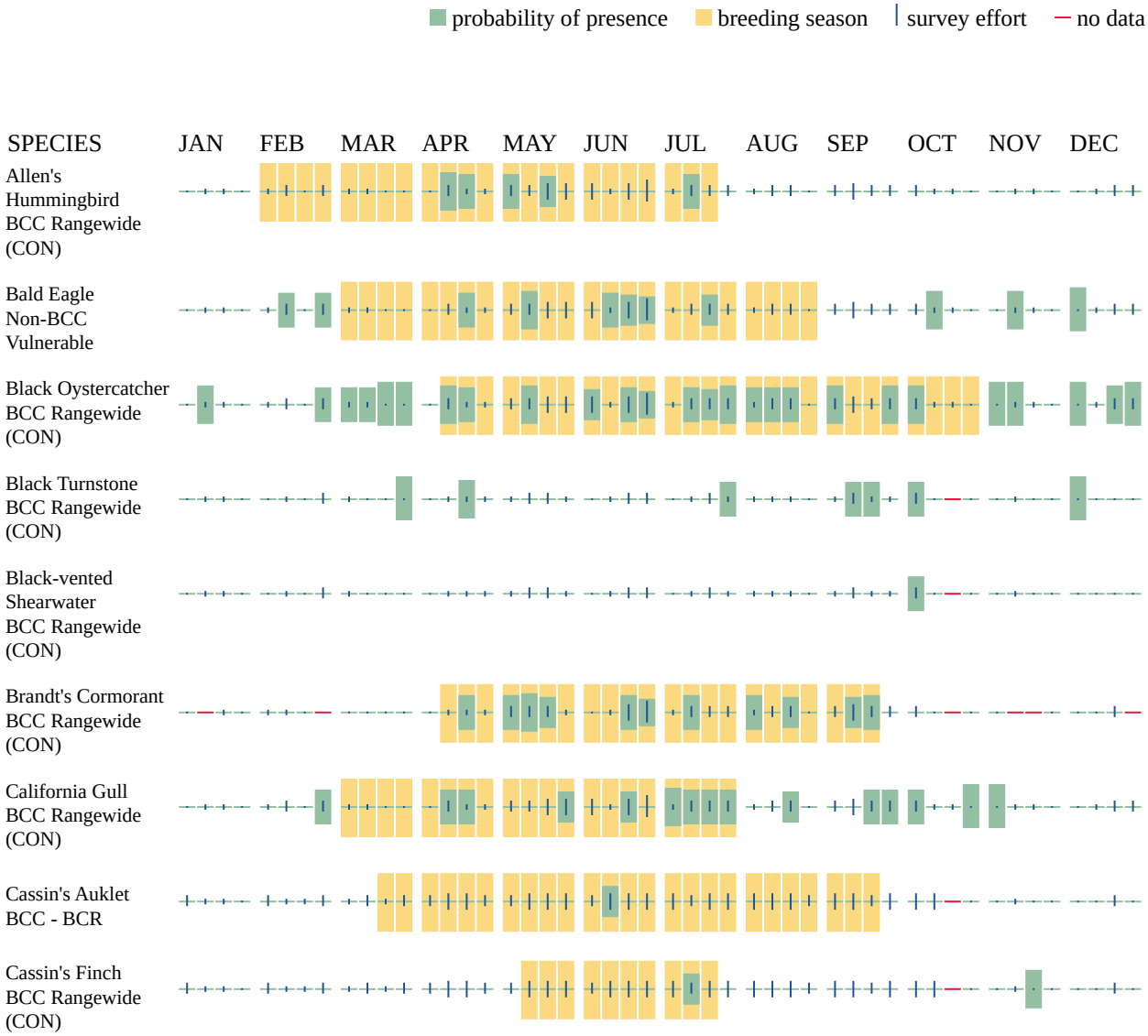
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

ESTUARINE AND MARINE WETLAND

- M2RSN
- M2RSP

RIVERINE

- R4SBC

IPAC USER CONTACT INFORMATION

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APPENDIX H. Special-Status Plant Species with the Potential to Occur in the Project Vicinity



Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
VASCULAR PLANTS						
pink sand-verbena	*Abronia umbellata* var. *breviflora*	--/--/1B.1	Jun–Oct	Coastal dunes. Foredunes and interdunes with sparse cover. This species is usually the plant closest to the ocean. Elevational range: 0–35 feet (0–11 meters)	A	None
sea-watch	*Angelica lucida*	--/--/4.2	Apr–Sep	Coastal bluff scrub, coastal dunes, coastal scrub, marshes and swamps (coastal salt). Often along the edges of coastal backdunes and bluffs, edges of coastal marshes and riparian areas (creeks, rivers) close to the coast (J. Barrett, pers. obs.). Elevational range: 0–490 feet (0–149 meters)	P	Present
evergreen everlasting	*Antennaria suffrutescens*	--/--/4.3	Jan–Jul	Lower montane coniferous forest (serpentinite). Dry, open conifer woodland, serpentine barrens (Jepson Flora Project 2021). Elevational range: 1,640–5,250 feet (500–1,600 meters)	A	None
vanilla-grass	*Anthoxanthum nitens* ssp. *nitens*	--/--/2B.3	Apr–Jul	Meadows and seeps (mesic). Wet sites. Elevational range: 4,920–6,215 feet (1,500–1,894 meters)	HP	Low
McDonald's rockcress	*Arabis mcdonaldiana*	FE/SE/1B.1	May–Jul	Lower montane coniferous forest, upper montane coniferous forest. Rocky outcrops, ridges, slopes, and flats on serpentine. Elevational range: 440–5,905 feet (134–1,800 meters)	A	None
Howell's manzanita	*Arctostaphylos hispidula*	--/--/4.2	Mar–Apr	Chaparral (serpentinite or sandstone). Elevational range: 390–4,100 feet (119–1,250 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Del Norte manzanita	*Arctostaphylos nortensis*	--/--/4.3	Feb	Chaparral, lower montane coniferous forest. Often serpentinite. Elevational range: 1,640–2,625 feet (500–800 meters)	A	None
serpentine arnica	*Arnica cernua*	--/--/4.3	Apr–Jul	Lower montane coniferous forest (serpentinite). Elevational range: 1,640–6,300 feet (500–1,920 meters)	A	None
Klamath arnica	*Arnica spathulata*	--/--/4.3	May–Aug	Lower montane coniferous forest (serpentinite). Elevational range: 2,095–5,905 feet (639–1,800 meters)	A	None
maidenhair spleenwort	*Asplenium trichomanes* ssp. *trichomanes*	--/--/2B.1	May–Jul	Lower montane coniferous forest (rocky). On rocks. Elevational range: 605–655 feet (184–200 meters)	A	None
Koehler's stipitate rockcress	*Boechera koehleri*	--/--/1B.3	(Mar) Apr–Jul	Chaparral, lower montane coniferous forest. Rocky, serpentine substrate. Elevational range: 505–5,445 feet (154–1,670 meters)	A	None
Bolander's reed grass	*Calamagrostis bolanderi*	--/--/4.2	May–Aug	Bogs and fens, broadleaf upland forest, closed-cone coniferous forest, coastal scrub, meadows and seeps (mesic), marshes and swamps (freshwater), North Coast coniferous forest. Peatland, marshes, wet meadows in forest, coastal scrub, and prairie (Jepson Flora Project 2021). Elevational range: 0–1,495 feet (0–456 meters)	HP	Moderate
Thurber's reed grass	*Calamagrostis crassiglumis*	--/--/2B.1	May–Aug	Coastal scrub (mesic), marshes and swamps (freshwater). Usually in marshy swales surrounded by grassland or coastal scrub. Elevational range: 30–195 feet (9–59 meters)	HP	Low

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Leafy reed grass	*Calamagrostis foliosa*	--/SR/4.2	May–Sep	Coastal bluff scrub, North Coast coniferous forest. Rocky cliffs and ocean-facing bluffs. Elevational range: 0–4,005 feet (0–1,221 meters)	HP	Low
Alaska cedar	*Callitropsis nootkatensis*	--/--/4.3	N/A	Upper montane coniferous forest. Cool, moist, forested, well-drained mountain slopes (Jepson Flora Project 2021). Elevational range: 2,130–8,200 feet (649–2,499 meters)	A	None
Butte County morning-glory	*Calystegia atriplicifolia* ssp. *buttensis*	--/--/4.2	May–Jul	Chaparral, lower montane coniferous forest, valley and foothill grassland. Rocky, sometimes roadsides; dry, mostly open slopes; rocky substrates. Elevational range: 1,850–5,000 feet (564–1,524 meters)	A	None
seaside bittercress	*Cardamine angulata*	--/--/2B.2	(Jan) Mar–Jul	Lower montane coniferous forest, North Coast coniferous forest. Wet areas, streambanks; often within riparian forests dominated by mature, undisturbed big-leaf maple or red alder trees (J. Barrett, pers. obs.). Elevational range: 80–3,000 feet (24–914 meters)	P	Present
yellow-tubered toothwort	*Cardamine nuttallii* var. *gemmata*	--/--/3.3	Apr–May (Jun)	Lower montane coniferous forest, North Coast coniferous forest. On serpentine in a variety of aspects. Elevational range: 325–2,295 feet (99–700 meters)	A	None
northern clustered sedge	*Carex arcta*	--/--/2B.2	Jun–Sep	Bogs and fens, North Coast coniferous forest (mesic). Mesic sites, especially sphagnum bogs (Jepson Flora Project 2021). Elevational range: 195–4,595 feet (59–1,401 meters)	HP	Low

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Buxbaum's sedge	*Carex buxbaumii*	--/--/4.2	Mar–Aug	Bogs and fens, meadows and seeps (mesic), marshes and swamps. Bogs, peatland, wet meadows (Jepson Flora Project 2021); generally, not in running water (Wilson et al. 2008). Elevational range: 5–10,825 feet (2–3,299 meters)	A	None
lagoon sedge	*Carex lenticularis* var. *limnophila*	--/--/2B.2	Jun–Aug	Bogs and fens, marshes and swamps, North Coast coniferous forest. Lakeshores, beaches. Often in gravelly substrates. Elevational range: 0–20 feet (0–6 meters)	A	None
bristle-stalked sedge	*Carex leptalea*	--/--/2B.2	Mar–Jul	Bogs and fens, meadows and seeps (mesic), marshes and swamps. Mostly known from bogs and wet meadows; often under dense willow thickets in Pacific Northwest (Wilson et al. 2008). Elevational range: 0–2,295 (0–700 meters)	HP	Low
Lyngbye's sedge	*Carex lyngbyei*	--/--/2B.2	Apr–Aug	Marshes and swamps (brackish or freshwater). Coastal brackish and freshwater marshes and estuaries, edges of river mouths. Elevational range: 0–35 feet (0–11 meters)	A	None
northern meadow sedge	*Carex praticola*	--/--/2B.2	May–Jul	Meadows and seeps (mesic). Moist to wet meadows, forest openings, areas of low disturbance (Wilson et al. 2008). Elevational range: 0–10,500 feet (0–3,200 meters)	HP	Low
deceiving sedge	*Carex saliniformis*	--/--/1B.2	May–Jun (Jul)	Coastal prairie, coastal scrub, meadows and seeps, marshes and swamps (coastal salt). Mesic sites; marshes, pond shores, wet openings (Jepson Flora Project 2021). Elevational range: 5–755 feet (2–230 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Siskiyou sedge	*Carex scabriuscula*	--/--/4.3	May–Jul	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. Mesic, sometimes serpentinite seeps. Elevational range: 2,325–7,695 feet (709–2,428 meters)	A	None
serpentine sedge	*Carex serpenticola*	--/--/2B.3	Mar–May	Meadows and seeps (mesic, serpentinite). Elevational range: 195–3,935 feet (59–1,199 meters)	A	None
Sheldon's sedge	*Carex sheldonii*	--/--/2B.2	May–Aug	Lower montane coniferous forest (mesic), marshes and swamps (freshwater), riparian scrub. Wet places (confirmed records only reported from the northern Sierra Nevada). Elevational range: 3,937–6,601 feet (1,200–2,012 meters)	A	None
green yellow sedge	*Carex viridula* ssp. *viridula*	--/--/2B.3	(Jun) Jul–Sep (Nov)	Bogs and fens, marshes and swamps (freshwater), North Coast coniferous forest (mesic). Variety of mesic habitats including fens and bogs. Elevation range: 0–5,250 feet (0–1,600 meters)	HP	Low
Nuttall's saxifrage	*Cascadia nuttallii*	--/--/2B.1	May	North Coast coniferous forest (mesic, rocky) Cliff walls, moss-covered rocks along creeks; mesic sites. Elevation range: 130–245 feet (40–75 meters)	HP	Low
johnny-nip	*Castilleja ambigua* ssp. *ambigua*	--/--/4.2	Mar–Aug	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margin Coastal bluffs, grassland (Jepson Flora Project 2021). Elevation range: 0–1,427 feet (0–435 meters)	HP	Low
Humboldt Bay owl's-clover	*Castilleja ambigua* ssp. *humboldtiensis*	--/--/1B.2	Apr–Aug	Marshes and swamps (coastal salt). In coastal saltmarsh with *Spartina, Distichlis, Salicornia, Jaumea.* Elevation range: 0–10 feet (0–3 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
short-lobed paintbrush	*Castilleja brevilobata*	--/--/4.2	Apr–Jul	Lower montane coniferous forest (serpentinite, edges and openings). Dry, open serpentine, forest edges (Jepson Flora Project 2021). Elevation range: 390–5,575 feet (94–1,700 meters)	A	None
Siskiyou paintbrush	*Castilleja elata*	--/--/2B.2	May–Aug	Bogs and fens, lower montane coniferous forest (seeps). Usually found on mesic serpentine soils; often associated with bogs, seeps, stream benches, and dry gullies. Elevation range: 0–5,740 feet (0–1,750 meters)	A	None
Oregon coast paintbrush	*Castilleja litoralis*	--/--/2B.2	Jun–Jul	Coastal bluff scrub, coastal dunes, coastal scrub. Generally dry sea bluffs (Jepson Flora Project 2021), sandy sites, coastal bluff scrub. Elevation range: 45–330 feet (14–101 meters)	HP	Moderate
Pacific golden saxifrage	*Chrysosplenium glechomifolium*	--/--/4.3	Feb–Jun (Jul)	North Coast coniferous forest, riparian forest. Streambanks, sometimes seeps, sometimes roadsides. Elevation range: 30–2,100 feet (9–640 meters)	P	Present
Greenland cochlearia	*Cochlearia groenlandica*	--/--/2B.3	May–Jul	Coastal bluff scrub (on basaltic sea stack). Sea bird nesting areas on offshore rocks. Elevation range: 0–165 feet (0–50 meters)	A	None
Oregon goldthread	*Coptis laciniata*	--/--/4.2	(Feb) Mar–May (Sep–Nov)	Meadows and seeps, North Coast coniferous forest (streambanks). Mesic sites such as moist streambanks. Elevation range: 0–3,280 feet (0–1,000 meters)	HP	Low
California lady's-slipper	*Cypripedium californicum*	--/--/4.2	Apr–Aug (Sep)	Bogs and fens, lower montane coniferous forest. Seeps and streambanks, usually serpentinite. Elevation range: 95–9,020 feet (29–2,749 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
mountain lady's-slipper	*Cypripedium montanum*	--/--/4.2	Mar–Aug	Broadleaf upland forest, cismontane woodland, lower montane coniferous forest, North Coast coniferous forest. Moist areas, dry slopes, mixed-evergreen or conifer forest (excluding North Coast) (Jepson Flora Project 2021). Elevation range: 605–7,300 feet (184–2,225 meters)	A	None
California pitcherplant	*Darlingtonia californica*	--/--/4.2	Apr–Aug	Bogs and fens, meadows and seeps. Mesic, generally serpentinite seeps. Elevation range: 0–8,480 (0–2,585 meters)	A	None
Oregon bleeding heart	*Dicentra formosa* ssp. *oregana*	--/--/4.2	Apr–May	Lower montane coniferous forest (serpentinite). Damp, shaded areas (Jepson Flora Project 2021). Elevation range: 1,390–4,870 (424–1,484 meters)	A	None
Siskiyou aster	*Doellingeria glabrata* (synonym *Eucephalus glabratus*)	--/--/4.3	Jul–Sep	Lower montane coniferous forest, upper montane coniferous forest. Rocky openings. Elevation range: 390–8,875 feet (119–2,705 meters)	A	None
Cascade downingia	*Downingia willamettensis*	--/--/2B.2	Jun–Jul (Sep)	Cismontane woodland (lake margins), valley and foothill grassland (lake margins), vernal pools. Elevation range: 45–3,640 feet (14–1,109 meters)	A	None
small spikerush	*Eleocharis parvula*	--/--/4.3	(Apr) Jun–Aug (Sep)	Marshes and swamps. Brackish wet soil, coastal (Jepson Flora Project 2021). Elevation range: 3–9,908 feet (1–3,020 meters)	A	None
black crowberry	*Empetrum nigrum*	--/--/2B.2	Apr–Jun	Coastal bluff scrub, coastal prairie. Rocks on coastal cliffs (Jepson Flora Project 2021). Elevation range: 30–655 feet (9–199 meters)	HP	Low
Siskiyou Mountains willowherb	*Epilobium rigidum*	--/--/4.3	Jul–Aug	Lower montane coniferous forest (serpentinite). Dry, open places, dry streambeds, sometimes on serpentine-like soils (Jepson Flora Project 2021). Elevation range: 492–3,937 feet (150–1,200 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Waldo daisy[4]	*Erigeron bloomeri* var. *nudatus*	--/--/2B.3	Jun–Jul	Lower montane coniferous forest, upper montane coniferous forest. Serpentinite. Often on roadsides, sometime on ridges, streambanks, and in openings. Elevation range: 1,965–7,545 feet (599–2,230 meters)	A	None
Siskiyou daisy	*Erigeron cervinus*	--/--/4.3	Jun–Aug	Lower montane coniferous forest, meadows and seeps. Open, rocky slopes, meadows, forest (Jepson Flora Project 2021). Elevational range: 80–6,235 feet (24–1,900 meters)	A	None
Del Norte buckwheat	*Eriogonum nudum* var. *paralinum*	--/--/2B.2	Jun, Aug, Sep	Coastal bluff scrub, coastal prairie. Open places along immediate coast. Elevation range: 15–260 feet (5–79 meters)	HP	Low
Waldo wild buckwheat	*Eriogonum pendulum*	--/--/2B.2	Aug–Sep	Lower montane coniferous forest, upper montane coniferous forest. On dry, rocky ultramafic soils; open somewhat grassy areas within pine forest. Elevation range: 750–3,280 feet (229–1,000 meters)	A	None
ternate buckwheat	*Eriogonum ternatum*	--/--/4.3	Jun–Aug	Lower montane coniferous forest (serpentinite). Elevation range: 1,001–7,300 feet (305–2,225 meters)	A	None
bluff wallflower	*Erysimum concinnum*	--/--/1B.2	Feb–Jul	Coastal bluff scrub, coastal dunes, coastal prairie. More or less a coastal generalist within coastal habitat types. Elevation range: 0–605 feet (0–185 meters)	HP	Low
lemon-colored fawn lily	*Erythronium citrinum* var. *citrinum*	--/--/4.3	Mar–May	Chaparral, lower montane coniferous forest. Dry woodland, shrubby slopes (usually serpentinite). Elevation range: 490–4,265 feet (150–1,300 meters)	A	None
Henderson's fawn lily	*Erythronium hendersonii*	--/--/2B.3	Apr–Jul	Lower montane coniferous forest. Openings in dry woodland (Jepson Flora Project 2021). Elevation range: 980–5,250 (299–1,600 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Howell's fawn lily	*Erythronium howellii*	--/--/1B.3	Apr–May	Lower montane coniferous forest, North Coast coniferous forest. Sometimes serpentinite. Elevation range: 655–3,755 feet (200–1,145 meters)	A	None
giant fawn lily	*Erythronium oregonum*	--/--/2B.2	Mar–Jun (Jul)	Cismontane woodland, meadows and seeps. Openings. Sometimes on serpentine; rocky sites. Elevation range: 325–3,775 (99–1,151 meters)	A	None
coast fawn lily	*Erythronium revolutum*	--/--/2B.2	Mar–Jul (Aug)	Bogs and fens, broadleaf upland forest, North Coast coniferous forest. Mesic sites; streambanks. Elevation range: 0–5,250 feet (0–1,600 meters)	HP	Moderate
Mendocino gentian	*Gentiana setigera*	--/--/1B.2	(Apr–Jul) Aug-Sep	Lower montane coniferous forest, meadows, seeps, and bogs. Serpentine substrates. Elevation range: 1,095–3,495 feet (334–1,065 meters)	A	None
Pacific gilia	*Gilia capitata* ssp. *pacifica*	--/--/1B.2	Apr–Aug	Coastal bluff scrub, chaparral (openings), coastal prairie, valley and foothill grassland. Steep slopes, ravines, open flats, or coastal bluffs, grassland, and dunes (Jepson Flora Project 2021). Elevation range: 15–5,465 feet (5–1,666 meters)	HP	Low
dark-eyed gilia	*Gilia millefoliata*	--/--/1B.2	Apr–Jul	Coastal dunes. Stabilized coastal dunes (Jepson Flora Project 2021). Elevation range: 0–100 feet (0–30 meters)	A	None
American glehnia	*Glehnia littoralis* ssp. *leiocarpa*	--/--/4.2	May–Aug	Coastal dunes. Elevation range: 0–65 feet (0–20 meters)	A	None
short-leaved evax	*Hesperevax sparsiflora* var. *brevifolia*	--/--/1B.2	Mar–Jun	Coastal bluff scrub (sandy), coastal dunes, coastal prairie. Elevation range: 0–705 feet (0–215 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Josephine horkelia	*Horkelia congesta* var. *nemorosa*	--/--/2B.1	May–Jul	North Coast coniferous forest (clay, serpentinite seeps). Vernally moist, rocky clay, generally serpentine (Jepson Flora Project 2021). Elevation range: 984–2,625 feet (300–800 meters)	A	None
Howell's horkelia	*Horkelia sericata*	--/--/4.3	Jun–Aug	Chaparral, lower montane coniferous forest. Elevation range: 195–4,200 feet (59–1,280 meters)	A	None
harlequin lotus	*Hosackia gracilis*	--/--/4.2	Mar–Jul	Broadleaf upland forest, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, coastal scrub, meadows and seeps, marshes and swamps, North Coast coniferous forest, valley and foothill grassland. Wetlands, roadsides. Elevation range: 0–2,295 feet (0–700 meters)	HP	Low
California globe mallow	*Iliamna latibracteata*	--/--/1B.2	Jun–Aug	Chaparral (montane), lower montane coniferous forest, North Coast coniferous forest (mesic), riparian scrub (streambanks). Often in burned areas. Seepage areas in silty clay loam. Elevation range: 195–6,560 feet (59–1,999 meters)	HP	Low
Siskiyou iris	*Iris bracteata*	--/--/3.3	May–Jun	Broadleaf upland forest, lower montane coniferous forest. Serpentinite. Elevation range: 590–3,510 feet (180–1,070 meters)	A	None
Del Norte County iris	*Iris innominata*	--/--/4.3	May–Jun	Lower montane coniferous forest (serpentinite). Open or partly shaded slopes with well-drained soil. Elevation range: 980–6,560 feet (299–1,999 meters)	A	None
Orleans iris	*Iris tenax* ssp. *klamathensis*	--/--/4.3	Apr–May	Lower montane coniferous forest (often in disturbed areas). Shaded mixed-evergreen forest. Elevation range: 325–4,595 feet (99–1,401 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Thompson's iris	*Iris thompsonii*	--/--/4.3	(Mar–Apr) May–Jun (Jul–Aug)	Lower montane coniferous forest, North Coast coniferous forest. Openings, usually mesic, often serpentinite, often edges, sometimes roadsides and streambanks. Elevation range: 295–1,970 feet (90–600 meters)	A	None
small groundcone	*Kopsiopsis hookeri*	--/--/2B.3	Apr–Aug	North Coast coniferous forest. Open woods, shrubby places, generally on Gaultheria shallon. Elevation range: 295–2,905 (90–885 meters)	HP	Moderate
perennial goldfields	*Lasthenia californica* ssp. *macrantha*	--/--/1B.2	Jan–Nov	Coastal bluff scrub, Coastal dunes, coastal scrub. Grasslands and dunes along immediate coast (Jepson Flora Project 2021). Elevation range: 15–1,705 feet (5–520 meters)	HP	Low
Del Norte pea	*Lathyrus delnorticus*	--/--/4.3	Jun–Jul	Lower montane coniferous forest, North Coast coniferous forest. Often serpentinite. Elevation range: 95–4,755 feet (29–1,449 meters)	A	None
seaside pea	*Lathyrus japonicus*	--/--/2B.1	May–Aug	Coastal dunes. Coastal beaches and dunes (Jepson Flora Project 2021). Elevation range: 0–100 feet (0–30 meters)	A	None
marsh pea	*Lathyrus palustris*	--/--/2B.2	Mar–Aug	Bogs and fens, coastal prairie, coastal scrub, lower montane coniferous forest, marshes and swamps, North Coast coniferous forest. Moist coastal areas. Elevation range: 0–330 feet (0–101 meters)	HP	Low
beach layia	*Layia carnosa*	FT/SE/1B.1	Mar–Jul	Coastal dunes, coastal scrub (sandy). On sparsely vegetated, semi-stabilized dunes, usually behind foredunes. Elevation range: 0–195 feet (0–59 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
bristly leptosiphon	*Leptosiphon acicularis*	--/--/4.2	Apr–Jul	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Grassy areas, woodland, chaparral (Jepson Flora Project 2021). Elevation range: 180–4,921 feet (55–1,500 meters)	HP	Low
broad-lobed leptosiphon	*Leptosiphon latisectus*	--/--/4.3	Apr–Jun	Broadleaf upland forest, cismontane woodland. Open or partially shaded grassy slopes (Jepson Flora Project 2021). Elevation range: 558–4,921 feet (170–1,500 meters)	A	None
opposite-leaved lewisia	*Lewisia oppositifolia*	--/--/2B.2	Apr–May (Jun)	Lower montane coniferous forest (mesic). In open, rocky, shallow soils; usually on decomposed serpentine. Mesic sites. Elevation range: 980–4,005 (299–1,221 meters)	A	None
Bolander's lily	*Lilium bolanderi*	--/--/4.2	Jun–Jul	Chaparral, lower montane coniferous forest. Serpentinite. Elevation range: 95–5,250 feet (29–1,600 meters)	A	None
Kellogg's lily	*Lilium kelloggii*	--/--/4.3	May–Aug	Lower montane coniferous forest, North Coast coniferous forest. Openings, roadsides. Elevation range: 5–4,265 feet (2–1,300 meters)	HP	Low
western lily	*Lilium occidentale*	FE/SE/1B.1	Jun–Jul	Bogs and fens, coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps (freshwater), North Coast coniferous forest (openings). Well-drained, old beach washes overlain with wind-blown alluvium and organic topsoil; usually near margins of Sitka spruce. Elevation range: 5–605 feet (2–184 meters)	HP	Low
Vollmer's lily	*Lilium pardalinum* ssp. *vollmeri*	--/--/4.3	(Jun) Jul–Aug	Bogs and fens, meadows and seeps (mesic). Peatland, springs and streams (Jepson Flora Project 2021). Elevation range: 95–5,510 feet (29–1,679 meters)	HP	Low

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
heart-leaved twayblade	*Listera cordata*	--/--/4.2	Feb–Jul	Bogs and fens, lower montane coniferous forest, North Coast coniferous forest. Moist, shady conifer forests (Jepson Flora Project 2021). Elevation range: 15–4,495 feet (5–1,370 meters)	HP	High
Howell's lomatium	*Lomatium howellii*	--/--/4.3	Apr–Jul	Chaparral, lower montane coniferous forest. Serpentinite. Elevation range: 360–5,595 feet (110–1,705 meters)	A	None
Coast Range lomatium	*Lomatium martindalei*	--/--/2B.3	May–Jun (Aug)	Coastal bluff scrub, lower montane coniferous forest, meadows and seeps. Bogs and seeps along creeks and on ridgetops, often on serpentine. Elevation range: 785–9,845 feet (239–3,001 meters)	A	None
inundated bog club-moss[4]	*Lycopodiella inundata*	--/--/2B.2	Jun–Sep	Bogs and fens (coastal), lower montane coniferous forest (mesic), marshes and swamps (lake margins). Peat bogs, muddy depressions, and pond margins (Jepson Flora Project 2021). Elevational range: 15–3,280 feet (4–1,000 meters)	HP	Low
running-pine	*Lycopodium clavatum*	--/--/4.1	Jun–Aug (Sep)	Lower montane coniferous forest (mesic), marshes and swamps, North Coast coniferous forest (mesic). Forest understory, edges, openings, roadsides; mesic sites with partial shade and light. Elevational range: 145–4,020 feet (44–1,226 meters)	HP	Moderate
arctic starflower	*Lysimachia europaea*	--/--/2B.2	Jun–Jul	Bogs and fens, meadows and seeps. Coastal boggy areas. Elevation range: 0–50 feet (0–15 meters)	HP	Low
Howell's saxifrage	*Micranthes howellii*	--/--/4.3	Mar–May	Cismontane woodland (sometimes serpentinite). Moist ledges, crevices. Elevation range: 246–2,953 feet (75–900 meters)	A	None
Marshall's saxifrage	*Micranthes marshallii*	--/--/4.3	Mar–Aug	Riparian forest. Rocky streambanks. Elevation range: 295–6,990 feet (90–2,131 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
leafy-stemmed mitrewort	*Mitellastra caulescens*	--/--/4.2	(Mar) Apr–Oct	Broadleaf upland forest, lower montane coniferous forest, meadows and seeps, North Coast coniferous forest. Mesic, sometimes roadsides. Elevation range: 15–5,575 feet (5–1,699 meters)	HP	High
woodnymph	*Moneses uniflora*	--/--/2B.2	May–Aug	Broadleaf upland forest, North Coast coniferous forest. Elevation range: 325–3,610 feet (99–1,100 meters)	HP	Moderate
ghost pipe	*Monotropa uniflora*	--/--/2B.2	Jun–Aug (Sep)	Broadleaf upland forest, North Coast coniferous forest. Often found growing under mature or old-growth Douglas-fir trees; also known to occur under coast redwoods or western hemlock. Elevation range: 30–1,805 feet (9–550 meters)	P	Present
Howell's montia	*Montia howellii*	--/--/2B.2	(Jan–Feb) Mar-May	Meadows and seeps, North Coast coniferous forest, vernal pools. Vernally mesic, sometimes roadsides; often on compacted soil; appears to do better in partly shaded sites rather than exposed sites (J. Barrett, pers. obs.). Elevation range: 0–2,740 feet (0–835 meters)	HP	Low
Wolf's evening-primrose	*Oenothera wolfii*	--/--/1B.1	May–Oct	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest. Sandy substrates; usually mesic sites. Elevation range: 5–2,625 feet (2–800 meters)	HP	Low
Suksdorf's wood-sorrel	*Oxalis suksdorfii*	--/--/4.3	May–Aug	Broadleaf upland forest, North Coast coniferous forest. Dry, shrubby or wooded areas, or grassy areas; often in open to partly shaded areas along trails and roadsides (J. Barrett, pers. obs.). Elevation range: 45–2,295 feet (14–700 meters)	P	Present
seacoast ragwort	*Packera bolanderi* var. *bolanderi*	--/--/2B.2	(Jan–Apr) May–Jul (Aug)	Coastal scrub, North Coast coniferous forest. Sometimes along roadsides. Elevation range: 95–2,135 feet (29–651 meters)	HP	Moderate

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
western ragwort	*Packera hesperia*	--/--/2B.2	Apr–Jun	Meadows and seeps, upper montane coniferous forest. Serpentine. Elevation range: 1,640–8,200 feet (500–2,499 meters)	A	None
Siskiyou Mountains ragwort	*Packera macounii*	--/--/4.3	Jun–Jul	Chaparral, lower montane coniferous forest. Sometimes serpentinite, often in disturbed areas. Elevation range: 1,310–3,000 feet (399–914 meters)	A	None
Gairdner's yampah	*Perideridia gairdneri* ssp. *gairdneri*	--/--/4.2	Jun–Oct	Broadleaf upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools. Vernally mesic. Elevation range: 0–2,000 feet (0–610 meters)	HP	Low
sand dune phacelia	*Phacelia argentea*	FCT/--/1B.1	Jun–Aug	Coastal dunes. Stabilized and recently moving sand dunes. Elevation range: 5–80 feet (2–24 meters)	A	None
horned butterwort	*Pinguicula macroceras*	--/--/2B.2	Apr–Jun	Bogs and fens (serpentinite). Meadow edges, seepage areas. Serpentine soil. Elevation range: 130–6,300 feet (40–1,920 meters)	A	None
white-flowered rein orchid	*Piperia candida*	--/--/1B.2	(Mar) May–Sep	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest. Sometimes on serpentine. Forest duff, mossy banks, rock outcrops, and muskeg. Elevation range: 95–4,300 feet (29–1,311 meters)	A	None
California pinefoot	*Pityopus californicus*	--/--/4.2	(Mar–Apr) May–Aug	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest. Mesic. Elevation range: 45–7,300 feet (14–2,225 meters)	HP	High

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
nodding semaphore grass	*Pleuropogon refractus*	--/--/4.2	(Mar) Apr–Aug	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest, riparian forest. Mesic. Elevation range: 0–5,250 feet (0–1,600 meters)	P	Present
Piper's blue grass	*Poa piperi*	--/--/4.3	Apr–May	Chaparral, lower montane coniferous forest (rocky, serpentinite). Elevation range: 330–4,790 feet (100–1,460 meters)	A	None
timber blue grass	*Poa rhizomata*	--/--/4.3	Apr–May	Lower montane coniferous forest (often serpentinite). Shady moist slopes in forest, in rich loose soils, on ultramafic substrates (Jepson Flora Project 2021). Elevation range: 490–3,280 feet (149–1,600 meters)	A	None
Oregon polemonium	*Polemonium carneum*	--/--/2B.2	Apr–Sep	Coastal prairie, coastal scrub, lower montane coniferous forest. Moist to dry, open areas (Jepson Flora Project 2021). Elevation range: 0–6,005 feet (0–1,830 meters)	HP	High
fibrous pondweed	*Potamogeton foliosus* ssp. *fibrillosus*	--/--/2B.3	unknown	Marshes and swamps (assorted shallow freshwater). Shallow water, small streams. Elevation range: 15–4,265 feet (5–1,300 meters)	A	None
beautiful shootingstar	*Primula pauciflora*	--/--/4.2	Apr–Jun	Great Basin scrub, meadows and seeps, pinyon and juniper woodland. Wet meadows. Elevation range: 3,281–7,808 feet (1,000–2,380 meters)	A	None
Siskiyou bells	*Prosartes parvifolia*	--/--/1B.2	May–Sep	Lower montane coniferous forest, upper montane coniferous forest. Occurs in disturbed and undisturbed sites, but mostly productive roadsides, disturbed areas, and burned areas. Elevation range: 2,295–5,005 feet (700–1,526 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Del Norte pyrrocoma	*Pyrrocoma racemosa* var. *congesta*	--/--/2B.3	Aug–Sep	Chaparral, lower montane coniferous forest. Serpentine soils, from dry roadsides to damp hills; often in forest openings. Apparently equally likely to occur in wetlands or non-wetlands. Elevation range: 655–3,280 feet (200–1,000 meters)	A	None
white beaked-rush	*Rhynchospora alba*	--/--/2B.2	Jun–Aug	Bogs and fens, meadows and seeps, marshes and swamps (freshwater). Boggy open sites (Jepson Flora Project 2021). Elevation range: 197–6,693 feet (60–2,040 meters)	A	None
trailing black currant	*Ribes laxiflorum*	--/--/4.3	Mar–Jul (Aug)	North Coast coniferous forest. Sometimes roadsides. Elevation range: 15–4,575 feet (5–1,394 meters)	HP	High
Tracy's romanzoffia	*Romanzoffia tracyi*	--/--/2B.3	Mar–May	Coastal bluff scrub, coastal scrub. Rocky sites. Elevation range: 45–100 feet (14–30 meters)	HP	Low
Gasquet rose	*Rosa gymnocarpa* var. *serpentina*	--/--/1B.3	Apr–Jun (Aug)	Chaparral, cismontane woodland. Serpentinite. Often on roadsides, sometime on ridges, streambanks, and in openings. Elevation range: 1,310–5,660 feet (399–1,725 meters)	A	None
Howell's sandwort	*Sabulina howellii*	--/--/1B.3	Apr–Jul	Chaparral, lower montane coniferous forest. Dry open places, often on serpentine hillsides and ridges, near Jeffrey pines. Elevation range: 1,800–3,280 feet (549–1,000 meters)	A	None
Sanford's arrowhead	*Sagittaria sanfordii*	--/--/1B.2	May–Oct (Nov)	Marshes and swamps (assorted shallow freshwater). In standing or slow-moving freshwater ponds, marshes, and ditches. Elevation range: 0–2,135 feet (0–651 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Del Norte willow	*Salix delnortensis*	--/--/4.3	Apr–May	Riparian forest (serpentinite). Elevation range: 295–1,640 feet (90–500 meters)	A	None
great burnet	*Sanguisorba officinalis*	--/--/2B.2	Jul–Oct	Bogs and fens, broadleaf upland forest, meadows and seeps, marshes and swamps, North Coast coniferous forest, riparian forest. Rocky serpentine seepage areas and along stream. Elevation range: 195–4,595 feet (59–1,401 meters)	A	None
Peck's sanicle	*Sanicula peckiana*	--/--/4.3	Mar–Jun	Chaparral, lower montane coniferous forest. Often serpentinite. Elevation range: 490–2,625 feet (149–800 meters)	A	None
Blue Creek stonecrop	*Sedum citrinum*	--/--/1B.2	Jun	North Coast coniferous forest. Serpentinite, rocky; talus, scree, or boulder crevices, sometimes roadsides. Serpentinite. Elevation range: 3,440–4,200 feet (1,049–1,280 meters)	A	None
Smith River stonecrop	*Sedum patens*	--/--/1B.2	May–Jul	Lower montane coniferous forest. Ultramafic, openings, rock crevices, rocky sites, and talus. Elevation range: 295–690 feet (90–210 meters)	A	None
Del Norte checkerbloom	*Sidalcea elegans*	--/--/3.3	May–Jul	Chaparral, lower montane coniferous forest. Elevation range: 705–4,480 (215–1,366 meters)	A	None
maple-leaved checkerbloom	*Sidalcea malachroides*	--/--/4.2	(Mar) Apr–Aug	Broadleaf upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, riparian woodland. Woodlands and clearings near coast; often in disturbed areas. Elevation range: 0–2,395 feet (0–730 meters)	HP	High
Siskiyou checkerbloom	*Sidalcea malviflora* ssp. *patula*	--/--/1B.2	(Mar) May–Aug	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest. Open coastal forest; roadcuts. Elevation range: 45–2,885 feet (14–880 meters)	HP	Moderate

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
coast checkerbloom	*Sidalcea oregana* ssp. *eximia*	--/--/1B.2	Jun–Aug	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest. Near meadows, in gravelly soil. Elevation range: 15–4,395 feet (5–1,340 meters)	HP	Moderate
Hooker's catchfly	*Silene hookeri*	--/--/2B.2	(Mar) May–Jul	Chaparral, cismontane woodland, lower montane coniferous forest. Often in grassy openings. Sometimes rocky, serpentinite, slopes. Elevation range: 490–4,135 feet (150–1,260 meters)	A	None
Scouler's catchfly	*Silene scouleri* ssp. *scouleri*	--/--/2B.2	(Mar–May) Jun–Aug (Sep)	Coastal bluff scrub, coastal prairie, valley and foothill grassland. Rocky slopes, coastal bluffs (Jepson Flora Project 2021). Elevation range: 0–1,970 feet (0–600 meters)	HP	Low
serpentine catchfly	*Silene serpentinicola*	--/--/1B.2	May–Jul	Chaparral, lower montane coniferous forest. Serpentine openings, gravelly or rocky soils. Elevation range: 475–5,415 feet (145–1,650 meters)	A	None
Howell's jewelflower	*Streptanthus howellii*	--/--/1B.2	Jul–Aug	Lower montane coniferous forest (serpentinite, rocky). Dry serpentine slopes, in open pine woods or in brushy areas; on rocky soil. Elevation range: 1,000–4,920 feet (305–1,500 meters)	A	None
glaucous tauschia	*Tauschia glauca*	--/--/4.3	Apr–Jun	Lower montane coniferous forest (gravelly, serpentinite). Often serpentinite (J. Barrett, pers. obs.). Elevation range: 260–5,575 feet (79–1,699 meters)	A	None
robust false lupine	*Thermopsis robusta*	--/--/1B.2	May–Jul	Broadleaf upland forest, North Coast coniferous forest. Ridgetops; sometimes on serpentine. Elevation range: 490–4,920 feet (149–1,500 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
trifoliate laceflower	*Tiarella trifoliata* var. *trifoliata*	--/--/3.2	(May) Jun–Aug	Lower montane coniferous forest, North Coast coniferous forest. Edges, moist shady banks, streambanks. Elevation range: 555–4,920 feet (169–1,500 meters)	HP	Moderate
little-leaved huckleberry	*Vaccinium scoparium*	--/--/2B.2	Jun–Aug	Subalpine coniferous forest (rocky). Rocky, subalpine woods. Sometimes serpentine. Elevation range: 3,395–7,220 feet (1,035–2,201 meters)	A	None
Siskiyou inside-out-flower	*Vancouveria chrysantha*	--/--/4.3	Jun	Chaparral, lower montane coniferous forest. Serpentinite. Elevation range: 390–4,920 feet (119–1,500 meters)	A	None
Siskiyou false-hellebore	*Veratrum insolitum*	--/--/4.3	Jun–Aug	Chaparral, lower montane coniferous forest. Clay. Elevation range: 150–5,365 feet (45–1,635 meters)	A	None
Langsdorf's violet	*Viola langsdorffii*	--/--/2B.1	May–Jul	Bogs and fens (coastal). Coastal wet areas. Elevation range: 5–35 feet (2–11 meters)	A	None
alpine marsh violet	*Viola palustris*	--/--/2B.2	Mar–Aug	Bogs and fens (coastal), coastal scrub (mesic). Swampy, shrubby places in coastal scrub or coastal bogs. Elevation range: 0–490 feet (0–149 meters)	HP	Low
Western white bog violet	*Viola primulifolia* ssp. *occidentalis*	--/--/1B.2	Apr–Sep	Bogs and fens (serpentinite), marshes and swamps. Streamside flats and bogs; serpentine soils. Elevation range: 325–3,250 feet (99–991 meters)	A	None
BRYOPHYTES AND LICHENS						
green shield-moss	*Buxbaumia viridis*	--/--/2B.2	N/A	Lower montane coniferous forest, upper montane coniferous forest, subalpine coniferous forest. Fallen, decorticated wood or humus. Elevational range: 3,200–7,220 feet (975–2,200 meters)	A	None

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
spiral-spored guilded-head pin lichen	*Calicium adspersum*	--/--/2B.2	N/A	Lower montane coniferous forest, North Coast coniferous forest. Often restricted to old-growth bark of conifers that are over 200 years in age; only known in California from a *Sequoia sempervirens* stand. Restricted throughout its range to old-growth conifer forests in relatively cool-humid stands. Restricted to aged bark of conifers, typically old-growth trees over 200 years of age. Elevational range: 655 feet (200 meters)	HP	High
naked flag moss	*Discelium nudum*	--/--/2B.2	N/A	Coastal bluff scrub (soil, on clay banks). Moss that grows on moist silty clay to fine sandy banks in somewhat shaded sites. Elevational range: 30–165 feet (9–50 meters)	HP	Low
Minute pocket moss	*Fissidens pauperculus*	--/--/1B.2	N/A	North Coast coniferous forest (damp coastal soil). Moss growing on damp soil along the coast. In dry streambeds and on stream banks. Elevational range: 30–3,360 feet (9–1,024 meters)	HP	High
crinkled rag lichen	*Platismatia lacunosa*	--/--/2B.3	N/A	North Coast coniferous forest, riparian woodland. Usually growing on *Alnus* (alder). Elevational range: 65–6,560 feet (20–2,000 meters)	HP	High
angel's hair lichen	*Ramalina thrausta*	--/--/2B.1	N/A	North Coast coniferous forest. On dead twigs and other lichens. Elevational range: 245–1,410 feet (74–430 meters)	HP	High
twisted horsehair lichen	*Sulcaria spiralifera*[5]	--/--/1B.2	N/A	Coastal dunes, North Coast coniferous forest; usually on conifers of the immediate coast: primarily *Picea sitchensis* and *Pinus contorta* var. *contorta* and also *Pseudotsuga menziesii*, *Abies grandis*, and *Tsuga heterophylla* (Glavich 2008a, 2008b; Myllys et al. 2014). Elevational range: 0–100 feet (0–31 meters)	HP	Moderate

Common Name	Scientific Name	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
cylindrical trichodon	*Trichodon cylindricus*	--/--/2B.2	N/A	Broadleaf upland forest, meadows and seeps, upper montane coniferous forest. Moss growing in openings on sandy or clay soils on roadsides, stream banks, trails or in fields. Elevational range: 160–6,570 feet (49–2,004 meters)	HP	Low
coastal triquetrella	*Triquetrella californica*	--/--/1B.2	N/A	Coastal bluff scrub, Coastal scrub. Grows within 98 feet (30 meters) from the coast in coastal scrub, grasslands, and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. Elevational range: 30–300 feet (9–91 meters)	HP	Moderate
Methuselah's beard lichen	*Usnea longissima*	--/--/4.2	N/A	Broadleaf upland forest, North Coast coniferous forest. Grows in the "redwood zone" on tree branches of a variety of trees, including big-leaf maple, oaks, ash, Douglas-fir, and bay, usually on old-growth hardwoods and conifers. Elevational range: 165–4,790 feet (50–1,460 meters)	P	Present

Sources: CNPS 2026; J. Barrett, personal observations; Jepson Flora Project 2021, 2022; CDFW 2026; Glavich 2008a, 2008b; Myllys et al. 2014; Wilson et al. 2008.

[1] **Status Definitions:**
Federal status: FT = Federal Threatened; FE = Endangered; FCT = Federal Candidate Threatened; FCE = Federal Candidate Endangered.
State status: ST = State Threatened; SE = State Endangered; SCE: State Candidate Endangered; FP = Fully Protected; SR = State Rare.
California Rare Plant Rank (CRPR): 1B = rare, threatened, or endangered in California and elsewhere; 2B = rare, threatened, or endangered in California but more common elsewhere; 3 = more information is needed (Review List); 4 = limited distribution (Watch List).
CRPR Threat Ranking: 0.1 = seriously threatened in California, 0.2 = moderately threatened in California, 0.3 = not very threatened in California.

[2] **Habitat Designations:**
A = Absent: no habitat present and no further work needed.
HP = Habitat Present: habitat is or may be present. The species may be present.
P = Present: the species is present.
CH = Critical Habitat: the project is within a designated critical habitat unit but this does not necessarily mean that appropriate habitat is present.

[3] **Rationale Rankings:**
None = No suitable habitat present within the BSA; the BSA is outside of species documented distribution and elevation range, species primarily occurs on serpentine soils, and/or species has generally not been documented within 10 miles of the BSA.
Low = Low-quality suitable habitat present within the BSA; the BSA is within the species documented distribution and elevation range and/or species has generally (with some exceptions) been documented within 10 miles of the BSA.

Moderate = Moderate-quality suitable habitat present within the BSA; the BSA is within the species documented distribution and elevation range, and/or species has generally (with some exceptions) been documented within 5 miles of the BSA.
High = High-quality suitable habitat present within the BSA; the BSA is within the species documented distribution and elevation range, and/or species has generally (with some exceptions) been documented within the BSA or within 1 mile of the BSA.
Present = Species was observed within BSA #1 during the botanical surveys conducted for the project.
[4] Species only appeared in the March 20, 2021, CNPS search and is not recorded from any of the quadrangles searched in 2026.
[5] *Sulcaria spiralifera* is the new combined name for *Bryoria spiralifera* (CRPR 1B.1) and *Bryoria pseudocapillaris* (CRPR 3.2). See Myllys et al. 2014



APPENDIX I. Special-Status Wildlife Species and Critical Habitat with the Potential to Occur in the Project Vicinity



Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
AMPHIBIANS AND REPTILES						
foothill yellow-legged frog	*Rana boylii*	--/SSC	Inhabits forest perennial and intermittent streams and rivers with sunny, sandy, and rocky banks, with deep pools and shallow riffles. Spends most of its time along streams, but may move up to 165 feet (50 meters) from the edge of aquatic habitat. This is a state-listed threatened species in California, with the exception of the Northwest/North Coast Clade, which occurs from the Oregon border to San Francisco Bay and inland east of Redding.	Present	N/A	Habitat is present within Biological Study Area (BSA) #1. Aquatic resources within BSA #1 such as perennial and intermittent streams may provide aquatic habitat. May occur in vegetated stream banks immediately adjacent to flowing water within red alder forests. The nearest California Natural Diversity Database (CNDDB) occurrence is approximately 3.4 miles southeast of the Environmental Study Limits (ESL). This species was not observed during surveys.
green sea turtle – East Pacific Distinct Population Segment (DPS)	*Chelonia mydas*	FT/--	Does not nest on beaches of Northern California (NMFS and USFWS 2007); may occur in open water habitat off the coastline of Del Norte County. Found on both coasts of North America and Pacific Islands.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
leatherback sea turtle	*Dermochelys coriacea*	FE/--	No known nesting sites on the coast of California (NMFS 2020); may occur in open water habitat off the coast of Del Norte County. Found in U.S. waters in the west and east Pacific and northwest Atlantic.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.
northern red-legged frog	*Rana aurora*	--/SSC	Humid forest, woodlands, grasslands, and stream sides in northwestern California, usually near dense riparian vegetation. Typically breeds in shallow ponds with emergent vegetation that are inundated at least 5 months a year. Along the Coast Ranges from Del Norte County south to Mendocino County below 4,000 feet (1,219 meters) elevation.	Present	N/A	Habitat is present within BSA #1. Aquatic resources within BSA #1 may provide habitat. May also occur in forested uplands such as red alder, redwood, and Sitka spruce forests. The nearest CNDDB occurrence abuts the eastern side of the central portion of the ESL. Observed in southern portion of ESL during wildlife surveys.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
olive ridley sea turtle	*Lepidochelys olivacea*	FT/--	Mainly pelagic in tropical/temperate regions of Pacific, South Atlantic, and Indian Oceans but has been known to inhabit coastal areas, including bays and estuaries. Found in tropical regions of the Atlantic, Pacific and Indian Oceans.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.
Pacific (coastal) tailed frog	*Ascaphus truei*	--/SSC	Typically found in cold, clear, perennial rocky streams in wet forests, but may also utilize intermittent creeks. This species is not known to use ponds or lakes. This species may occur in uplands during precipitation events. In California, found along coast from Mendocino County, north and east to Shasta County up to 8,400 feet (2,560 meters) elevation.	Present	N/A	Habitat is present within BSA #1. Aquatic resources within BSA #1, such as the perennial and intermittent streams that occur in the red alder, coastal brambles, Sitka spruce, and redwood natural communities, provide potential habitat for this species. The nearest CNDDB occurrence is approximately 0.3 mile east of the ESL. This species was not observed during surveys.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
southern torrent salamander	*Rhyacotriton variegatus*	--/SSC	Occurs along the coast in cold and well-shaded perennial streams and seeps in hardwood and coniferous forests. Eggs are laid in flowing water and adults are typically found among moss-covered pebbles and rocks within or adjacent to flowing water. Found in Humboldt, Mendocino, Siskiyou, and Trinity Counties up to 3,900 feet (1,189 meters) elevation.	Present	N/A	Habitat is present within BSA #1. Aquatic resources within BSA #1 such as perennial streams and seeps may provide aquatic habitat. May occur in vegetated stream banks immediately adjacent to flowing water in mature redwood, Douglas-fir, and Sitka spruce forests. The nearest CNDDB occurrence is within the ESL. This species was not observed during surveys.
northwestern pond turtle	*Actinemys marmorata*	FPT/SSC	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms. Populations extend throughout coastal areas, the Central Valley, and foothills of California below 6,000 feet (1,829 meters) elevation.	Absent	N/A	There is no suitable habitat present within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL. This species was not observed during surveys.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
BIRDS[3]						
bald eagle	*Haliaeetus leucocephalus*	FD/SE, FP	Nests typically 50–200 feet (15–61 meters) above ground in large, old-growth, or dominant live trees. Forages primarily in large inland fish-bearing waters with adjacent large trees or snags, also along coastline, bay, and lagoons; occasionally in uplands with abundant rabbits, other small mammals. Breeding range includes the Sierra Nevada, Cascade Range, and portions of the Coast Ranges; winter range expands to include most of the state except southeastern California. Year-round residents within Northern California.	Present	N/A	Winter foraging habitat is present within BSA #1. Likely forages along coastline year-round. Large trees in Douglas-fir and Sitka spruce forest within BSA #1 may provide suitable nesting habitat. The nearest CNDDB record of a nesting pair is approximately 7.5 miles southeast of the ESL. No nests of this species were observed during nesting eagle and raptor helicopter surveys for the project. This species was observed flying over U.S. 101 and the Pacific Ocean during northern spotted owl surveys.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
bank swallow	*Riparia riparia*	--/ST	Found primarily in riparian and other lowland habitats west of the deserts during spring through fall. Requires vertical banks and cliffs with sandy soils for digging nest holes near water; a colonial nesting species. Arrives in California from South America for breeding season.	Absent	N/A	No sandy, vertical bank habitat present in BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
black swift	*Cypseloides niger*	--/SSC	Colonial breeder on cliffs behind or adjacent to waterfalls and sea bluffs above the surf; forages widely. Breeds very locally in the Sierra Nevada, Cascade, San Gabriel, San Bernardino, and San Jacinto Mountains, and in coastal bluffs and mountains from San Mateo County south to San Luis Obispo County. Does not winter in California. California provides migration habitat between breeding and non-breeding sites.	Absent	N/A	No waterfall habitat present within BSA #1. BSA #1 is outside this species' known breeding range. The nearest CNDDB record is 9.3 miles northeast of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
California condor– Pacific Northwest DPS	*Gymnogyps californianus*	Non-Essential Experimental Population FE/SE	Within California, this species is primarily found in semi-arid, rugged mountain ranges surrounding the southern San Joaquin Valley, including the Coast Ranges from Santa Clara County south to Los Angeles County, the Transverse Ranges, Tehachapi Mountains, and southern Sierra Nevada. However, there are several experimental nonessential populations, including one nearby [10(j)] that resides east of Orick in the Bald Hills Area of Redwood National Park. Condors primarily nest in cliff caves, although some have been known to nest in large trunk cavities of giant sequoia and coastal redwood trees. Forages up to 150 miles from roost/nest sites.	Present	Absent	While potentially suitable nesting/ roosting habitat is present within both the BSAs and the ESL, the nearby population of condors has not yet been confirmed nesting in the wild, and nesting individuals are not expected to occur within the BSAs or ESL. While potentially suitable foraging habitat is present within the BSA #2 (beaches), no condors have been documented foraging north of the Klamath River.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Cassin's auklet	*Ptychoramphus aleuticus*	--/SSC	Pelagic species, breeds in large, dense colonies on undisturbed islands; 80 percent of state population on Farallon Islands. Also nests in rock crevices or cavities. Intolerant of human intrusion at breeding grounds. Fairly common year-round in marine pelagic waters off California.	Absent	N/A	No habitat within BSA #1. This is a pelagic species. There are no CNDDB occurrences within 10 miles of the ESL.
fork-tailed storm petrel	*Oceanodroma furcata*	--/SSC	Colonial nester on islands. Nests in burrows, natural cavities, or rock crevices on island. Forages over the open ocean. Uncommon, sporadic late fall to early spring visitor on open ocean along the entire California coast; occasionally in bays and harbors. Breed on six small islets off Del Norte and Humboldt Counties.	Absent	N/A	No habitat within BSA #1. No islet nesting habitat present. The nearest CNDDB occurrence is approximately 7.0 miles north of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
golden eagle	*Aquila chrysaetos*	--/FP	Utilizes rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, cliffs, and rock outcrops; also large trees adjacent to open areas. Uncommon permanent resident and migrant throughout California except Central Valley, ranging from sea level up to 11,500 feet (3,505 meters) elevation.	Absent	N/A	No nesting or foraging habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
little willow flycatcher	*Empidonax traillii*	--/SE	Found within mountain meadow and riverine riparian habitats. Nests in vegetation clumps near edges of streams. Most numerous in areas with extensive thickets of 19.7 acres (8 hectares) or more, and an absolute minimum of 0.6 acre (0.25 hectare), of low, dense willows on the edge of wet meadows, ponds, or backwaters (Craig and Williams 1998). Known from Tulare County north, along the west side of the Sierra Nevada and Cascades, extending to the coast in Northern California. A common spring and fall migrant at lower elevations; few breeding records for Humboldt County and probable breeder along Smith River in Del Norte County.	Absent	N/A	No habitat within BSA #1. No extensive willow or similar riparian habitat. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
marbled murrelet	*Brachyramphus marmoratus*	FT/SE	Nests in old-growth redwood-dominated forests, up to 6 miles inland, often in Douglas-fir. Feeds near shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Occurs year-round in marine subtidal and pelagic habitats; largely concentrated in coastal waters off Del Norte and Humboldt Counties.	Present	Present	Habitat is present within BSA #1. Critical habitat overlaps with BSA #1. Presence is assumed within all suitable redwood, Douglas-fir and Sitka spruce forest habitat within BSA #1. The nearest CNDDB occurrence is 0.16 mile east of the ESL. Individuals were detected during northern spotted owl surveys (Caltrans 2021), and during the bird acoustical recording surveys.
northern harrier	*Circus hudsonius*	--/SSC	Nests on the ground among herbaceous vegetation, such as grasses or cattails; forages in grasslands, agricultural fields, and marshes. Breeding range encompasses much of lowland California; winter range expands to include the remaining lowland areas. Occurs from annual grasslands up to alpine meadow habitat at 10,000 feet (3,048 meters) elevation. Seldom found in wooded areas.	Absent	N/A	No habitat in ESL. No open areas for foraging, no grasslands or similar habitats for nesting. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
northern spotted owl	*Strix occidentalis caurina*	FT/ST	Found in mature old-growth forests and wooded canyons. Coniferous forests with a multi-layered, multispecies canopy with moderate to high canopy closure; nests in broken top, cavities, or in large snags; requires an abundance of large, dead wood on the ground and open space within and below the upper canopy to fly. Breeding range extends west of the Cascade Range through the North Coast Ranges, and the Sierra Nevada; may move downslope in winter from higher elevations.	Present	Absent	Habitat is present within BSA #1, including within 0.7 mile of the ESL. Presence is assumed within all suitable redwood and Douglas-fir forest habitat within BSA #1. There is a unit of northern spotted owl critical habitat approximately 1.5 mile south-southeast of the ESL, near High Prairie Creek. The nearest CNDDB occurrence is an AC 0.93 mile east of the ESL. This species was detected during northern spotted owl surveys.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
purple martin	*Progne subis*	--/SSC	An uncommon to rare, local summer resident foraging over a variety of low-elevation, wooded habitats, including foothill and montane hardwood, conifer, and riparian habitats. Frequents old-growth, multi-layered open forests with snags for breeding. Nests mostly in old woodpecker cavities, sometimes bridges, culverts. In Northern California, an uncommon to rare local breeder on the coast and inland to Modoc and Lassen Counties. Absent from higher slopes of the Sierra Nevada.	Present	N/A	Habitat is present within BSA #1. May occur in mature redwood and Douglas-fir forest habitat within BSA #1 where snags persist. There are no CNDDB occurrences within 10 miles of the ESL. This species was detected during the automated acoustical recording surveys.
short-tailed albatross	*Phoebastria albatrus*	FE/SSC	Pelagic species, does not breed in California; only known breeding sites in western Pacific Ocean islands. During nonbreeding season, may occur in Northern California along the shelf break of the continental shelf. Found off the coasts of Alaska and Canada, to the southwest coast of North America.	Absent	N/A	No habitat within BSA #1. This is a pelagic species. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
tufted puffin	*Fratercula cirrhata*	--/SSC	Feeds in the ocean; nests along the coast on islands, islets. Requires sod or earth in which to burrow on island cliffs or grass island slopes. Occurs on the northwestern coast off California, Oregon, and Washington. Winters at sea. Historical nest sites on rocks offshore near Crescent City in Del Norte County, and Elks Head State Park in Humboldt County.	Absent	N/A	No large sea stacks with appropriate nesting habitat in BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Vaux's swift	*Chaetura vauxi*	--/SSC	A summer resident of Northern California, breeding in the Coast Ranges from Sonoma County north. Requires large hollow trees for nest building; occasionally uses chimneys and buildings; often in large flocks. Preference for foraging over rivers and lakes. Prefers redwood and Douglas-fir habitats with nest sites in large hollow trees and snags, especially tall, burned-out remnants. Fairly common migrant throughout most of California in April, May, August, and September.	Present	N/A	Habitat is present within BSA #1. May occur in mature redwood and Douglas-fir forest habitats with large cavities, basal hollows, or snags for nesting within BSA #1. This species was detected during the automated acoustical recording surveys. There are no CNDDB occurrences within 10 miles of the ESL.
western snowy plover	*Charadrius nivosus nivosus*	FT/SSC	Found on sandy marine and estuarine shores, coastal beaches, sandy areas near salt ponds, river mouths, and levees along inland salt ponds. Nests on the ground in shallow depression, mainly in the open and near objects such as driftwood in sandy or friable soil substrates.	Absent	Absent	No habitat within BSA #1. No open sandy or friable substrates for nesting. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
white-tailed kite	*Elanus leucurus*	--/FP	Forages in undisturbed, open grasslands, meadows, and emergent wetlands. Nests near top of dense oak, willow, or other trees near open foraging area. Common to uncommon, yearlong resident in coastal and valley lowlands; rarely found away from agricultural areas.	Absent	N/A	No habitat within BSA #1. No open agricultural or grasslands habitat for foraging. There are no CNDDB occurrences within 10 miles of the ESL.
yellow-billed cuckoo	*Coccyzus americanus*	FT/SE	Prefers riparian woodlands of various compositions with a dense understory along slow-moving watercourses. Requires expansive riparian habitat for breeding. Breeds along major river valleys. Occurs at isolated sites in Northern California, Sacramento Valley, and along the Kern and Colorado River systems in Southern California.	Absent	N/A	No habitat within BSA #1. There is no expansive riparian habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
FISH						
Chinook salmon – California Coastal ESU	*Oncorhynchus tshawytscha pop. 17*	FT/SSC	Anadromous fish that spends between 1 and 5 years in the ocean before returning to natal rivers to spawn, typically entering freshwater river systems after large winter storm events. Spawns between October and December in the upper mainstems of rivers and the lower reaches of coastal creeks composed of a mixture of small cobble and large gravel.	Absent	CH Absent/ EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.
Chinook salmon – southern Oregon/ Northern California Coastal ESU	*Oncorhynchus tshawytscha pop. 14*	FC/SSC	Anadromous fish that spends between 1 and 5 years in the ocean before returning to natal rivers to spawn, typically entering freshwater river systems after large winter storm events.	Absent	CH Absent/ EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Chinook salmon – upper Klamath and Trinity Rivers ESU	*Oncorhynchus tshawytscha pop. 30*	FC/ST, SSC	Anadromous fish that spends between 1 and 5 years in the ocean before returning to natal rivers to spawn, typically entering freshwater river systems after large winter storm events.	Absent	CH Absent/ EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.
coast cutthroat trout	*Oncorhynchus clarkii*	--/SSC	Occupies coastal streams with some populations migrating to the ocean where they typically stay near the coastline and the mouths of larger rivers. In freshwater, found in small, low-gradient streams and estuaries.	Absent	N/A	No habitat within BSA #1. The nearest CNDDB occurrence is 0.28 mile east of the ESL.
coho salmon – southern Oregon/ Northern California Coastal ESU	*Oncorhynchus kisutch pop. 2*	FT/ST	Anadromous fish found in perennial streams with cooler temperatures. Requires deep pools, riffles, and runs with adequate canopy cover.	Absent	CH Absent/ EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL. Critical habitat is present within Wilson Creek tributaries below barriers to fish passage; some aquatic resources within BSA #1 flow through a tributary system to Wilson Creek.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
eulachon	*Thaleichthys pacificus*	FT/SSC	Anadromous fish that spawns in lower reaches of rivers during peak spring flow events. Adults in the southern DPS are semelparous. Needs sand or coarse gravel for spawning substrate. Larvae are transported to estuaries and then to the ocean.	Absent	Absent	No habitat within BSA #1. The nearest CNDDB occurrence is approximately 4.7 miles south of the ESL.
green sturgeon – northern DPS	*Acipenser medirostris pop. 2*	--/SSC	Anadromous fish that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	Absent	N/A	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.
green sturgeon – southern DPS	*Acipenser medirostris pop. 1*	FT/SSC	Anadromous fish that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	Absent	CH Absent/ EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.
longfin smelt	*Spirinchus thaleichthys*	--/ST	Anadromous fish; adults live in bays, estuaries, and nearshore coastal areas and migrate into freshwater rivers to spawn, January through March, after which most adults die.	Absent	N/A	No habitat within BSA #1. The nearest CNDDB occurrence is approximately 4.7 miles south of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Lower Klamath marbled sculpin	*Cottus klamathensis polyporus*	--/SSC	Found in slow to swift water, in streams with widths greater than 65 feet (20 meters) and cooler temperatures, with rocky substrate for egg laying.	Absent	N/A	No habitat within BSA #1. The nearest CNDDB occurrence is approximately 9.2 miles southeast of the ESL.
Pacific lamprey	*Entosphenus tridentatus*	--/SSC	Anadromous and parasitic fish, with most of its time spent in the ocean. Occurs in moderate-gradient pool and riffle river habitat during runs. Lays eggs in gravel riffles upstream of muddy backwater habitat.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
Steelhead – Klamath Mountains province DPS	*Oncorhynchus mykiss irideus pop. 1*	--/SSC	Anadromous fish that lives as adults in ocean habitats and migrates into rivers and streams to spawn in gravel and small-cobble substrates usually associated with riffle-and-run habitat types in cold water streams.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
Steelhead – Northern California DPS winter run	*Oncorhynchus mykiss irideus pop. 49*	FT/SSC	Anadromous fish that lives as adults in ocean habitats and migrates into rivers and streams to spawn in gravel and small-cobble substrates usually associated with riffle-and-run habitat types in cold water streams.	Absent	CH Absent	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Steelhead – Northern California DPS summer-run	*Oncorhynchus mykiss irideus pop. 48*	FT/SE	Anadromous fish that lives as adults in ocean habitats and migrates into rivers and streams to spawn in gravel and small-cobble substrates usually associated with riffle-and-run habitat types in cold water streams.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
tidewater goby	*Eucyclogobius newberryi*	FE/SSC	Inhabits lagoons and estuaries with still or slow-moving water less than 3 feet (1 meter) deep. Salinity levels typically less than 10 parts per thousand, although found in higher-salinity water. Typically occurs over a sandy or mixed sand and silt bottom with sparse vegetation.	Absent	Absent	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
western brook lamprey	*Lampetra richardsoni*	--/SSC	Entire life spent in small freshwater streams. Larvae filter-feed on algae and micro-organisms; there is no juvenile stage, and adults do not feed. Adults spawn and die in same waters.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
western river lamprey	*Lampetra ayresii*	--/SSC	Larvae require soft sediment of slow-moving freshwater streams to burrow. Juveniles feed in surface waters of estuaries and nearshore ocean waters. Adults return to freshwater to spawn.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
white sturgeon	*Acipenser transmontanus*	SCT, SSC	Occasionally found in the ocean, this fish primarily resides in large rivers and associated estuaries. Some runs include the Klamath, Trinity, and Eel Rivers.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
MAMMALS						
blue whale	*Balaenoptera musculus*	FE/--	Worldwide, often near the edges of physical features where krill tend to concentrate.	Absent	Absent	No habitat within BSA #1. This is a pelagic species.
fin whale	*Balaenoptera physalus*	FE/--	Deep, offshore waters of all major oceans; less common in the tropics.	Absent	Absent	No habitat within BSA #1. This is a pelagic species.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
fisher	*Pekania pennanti*	--/SSC	Utilizes forests with dense canopy and a complex structure that includes downed wood, moderate to high shrub cover, dead trees, and intermixed hardwood trees. Relies on dens created by large trees, snags, logs, rock piles, and root burrows. Uncommon resident of the Sierra Nevada, Cascades, and Klamath Mountains; found in a few areas of the North Coast Range.	Present	N/A	Habitat is present within BSA #2, within redwood and Douglas-fir forest habitats with appropriate canopy cover or dense shrub cover. Distant image captured during 2021 camera study determined to likely be fisher. The 2021 Forest Carnivore Survey detected fisher in the northeastern portion of BSA #2. There are no CNDDB occurrences within 10 miles of the ESL.
Humboldt marten	*Martes caurina humboldtensis*	FT/SE, SSC	Found in coastal old-growth forests, some dune forest habitat, and certain areas with dense shrub cover on serpentine areas. Avoids open areas. Dens in large tree cavities, snags, and logs. Uncommon resident endemic to northwestern California and western Oregon.	Present	Absent	Habitat is present within BSA #1, within redwood and Douglas-fir forest habitats with appropriate canopy cover or dense shrub cover. The nearest CNDDB occurrence is approximately 6.8 miles east of the ESL. Safe Harbor Agreement on adjacent GDRC land.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
humpback whale	*Megaptera novaeangliae*	FT/--	Central California population migrates from winter calving and mating areas off Mexico to summer and fall feeding areas off coastal California. Humpback whales occur from late April to early December.	Absent	Absent	No habitat within BSA #1. This is a pelagic species.
North Pacific right whale	*Eubalaena japonica*	FE/--	North Pacific Ocean; seasonally migratory; colder waters for feeding, migrating to warmer waters for breeding and calving; may move far out to sea during feeding seasons but gives birth in coastal areas.	Absent	Absent	No habitat within BSA #1. This is a pelagic species.
pallid bat	*Antrozous pallidus*	--/SSC	Roosts in rocky outcrops, cliffs, and crevices, live or dead tree hollows, mines, caves, and a variety of vacant occupied structures or buildings.	Present	N/A	Habitat is present within BSA #1. Mature trees with cavities likely provide suitable roosting sites, including maternity sites for the rearing of young; may forage throughout BSA #1 in all habitat community types. There are no CNDDB occurrences within 10 miles of the ESL. Species was acoustically detected during 2021/2022 bat surveys.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
ringtail	*Bassariscus astutus*	--/FP	Widely distributed, common to uncommon permanent resident in various riparian habitats and in brush stands of most forest habitats. Usually not found more than 0.6 mile (1 kilometer) from water. Breeding occurs in rock crevices and recesses, logs, snags, abandoned burrows, and tree hollows. Avoids open space. Primarily nocturnal. Occurs throughout a majority of California, including the Sierra Nevada, Coast Ranges, and the Central Valley.	Present	N/A	Reproductive and foraging habitat within BSA #1 in talus and rock outcrop areas, large logs, snags, and tree hollows found in mature redwood, Douglas-fir and Sitka spruce forests. Presence is assumed within all suitable habitats. There are no CNDDB occurrences within 10 miles of the ESL. This species was not detected during wildlife surveys.
sei whale	*Balaenoptera borealis*	FE/--	Subtropical, temperate, and subpolar waters; usually observed in deeper waters of oceanic areas far from coastline. Occurs in subtropical, temperate, and subpolar waters worldwide; prefers temperate waters in mid-latitudes of Atlantic, Pacific, and Indian Oceans.	Absent	Absent	No habitat within BSA #1. This is a pelagic species.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Sonoma tree vole	*Arborimus pomo*	--/SSC	Occurs in old-growth and mixed-age forests, mainly Douglas-fir, the primary food source for this arboreal species; found in redwood with Douglas-fir component. Distributed along the North Coast from Sonoma County north to the Oregon border, being more or less restricted to the fog belt.	Present	N/A	Reproductive and foraging habitat present within BSA #1 in Douglas-fir forests and redwood forests with a Douglas-fir component. Presence is assumed within all suitable habitat. The nearest CNDDB occurrence is within the ESL. This species was not detected during wildlife surveys.
southern resident killer whale	*Orcinus orca*	FE/--	Most abundant in colder waters but also occurs in temperate water; presence and occurrence common but unpredictable in coastal California.	Absent	Absent	No habitat within BSA #1. This is a pelagic species.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
southern sea otter	*Enhydra lutris nereis*	FT/FP	Canopies of giant kelp and bull kelp provide important rafting and feeding areas. Found in rocky substrates, near points of land or large bays, where kelp beds occur. Found in nearshore marine environments from San Mateo County to Santa Barbara County. There are two unprocessed data records in the CNDDB showing southern sea otter present in the Crescent City and Sister Rocks quads.	Absent	Absent	No habitat within BSA #1. This species is found where kelp beds persist offshore.
sperm whale	*Physeter catodon*	FE/--	Open ocean far from land and uncommon in waters less than 984 feet (300 meters) deep; live at surface of the ocean but dive deep to catch giant squid.	Absent	Absent	No habitat within BSA #1. This is a pelagic species.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Townsend's big-eared bat	*Corynorhinus townsendii*	--/SSC	Primarily cavity-roosting and most often found in caves, mines, and tunnels, while also found in tree hollows. Found from redwood forests to inland desert, oak woodlands of Coast Range, and Sierra Nevada foothills. Very sensitive to disturbances and may abandon a roost after a single disturbance.	Present	N/A	Habitat is present within BSA #1. Mature redwood trees with cavities likely provide suitable roosting sites, including maternity sites for the rearing of young; may forage throughout the ESL in all habitat community types. The nearest CNDDB occurrence is approximately 6.5 miles southeast of the ESL. Species was acoustically detected during 2021/2022 bat surveys.
white-footed vole	*Arborimus albipes*	--/SSC	Found in coastal forests dominated by redwood, Douglas-fir, and riparian forest. Occupies habitat near small streams with dense alder and deciduous trees and shrubs. Endemic to the forests of western Oregon and northwestern California. In California only known from Humboldt and Del Norte Counties.	Present	N/A	Reproductive and foraging habitat present in BSA #1 within red alder forest habitat, specifically near small streams. Presence is assumed within all suitable habitat. There are no CNDDB occurrences within 10 miles of the ESL. This species was not detected during wildlife surveys.
INVERTEBRATES						
Suckley's cuckoo bumble bee	*Bombus suckleyi*	FPE/SCE	Obligate social parasite of other *Bombus* species. Found in western meadows with abundant floral resources.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
monarch butterfly	*Danaus plexippus*	FPT/--	Leave overwintering sites in Mexico during February and March and reach northern limit of North America range in early June. Females lay eggs singly on native milkweed species.	Absent	N/A	No habitat within BSA #1. The BSA is outside of this species' overwintering and breeding zones (Pelton et al. 2016). There are no overwintering sites in Del Norte County; the nearest overwintering sites are in Mendocino County well south of the BSAs (Pelton et al. 2016). Additionally, no milkweed was observed in BSA #1 during botanical surveys that would provide suitable habitat for larval life stages.
Oregon silverspot butterfly	*Speyeria zerene hippolyta*	FT/--	Occupies marine terrace and coastal headland meadows, stabilized dunes, and montane grasslands found on Mount Hebo and Fairview Mountain in Oregon and Del Norte County in California. Requires early blue violet (*Viola adunca*), the larval host plant and nectar plants for adult butterflies.	Absent	Absent	No habitat within BSA #1. Species is only known from two or possibly three populations in California near the Lake Earl area. The nearest known CNDDB occurrence is approximately 10.4 miles northwest of the ESL near Crescent City. Additionally, the larval host plant *Viola adunca* was not observed during botanical surveys.

Common Name	Scientific Name	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
western bumble bee	*Bombus occidentalis*	--/SC	General forager of open fields of wild flowering plants and cultivated crops from near sea level to mountain meadows.	Absent	N/A	No habitat within BSA #1. The nearest CNDDB occurrence is approximately 3.8 miles east of the ESL.

Sources: CDFW 2026; USFWS 2026a, NMFS 2026

[1] **Status Definitions:**
Federal Status: FE = Endangered; FPE = Proposed Endangered; FPT = Proposed Threatened; FT = Threatened; FC = Candidate; FD = Federally Delisted.
State Status: SE = Endangered; ST = Threatened; SC = State Candidate; SCE = State Candidate Endangered; SCT = State Candidate Threatened; FP = CDFW Fully Protected; SSC = CDFW Species of Special Concern; SR = State Rare.

[2] **Habitat Designations:**
Absent = Absent: no habitat present.
Present = Present: the species habitat is present.
CH = Critical Habitat
EFH = Designated Essential Fish Habitat
AC = activity center

[3] American peregrine falcon (*Falco peregrinus anatum*) and California brown pelican (*Pelecanus occidentalis californicus)* were listed on the CNDDB list in 2023 as FP species. On July 10, 2023 Senate Bill No. 147 passed and these birds are no longer listed as FP. Therefore, we have removed them from this list.

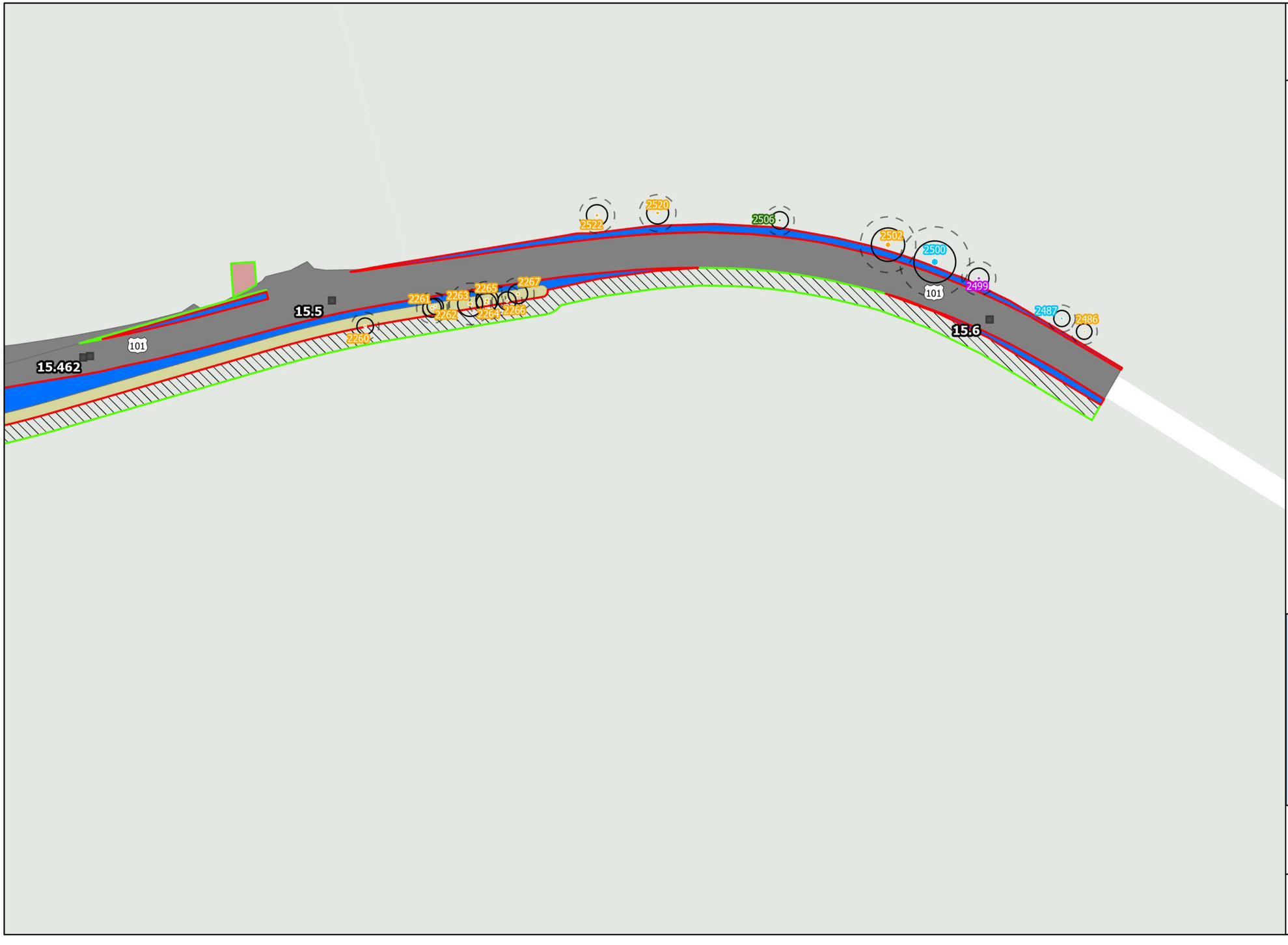
APPENDIX J. Tree Impact Maps



Tree Impact Figures

Figure 1. Alternative X Impacts to Large Trees (zoomed out) (7 sheets)
Figure 2. Alternative X Impacts to Large Trees (closeup) (22 sheets)
Figure 3. Alternative F Impacts to Large Trees (zoomed out) (8 sheets)
Figure 4. Alternative F Impacts to Large Trees (closeup) (29 sheets)





Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH

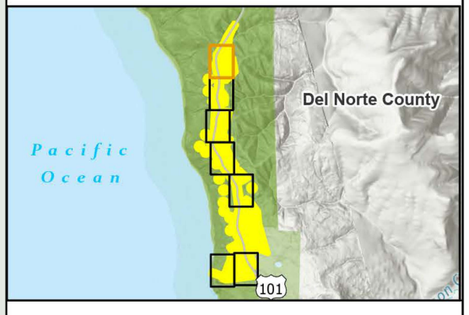
- Douglas Fir
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area

- Permanent
- Temporary

Project Components and Design Features

- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



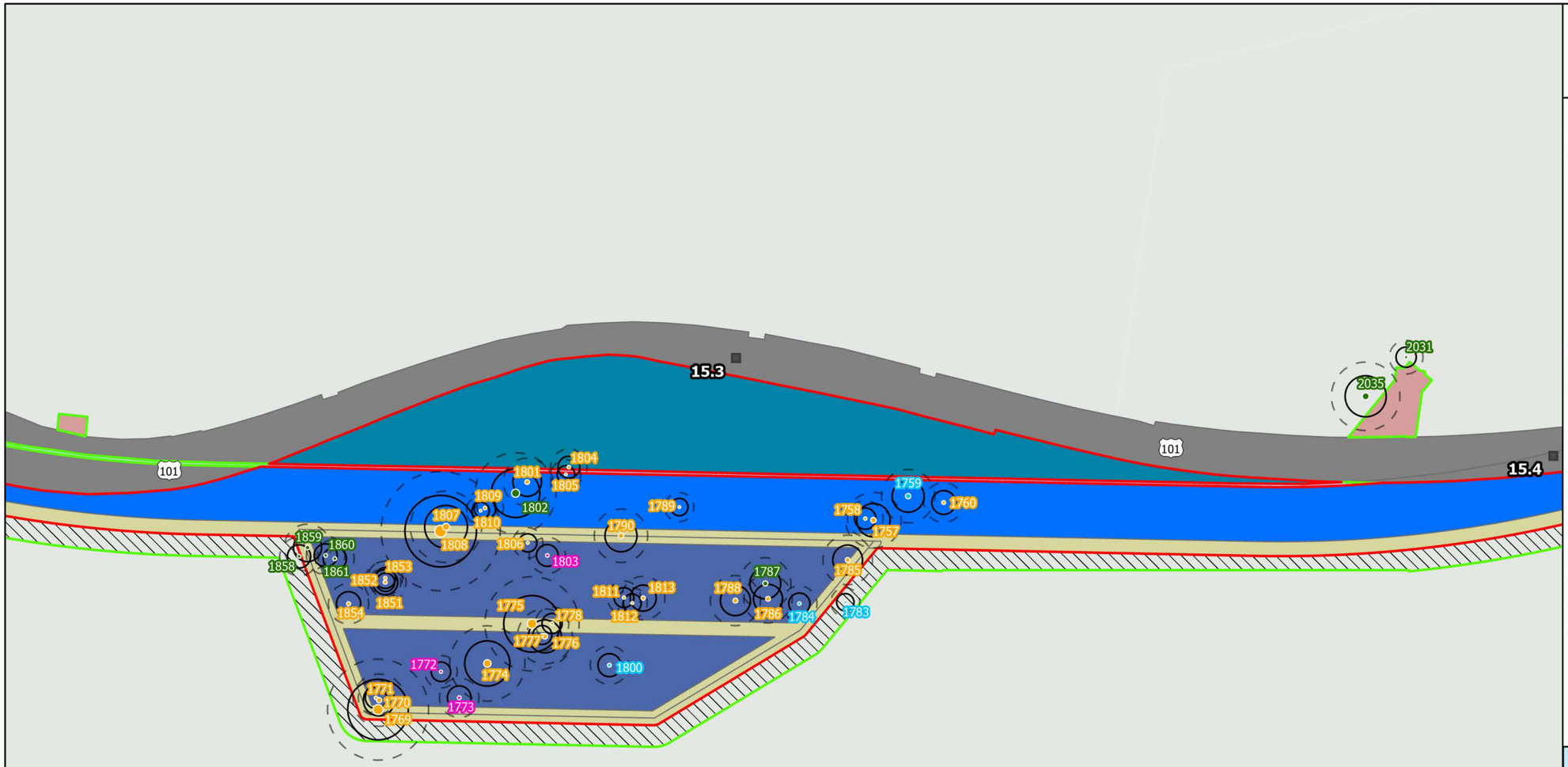
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Figure 1
Alternative X Impacts to Large Trees
Sheet 1 of 7



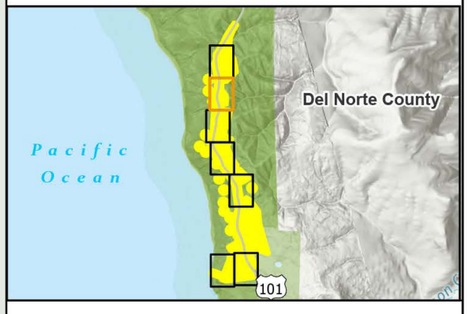
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- Tiered Wall
- New Road
- Existing Rd



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Date created: 6/30/2023

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Figure 1
Alternative X Impacts to Large Trees
Sheet 2 of 7

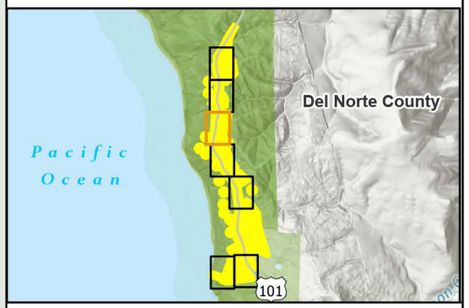
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



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Feet

Date created: 6/30/2023

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Figure 1
Alternative X Impacts to Large Trees
Sheet 3 of 7

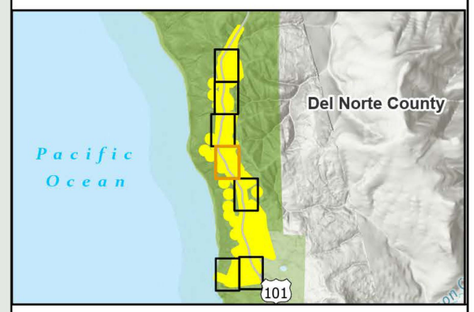
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



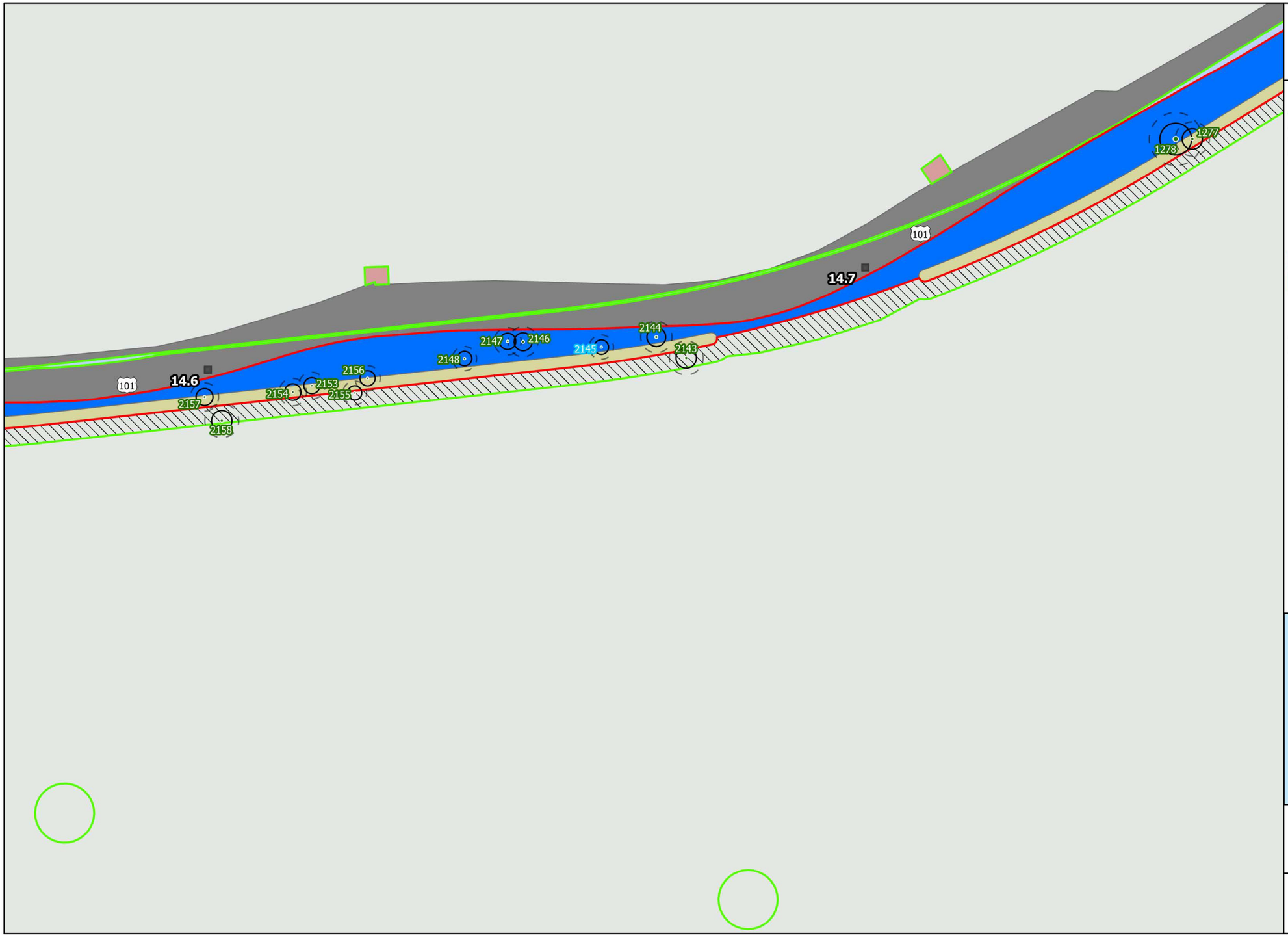
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Date created: 6/30/2023

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Figure 1
Alternative X Impacts to Large Trees
Sheet 4 of 7



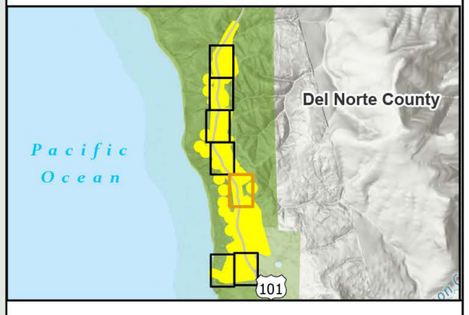
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



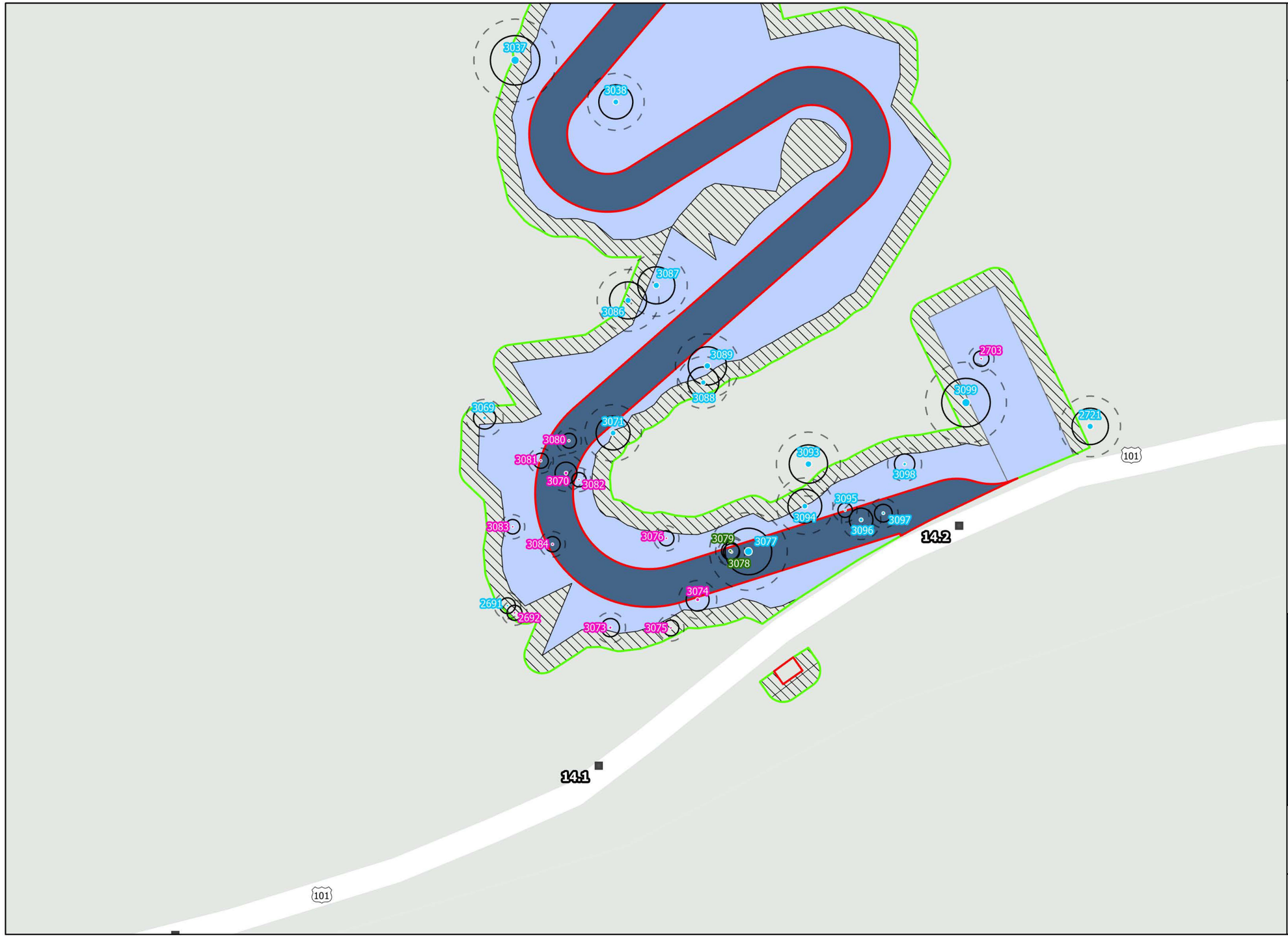
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Date created: 6/30/2023

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Figure 1
Alternative X Impacts to Large Trees
Sheet 5 of 7



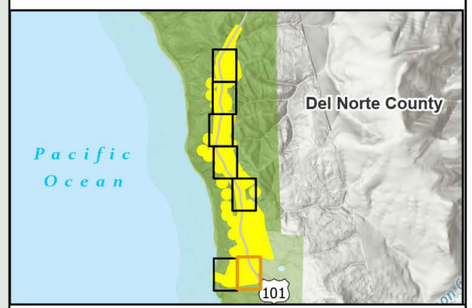
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- Cut/Fill



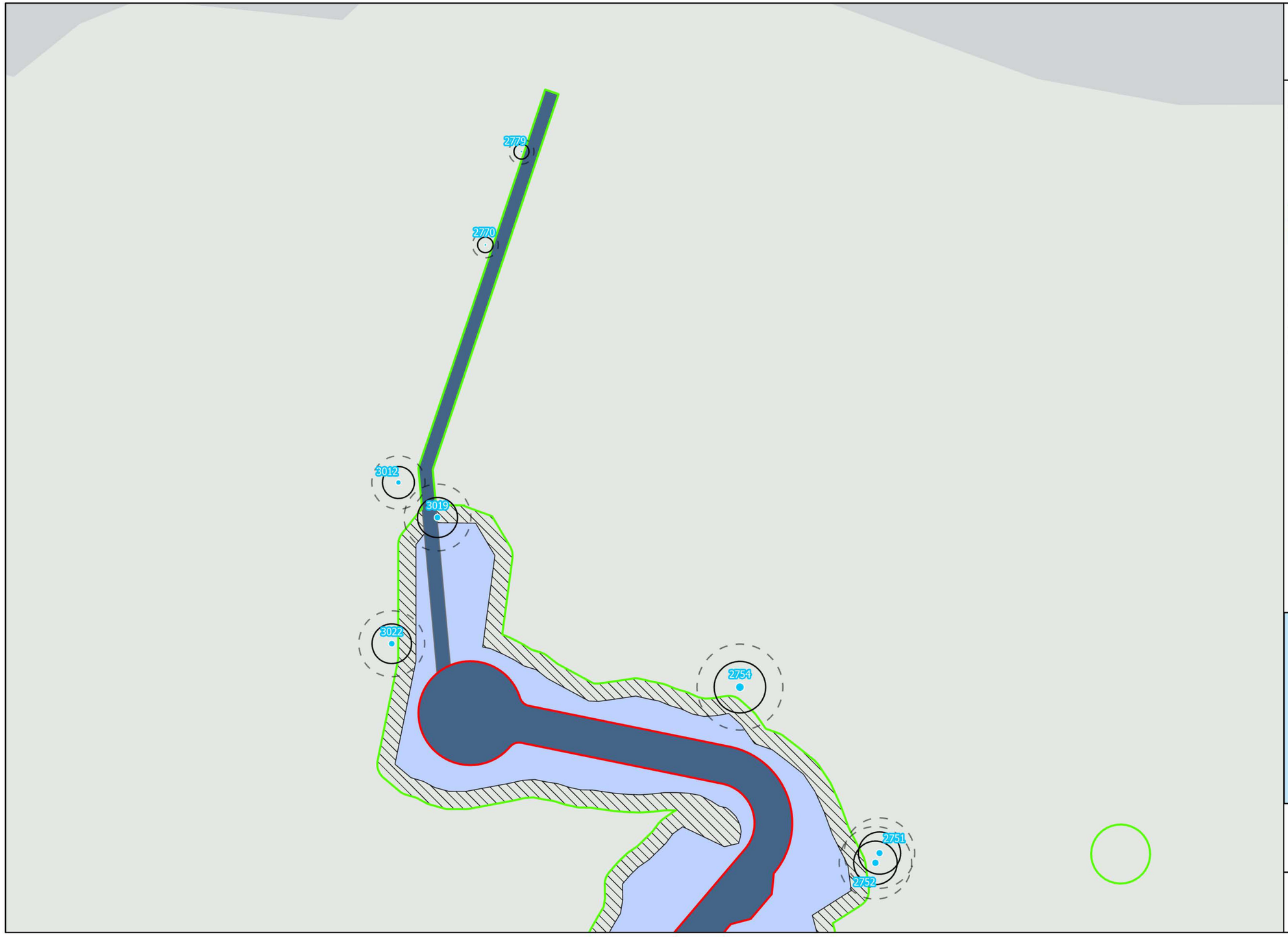
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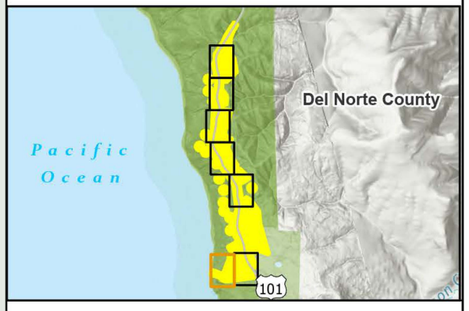
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Figure 1
Alternative X Impacts to Large Trees
Sheet 6 of 7



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill



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Feet

Date created: 6/30/2023

Figure 1
Alternative X Impacts to Large Trees
Sheet 7 of 7

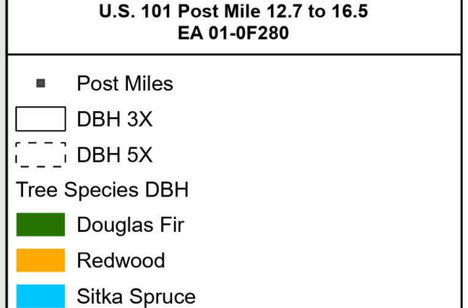
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- New Road
- Existing Rd



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Feet

Date created: 6/30/2023

Figure 2
Alternative X Impacts to Large Trees
Sheet 1 of 22

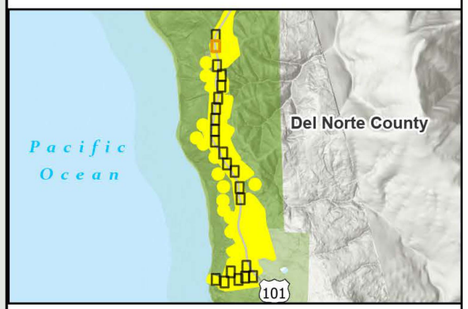
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Redwood

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Retaining Wall
- New Road
- Existing Rd



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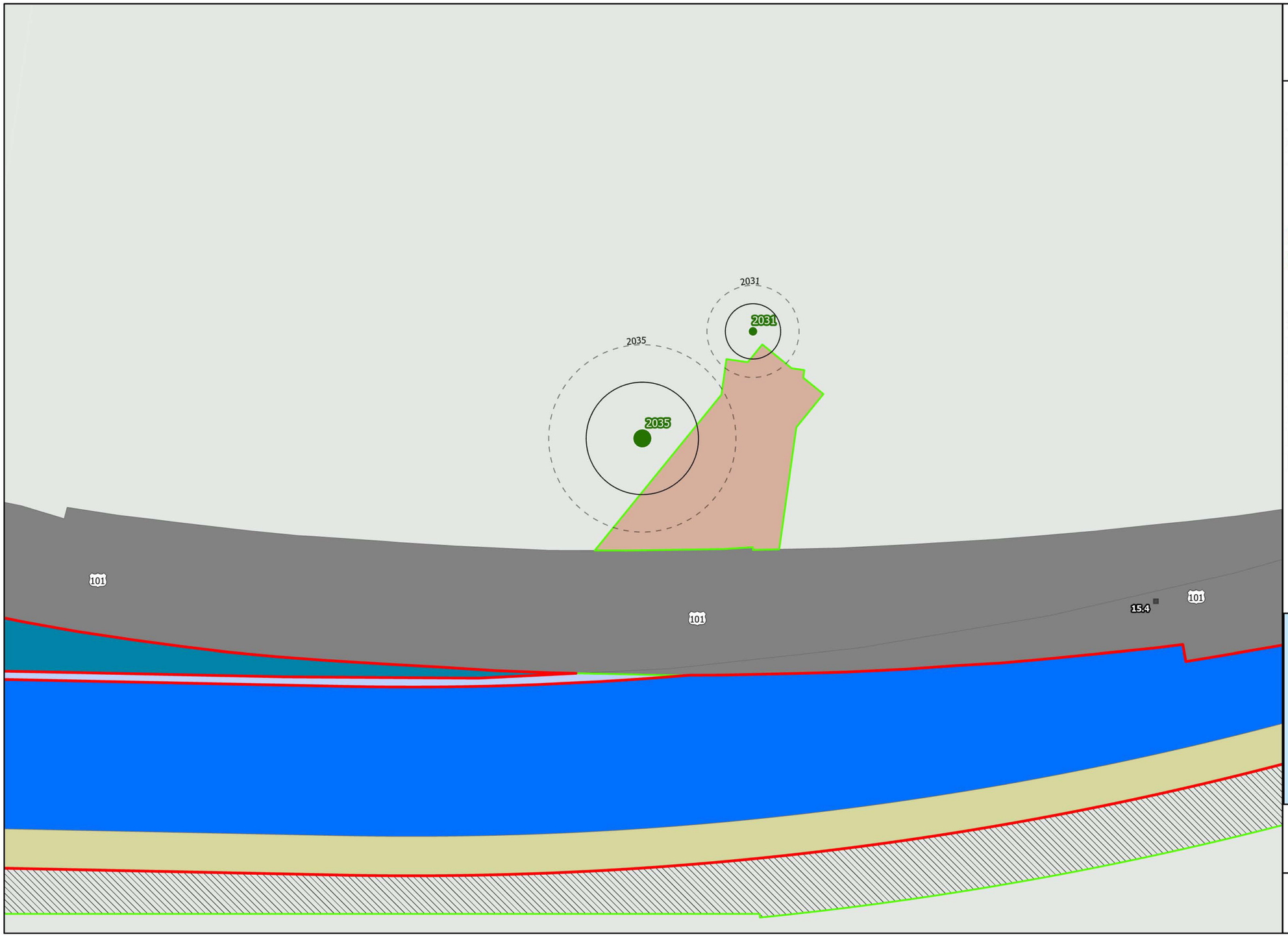
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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 2 of 22



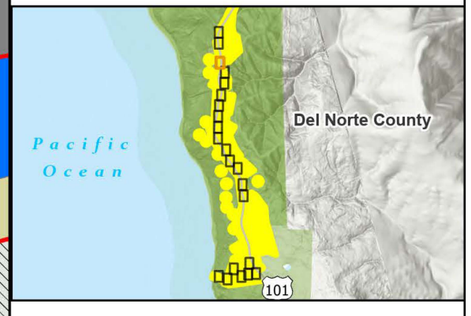
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd

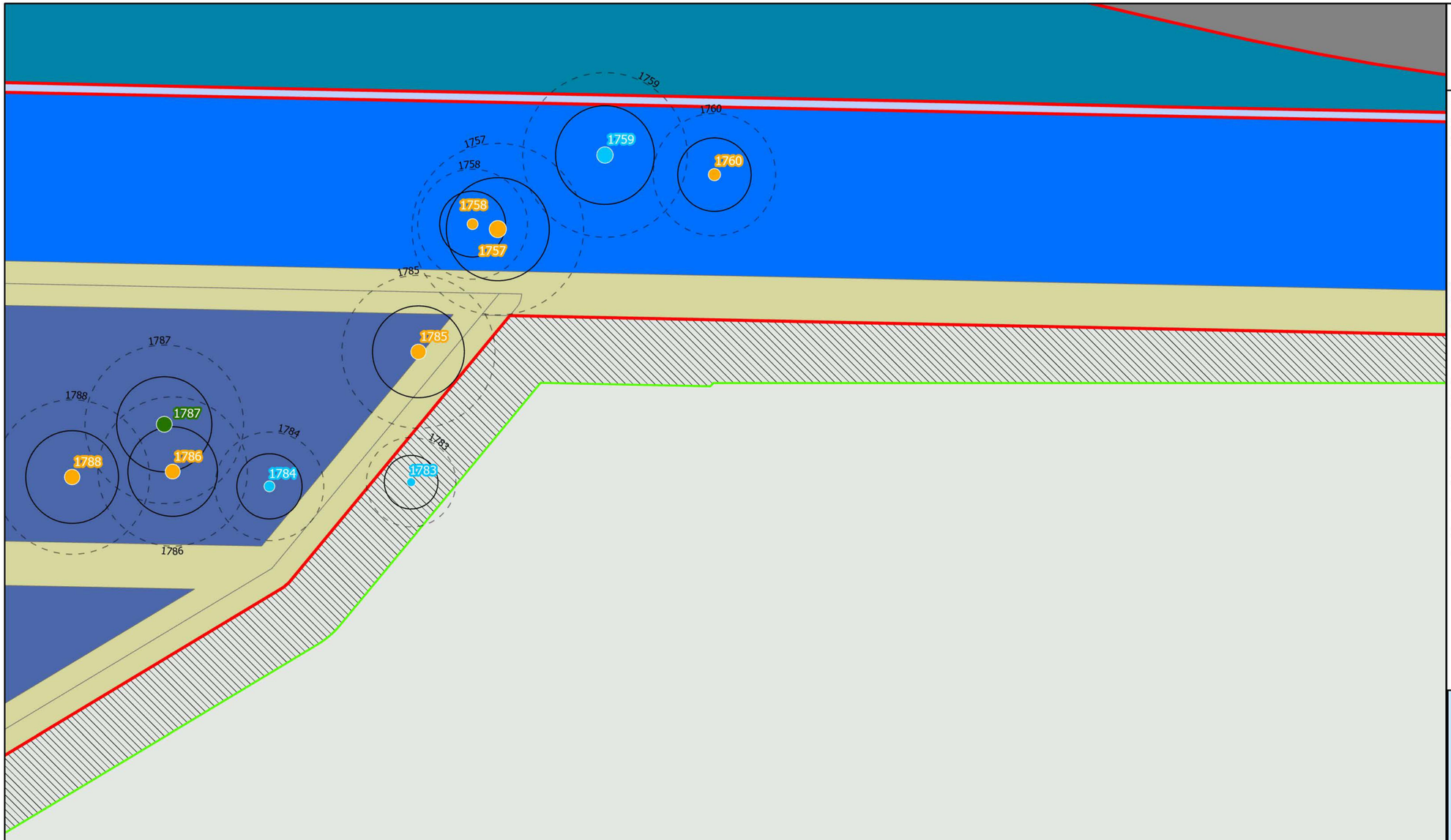


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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 3 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH

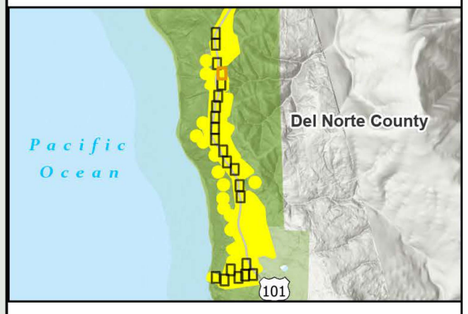
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area

- Permanent
- Temporary

Project Components and Design Features

- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Retaining Wall
- Tiered Wall
- New Road
- Existing Rd



N

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Feet

Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 4 of 22

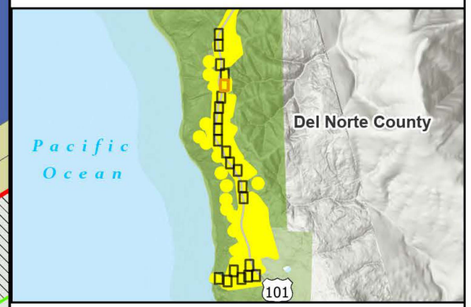
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Retaining Wall
- Tiered Wall
- New Road
- Existing Rd

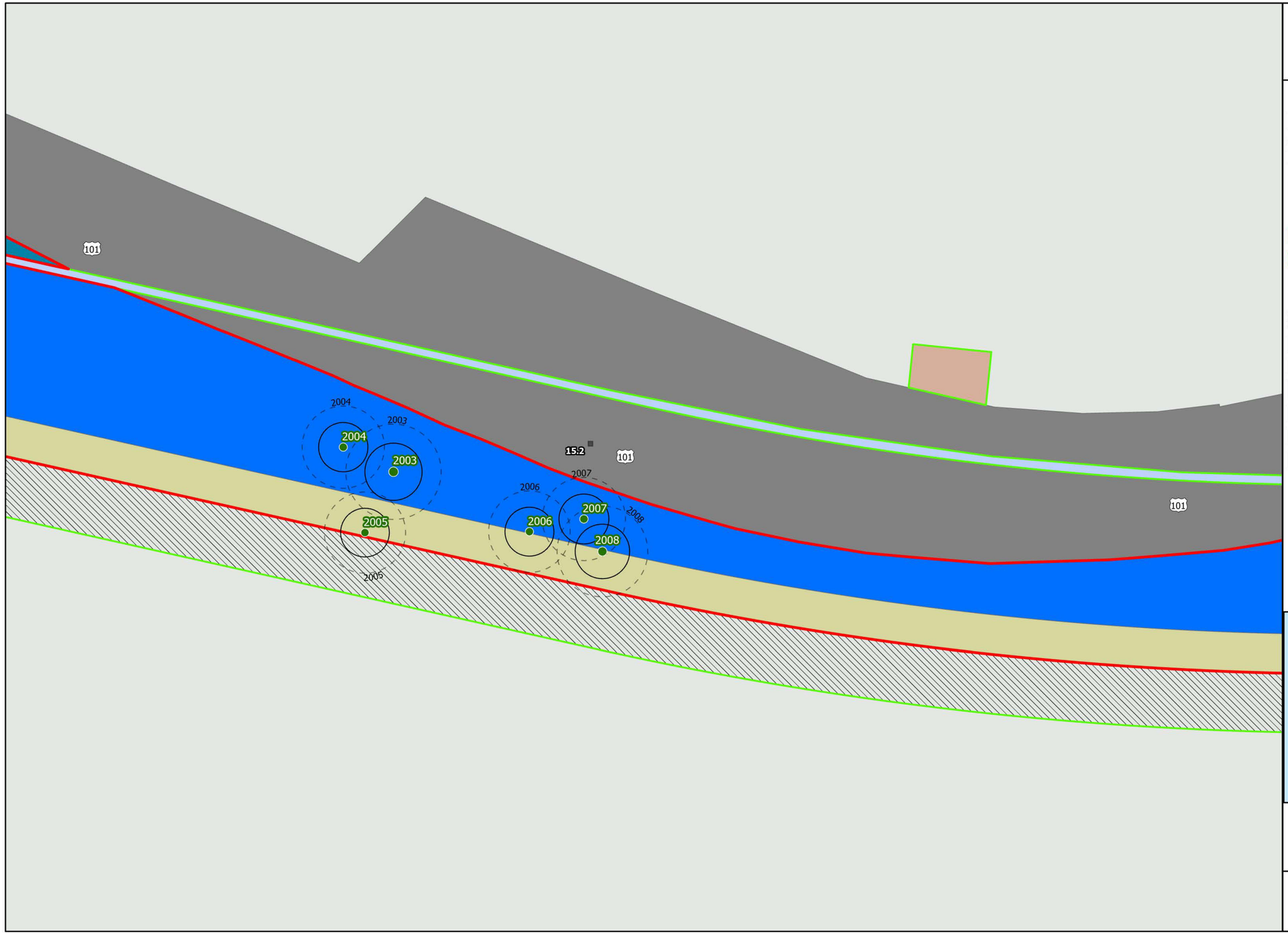


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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 5 of 22



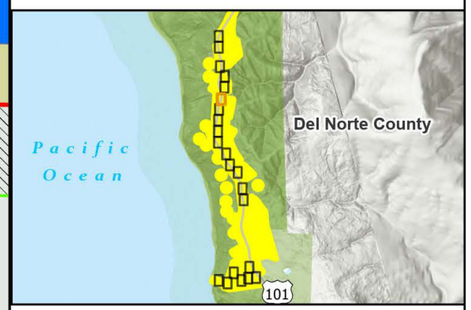
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



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Feet

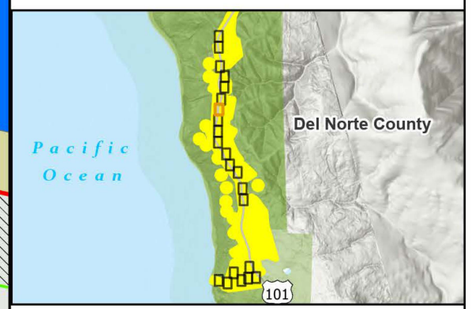
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Figure 2
Alternative X Impacts to Large Trees
Sheet 6 of 22

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Redwood
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Additional Areas
Cut/Fill
Retaining Wall
New Road
Existing Rd



N
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Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 7 of 22

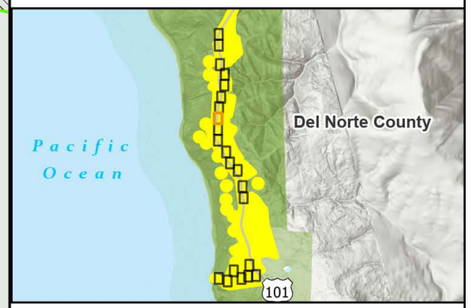
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



N

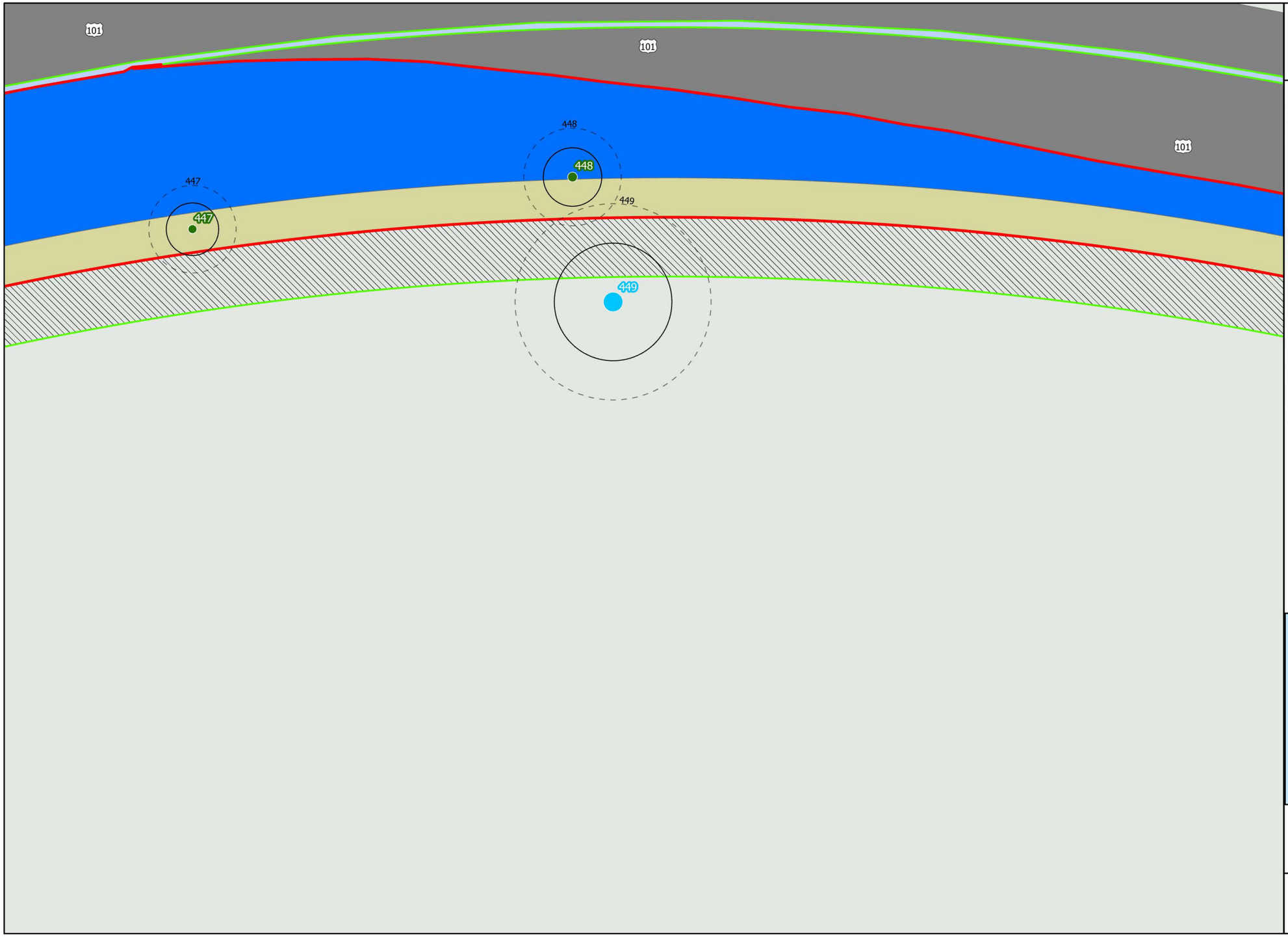
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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 8 of 22



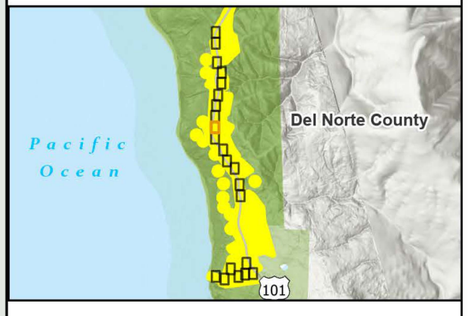
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Retaining Wall
- New Road
- Existing Rd



N

0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 9 of 22

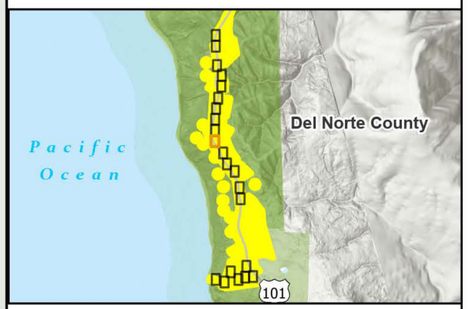
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



N

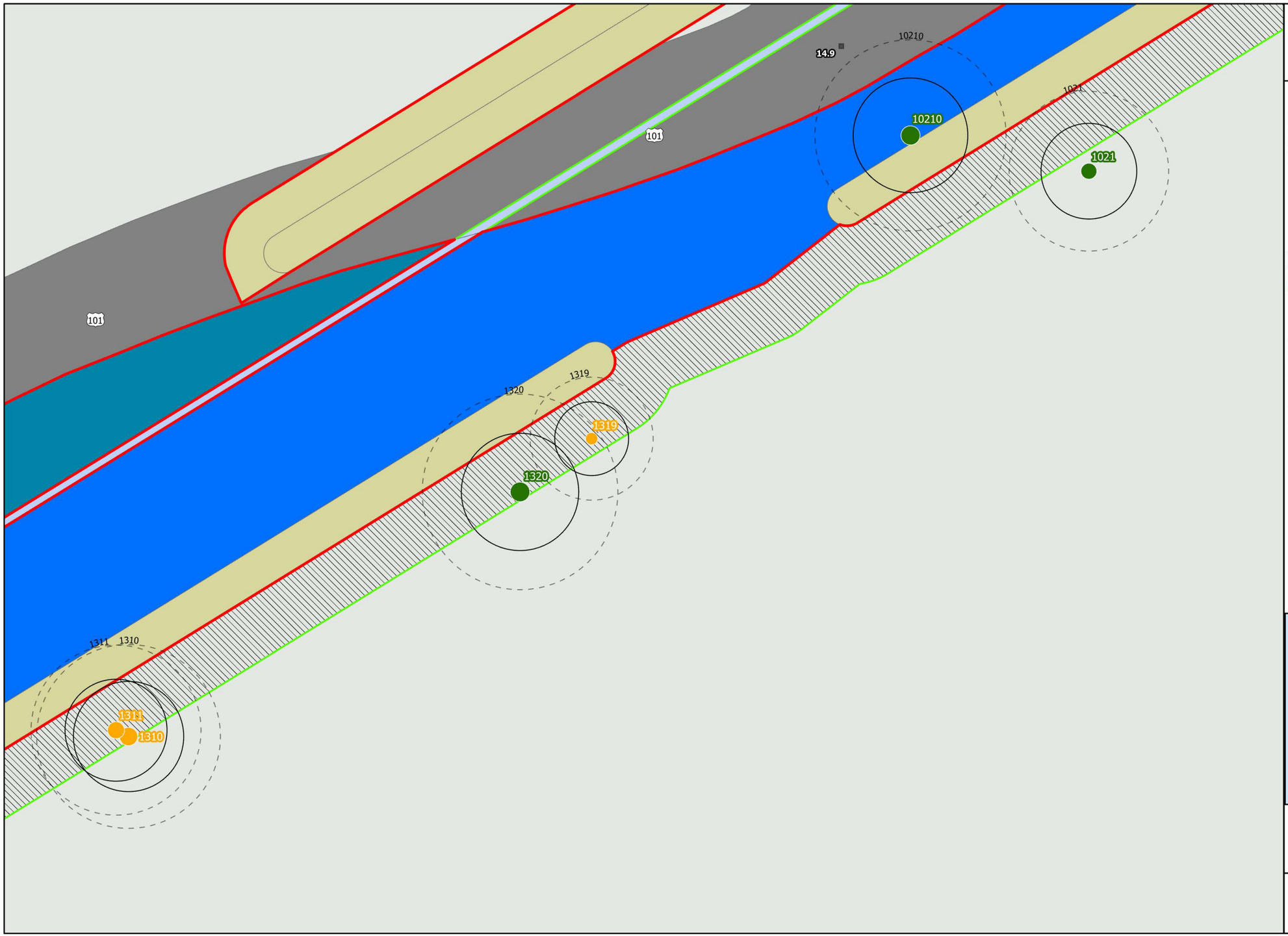
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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 10 of 22



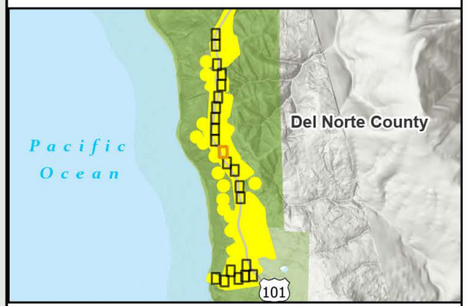
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Retaining Wall
- New Road
- Existing Rd



N
0
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Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 11 of 22

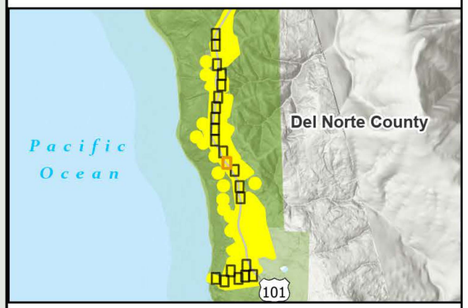
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



N

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Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 12 of 22



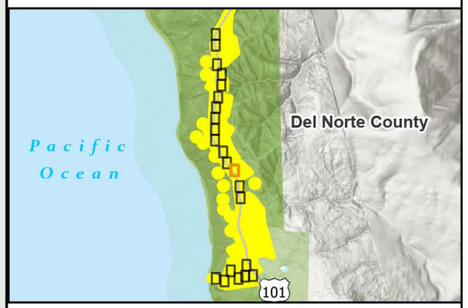
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Retaining Wall
- New Road
- Existing Rd



N

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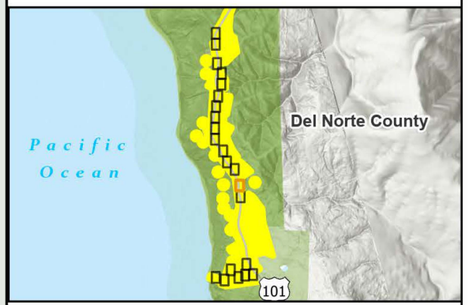
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Figure 2
Alternative X Impacts to Large Trees
Sheet 13 of 22

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill
Retaining Wall
New Road
Existing Rd



N
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Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 14 of 22

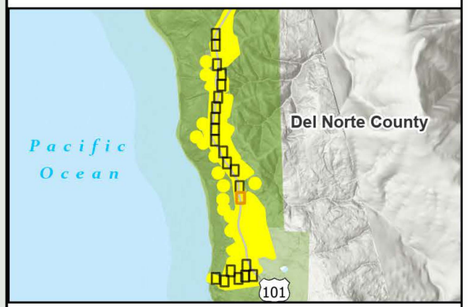
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



N

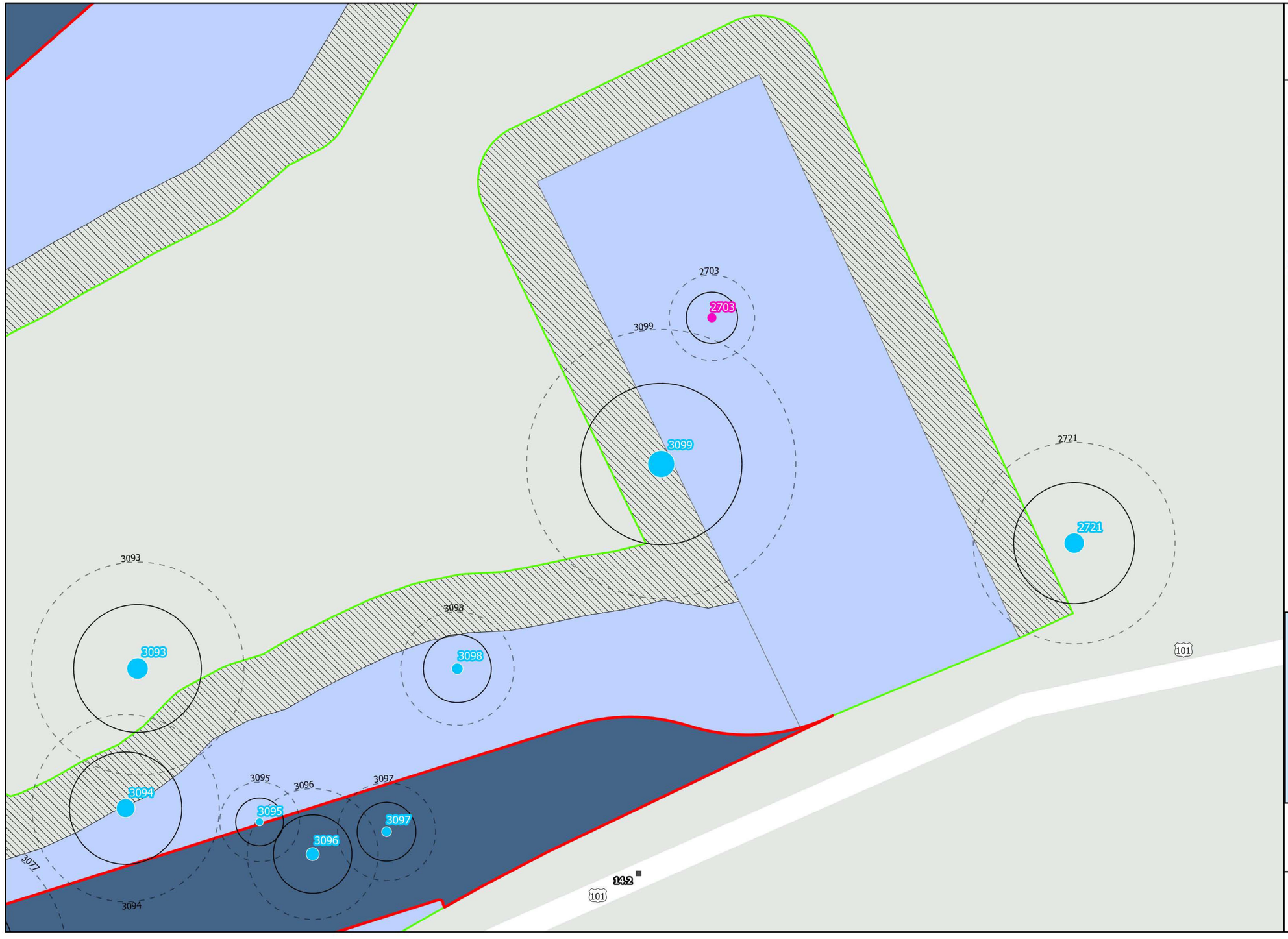
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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 15 of 22



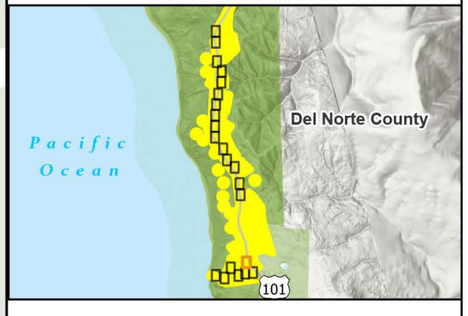
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- Cut/Fill

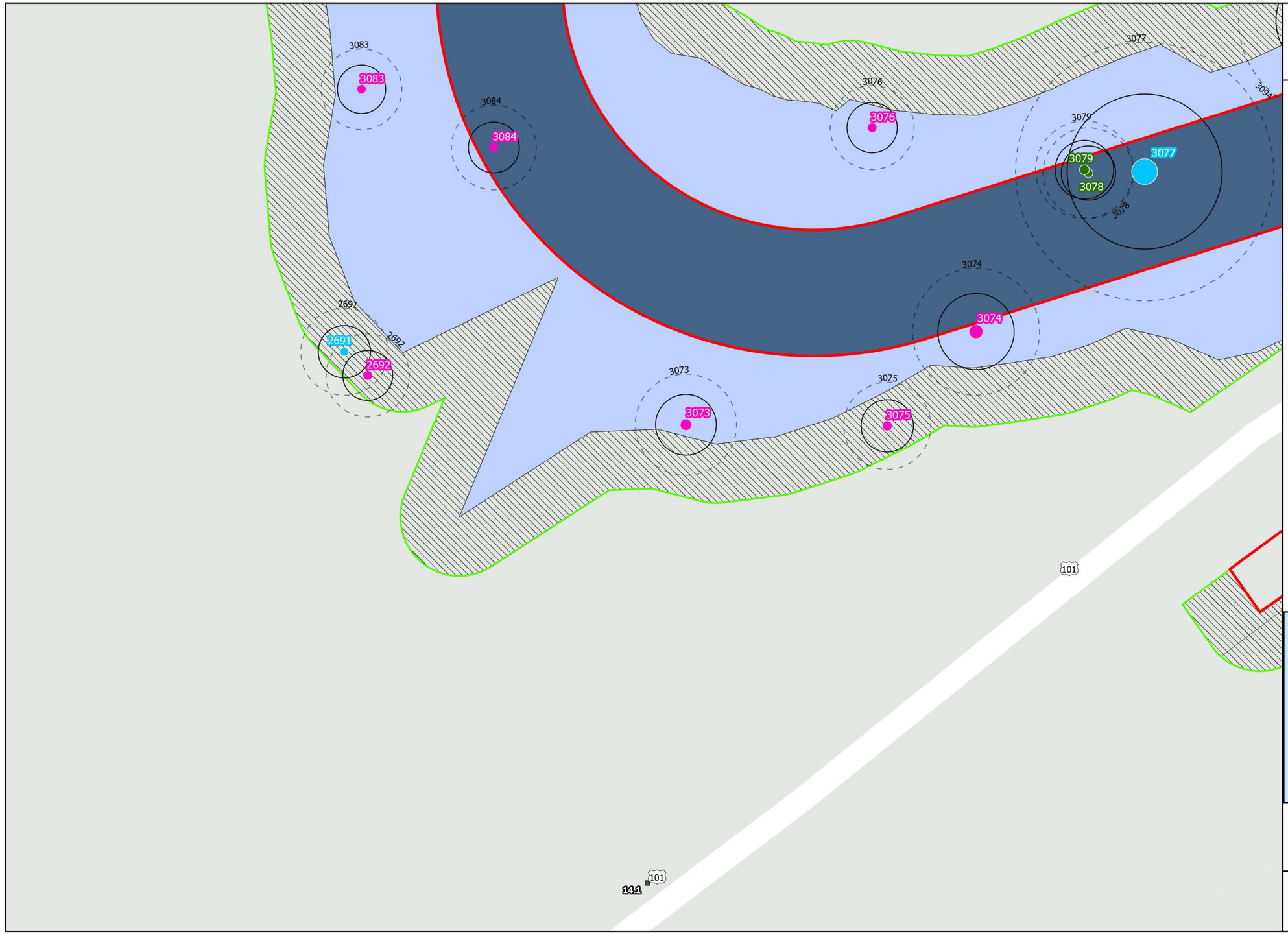


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Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 16 of 22



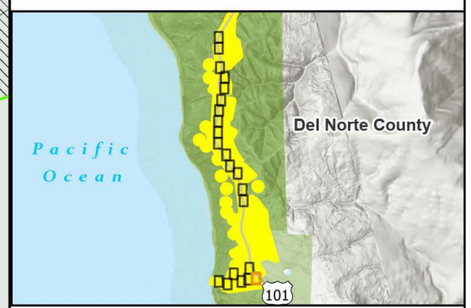
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- Cut/Fill



N

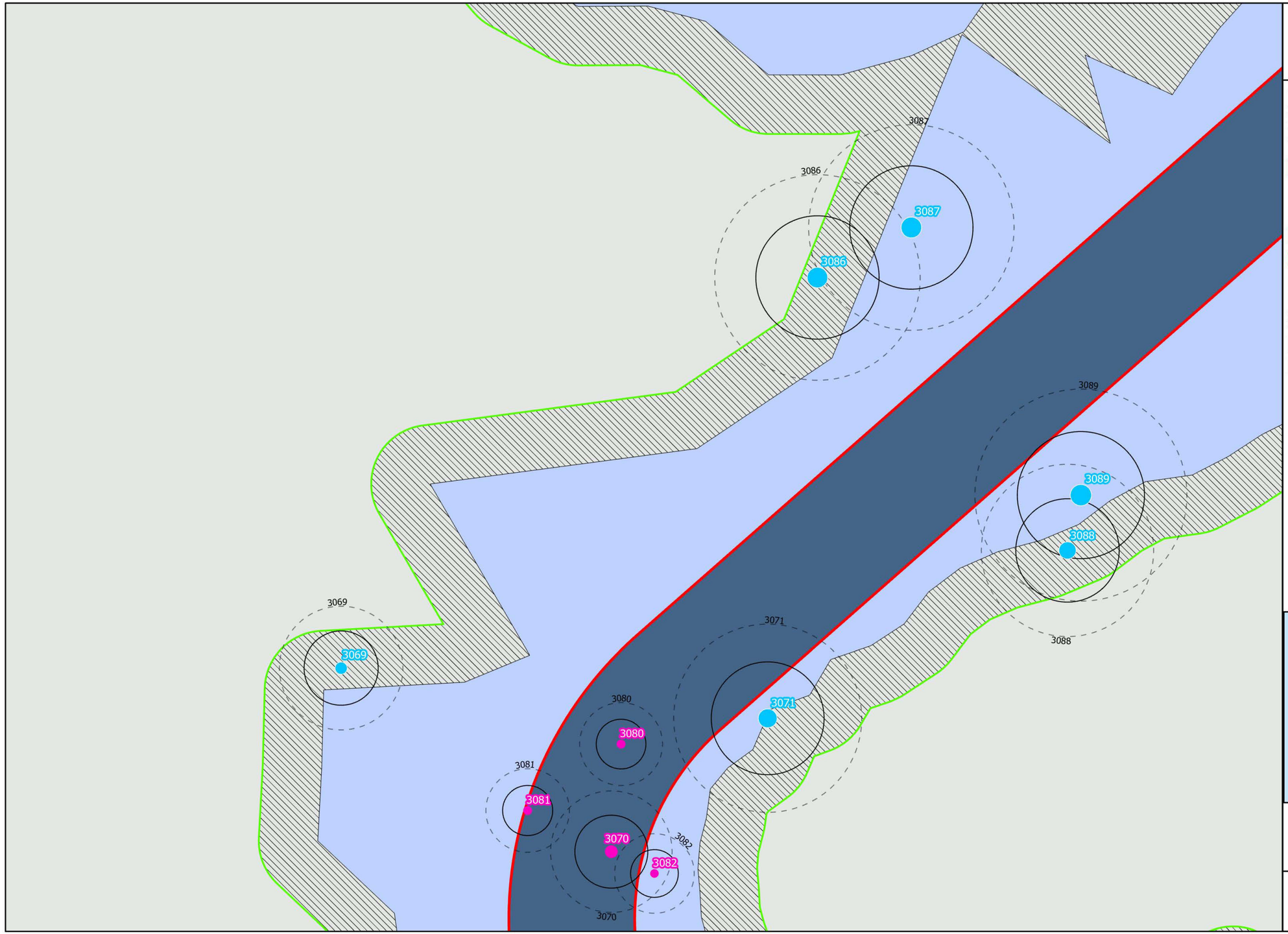
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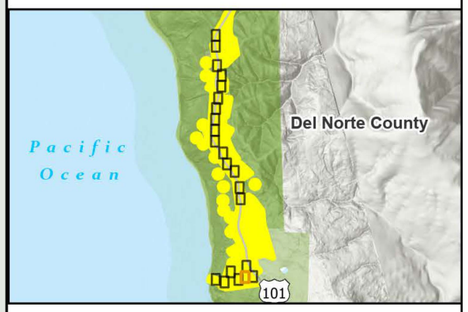
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Figure 2
Alternative X Impacts to Large Trees
Sheet 17 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill

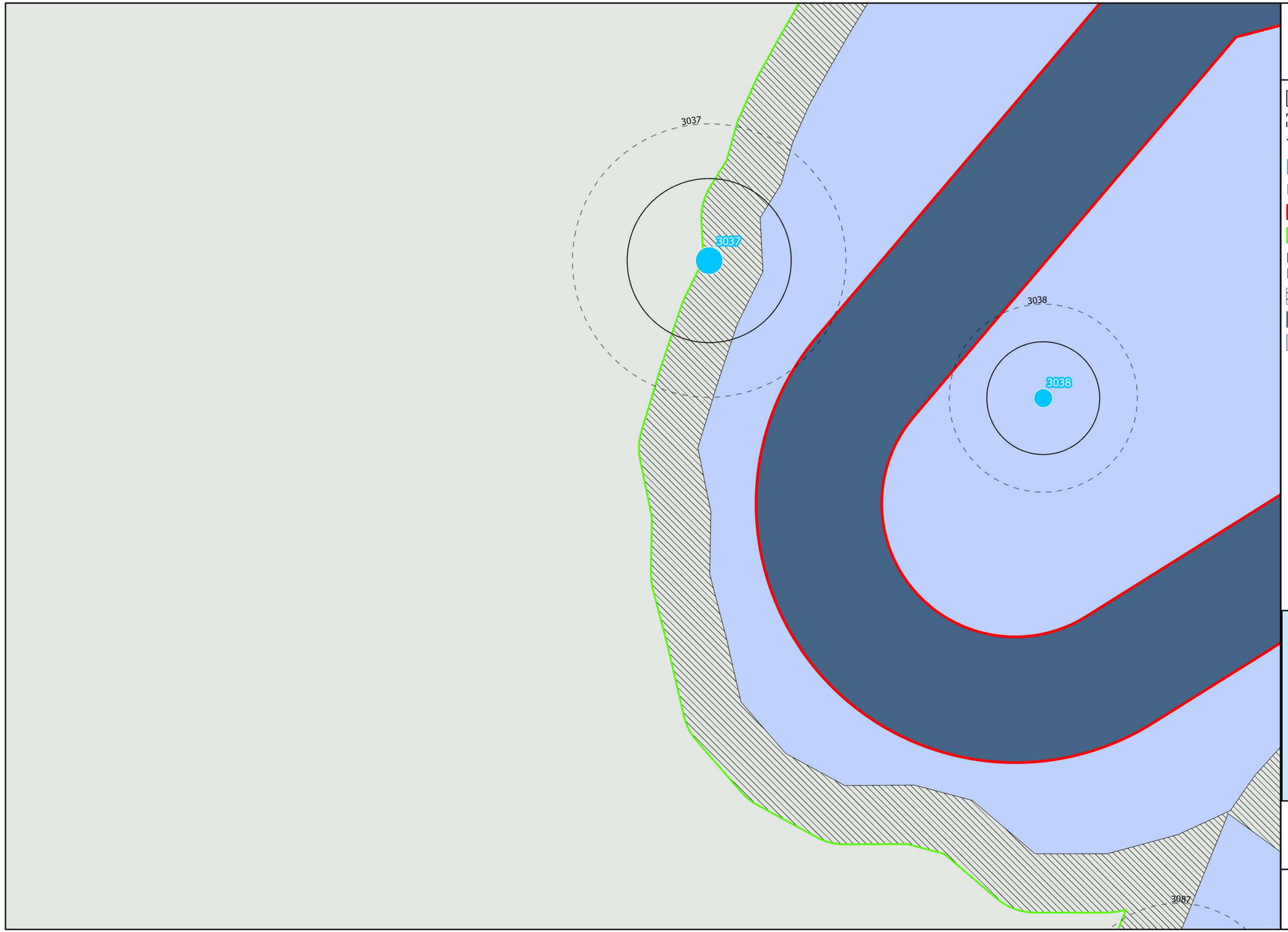


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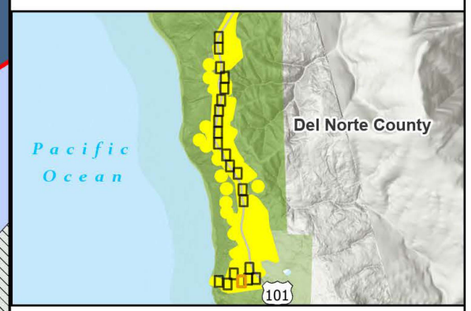
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Figure 2
Alternative X Impacts to Large Trees
Sheet 18 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

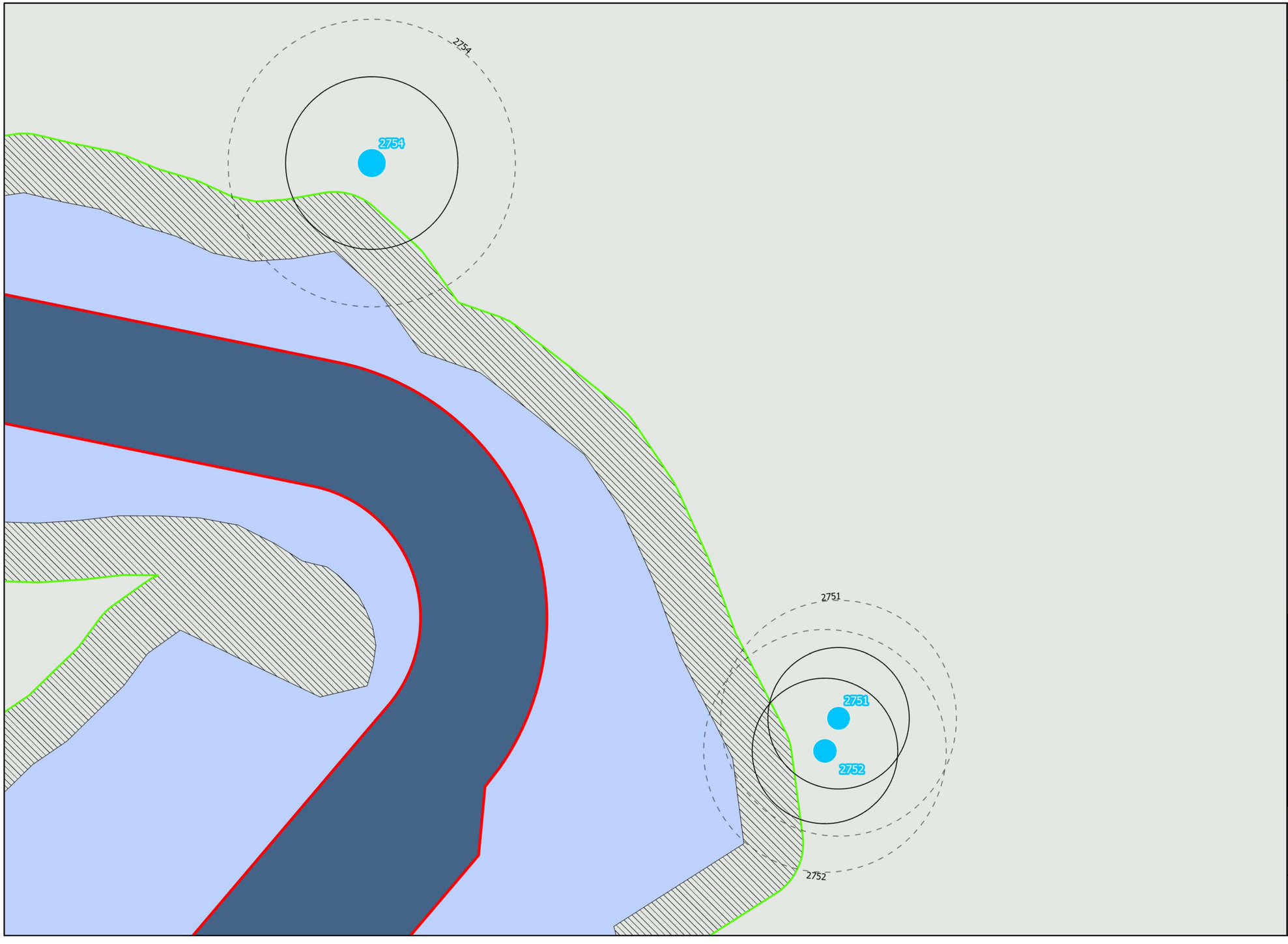
DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill



N
0
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Feet

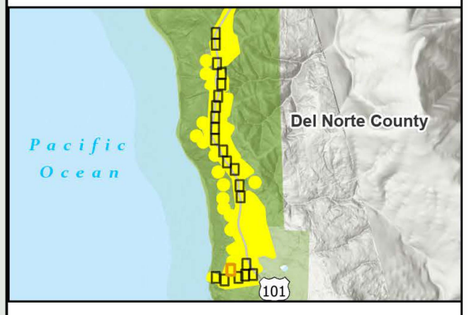
Date created: 6/30/2023

Figure 2
Alternative X Impacts to Large Trees
Sheet 19 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill

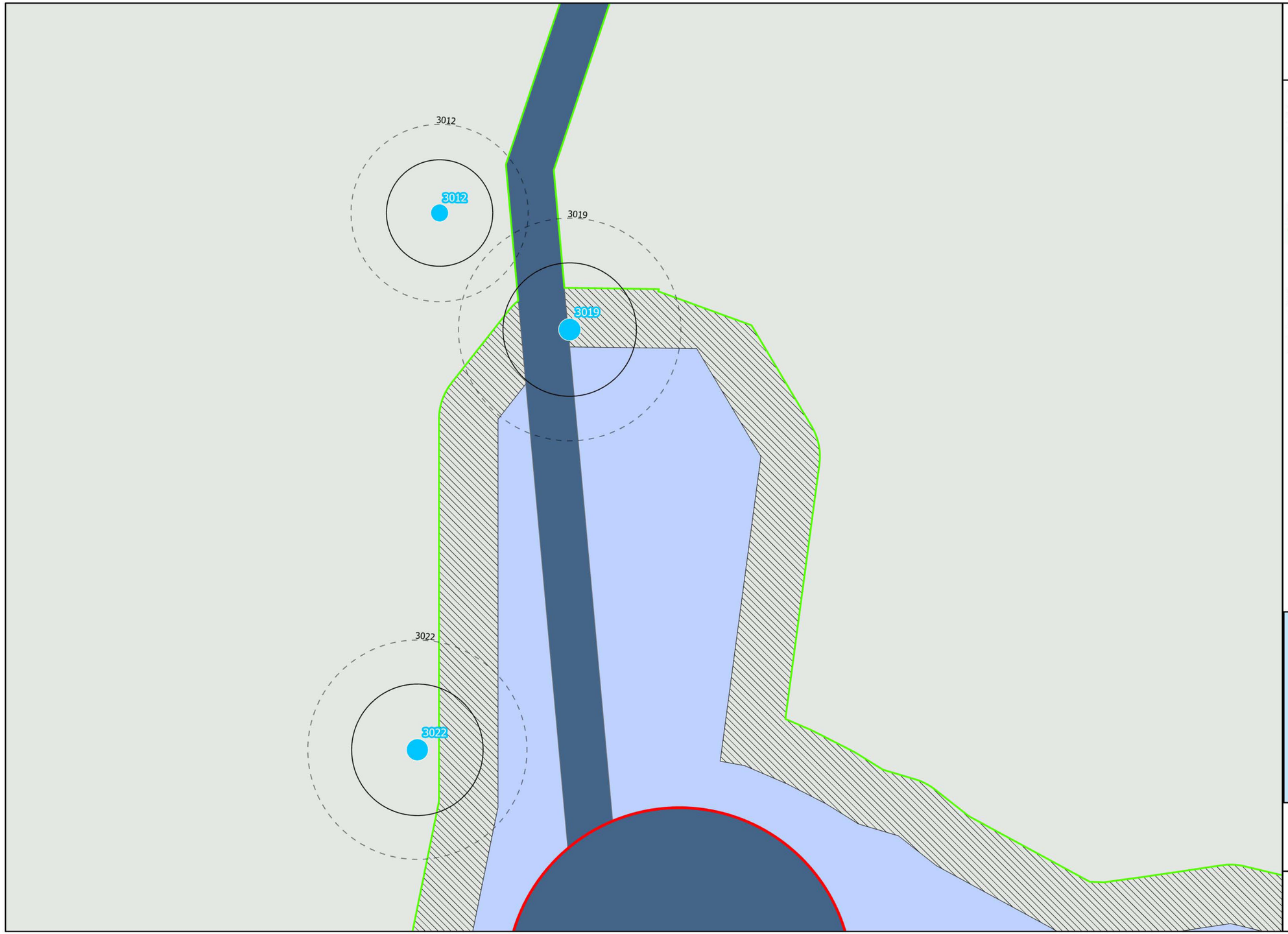


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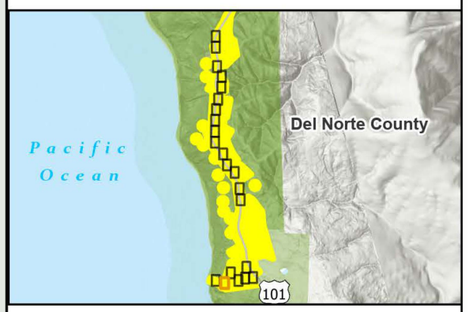
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Figure 2
Alternative X Impacts to Large Trees
Sheet 20 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill

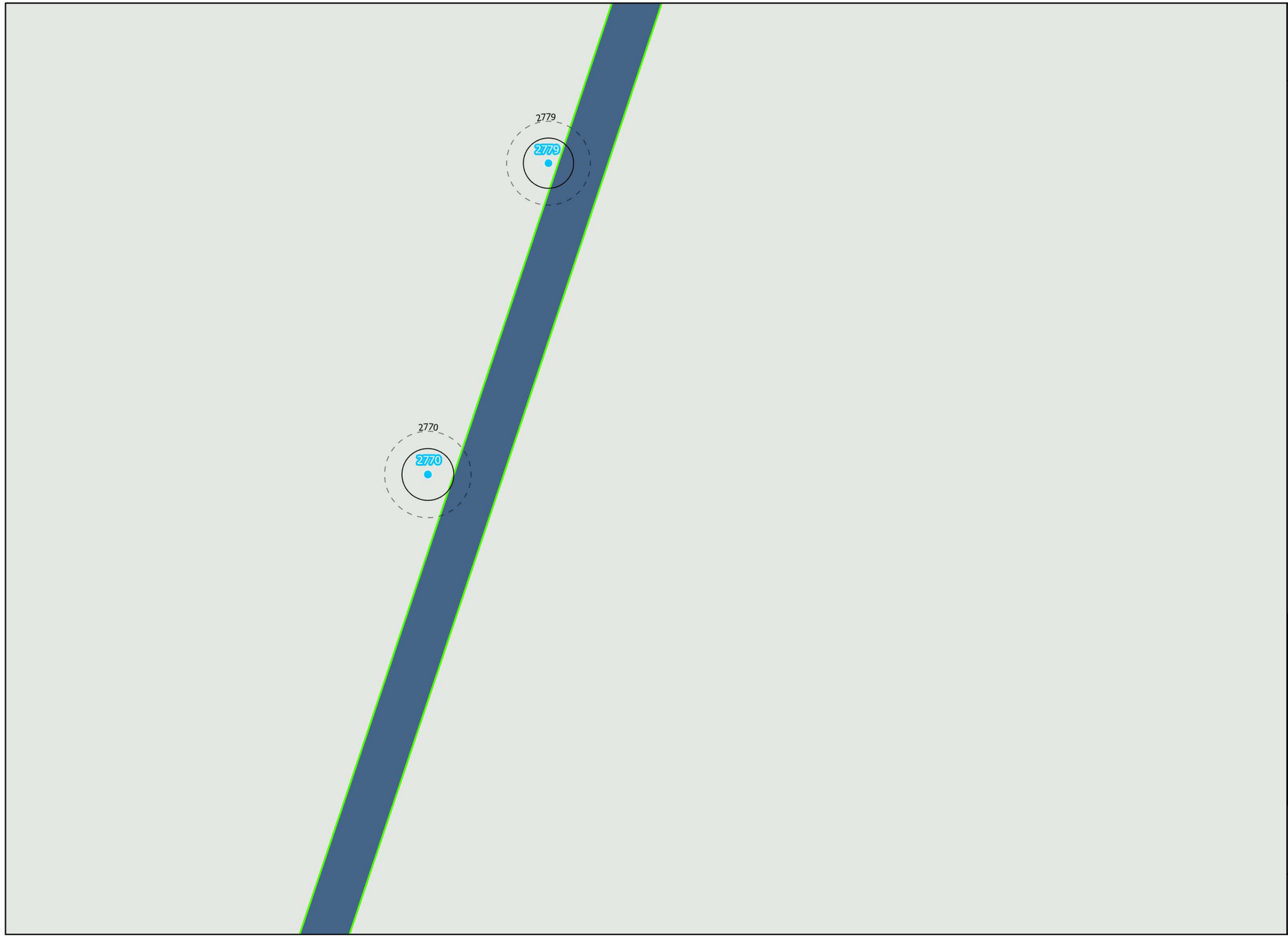


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Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 21 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X

DBH 5X

Tree Species DBH

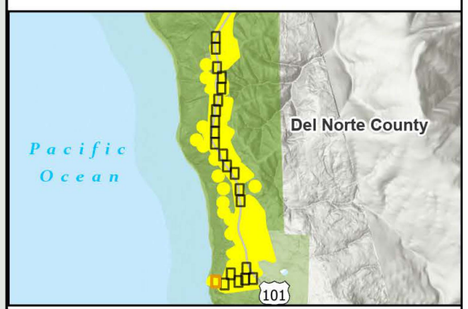
Sitka Spruce

Impact Area

Temporary

Project Components and Design Features

Access Road



0 50

N

Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 22 of 22

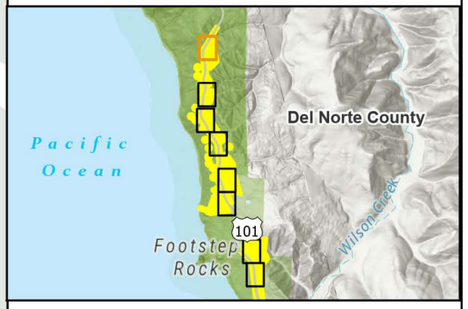
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Bridge
- New Road
- Removed Road
- Existing Road



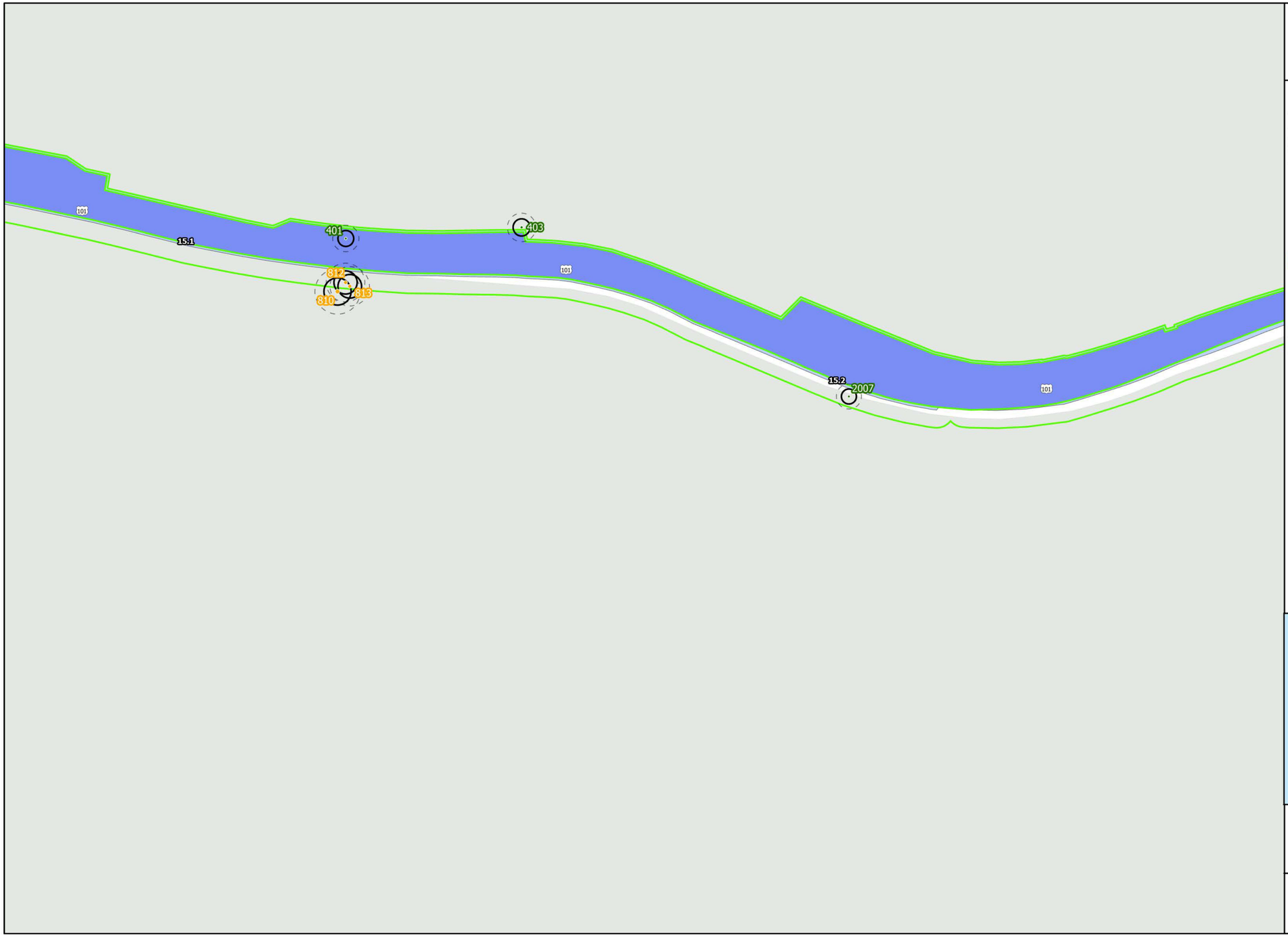
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Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 1 of 8



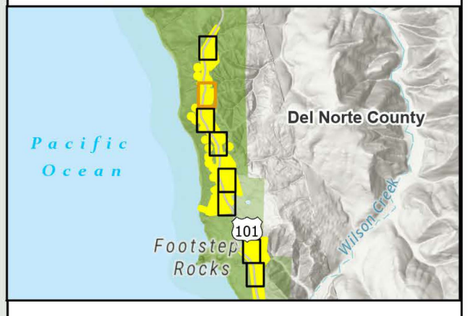
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood

Impact Area
- Temporary

Project Components and Design Features
- Cut/Fill
- Removed Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 2 of 8

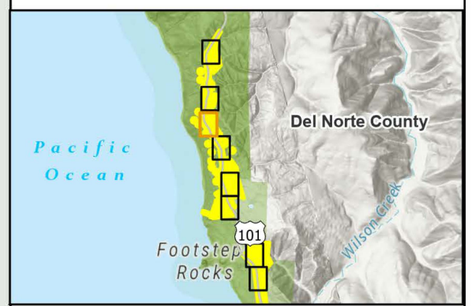
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Temporary

Project Components and Design Features
- Cut/Fill
- Removed Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 3 of 8

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH

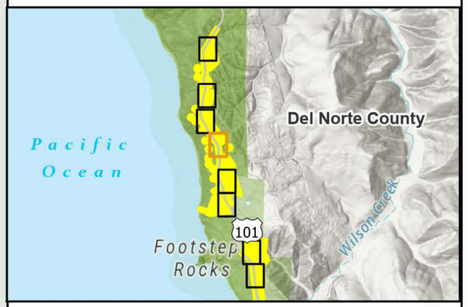
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area

- Temporary

Project Components and Design Features

- Cut/Fill
- Removed Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 4 of 8

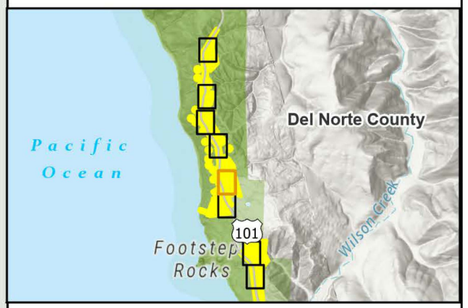
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Removed Road
- Existing Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 5 of 8

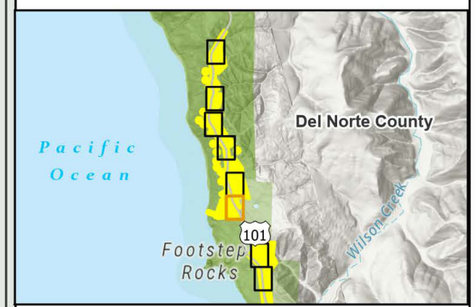
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- New Road
- Removed Road
- Existing Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 6 of 8

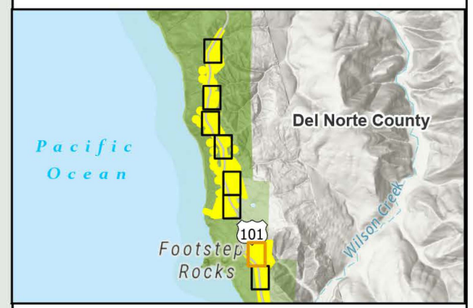
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Maintenance Yard



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 7 of 8

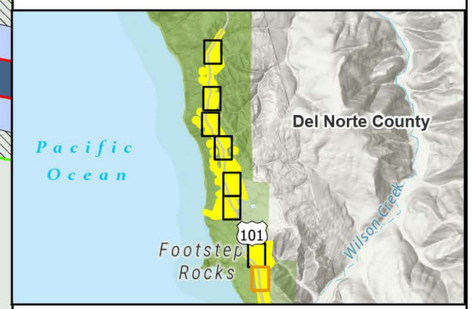
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Transformer



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 8 of 8



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Redwood

Impact Area
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Existing Road



N

0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 1 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH
- Redwood
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Tunnel Entry
- Bridge
- New Road
- Removed Road
- Existing Road



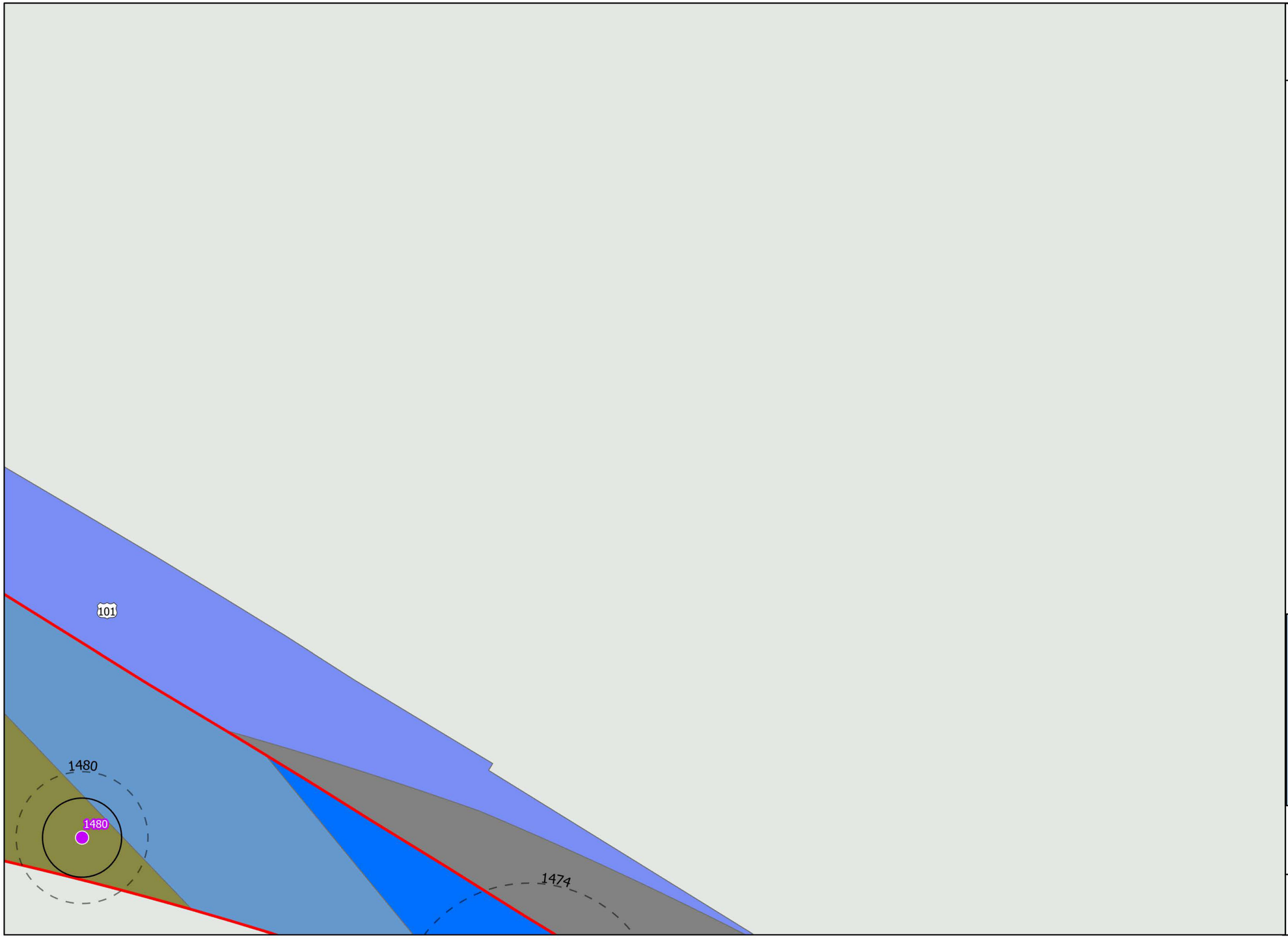
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Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 2 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Western Hemlock
Impact Area
Permanent
Project Components and Design Features
Tunnel Entry
Bridge
New Road
Removed Road
Existing Road



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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 3 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Bridge
- Removed Road
- Existing Road



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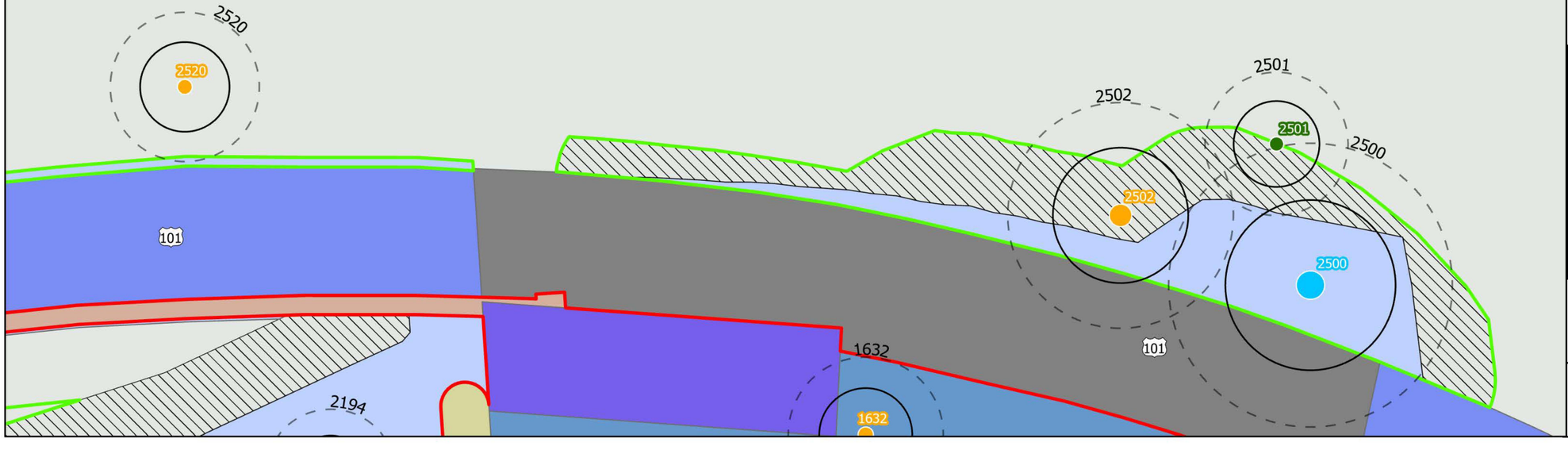
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Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 4 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Redwood
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
BMP Area
Culvert/Drainage
Cut/Fill
Retaining Wall
Tunnel Entry
Removed Road
Existing Road





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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 5 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Removed Road

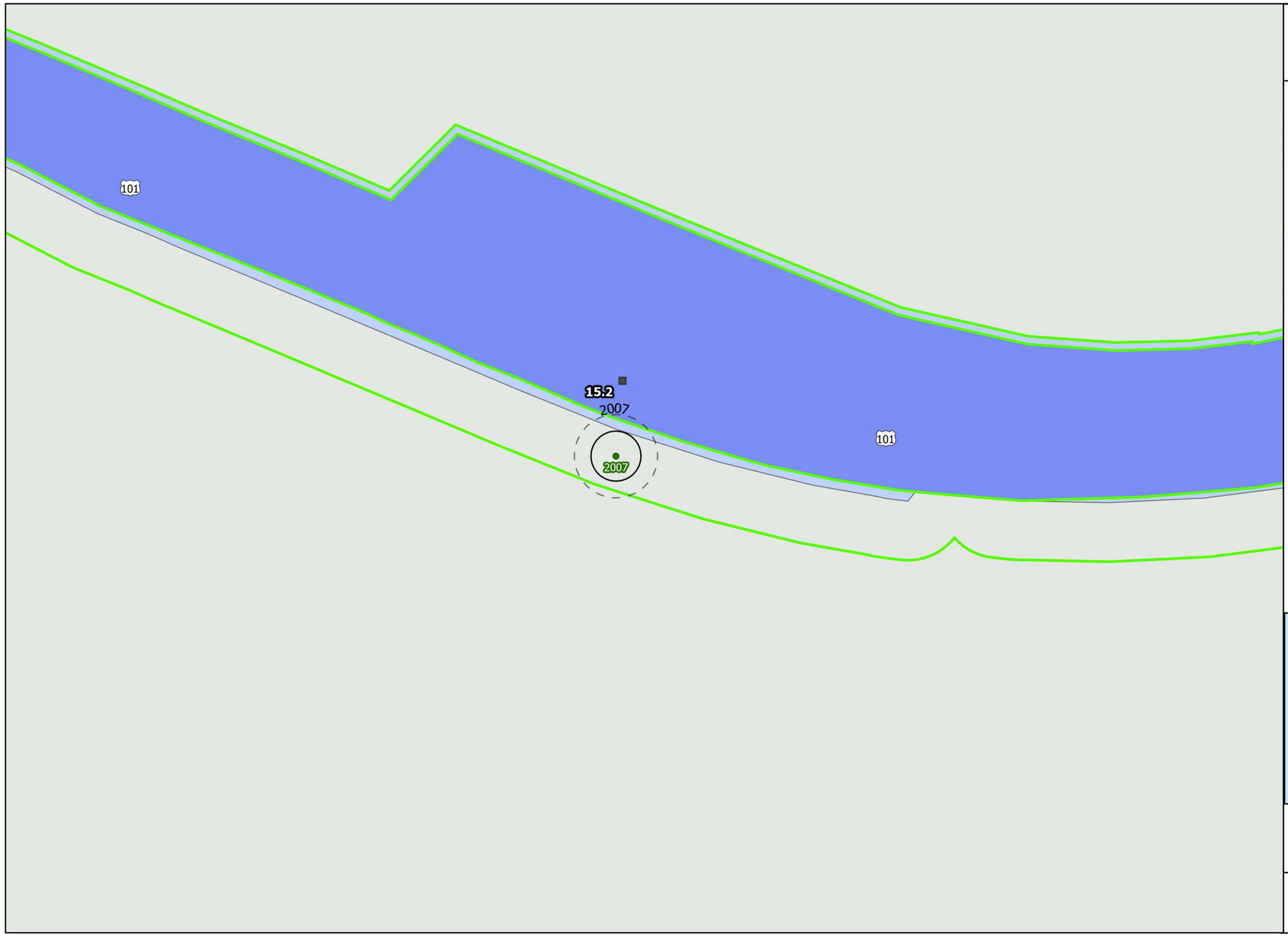


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Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 6 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH

- Douglas Fir

Impact Area

- Temporary

Project Components and Design Features

- Cut/Fill
- Removed Road



N

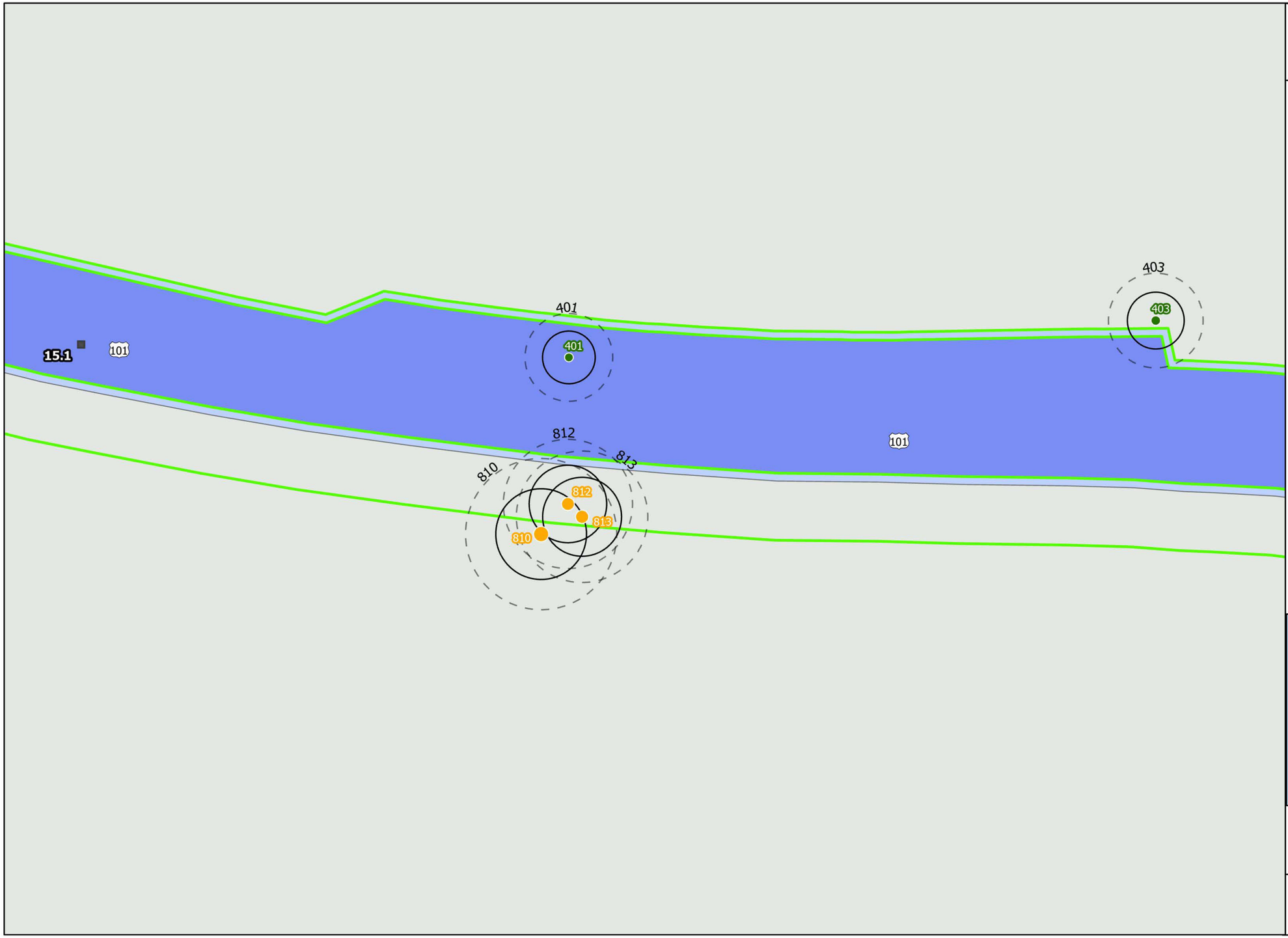
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Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 7 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood

Impact Area
- Temporary

Project Components and Design Features
- Cut/Fill
- Removed Road



N

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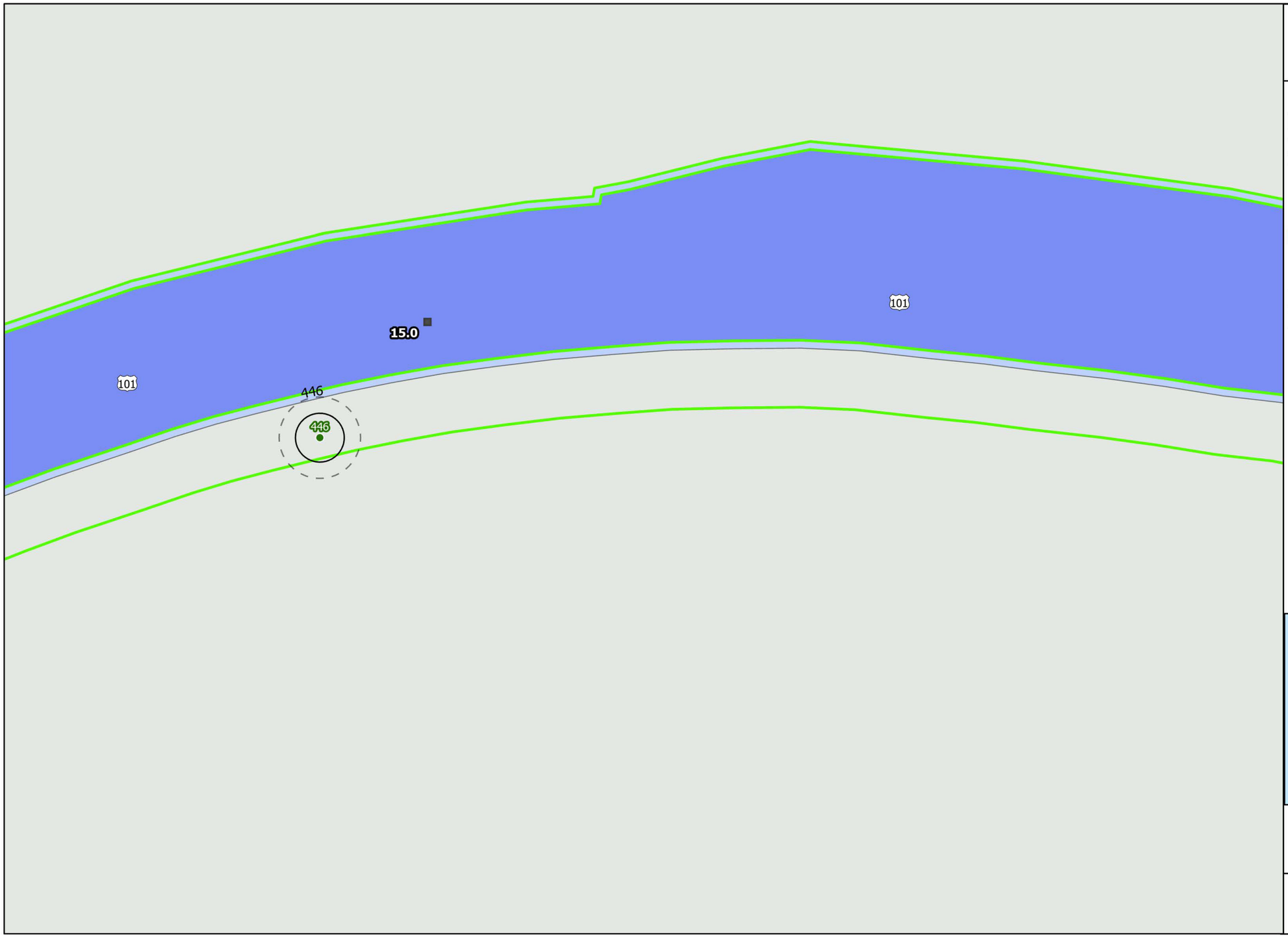
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Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 8 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280



- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Temporary

Project Components and Design Features
- Cut/Fill
- Removed Road



N

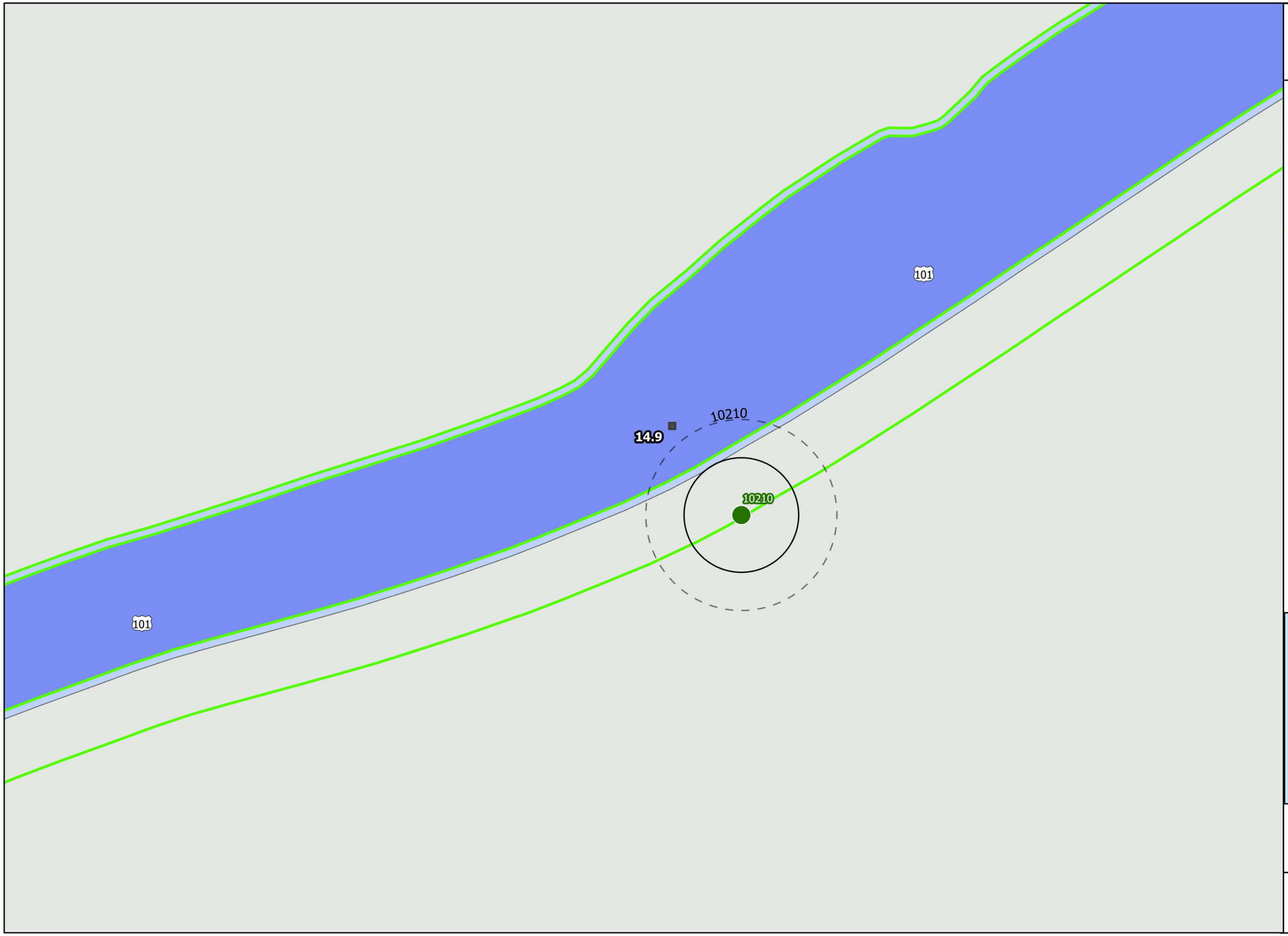
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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 9 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Temporary

Project Components and Design Features
- Cut/Fill
- Removed Road



N

0 50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 10 of 29

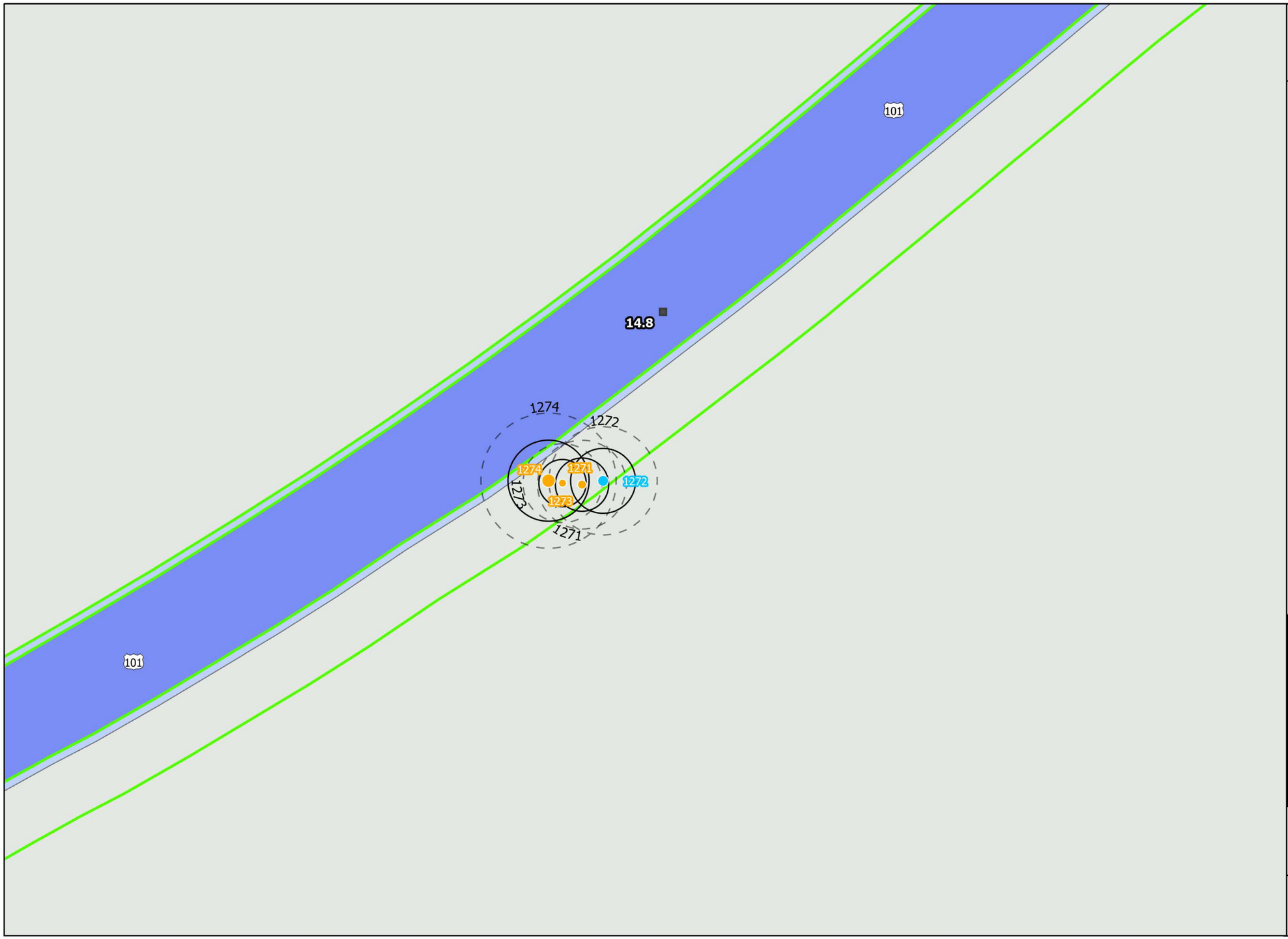
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Redwood
- Sitka Spruce

Impact Area
- Temporary

Project Components and Design Features
- Cut/Fill
- Removed Road





N

0 50

Feet

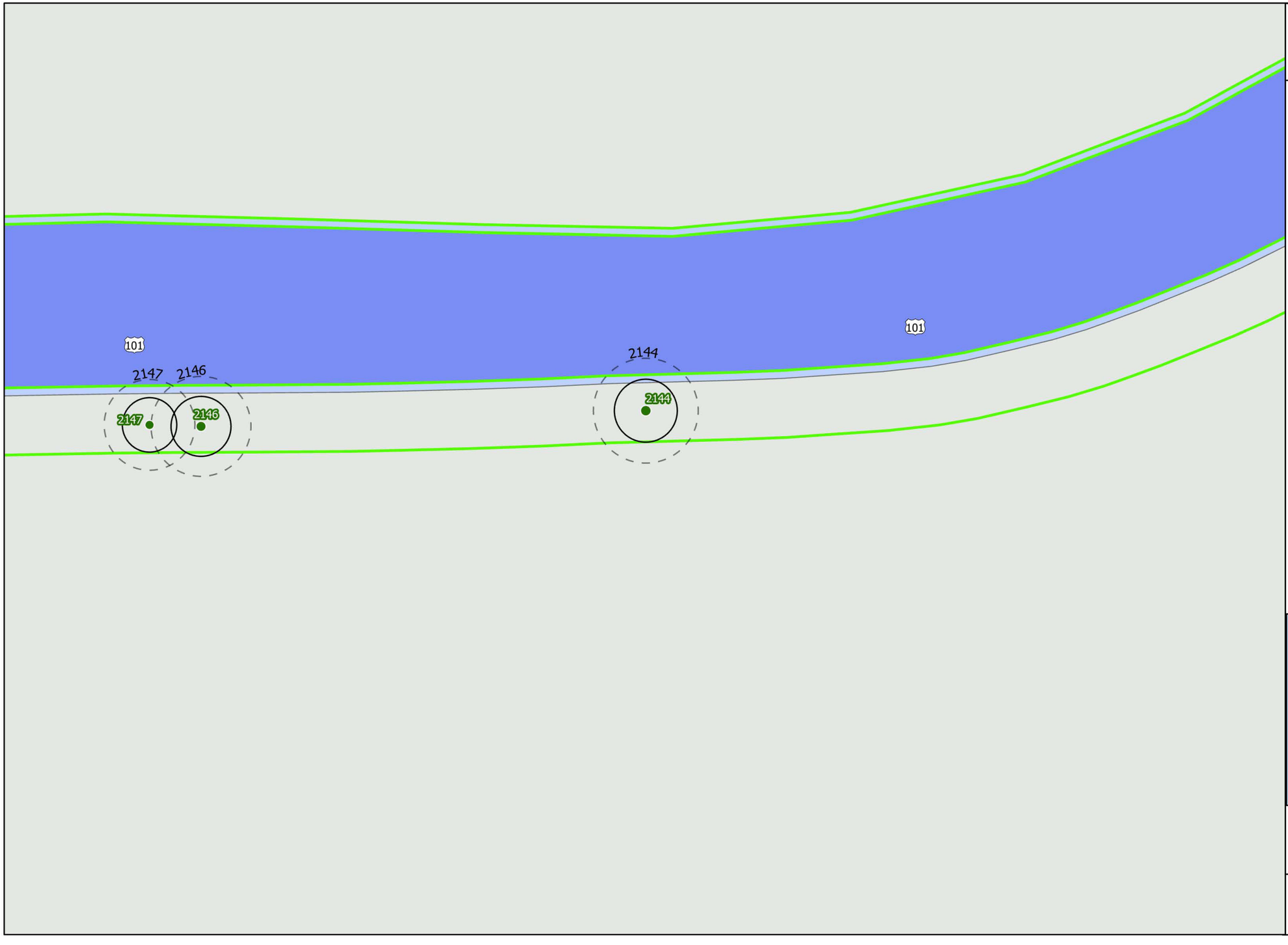
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Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 11 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Impact Area
Temporary
Project Components and Design Features
Cut/Fill
Removed Road





N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 12 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Impact Area
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill

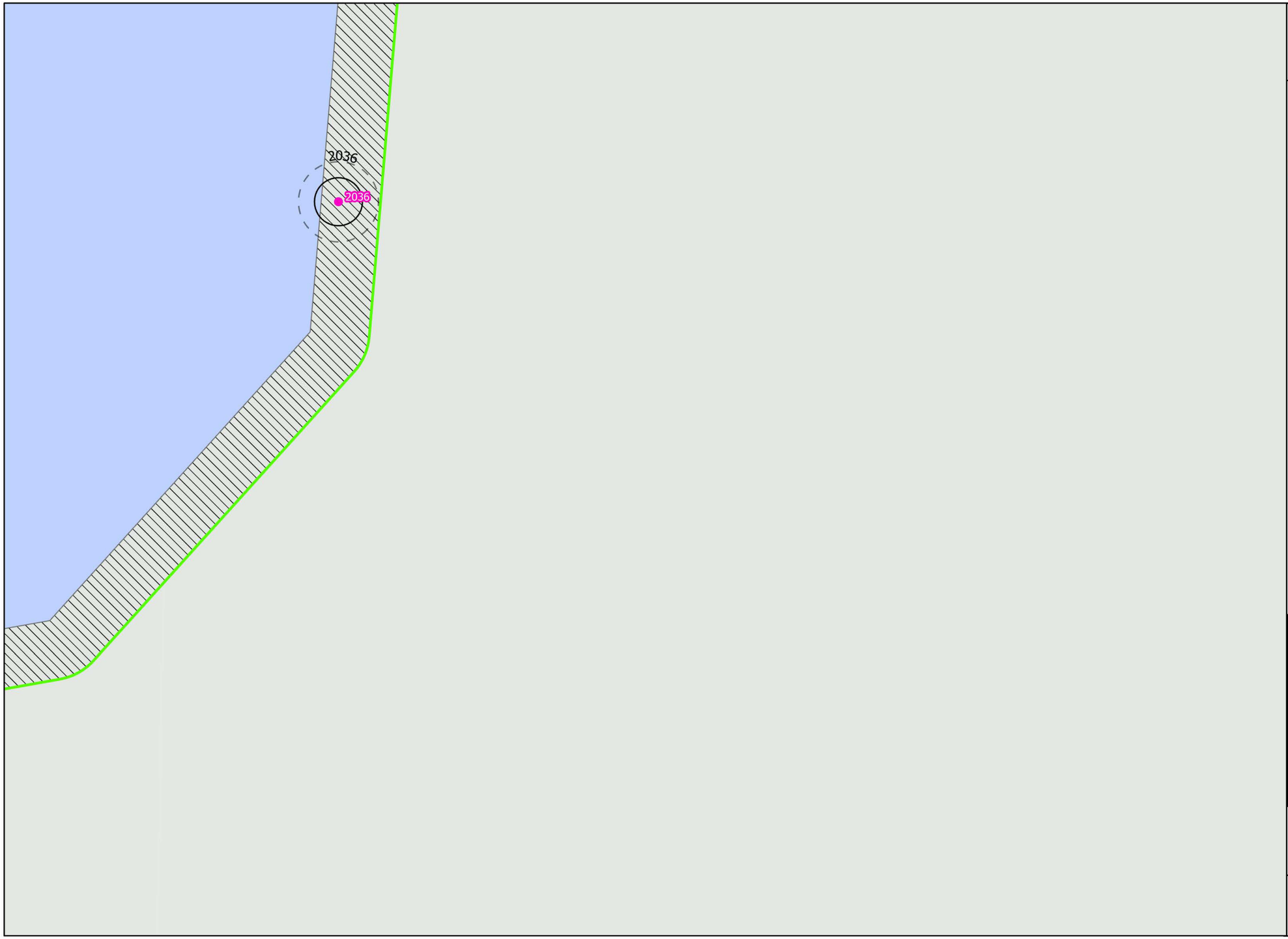
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2926
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2928
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Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 13 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

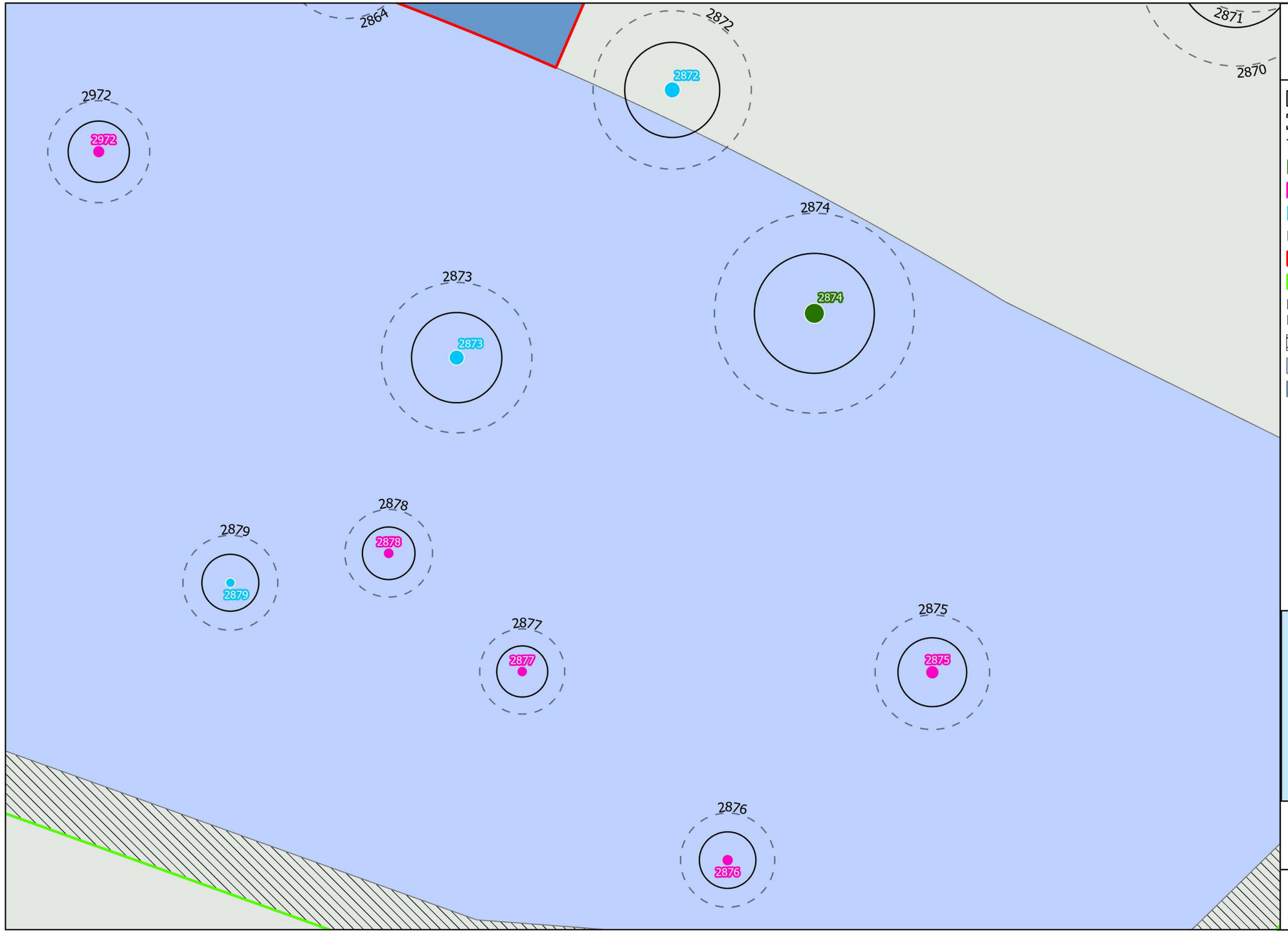
DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Impact Area
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill



N
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50
Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 14 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Tunnel Entry



N

0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 15 of 29

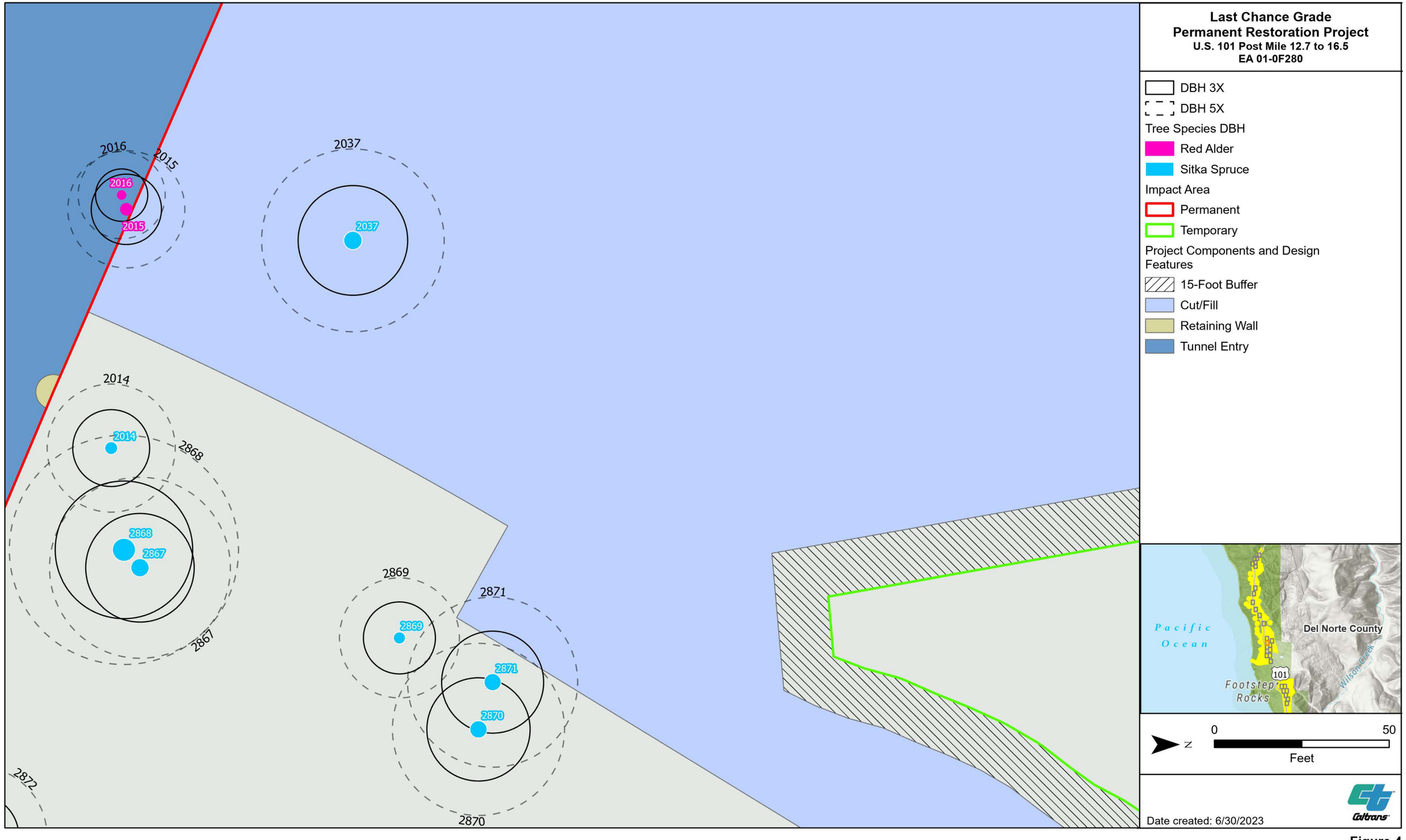
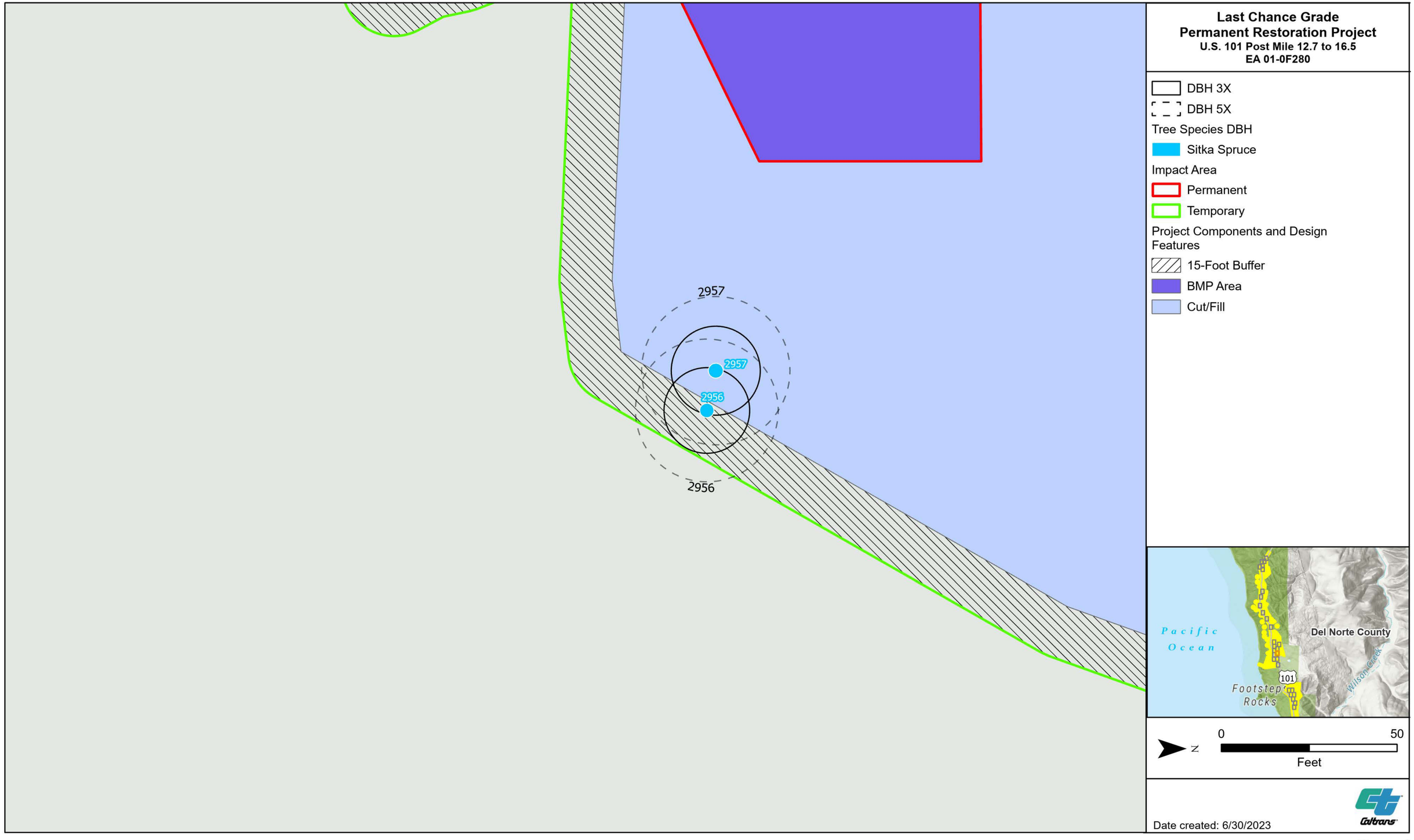


Figure 4
Alternative F Impacts to Large Trees
Sheet 16 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
BMP Area
Cut/Fill

N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 17 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
BMP Area
Culvert/Drainage
Cut/Fill
Retaining Wall
Tunnel Entry
Removed Road
Existing Road



N
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50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 18 of 29

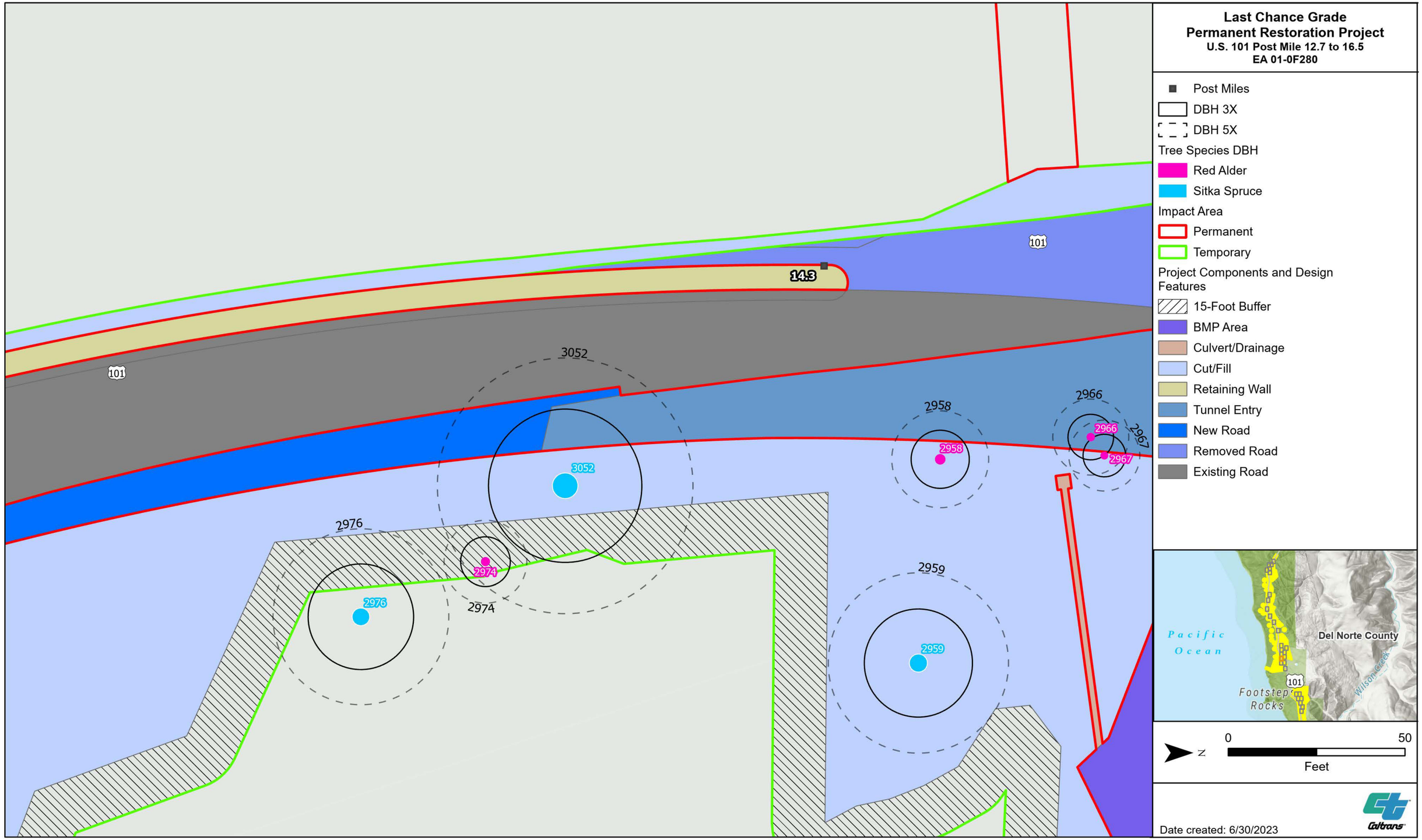
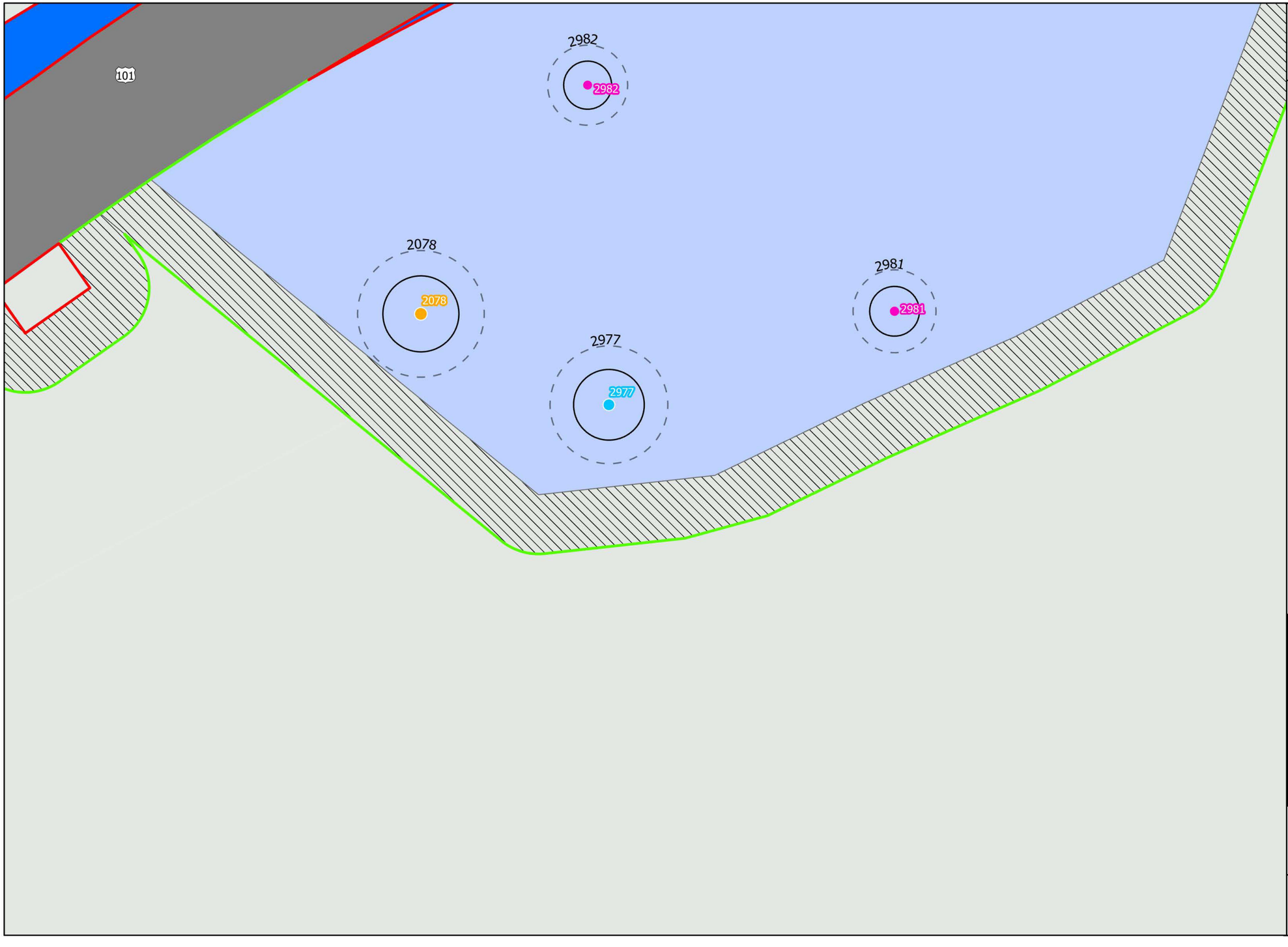


Figure 4
Alternative F Impacts to Large Trees
Sheet 19 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Redwood
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill
New Road
Existing Road



N
0
50
Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 20 of 29

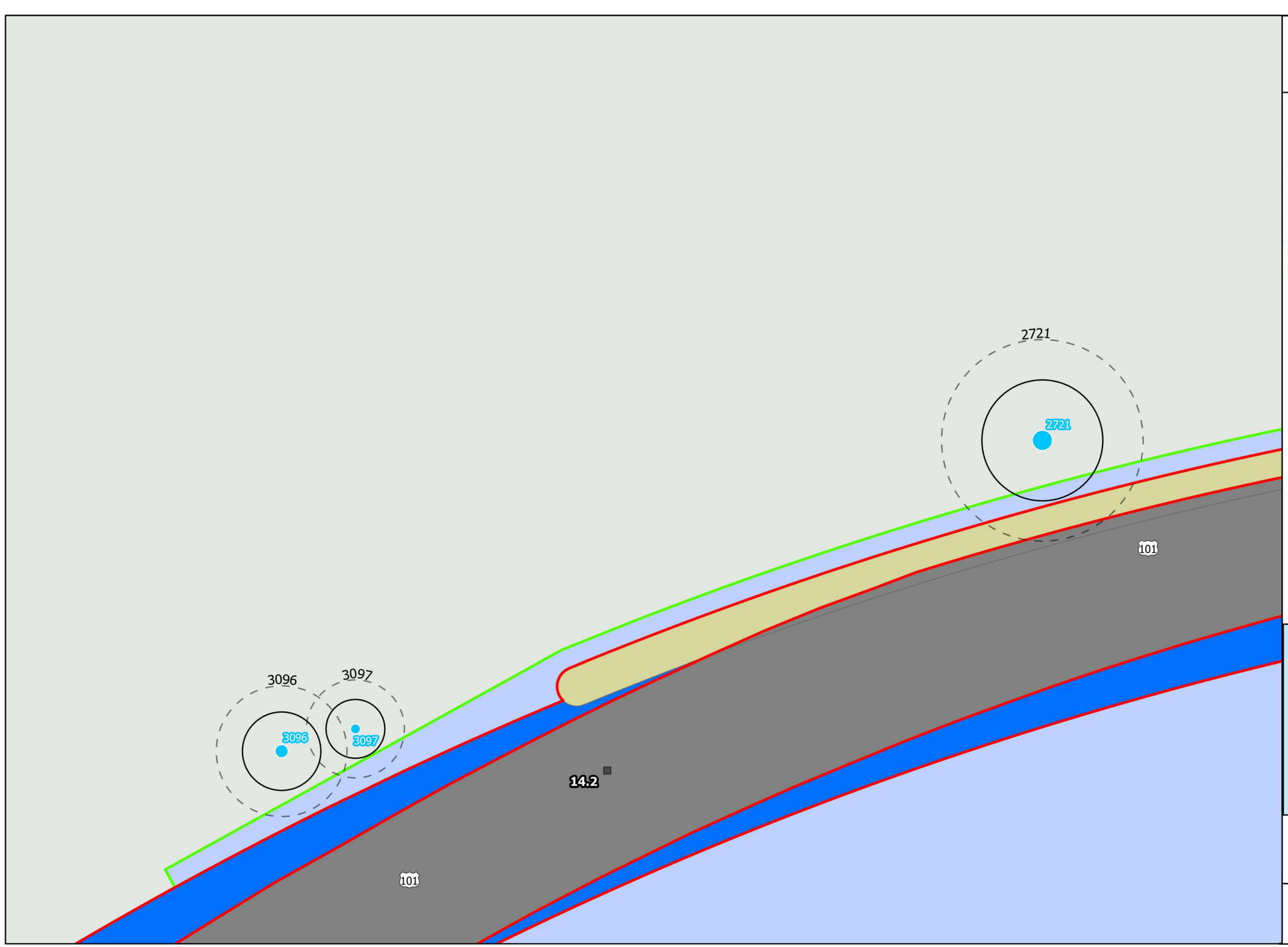
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Retaining Wall
- New Road
- Existing Road





N

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Feet

Date created: 6/30/2023

Caltrans

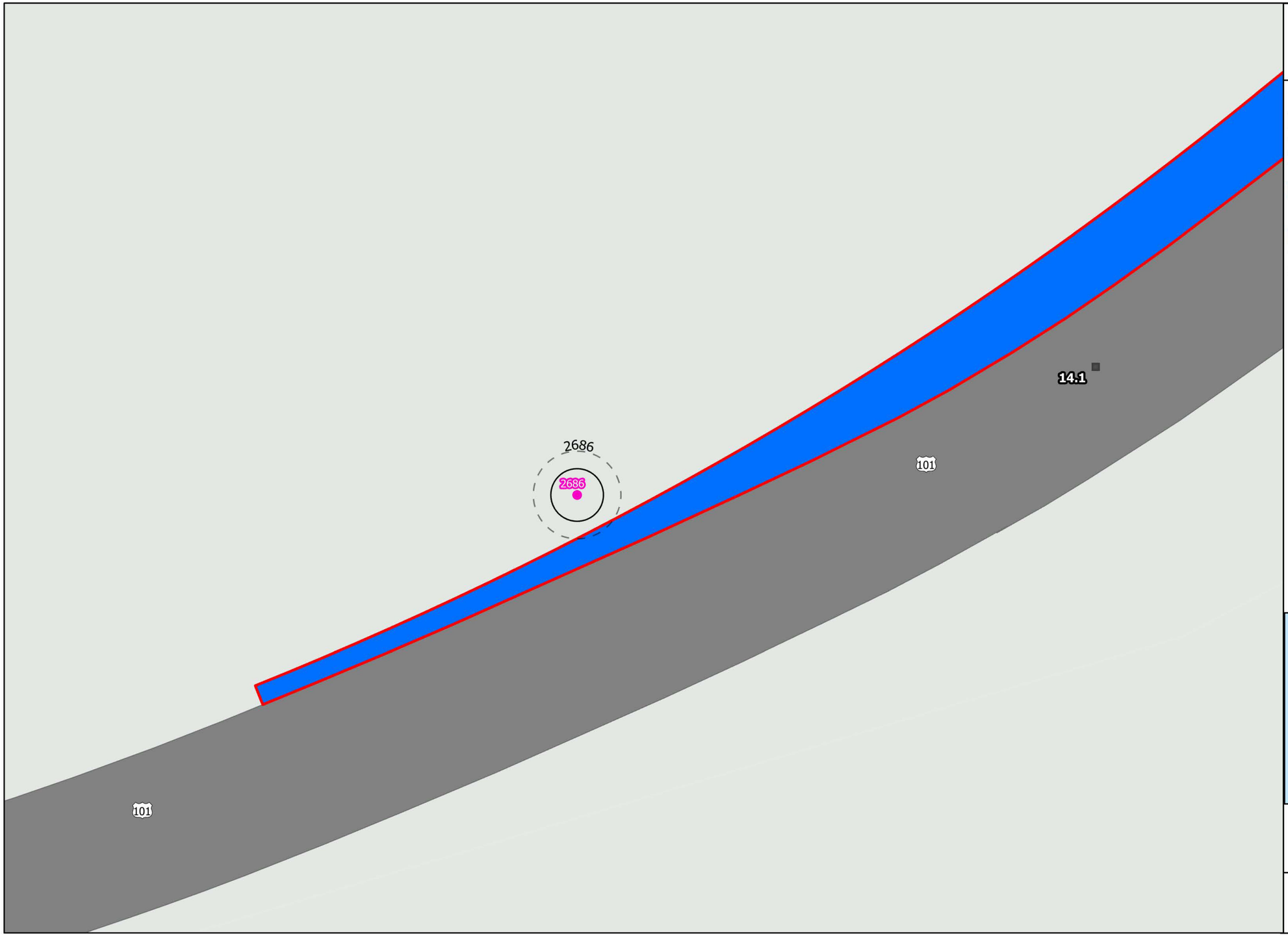
Figure 4
Alternative F Impacts to Large Trees
Sheet 21 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder

Impact Area
- Permanent
- New Road
- Existing Road





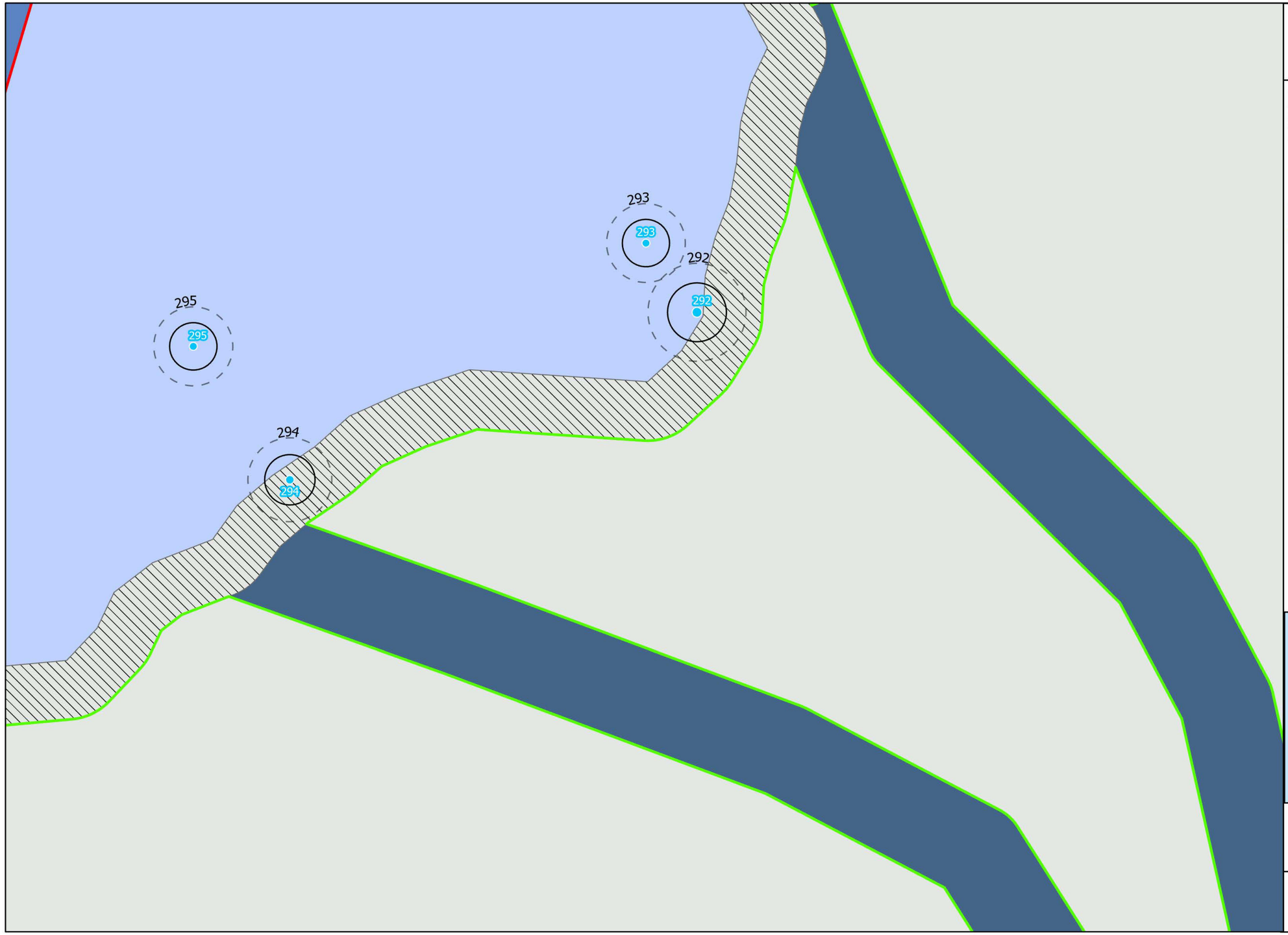
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Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 22 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill
Maintenance Yard



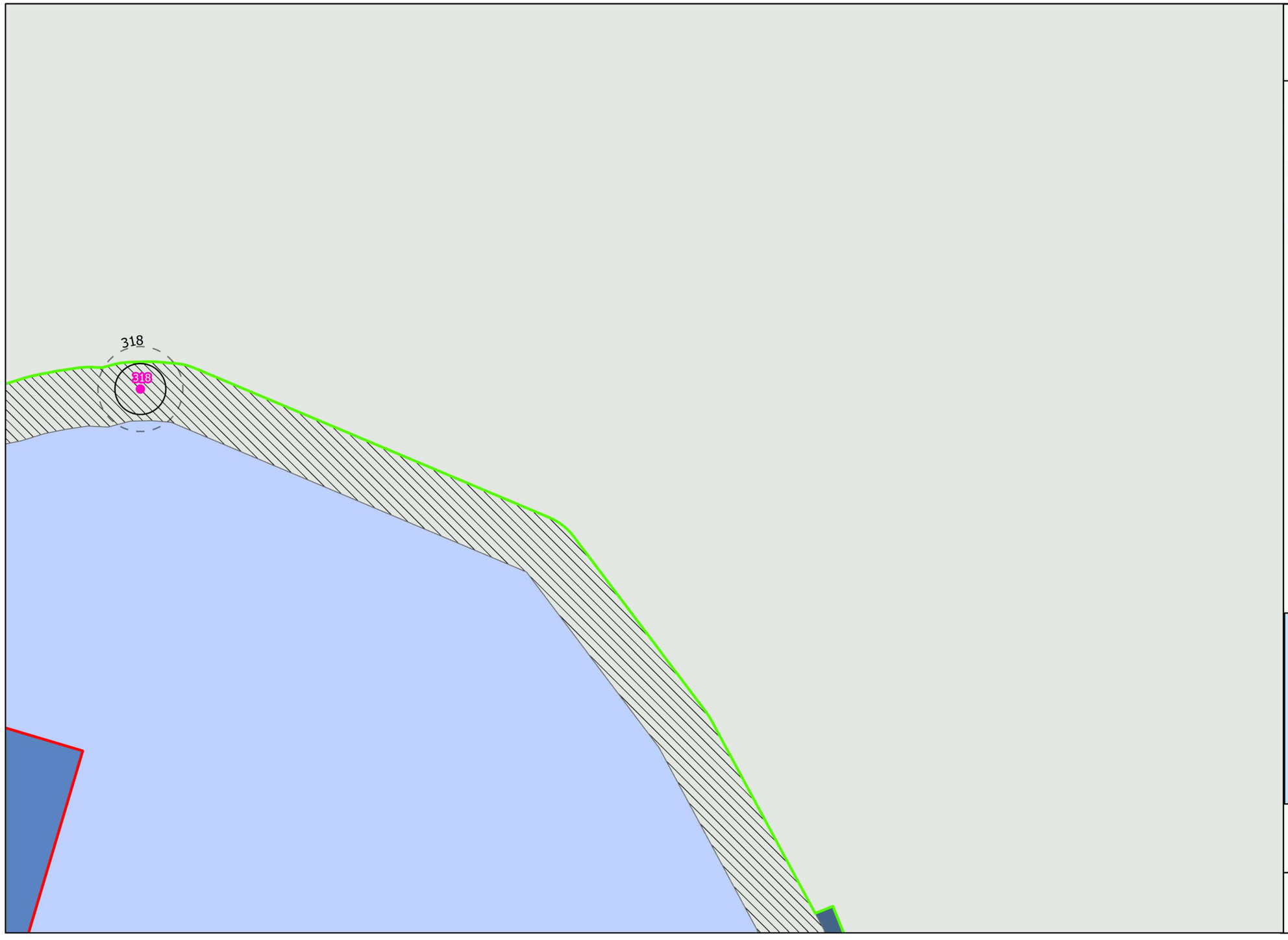
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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 23 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280



DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill
Maintenance Yard

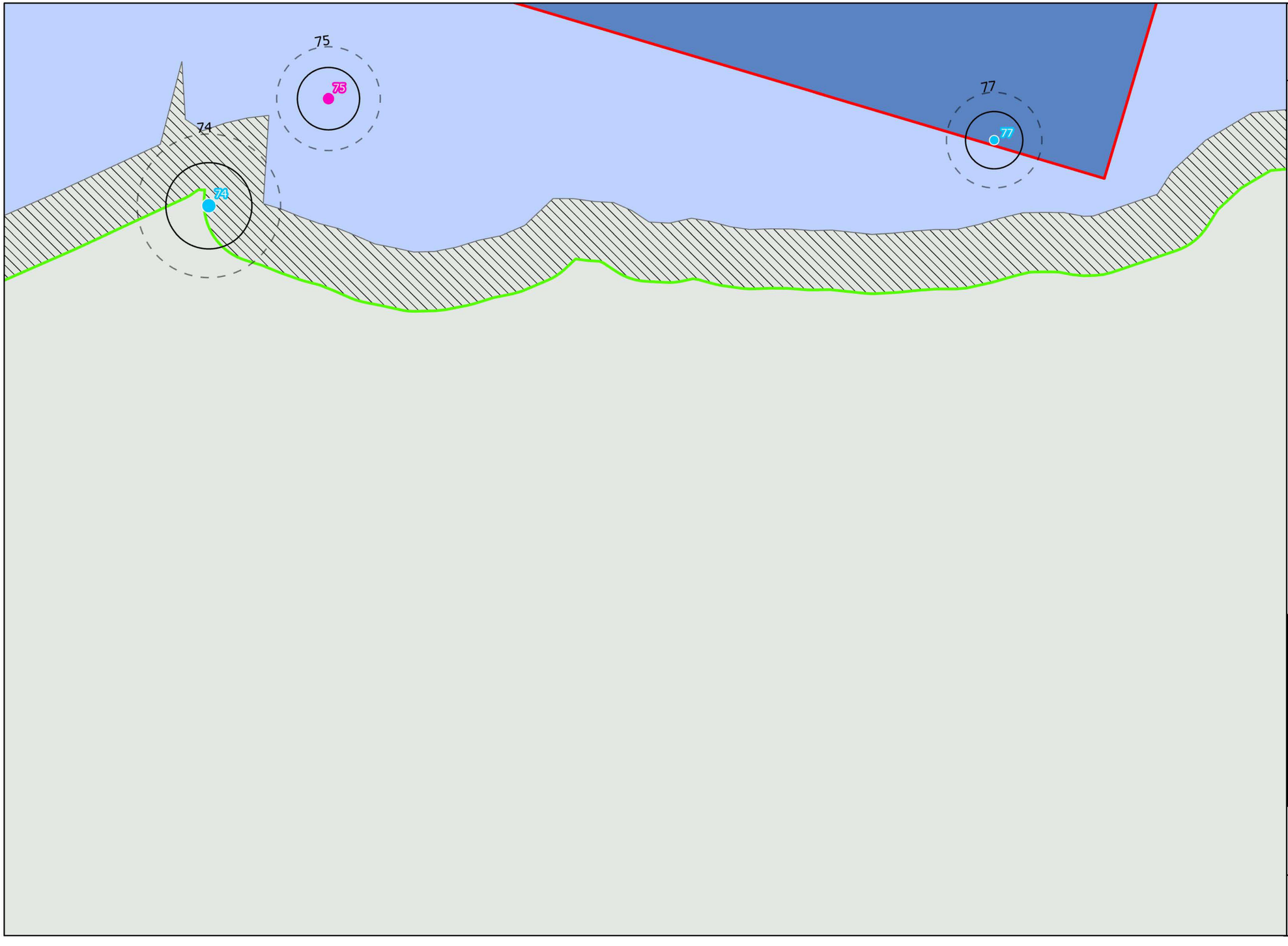


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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 24 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

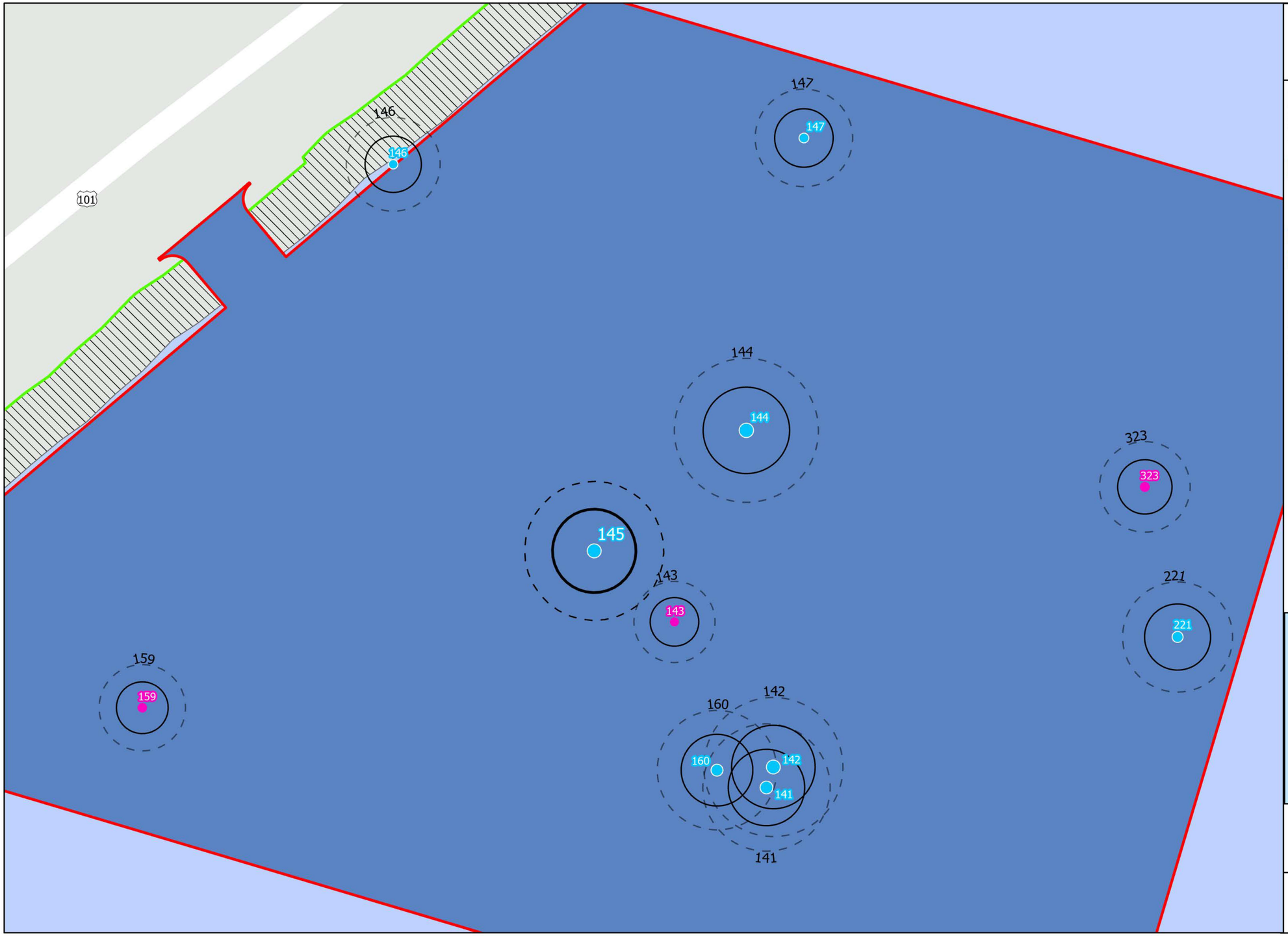
DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill
Maintenance Yard



N
0
50
Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 25 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X

Tree Species DBH
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Maintenance Yard

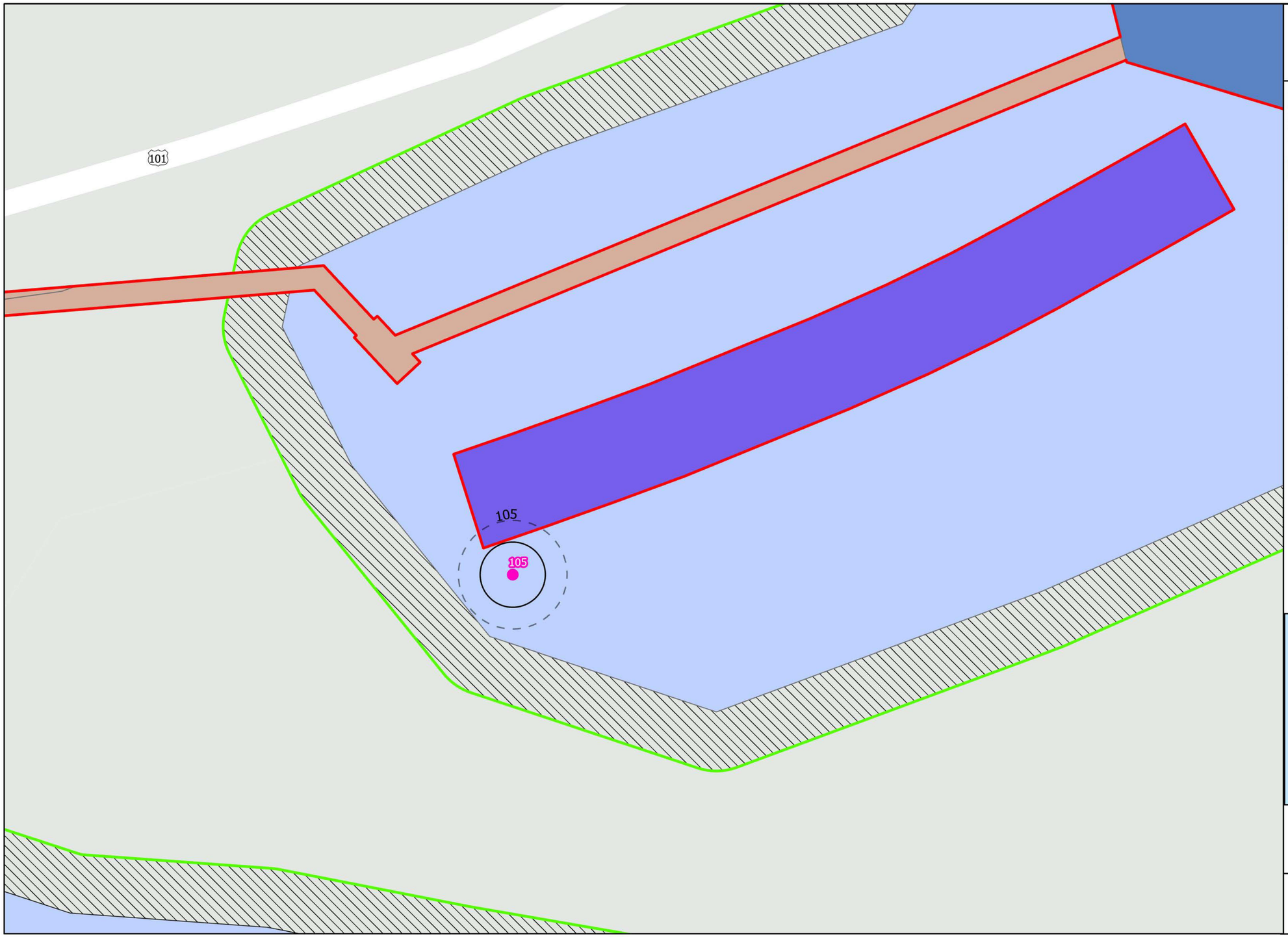


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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 26 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
BMP Area
Culvert/Drainage
Cut/Fill
Maintenance Yard



N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 27 of 29

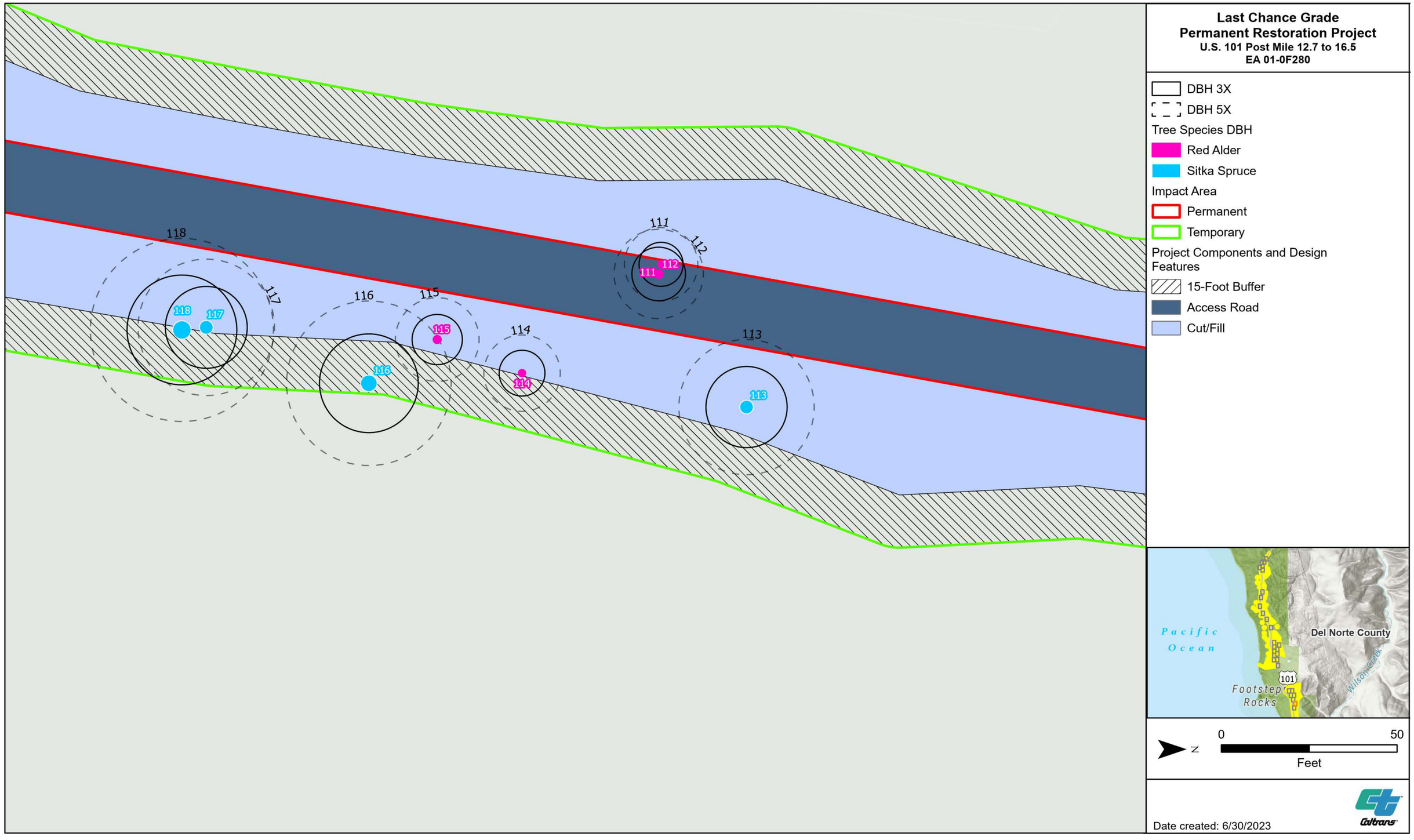
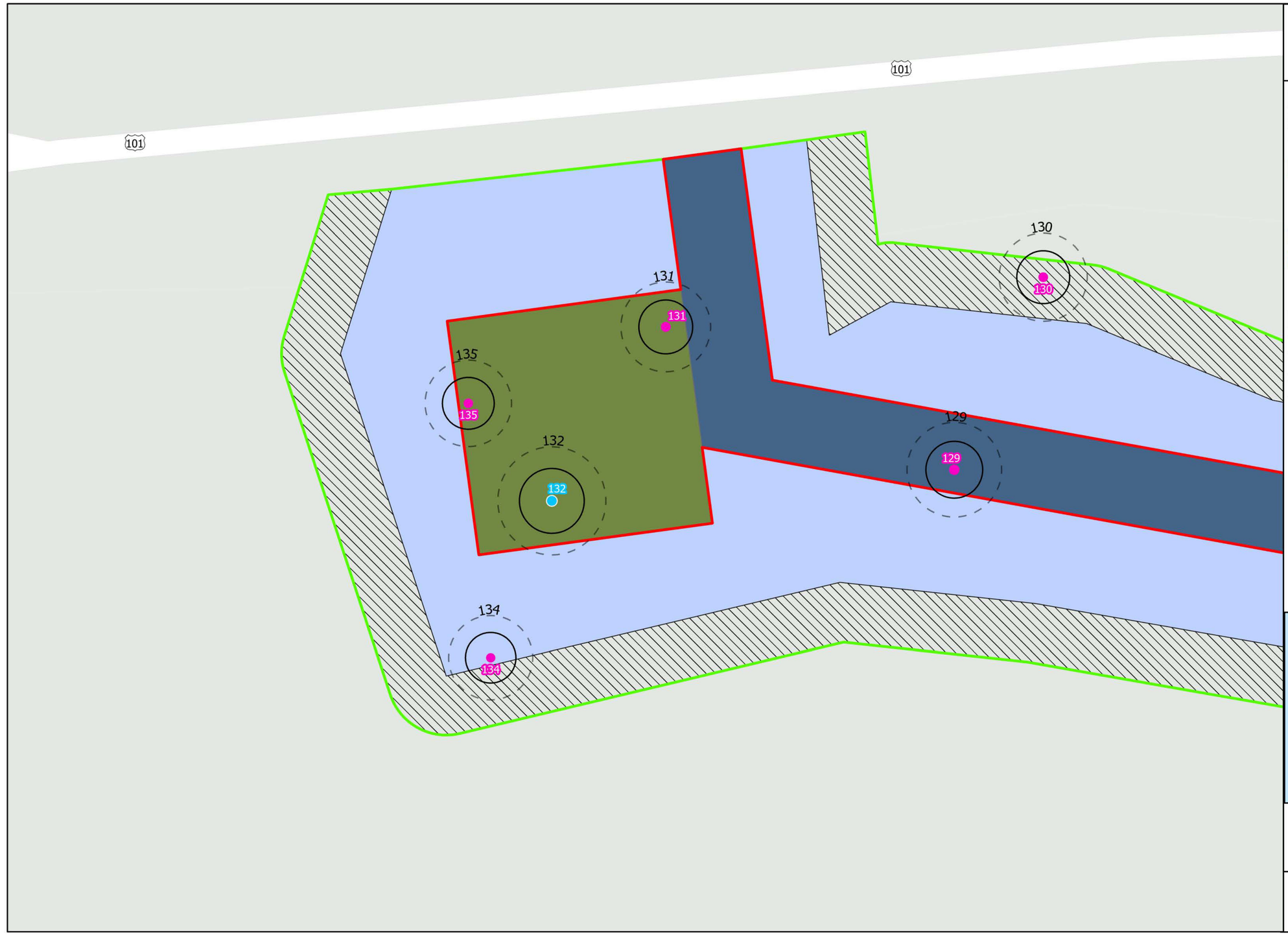


Figure 4
Alternative F Impacts to Large Trees
Sheet 28 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill
Transformer





N
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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 29 of 29

APPENDIX K. USFWS Biological Opinion



United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California 95521
Phone: 707-822-7201 Fax: 707-822-8411

In Reply Refer to:
AFWO-2024-0105915

Sent electronically

Mr. Steven Croteau
Senior Environmental Scientist, Branch Chief
North Region Environmental District 1
California Department of Transportation
P.O. Box 3700
Eureka, California 95502-3700
Steven.Croteau@dot.ca.gov

Subject: Formal and informal consultation on the Last Chance Grade Permanent Restoration Project, U.S. Highway 101, Del Norte County, California (Caltrans EA: 01-0F280)

Dear Mr. Steven Croteau:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion and letter of concurrence for the California Department of Transportation's (Caltrans') Last Chance Grade Permanent Restoration Project, U.S. Highway (US) 101, Del Norte County, California (Caltrans EA: 01-0F280). This biological opinion addresses your determinations that the proposed project may affect and is likely to adversely affect the federally threatened marbled murrelet (*Brachyramphus marmoratus*; murrelet) and designated murrelet critical habitat. The letter of concurrence addresses your determinations that the proposed project may affect but is not likely to adversely affect the federally threatened northern spotted owl (*Strix occidentalis caurina*; spotted owl) and the coastal Distinct Population Segment of the Pacific marten (*Martes caurina*; coastal marten).

We received your request for consultation by email on November 8, 2024. Your request and our response are made in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 (U.S.C.) 1531 *et seq*.; Act). The murrelet and designated murrelet critical habitat, for which you have made a may affect and likely to adversely affect determination, are addressed in the accompanying biological opinion. Species for which you have made a may affect, but not likely to adversely affect determination are addressed in the concurrence section the precedes the biological opinion. Our response to your request is based on the biological assessment accompanying your request email, various video, phone, and email correspondence, a field site review, geospatial data, and other information in our records.

CONCURRENCE

The Service concurs with Caltrans' may affect, but not likely to adversely affect determination for the spotted owl and coastal marten based on the information presented below. Refer to the Appendix A for suitable habitat definitions.

1. Protocol level surveys for spotted owls did not detect owls in or within 0.25 miles of the action area. Protocol-level surveys will be implemented prior to and during construction to ensure spotted owls are not exposed to effects from the proposed action.
2. Surveys for coastal marten did not detect the species in the action area. Surveys will be implemented prior to construction to ensure coastal marten are not in or adjacent to the action area.
3. Loss of suitable habitat for both species is limited in scope and in areas that already experience some amount of disturbance from traffic.
4. Remediation and removal of the existing road will improve access to additional habitat west of US 101 and minimize the disturbance from traffic and emergency repairs in this area.

Spotted Owl Surveys

Surveys conducted in 2020 and 2021 using the current 2-year Service protocol (Service 2012), and spot check surveys in 2024 (also using Service 2012), did not detect spotted owls in the action area (defined below) or within 0.25 miles of the action area. Another 2-year protocol survey for spotted owls will be conducted prior to tunnel construction. Additional spot check surveys may be conducted as required per the survey protocol throughout the construction period to confirm that spotted owls have not moved into the action area. Future spotted owl surveys will be completed with adequate time for reinitiation of section 7 consultation if spotted owls are found within the action area and proposed activities are likely to result in an adverse effect to individuals or suitable nesting/roosting or foraging habitats.

Coastal Marten Surveys

The California Department of Parks and Recreation conducted coastal marten surveys within the action area in 2021, following methods developed by Slauson and Moriarty (2014). To cover the extent of the project area, a 1-mile (mi.) radius buffer (equivalent to an average coastal marten home range) was placed around Caltrans' environmental study limits (ESL) for the project and a total of 10 survey stations were established. No coastal martens were detected within the ESL or within the 1-mi. buffer. In 2024, surveys for coastal marten were conducted by the California Department of Parks and Recreation to the north of the ESL in the Mill Creek watershed using similar methods as in 2021. The closest survey station was placed about a mile to the north of the ESL. A coastal marten was detected at a survey station approximately 2.35 mi. north of the north portal construction area, which is within the known dispersal distance of a juvenile marten. The 2021 survey area was not resurveyed in 2024. Because coastal marten could move into the action area prior to 2031 when construction will begin, additional coastal marten surveys within the action area will be conducted prior to construction with adequate time for reiteration of section 7

consultation if coastal martens are found within the action area and proposed activities are likely to result in an adverse effect to individuals or suitable resting and denning habitats.

Conservation Measures

The following conservation measures will be implemented by Caltrans to avoid or minimize potential adverse effects to the spotted owl and coastal marten. The measures were developed for the murrelet but will also avoid or minimize potential adverse effects to the spotted owl and coastal marten in the unlikely event that either species occurs within the action area but were not detected during surveys.

1. Helicopter use will be restricted to between September 16 and the following January 31 to avoid auditory or visual disturbance to nesting spotted owls or denning coastal martens.
2. During the majority of the spotted owl nesting season and coastal marten denning season (i.e., during the murrelet nesting season of March 24 through September 15), no suitable spotted owl nest trees or suitable coastal marten den or rest trees will be removed, and no suitable spotted owl nesting/roosting or foraging habitat or suitable coastal marten resting or denning habitat will be altered or removed.
3. No human activities (including use of drones) will occur within visual line-of-sight of 328 ft. or less from a known spotted owl nest or coastal marten natal or maternal den site.

CONSULTATION HISTORY

Date	Personnel and Discussion Topics
December 17, 2015-January 6, 2020	Multi-agency, Biological Resources Working Group meetings. Fourteen meetings held to discuss potential impacts to natural resources including federally listed species.
August 20-22, 2019	The Service and Caltrans discussed potential impacts to the spotted owl and murrelet from proposed helicopter use.
September 30, 2019	The Service and Caltrans discussed the listing status of the fisher.
October 17, 2019	The Service and Caltrans discussed appropriate spotted owl and murrelet conservation measures.
October 31, 2019	The Service and Caltrans discussed murrelet critical habitat spatial data.
December 4, 2019	The Service and Caltrans discussed fisher and marten field survey methodology.
February 6, 2020	The Service and Caltrans discussed fisher and marten conservation measures.
February 12, 2020	The Service and Caltrans discussed special status insect species surveys.
June 4, 2020	The Service and Caltrans discussed fisher and marten survey protocols.

Date	Personnel and Discussion Topics
June 15, 2020	The Service and Caltrans discussed the potential use of an unmanned aircraft system (aka "drone") for wildlife surveys, especially for locating and monitoring murrelet nests.
November 24, 2020	The Service and Caltrans discussed whether the Western DPS yellow-billed cuckoo or the bald eagle could be impacted by the project.
March 10, 2021	The Service and Caltrans discussed potential impacts to spotted owls and martens.
April 5, 2023	The Service and Caltrans discussed project updates and impacts relating to the murrelet, spotted owl, and marten.
August 17, 2023	The Service and Caltrans discussed potential impacts to the murrelet and other listed species.
September 25, 2024	The Service and Caltrans discussed construction impacts in specific project areas on the murrelet, spotted owl, and marten.
November 8, 2024	The Service received a request for formal consultation and a biological assessment for the murrelet and designated murrelet critical habitat. Caltrans also requested concurrence for the spotted owl and marten.
March 7, 2025	The Service requested and received approval to extend the biological opinion submission date to May 1, 2025.
April 28, 2025	The Service requested and received approval to extend the biological opinion submission date to May 16, 2025.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Caltrans proposes to construct an approximately 6,000-foot-long (1.1 mi.) tunnel to the east of US 101 approximately 10 mi. south of Crescent City, Del Norte County, California as a permanent bypass around more than 30 active landslides of varying widths and depths along US 101 at Last Chance Grade between Post Miles 12.7 and 16.5. The tunnel will be placed at the northern extent of the Last Chance Grade, but construction activities will occur throughout. Proposed work activities are summarized here. Refer to the draft environmental impact statement or the final biological assessment for a detailed project description.

The main components of the project include construction of the tunnel, tunnel portal structures at the northern and southern approaches, a bridge at the north portal, an Operations and Maintenance Center (OMC) near the southern end of the Last Chance Grade, and demolition of

the old road alignment. The general sequence of construction activities is as follows:

- Conduct geotechnical investigations prior to finalizing the project design and the start of construction. Includes drilling accessed by truck and track rig, drilling accessed by helicopter, and drilling within an exploratory tunnel.
- Remove trees in project areas where ground disturbance (cut and fill) will take place.
- Clear and grub vegetation at the OMC, north and south portals (portals), and staging areas.
- Grading of the portal construction areas, road approaches, and the OMC site.
- Construct bridge at the north portal.
- Construct staging areas near the portals, and at the OMC site.
- Construct retaining walls and road approaches at the portals and the OMC.
- Construct tunnel approach (entrance) structure at the portals.
- Excavate the tunnel at both ends (simultaneously) and construct the OMC building and associated structures.
- Once constructed, connect the tunnel and OMC to an existing transformer for electrical power.
- Complete the tunnel and the tunnel approach (entrance) structures.
- Decommission the old road alignment. Where feasible, highway infrastructure will be removed, and the affected area will be revegetated with native plant species).

Equipment used for construction includes earthmovers and loaders, excavators, augers, oscillators, road headers, hoe and hydraulic jack rammers, bulldozers, multidirectional drill or hammer rigs, graders, pile drivers, cable percussion tools, pavers, dump trucks, generators, fans, pavement grinders, concrete pumps, cranes, rollers, sheepsfoot and smooth drum compactors, Bidwell, concrete finishing equipment, chainsaws, log loader, or other logging equipment, and materials needed for blasting within the tunnel.

Construction is anticipated to take 6 to 8 years to complete, with construction beginning in 2031 and ending in 2038. An additional 2 to 3 years will be required for decommissioning the bypassed road alignment. The entire project will be completed by 2041.

Conservation Measures

When used in the context of the Act, “conservation measures” represent actions proposed by the federal agency that are intended to further the recovery of or to minimize or compensate for project effects on the species under review. Because conservation measures are pledged in the project description by the action agency, their implementation is required under the terms of the consultation (Service and National Marine Fisheries Service 1998). In addition to the conservation measures below, Caltrans has proposed standard measures and best management practices in their biological assessment for the project, which may also avoid or minimize potential impacts to murrelets but were not developed specifically for the murrelet.

The following conservation measures will be implemented by Caltrans to avoid or minimize potential adverse effects to the murrelet and designated murrelet critical habitat:

1. During the murrelet nesting season (i.e., from March 24 through September 15), no suitable murrelet nest trees will be removed, and no suitable or potential murrelet nesting habitat (defined in *Murrelet Nesting Habitat Availability* section below) will be altered or removed.
2. At the north portal construction area, where the majority of suitable murrelet nesting habitat occurs and murrelet occupancy is presumed, no pile driving will occur from March 24 through August 5 (i.e., during most of the murrelet nesting season). Further, from August 6 through September 15 (i.e., the end of the murrelet nesting season) at the north portal, pile driving will be restricted to a daily work window beginning 2 hours post-sunrise and ending 2 hours pre-sunset. This restriction will minimize auditory disturbance to dependent chicks in nests, and to adult murrelets during morning and evening prey deliveries to the nest. Additionally, at the north portal, blasting at the portal and in the tunnel interior (to the point where it would raise sound levels to greater than 90 dB at the edge of habitat) will be prohibited from March 24 through September 15 (i.e., throughout the entire murrelet nesting season).
3. Preconstruction surveys, following the Pacific Seabird Group's revised protocol (Pacific Seabird Group 2024), will be conducted for murrelets at the south portal and OMC construction areas. If murrelets are detected at either construction area, pile driving would not take place between March 24 and August 5, and between August 6 and September 15 pile driving would be restricted to a daily work window beginning 2 hours post-sunrise and ending 2 hours pre-sunset. In addition, if murrelets are detected within the south portal construction area, blasting at that portal and in the tunnel interior (to the point where it would raise sound levels to greater than 90 dB at the edge of habitat) would be limited to the period from September 16 through the following March 23. If murrelets are not detected there will be no seasonal restrictions on elevated sound levels.
4. Helicopter use will be limited to outside the murrelet nesting season (i.e., from September 16 through the following March 23). Further, helicopters will fly at a high enough altitude between staging areas and geotechnical boreholes to reduce rotor wash on tree canopies and the surrounding habitat.
5. Artificial night lighting may be required during construction. To reduce potential disturbance to nesting murrelets, work area lighting will be temporary and directed specifically on the portion of the work area actively under construction. Lighting for security will be directed specifically on the area needed for this purpose.
6. To prevent attracting corvids (e.g., common ravens (*Corvus corax*) and jays (i.e., Canada jays [*Perisoreus canadensis*] and Steller's jay [*Cyanocitta stelleri*]) and other known or potential murrelet nest predators, no trash or foodstuffs will be left or stored at construction sites. All trash will be deposited in a secure container daily and disposed of at an approved waste facility at least once a week. Also, on-site workers will not attempt to attract or feed any wildlife.
7. To compensate for the impacts based on acreage of habitat removed and temporal loss of

function to habitats caused by the proposed action, Caltrans will undertake a mitigation project to restore early successional conifer forest habitat to late successional forest habitat and/or preserve conifer habitat to act as buffer habitat to late successional forest. Acreages of restoration and/or preservation will be based on the following ratios, 100:1 for late successional Sitka spruce forest, 150:1 for late successional Douglas-fir forest, and 200:1 for late successional coast redwood forest. Caltrans will coordinate with the Service to choose a forest location within the range of the murrelet that is likely to be used for nesting once restored or preserved. Caltrans will implement treatments to create natural nesting platforms and assess the success of these platforms in this habitat. Caltrans will develop a restoration or preservation plan with assurances for implementation and research proposal for developing nesting platforms and solicit input from the Service prior to the construction of the proposed project. Upon implementation, for ten years or until murrelets successfully occupy habitat by fledging young, whichever comes first, Caltrans will report progress of restored habitat and utilization by murrelets on an annual basis.

8. Caltrans, in conjunction with Redwood National and State Parks and applicable utility companies, will develop and implement a plan to bury existing powerlines in elk prairie, which present a known threat to murrelets. This action will offset direct or indirect impacts to murrelets that result from the removal of nest trees, by providing relief from murrelet strikes with utility infrastructure. Compliance with this measure will be achieved by Caltrans funding up to one million dollars towards the completion of such effort and will be conditioned upon State Parks entering into a financial agreement with Caltrans. Pending the completion of the financial agreement between Caltrans and Redwood National and State Parks, Caltrans will ensure funding of this action will occur prior to the completion of the proposed project.

ACTION AREA

According to 50 CFR §402.02 pursuant to section 7 of the Act, the “action area” refers to all areas to be affected directly and indirectly by the federal action and not merely the immediate area involved in the action. The Service defines the action area for this biological opinion as areas that may be directly, indirectly, temporarily, or permanently impacted by proposed project-related activities. Subsequent analyses of the environmental baseline, effects of the action, and amount and extent of incidental take are based upon the action area.

The action area for this project includes the four construction areas where temporary and permanent impacts to suitable nesting habitats, and critical habitat will occur: the north portal, the south portal, the OMC, and the existing highway that will be removed, plus areas surrounding the four construction areas that will be exposed to elevated sound levels and visual disturbance during construction (Figure 1). Caltrans’ estimated the peak ambient sound levels at 81–90 decibels (dB) for the four construction areas and calculated auditory disturbance buffers for each of the four construction areas by assuming that construction sound levels will be reduced by 6 dB for every doubling of distance (Caltrans 2023). Accordingly, Caltrans’ determined that at the north and south portal construction areas, elevated sound levels from blasting would attenuate back down to 90 dB (i.e., within the ambient sound level range) within 800 feet (ft.), and at the OMC, elevated sound levels from pile driving would attenuate back

down to 90 dB within 400 ft. (Figure 1). Elevated sound levels from hoe ram use to remove the existing highway after tunnel construction would attenuate back down to 90 dB within 50 ft.

The Arcata Fish and Wildlife Office's auditory and visual disturbance guidelines for its jurisdictional area in northwestern California (Service 2020) suggest nesting murrelets may be impacted by visual disturbance up to 330 ft. from construction activities, which falls within the auditory and visual disturbance buffer distance for the north and south portal construction areas, and the OMC. A visual disturbance buffer was not used for the highway removal area due to constant visual disturbance from traffic and emergency road repair activities over the years.

Applying the buffer distances to the four construction areas, results in a total action area size of 280 acres (ac.; Table 1, Figure 1).

Table 1. Action area acreage of temporary and permanent impacts and auditory and visual disturbance.

Construction area	Area (ac.) of temporary impacts	Area (ac.) of permanent impacts	Auditory/visual buffer area (ac.)[1]
North portal	1.18	1.15	88.2
South portal	8.49	1.53	122.9
Operations and Maintenance Center	4.17	2.13	48.6
Road removal	0	2.08[2]	20.1
Total	**13.84**	**6.89**	**280**

[1]The road removal buffer area overlaps the north and south portal buffer areas (Figure 1) but is a separate activity that will occur after the tunnel is completed. Habitat within the road removal buffer overlap areas will be exposed to elevated sound levels during tunnel construction and road removal. Therefore, the total buffer area does not exclude the road removal overlap areas.

[2]Permanent impacts in the road removal construction area is due to actual road removal and not to removal of vegetation.

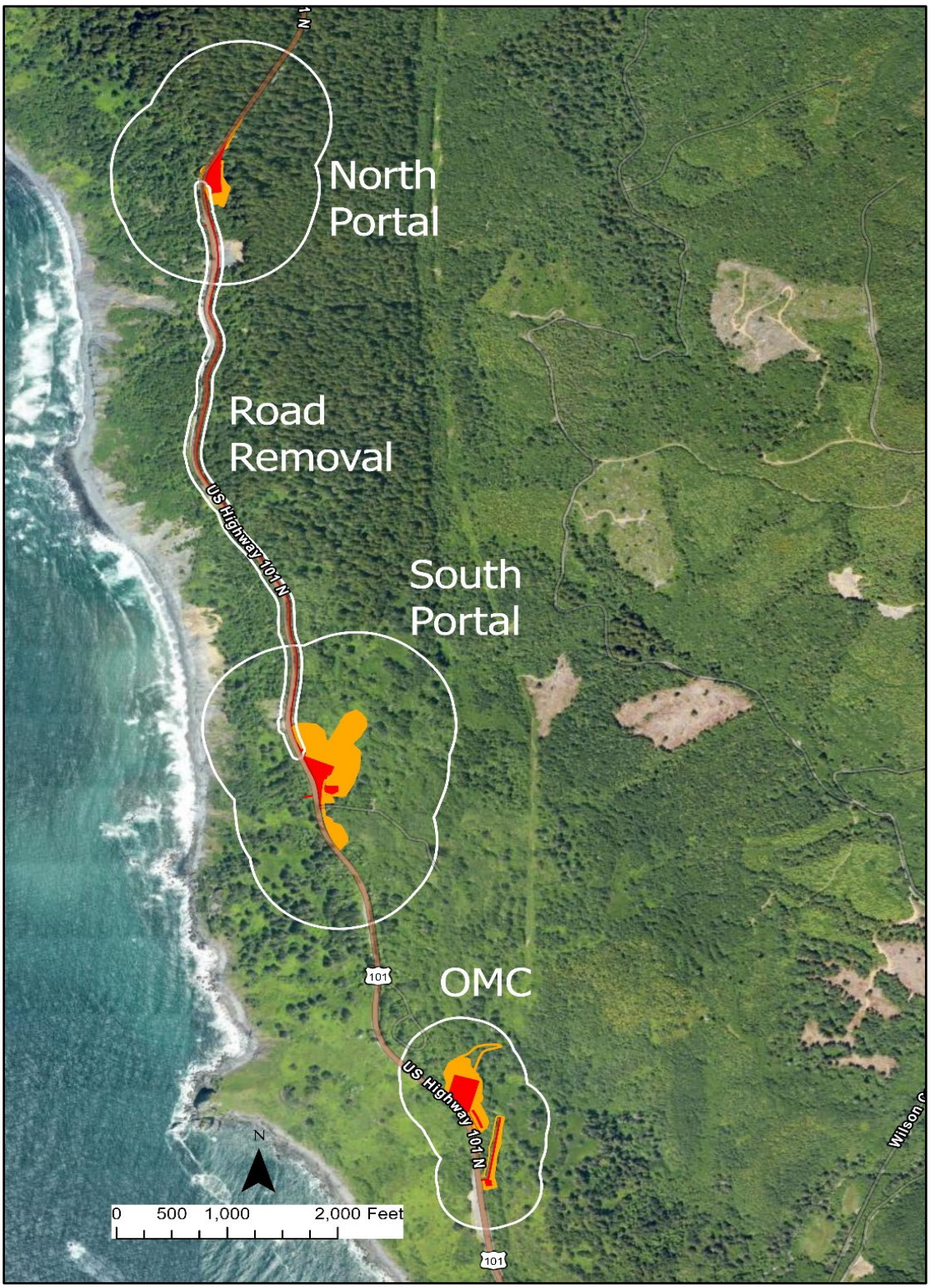


Figure 1. The 280-ac. action area (sum of white polygon areas). Ground-disturbing impact areas are represented by red polygons (permanent impacts) and orange polygons (temporary impacts). White polygons delineate areas that will be exposed to elevated sound levels and visual disturbance.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range-wide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the action area without the consequences to the listed species caused by the proposed action, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines all consequences to the listed species that are caused by the proposed federal action that are reasonably certain to occur in the action area; and (4) the *Cumulative Effects*, which evaluates the effects on the species of future, non-federal activities that are reasonably certain to occur in the action area.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the status of the covered species, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the covered species in the wild by reducing the reproduction, numbers, and distribution of that species.

ANALYTICAL FRAMEWORK FOR THE ADVERSE MODIFICATION DETERMINATION

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat range wide for the conservation of a listed species. The destruction or adverse modification analysis in this biological opinion relies on four components: (1) the *Status of Critical Habitat*, which describes the current range-wide condition of the critical habitat for the listed species; (2) the *Environmental Baseline*, which analyzes the current condition of the critical habitat in the action area without the consequences to designated critical habitat caused by the proposed action, the factors responsible for that condition, and the value of the critical habitat in the action area for the recovery of the listed species; (3) the *Effects of the Action*, which determines all consequences to critical habitat that are caused by the proposed federal action that are reasonably certain to occur; and (4) *Cumulative Effects*, which evaluate the effects of future non-federal activities that are reasonably certain to occur in the action area. For the section 7(a)(2) determination regarding destruction or adverse modification of critical habitat,

the Service begins by evaluating the effects of the proposed federal action and any cumulative effects. The Service then examines those effects against the condition of all critical habitat described in the listing designation to determine if the proposed action's effects are likely to appreciably diminish the value of critical habitat range wide for the conservation of the species.

STATUS OF THE SPECIES

This section describes the current range-wide condition of the murrelet, the factors responsible for that condition, and its survival and recovery needs. For the most recent comprehensive assessment of the species' range-wide status, refer to the murrelet 5-year status review from August 2024 (Service 2024). No change in the murrelet's listing status was recommended in the 2024 status review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2024 status review was finalized, with loss of habitat being the most significant effect.

For this consultation, we have considered all information provided in this section in our assessment of the project effects. The following describes those aspects of the species' ecology and its threats that have direct bearing on the analysis of the proposed action being considered in this consultation.

Legal Status

The murrelet was listed as threatened in Washington, Oregon, and northern California on September 28, 1992 (57 FR 45328) and the Service published a recovery plan for the murrelet in September 1997 (Service 1997).

Range and Distribution

The murrelet inhabits the coastal forests and nearshore marine environment along the Pacific Coast of North America from southern California to southern Alaska and the Aleutian Islands (Carter and Morrison 1992, Ralph et al. 1995, Nelson 1997). The breeding range of the murrelet extends along the Pacific Coast from Alaska to Monterey Bay in central California. Some wintering birds occur as far south as northern Baja California, Mexico. However, only the Washington, Oregon, and California population segment is federally listed as threatened. Limited information is available on murrelet historical distribution and abundance. However, most summaries give indications that the distribution of murrelet populations was significantly reduced as habitat was removed throughout its' range. Populations declined as a result. In some areas, murrelets have been locally extirpated, or only small numbers persist, risking maintenance of the species' distribution. These areas were identified as "areas of concern" (Service 1997). The areas included distribution gaps in central California, northwestern Oregon, and southwestern Washington, where very little suitable habitat remains, and what habitat does remain occurs in small patches.

Biology and Ecology

Murrelets are long-lived seabirds that spend most of their life in the marine environment, with breeding adults annually nesting in the forest canopy of mature and old-growth forests. Because

of their small body size, cryptic plumage, crepuscular activity, fast flight speed, solitary nesting behavior, and secretive behavior near nests, murrelet nests have been extremely difficult to locate (Hamer and Nelson 1995). In California, breeding occurs from about March 24 through September 15, is asynchronous, and spread over a more prolonged season than for most temperate seabirds. Data from murrelet populations throughout North America show that approximately 84 percent of murrelet young fledge from their nests by August 18 (Hamer and Nelson 1995). The latest published fledging date was a record of a fledgling found on September 21 in Oregon (Hamer and Nelson 1995). However, a live murrelet fledgling was found on a road in Prairie Creek Redwoods State Park, Humboldt County, California on September 24, 2017, only a few miles south of the action area (Service, unpublished data).

Murrelets have a naturally low reproductive rate; they lay just one egg per year and supposedly first breed at age 3. Re-nesting in the event of nest failure appears to be uncommon but does occur (Hébert et al. 2003a, Piatt et al. 2007). Incubation is shared by both sexes with incubation shifts lasting 24 hours and exchanges occurring at dawn (Nelson 1997). Chicks fledge 27 to 40 days after hatching (Nelson 1997). Flights by adults are made from ocean feeding areas to inland nest sites at all times of the day, but most often at dusk and dawn (Hamer and Cummins 1991, Nelson and Hamer 1995).

Murrelets are known to be opportunistic feeders, diving after small schooling fish and large pelagic crustaceans (e.g., euphausiids, mysids, amphipods). They will carry a single energy-dense fish to their chick: typically, larger sand lance, immature herring, anchovy, smelt, and occasionally salmon smolts (Carter and Sealy 1987, Burkett et al. 1995, Nelson 1997).

Habitat Use

Throughout most of their breeding range, including the listed range from Washington to central California, murrelets use old-growth coniferous forest habitat for nesting, and forage in the nearshore marine environments. Nests are not built, but rather the single egg is laid in a small depression or cup made in moss or other debris on the limb (Service 1997). The distance inland that murrelets breed is variable and influenced by several factors; however, the Service considers 50 mi. as the maximum inland distance for determining habitat suitability and amount of habitat within the listed range (Service 2009).

In California, radio-marked murrelets confirmed that breeders forage more closely to nesting habitat once nesting is initiated than non-breeders (Hébert and Golightly 2008, Peery et al. 2009). In northern California, mean home range size was 253 square miles (mi^2) for non-nesters and 93 mi^2 for nesters (Hébert and Golightly 2008). Mean along-shore movement was 43 mi. for nesting females and 49 mi. for nesting males (Hébert and Golightly 2008). Mean offshore movement was within 0.9 mi. regardless of sex or nesting status (Hébert and Golightly 2008).

Nest Tree Characteristics

Lank et al. (2003) states that murrelets “occur during the breeding season in near-shore waters along the north Pacific coastline from Bristol Bay in Alaska to central California”, nesting in single platform trees generally within 20 mi. of the coast and older forest stands generally within 50 mi. of the coast. Unlike most auks, murrelets nest solitarily on mossy platforms of large

branches in old-forest trees (Lank et al. 2003). These forests are generally characterized by large trees greater than 18 inches (in.) diameter at breast height (dbh), multi-storied canopies with moderate canopy closure, sufficient limb size and substrate (moss, duff, etc.) to support nest cups, flight accessibility, and protective cover from ambient conditions and potential avian predators (Manley 1999, Burger 2002, Nelson and Wilson 2002). Over 95 percent of measured nest limbs were ≥5.9 in. diameter, with limb diameter ranging from 2.8 to 29 in. (Burger 2002). Nelson and Wilson (2002) found that all 37 nest cups identified were: (1) in trees containing at least seven platforms, (2) located on branches ≥32.5 ft. above the ground, and (3) in trees >107 ft. tall. Lank et al. (2003) emphasizes that murrelets do not select nest sites based on tree species, but rather they select those individual trees that offer suitable nest platforms. Nest cups have been found in deciduous trees, albeit rarely and nest trees may be scattered or clumped throughout a forest stand.

Nest Stand Characteristics

Nest stands are typically composed of low elevation conifer species. In California, nest sites have been in stands containing old-growth redwood (*Sequoia sempervirens*) and Douglas-fir (*Pseudotsuga menziesii*), while nests in Oregon and Washington have been in stands dominated by Douglas-fir, western hemlock (*Tsuga heterophylla*), and Sitka spruce (*Picea sitchensis*). Murrelets appear to select forest stands greater than 123.6 ac. (Burger 2002) but will use small patches of habitat surrounded by larger patches of unsuitable habitat (Nelson and Wilson 2002). In surveys of mature or younger second-growth forests in California, murrelets were only found in forests where there were nearby old-growth stands or where residual older trees remained (Singer et al. 1995).

At the stand level, vertical complexity is correlated with nest sites (Meekins and Hamer 1998, Manley 1999, Nelson and Wilson 2002, Waterhouse et al. 2002), and flight accessibility is probably a necessary component of suitable habitat (Burger 2002). Some studies have shown higher murrelet activity near stands of old-forest blocks over fragmented or unsuitable forest areas (Paton et al. 1992, Rodway et al. 1993, Burger 1995, Rodway and Regehr 2002), but this correlation may be confounded by ocean conditions, distance inland, elevation, survey bias and disproportionately available habitat. Nelson and Wilson (2002) found that potential nest platforms per acre were a strong correlate for nest stand selection by murrelets in Oregon.

Adjacent forests can contribute to the conservation of the murrelet by reducing the potential for windthrow during storms by providing area buffers and creating a landscape with a higher probability of occupancy by murrelets (Burger 2001, Meyer et al. 2002, Raphael et al. 2002). Trees surrounding and within the vicinity of a potential nest tree(s) may provide protection to the nest platform and potentially reduce gradations in microclimate (Chen et al. 1993).
The Service's 2024 5-year status review for the murrelet (Service 2024) identified timber harvest, fire, predation, coastal and nearshore development, and climate change as threats that currently have a population-level effect, and that existing regulatory mechanisms remain inadequate to fully protect remaining nesting habitat. Additional threats to the species include tree disease, wind events, toxic contaminants, net entanglement, oil spills, energy generation, and highly pathogenic avian influenza. However, the best available information does not indicate that these additional threats currently act on the species at the population level.

Conservation Zones in California

Three murrelet Conservation Zones occur in California (Figure 2). Conservation Zone 4 extends from North Bend, Oregon, south to the southern boundary of Humboldt County, and includes the action area. In general, it extends inland 35 mi. from the Pacific Ocean shoreline and includes waters within 1.2 mi. of the shoreline. Conservation Zone 5 extends south from the southern boundary of Humboldt County to the mouth of San Francisco Bay and also includes marine waters within 1.2 mi. of the Pacific Ocean shoreline but extends inland a distance of up to 25 mi. Conservation Zone 6 extends south from the mouth of San Francisco Bay to Point Sur, Monterey County and includes marine waters within 1.2 mi. of the Pacific Ocean shoreline, and extends inland a distance of up to 15 mi. (Service 1997).

Lands considered necessary for the recovery of the murrelet within CZ 4, 5, and 6 are: (1) any suitable habitat managed by the federal government in late-successional reserves (LSRs) located in the Forest Ecosystem Management Assessment Team (FEMAT) Zone 1 (refer to U.S. Forest Service et al. 1993 for a description of Zone 1), (2) other large areas of suitable habitat on federal lands outside of LSRs, (3) large areas of suitable habitat on state lands within 25 mi. of the coast in California and Oregon, (4) suitable habitat on county park lands within 25 mi. of the coast in San Mateo and Santa Cruz counties, California, and (5) suitable nesting habitat on Humboldt Redwood Company (formerly Pacific Lumber Company) lands in Humboldt County, California (Service 1997).

Marine areas in California considered necessary for recovery of the murrelet include: (1) nearshore waters (i.e., within 1.2 mi. of the shore) along the Pacific Coast from the Oregon-California border south to Cape Mendocino in northern California, including Humboldt and Arcata bays, and river mouths, and (2) nearshore waters (within 1.2 mi. of shore) along the Pacific Coast in central California from San Pedro Point south to the mouth of the Pajaro River (Service 1997).

Population Dynamics

The murrelet population during the early 1990s in Washington, Oregon, and California was estimated at 18,550 to 32,000 birds (Ralph et al. 1995). Based on at-sea survey results from the NWFP marbled murrelet Effectiveness Monitoring Program (NWFP EM Program), the 2022 murrelet population for all CZs combined was estimated at 19,000 birds (95 percent confidence interval [CI]: 14,900–23,200; Table 2). The 2023 murrelet population size estimate for California, based on at-sea surveys, was 5,047 birds (95 percent CI: 3,492–6,602) and murrelet density for California in 2023 was estimated at 3.72 birds/kilometer^2 (km^2; 95 percent CI: 2.58–4.87; Table 3).

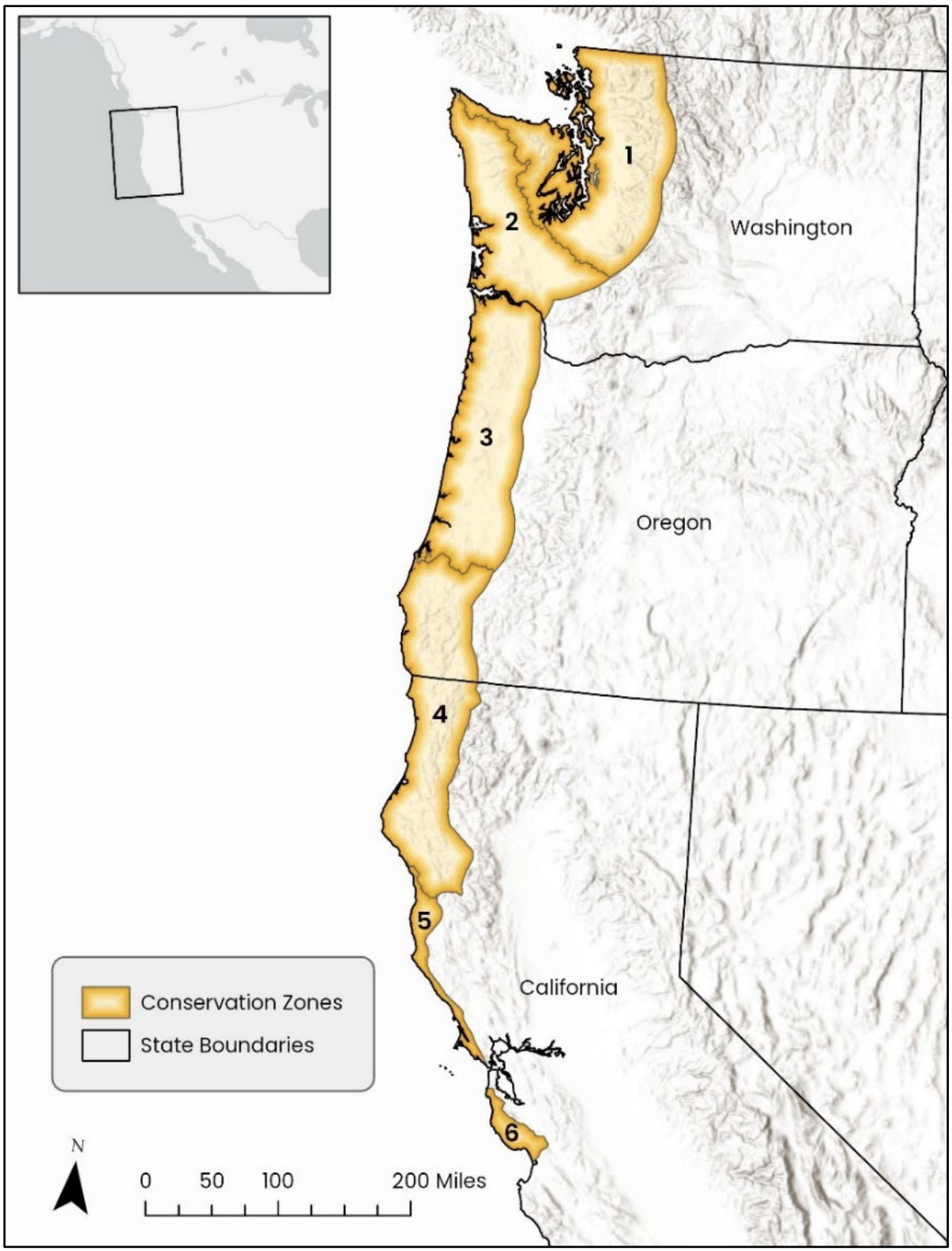


Figure 2. The six geographic areas identified as conservation zones in the recovery plan for the murrelet (Service 1997).

Table 2. Summary of 2001–2022 murrelet density and population size estimates (rounded to nearest 100 birds) for all conservation zones combined. Source: McIver et al. 2024.

Year	Number of Birds	Lower 95% CL	Upper 95% CL
2001	21,8000	17,500	26,100
2002	22,700	17,400	27,900
2003	22,200	18,300	26,200
2004	21,600	17,100	26,000
2005	20,200	16,000	24,400
2006	18,300	15,400	21,300
2007	17,300	12,700	22,000
2008	18,100	15,000	21,300
2009	17,200	13,700	20,800
2010	16,600	13,000	20,200
2011	22,000	16,600	27,400
2012	21,100	16,400	25,800
2013	19,600	15,400	23,900
2014	21,300	17,500	25,100
2015	24,100	19,700	28,600
2016	22,600	18,200	27,100
2017	23,000	18,500	27,600
2018	22,500	17,500	27,600
2019	21,200	16,400	26,000
2020	19,700	15,500	23,900
2021	18,000	14,000	21,900
2022	19,000	14,900	23,200

Table 3. Marbled murrelet density and abundance estimates for California, 2000–2023. Source: McIver et al. 2024.

Year	Number of Birds	Lower 95% CL	Upper 95% CL
2000	3,571	1,884	5,258
2001	2,051	608	3,495
2002	3,202	2,181	4,224
2003	2,985	1,753	4,217
2004	3,986	2,197	5,775
2005	2,710	1,896	3,523
2006	2,438	1,727	3,149
2007	2,440	1,465	3,415
2008	3,964	2,802	5,126
2009	2,928	1,589	4,268
2010	2,644	1,098	4,191
2011	5,217	1,962	8,472
2012	3,514	1,812	5,216
2013	4,178	2,662	5,694
2014	4,922	3,410	6,433
2015	5,666	3,970	7,361
2016	5,489	3,995	6,984
2017	6,111	4,473	7,749
2018	5,924	4,189	7,659
2019	5,738	3,887	7,588
2020	5,217	3,669	6,765
2021	3,870	2,727	5,014
2022	4,532	3,179	5,885
2023	5,047	3,492	6,602

Nesting Habitat Availability

McShane et al. (2004) evaluated range-wide murrelet nesting habitat estimates from 16 sources and concluded that there was approximately 2,223,048 ac. distributed throughout coastal Washington and Oregon, and coastal northern California. Washington contained almost half of all murrelet nesting habitat range-wide with an estimated 1,022,695 ac. or 48 percent of the total, and approximately 93 percent (2,000,000 ac.) were reported to occur on federal lands (McShane et al. 2004).

Raphael et al. (2006) produced two spatial models for the NWFP EM Program to predict the amount, location, and distribution of murrelet nesting habitat. Combining vegetation-based maps derived from satellite imagery and prior estimates of habitat on state and private lands from 1994 to 2003, Raphael et al. (2006) used a panel of experts to reclassify 22 old-growth forest classes into four classes of murrelet habitat based upon nesting suitability. Referred to as the Expert Judgment Model, the model classifies existing forest structure, based upon percent conifer cover, canopy structure, quadratic mean diameter, and forest patch size, into four classes of suitability: ranging from habitat unsuitable for murrelet nesting (Class 1) to highest suitability (Class 4). Raphael et al. (2006) found that across the murrelet range, most habitat-capable land (52 percent) is currently unsuitable for nesting (Class 1), and 18 percent is classified as Class 4 habitat (highest suitability), with an estimated 41 percent of the Class 4 habitat (1,620,800 ac.) occurring on non-federal lands. The second habitat model developed by Raphael et al. (2006) used the Biomapper Ecological Niche-Factor Analysis methodology developed by Hirzel et al. (2002). The resulting murrelet habitat suitability maps are based on both the physical and vegetative attributes adjacent to known murrelet occupied polygons or nest locations for each NWFP province. The maps provide a range of habitat suitability values, each with acreage estimates. In Washington, 2.1 million ac. of habitat were rated with a habitat suitability (HS) greater than 60 and captured 82 percent of the stands known to be occupied by murrelets, while 440,700 ac. of habitat were rated as HS >80 habitat and captured 36 percent of the known occupied stands.

Nesting Habitat Loss Since 1992

The rate of habitat loss has declined since listing, particularly on federal lands, due to implementation of the NWFP (Service 2004). Between 1992 and 2003, the estimated loss of suitable murrelet habitat totaled 22,398 ac. in Washington, Oregon, and California combined, of which 5,364 ac. resulted from timber harvest and 17,034 ac. from natural events such as wildfires (McShane et al. 2004). Those data primarily represented losses on federal lands and did not include data for most private or state lands within the murrelet's range.

Falxa and Raphael (2016) used habitat modeling to estimate losses of potential murrelet habitat from 1993 to 2012 on both federal and non-federal lands within the five CZs in the NWFP area. They estimated there were 2.53 million ac. of potential nesting habitat over all lands in the murrelet's range in Washington, Oregon, and California at the start of the NWFP in 1993. Of this, 0.46 million ac. (18 percent of total) were identified as the highest quality habitat. Ninety percent of the 1993 potential nesting habitat on federally administered lands occurred within reserved-land allocations, such as LSRs. Forty-one percent of potential nesting habitat occurred on non-federal lands, including 44 percent of the highest quality habitat.

Raphael et al. (2016) reported a net loss of 12 percent of potential nesting habitat from 1993 to 2012: Habitat loss on federal lands was about 2 percent and on non-federal lands about 27 percent. Wildfire was the major cause of nesting habitat loss on federal lands and timber harvest was the primary cause of loss on non-federal lands. Raphael et al. (2016) concluded that the NWFP has been successful in conserving murrelet habitat on federal lands and that losses of habitat on federal lands will continue due to wildfires and other disturbance events, but they expect those losses to be exceeded by recovery of currently unsuitable habitat within reserves as forests mature.

Lorenz et al. (2021) modeled the amount and distribution of probable nesting habitat in the murrelet's range in the NWFP area in 1993 (1 year prior to the start of the NWFP), and 25 years later in 2017. Their models indicated that there were 1.51 million ac. of "higher probability" nesting habitat over all lands in the murrelet's range in Washington, Oregon, and California in 1993. Of this, 0.14 million ac. were identified as core habitat, which they defined as intact patches of higher probability nesting habitat >5.56 ac. in size. Most (68 percent, or 1.04 million ac.) higher probability nesting habitat in 1993 was on federally administered lands, with 0.97 million ac. (66 percent) in reserved land use allocations. Non-federal lands contained 29 percent of all higher probability nesting habitat, but only 13 percent of all core habitat. They estimated a net loss of about 1.4 percent in higher probability nesting habitat across the NWFP area and 1.8 percent in core habitat from 1993 to 2017. Timber harvest and wildfire were the major causes of habitat loss on federal lands since the NWFP was implemented. Timber harvest was the primary cause of habitat loss on state and other non-federal lands, accounting for 99 percent of all attributable losses since 1993.

Throughout the listed range of the murrelet, habitat affected by actions consulted on through section 7 of the Act has been documented by the Service since October 2003. Most of the affected habitat is within the Puget Sound (WA), followed by western Washington and the Siskiyou Coast Ranges (California) with most of the acreage coming from patches of older forest with sufficient nest structure (Table 4).

Table 4. Aggregate results of all suitable habitat (ac.) affected by section 7 consultation for the murrelet: summary of effects by conservation zone and habitat type for October 1, 2003, to December 4, 2024 (Service, unpublished data).

	Authorized habitat effects[2]		Reported habitat effects[2]	
Conservation zone[1]	**Stands[3]**	**Remnants[4]**	**Stands[3]**	**Remnants[4]**
Puget Sound	24,356	0	1	0
Western Washington	17,583	0	12	0
Outsize CZ Area in WA	0	0	0	0
Oregon Coast Range	5,764	2,671	2,924	1,608
Siskiyou Coast Range	16,248	271	5,184	187
Outside CZ Area in OR	56	3	0	0
Mendocino	0	0	0	0
Santa Cruz Mountains	0	0	0	0
Outside CZ Area in CA	0	0	0	0
Total	**64,007**	**2,945**	**8,121**	**1,795**

[1]Six conservation zones were established by the murrelet recovery plan (Service 1997) to guide terrestrial and marine management planning and monitoring for the murrelet.

[2]Habitat includes all known occupied sites, as well as other suitable habitat, though it is not necessarily occupied. Importantly, there is no single definition of suitable habitat, though the Marbled Murrelet Effectiveness Monitoring Module is in the process. Some useable working definitions include the primary constituent elements as defined in the critical habitat final rule, or the criteria used for Washington State by Raphael et al. (2002).

[3]Stands are patches of older forest in an area with potential platform trees.

[4]Residual/remnant stands are areas with scattered potential platform trees within a younger forest that lacks, overall, the structures for murrelet nesting.

STATUS OF CRITICAL HABITAT

This section describes the range-wide condition of designated murrelet critical habitat. When discussing critical habitat, the terms "primary constituent elements" (Elements) and "physical and biological features" (Features) are synonymous. Critical habitat rules published before February 11, 2016, used the term Element, while critical habitat rules published after that date use the term Feature. In cases where a critical habitat rule numbers Elements specifically (e.g., Element 1), we will use the terms as defined in the critical habitat designation to avoid confusion.

Legal Status

On May 24, 1996, the Service designated critical habitat for the murrelet within 104 critical habitat units (Units) encompassing 3,887,800 ac. across Washington (1,631,300 ac.), Oregon (1,515,300 ac.), and California (741,200 ac.), with over 77 percent occurring in federal LSRs, just under 21 percent on state lands, and the remaining 2 percent on county, city, and private lands (61 FR 26256). The Service published a final rule revising critical habitat for the murrelet on October 5, 2011, that removed a total of 189,671 ac. of critical habitat in northern California (143,487 ac. removed from 6 Units) and in Oregon (46,184 ac. removed from 4 Units) (76 FR 61599). Three entire California critical habitat units were removed because they no longer met the definition of critical habitat. Therefore, the current designation includes approximately 3,698,100 ac. of critical habitat within 101 Units in Washington, Oregon, and California.

Primary Constituent Elements

The Elements are physical and biological features the Service determines are essential to a species' conservation and eventual recovery and require special management considerations. For murrelets, the Service determined the Elements associated with the terrestrial environment that support nesting, roosting, and other normal behaviors are essential to the conservation of the murrelet and require special management considerations. The Elements for the murrelet are: (1) individual trees with potential nesting platforms; and (2) forested lands of at least one-half site potential tree height regardless of contiguity within 0.5 mi. of individual trees with potential nesting platforms, and that are used or potentially used by murrelets for nesting or roosting (61 FR 26256). The site-potential tree height is the average maximum height for trees given the local growing conditions and is based on species-specific site index tables.

Status and Distribution

The majority (77 percent) of designated critical habitat occurs on federal lands in LSRs as identified in the NWFP. Because of this high degree of overlap with LSRs and LSR management guidelines, the condition of most of the range wide network of murrelet critical habitat has experienced little modification of habitat since designation.

Climate Change

There is growing evidence that recent climate change has impacted a wide range of ecological systems (Stenseth et al. 2002, Walther et al. 2002, Ådahl et al. 2006, Karl et al. 2009, Westerling

et al. 2011, Marlon et al. 2012, Moritz et al. 2012). Climate change, combined with effects from past management practices, is exacerbating changes in forest ecosystem processes and dynamics to a greater degree than originally anticipated under the NWFP. Environmental variation affects all wildlife habitats; however, climate change presents new challenges as systems may change beyond historical ranges of variability. In some areas, changes in weather and climate may result in major shifts in vegetation communities that can persist in some regions.

The Service believes climate change is likely to further exacerbate some existing threats to murrelet critical habitat such as the projected potential for increased habitat loss from drought-related fire, mortality, insects, and disease in the short-term (10 to 30 years). Although it appears likely that murrelet critical habitat will be adversely affected by long-term consequences of climate change, quantifying the magnitude of effects to the critical habitat network is difficult.

Current Condition of Range-wide Critical Habitat

The current condition of critical habitat incorporates the effects of all past human activities and natural events that led to the present-day status of the habitat (Service and National Marine Fisheries Service 1998). As of December 4, 2024, approximately 65,608 ac. of critical habitat (1.67 percent of all critical habitat) across all lands (i.e., federal and non-federal; Table 5) have been consulted on as removed with 5,471 ac. reported on NWFP lands only (Table 6). As with the overall habitat affects, caution is warranted in reviewing these consulted on impacts and applying them directly to habitat baselines in the monitoring reports. Habitat removal may not be realized to the extent of the consultations, particularly with large scale consultations where implementation will be distributed over decades and impacts may be offset by habitat development. “Reported” habitat effects include acres reported by action agencies as implemented by actions.

Table 5. Aggregate results of all critical habitat removed (ac.) by section 7 consultation for the murrelet: Baseline and summary of effects by conservation zone and habitat type from October 1st, 2003, to December 4, 2024 (Service, unpublished data).

		Authorized habitat effects[3]			Reported habitat effects[3]		
Conservation Zone[1]	**Designated Unit acres[2]**	**Stands[4]**	**Remnants[5]**	**Element2[6]**	**Stands[4]**	**Remnants[5]**	**Element2[6]**
Puget Sound	1,271,782	16	0	45	0	1	0
Western Washington	414,050	1	0	1	0	0	0
Outsize CZ Area in WA	0	0	0	0	0	0	0
Oregon Coast Range	1,024,122	60,651	4	2,497	0	1,186	0
Siskiyou Coast Range	1,055,788	4,940	0	3,195	0	97	0
Outside CZ Area in OR	0	0	0	1	0	0	0
Mendocino	122,882	0	0	0	0	0	0
Santa Cruz Mountains	47,993	0	0	0	0	0	0
Outside CZ Area in CA	0	0	0	0	0	0	0
Total	**3,936,617**	**65,608**	**4**	**5,738**	**0**	**1,284**	**0**

[1]Six conservation zones were established by the murrelet recovery Plan (Service 1997) to guide terrestrial and marine management planning and monitoring for the murrelet.

[2]Critical Habitat Unit acres divided by conservation zones, as presented in the murrelet recovery plan (Service 1997). The total amount of critical habitat range wide was reduced to approximately 3,698,100 ac. in 2011 (76 FR 61599).

[3]Habitat includes all known occupied sites, as well as other suitable habitat, though it is not necessarily occupied. Importantly, there is no single definition of suitable habitat, though the Marbled Murrelet Effectiveness Monitoring Module is in the process. Some useable working definitions include the primary constituent elements as defined in the critical habitat final rule, or the criteria used for Washington State by Raphael et al. (2002).

[4]Stands are patches of older forest in an area with potential platform trees.

[5]Residual/remnant stands are areas with scattered potential platform trees within a younger forest that lacks, overall, the structures for murrelet nesting.

[6]Element2: Trees with a ½ site-potential tree height within 0.5 mi. of a potential nest tree.

Table 6. Aggregate results of critical habitat removed (ac.) on NWFP lands by section 7 consultation for the murrelet: Baseline and summary of effects by conservation zone and habitat type from October 1, 2003, to December 4, 2024 (Service, unpublished data).

		Authorized habitat effects[3]			Reported habitat effects[3]		
Conservation Zone[1]	**Designated Unit acres[2]**	**Stands[4]**	**Remnants[5]**	**Element2[6]**	**Stands[4]**	**Remnants[5]**	**Element2[6]**
Puget Sound	1,271,782	16	0	45	0	1	0
Western Washington	414,050	1	0	1	0	0	0
Outsize CZ Area in WA	0	0	0	0	0	0	0
Oregon Coast Range	1,024,122	651	4	2,497	0	1,186	0
Siskiyou Coast Range	1,055,788	4,803	0	2,961	0	0	0
Outside CZ Area in OR	0	0	0	1	0	0	0
Mendocino	122,882	0	0	0	0	0	0
Santa Cruz Mountains	47,993	0	0	0	0	0	0
Outside CZ Area in CA	0	0	0	0	0	0	0
Total	**3,936,617**	**5,471**	**4**	**5,504**	**0**	**1,187**	**0**

[1]Six conservation zones were established by the murrelet recovery plan (Service 1997) to guide terrestrial and marine management planning and monitoring for the murrelet.

[2]Critical Habitat Unit acres divided by conservation zones, as presented in the murrelet recovery plan (Service 1997). The total amount of critical habitat range wide was reduced to approximately 3,698,100 ac. in 2011 (76 FR 61599).

[3]Habitat includes all known occupied sites, as well as other suitable habitat, though it is not necessarily occupied. Importantly, there is no single definition of suitable habitat, though the Marbled Murrelet Effectiveness Monitoring Module is in the process. Some useable working definitions include the primary constituent elements as defined in the critical habitat final rule, or the criteria used for Washington State by Raphael et al. (2002).

[4]Stands are patches of older forest in an area with potential platform trees.

[5]Residual/remnant stands are areas with scattered potential platform trees within a younger forest that lacks, overall, the structures for murrelet nesting.

[6]Element2: Trees with a ½ site-potential tree height within 0.5 mi. of a potential nest tree.

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) (50 CFR 402.02) of the Act define the environmental baseline as "the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline."

Habitat Characteristics of the Action Area

The north portal construction area occurs within a large, contiguous patch of late successional redwood forest and is considered high quality nesting habitat, containing many large trees with large branches (ranging from 4 to 32 in. diameter) or forked branches, deformities (e.g., broken tops), and growth of moss or other structures large enough to provide a platform for murrelet nesting (Figures 3 and 4). The entire north portal construction area is within designated murrelet critical habitat (Figures 4 and 7).

The habitat surrounding the south portal construction area, and the OMC is primarily red alder (*Alnus rubra*) forest, coastal brambles, and late successional Sitka spruce forest. However, the Sitka spruce stands occur as scattered, irregular, or linear-shaped patches of forest within a matrix of the other communities (Figures 3, 5, and 6). Scattered large-diameter Sitka spruce trees dominate the canopy, with occasional large-diameter Douglas-fir also present. Red alder, along with minor amounts of cascara (*Frangula purshiana*), are present in the sub-canopy. The late successional Sitka spruce patches contain large diameter trees and nesting platforms that provide nesting habitat for murrelets. However, the patchiness of the canopy lowers the quality of this habitat, and murrelets are not known to be present in these two construction areas. A portion of these areas are within designated murrelet critical habitat (Figure 7).

Habitat adjacent to the section of US 101 that will be removed after tunnel construction includes red alder forest, coastal brambles, late-successional Sitka spruce forest, early- and late-successional Douglas-fir forest, early- and late-successional redwood forest, and ruderal vegetation (Figures 3–5). Most of the ground disturbance associated with removal of the road will be within the existing highway and the ruderal vegetation community that borders it. Nearly the entire road removal area (i.e., 19.98 ac. of a total 20.1 ac.) is within designated murrelet critical habitat (Figure 7).

Ambient Sound Levels and Visual Disturbance

US 101 is a busy federal highway used by recreational vehicles, large trucks, buses, and passenger cars. Further, sections of US 101 within the action area have undergone continuous emergency repairs for over a decade that have likely established an elevated ambient sound level at least during the day. Accordingly, maximum ambient sound levels on US 101 within the

action area were estimated at 81–90 dB using Service guidelines (Service 2020), which is supported by a Caltrans' noise study for the project that found an average daytime maximum of 83.1 dB and an average nighttime maximum of 80.6 dB (Caltrans 2023). Daytime ambient noise within habitat adjacent to the construction areas ranged from 83 dB during the day to 60 dB at night (Caltrans 2023). Most project equipment sound levels were estimated at 71–90 dB and therefore would not exceed ambient sound levels estimated by the Service or Caltrans. However, some construction activities, such as pile driving and blasting, could reach 101–112 dB. Therefore, pile driving and blasting could result in auditory disturbance to murrelets if they are nesting within portions of the action area where these activities will occur, as described below in the *Effects of the Action* section. Ambient visual disturbance on US 101 within the action area is also considered high due to the presence of US 101 and the near continuous emergency road construction that occurs along portions of US 101, mainly between the north and south portal construction areas. Dense vegetation along US 101 likely blocks much of the visual disturbance from murrelets nesting near US 101, suggesting that the 330 ft. distance used by the Service for murrelet visual disturbance may be excessive for this action area.

Murrelet Abundance and Distribution

At-Sea Occurrences

Murrelets have been detected during at-sea surveys immediately west of the action area (Figure 3). The entire action area is within murrelet CZ 4. Since 2000, at-sea monitoring to estimate a murrelet population trend has occurred annually in CZ 4 through 2014, then every other year through 2024, as part of the NWFP EM Program (McIver et al. 2024). The average murrelet density at-sea from 2000 to 2013 monitoring data indicates 5 to 10 birds per km^2 in the Primary Sampling Units of the northern strata located offshore of the action area (Falxa and Raphael 2016). The marine environment is completely outside the action area and proposed construction activities will not impact murrelets foraging in the marine environment.

Terrestrial Occurrences

Murrelets are known to nest in the action area, at least within the north portal construction area (Figures 3 and 4). Suitable murrelet nesting habitat in the action area and the general vicinity of the action area was extensively surveyed for murrelets in the late 1980s and early 1990s by the U.S. Forest Service's Pacific Southwest Research Station and is the source for most terrestrial occurrence records in coastal northern California including the action area. The California Department of Parks and Recreation considers the large patch of high-quality nesting habitat (old-growth redwood) in the north portal construction area (Figures 1, 3, and 4), which falls within Del Norte Coast Redwoods State Park, as continuously occupied by nesting murrelets, and does not conduct regular surveys to monitor murrelet occupancy. However, as part of this project, murrelets were audibly detected six times within the vicinity of the action area in 2021 within Del Norte Coast Redwoods State Park and adjacent industrial timberlands during spotted owl surveys. Additionally, murrelets were audibly detected by Caltrans at all four avian acoustic recorder stations which were spread north to south to cover the project area, but most prominently at the northernmost station, which was in the late-successional redwood forest near the north portal construction area. Because no murrelet surveys in terrestrial habitats were conducted specifically for this project all suitable and potential nesting habitat (defined below in

the *Murrelet Nesting Habitat Availability* section with details in Appendix B) within the action area was considered occupied by nesting murrelets for the purposes of this consultation.

Murrelet Nesting Habitat Availability

For the purposes of this consultation, the Service defines suitable murrelet nesting habitat as coastal coniferous forest or mixed conifer/hardwood forest with mean tree dbh ≥24 in. with overstory canopy closure ≥60 percent, and potential nesting habitat as mean tree dbh of 11–23.9 in. with the same forest types and canopy closure as for suitable nesting habitat (Appendix B). Potential nesting habitat is considered suitable for nesting but identifies lower quality habitat, while suitable nesting habitat refers to higher quality habitat. Caltrans assessed vegetation types within the ESL for the proposed project and classified early and late successional redwood, Douglas-fir, and sitka spruce coniferous forest habitat as suitable for the murrelet. Suitable and potential nesting habitat outside of the ESL and within the action area was assessed using geospatial habitat layers developed by the Service to identify habitat that contains the characteristics described in the *Habitat Use* section above (see Appendix B for details on the geospatial habitat layer).

The 280-ac. action area contains approximately 116.9 ac. (42 percent of action area) of suitable murrelet nesting habitat and approximately 18 ac. (6 percent of action area) of potential nesting habitat (Table 7; Figures 3–6). The remaining 145.1 ac. (52 percent of action area) of the action area is not considered suitable for nesting murrelets due to low canopy closure, small tree diameter, unsuitable vegetation types, and unvegetated developed areas such as roadways (Table 7; Figures 3–6). The north portal construction area contains the highest proportion of suitable nesting habitat with 74.7 ac. of 88 total ac. (85 percent; Table 7; Figures 3 and 4), followed by the south portal construction area with 36.2 ac. of 123 total ac. (29 percent; Table 7; Figures 3 and 5). Although 16 percent of the road removal area contains suitable nesting habitat, it occurs immediately adjacent to US 101 (i.e., within 50 ft.) and has been exposed to elevated auditory and visual disturbance for decades, suggesting murrelets may avoid the area or have become habituated to the disturbance and would not be adversely affected (Table 7; Figures 3–5). Finally, approximately 6 percent (2.8 ac. of a total 49 ac.) of the OMC construction area contains suitable nesting habitat, and it has no potential nesting habitat (Table 7; Figures 3 and 6).

Status of Critical Habitat in the Action Area

Available geospatial habitat data for the murrelet do not contain attributes for whether individual polygons or pixels meet the criteria of Element 1 or Element 2. However, for the purposes of this consultation, the Service considers suitable and potential nesting habitats as defined above as meeting the criteria of Element 1 and Element 2, with potential nesting habitat containing adequate potential nest trees with platforms but with fewer such trees than suitable nesting habitat. The Service used habitat data from the biological assessment, which was ground-truthed and considered the best available information to assess temporary and permanent impacts to suitable murrelet habitat and critical habitat within the construction area. Outside of the construction area, the Service identified suitable nesting habitat, potential nesting habitat, and unsuitable nesting habitat using geospatial habitat layers created by the Service (Appendix B).

The action area overlaps a 6,662 ac. sub-unit (Del Norte Coast Redwoods State Park) of the

18,019-ac. murrelet critical habitat unit CA-02-a (Figure 7). The sub-unit overlapping the action area contains approximately 4,475 ac. (68 percent of sub-unit) of suitable murrelet nesting habitat, 1,148 ac. (17 percent) of potential nesting habitat, and 946 ac. of unsuitable habitat (14 percent; Figure 7).The 18,019 ac. CA-02-a unit contains approximately 13,356 ac. (74 percent of unit) of suitable murrelet nesting habitat, 2,153 ac. (12 percent) of potential nesting habitat, and 2,510 ac. (14 percent) of unsuitable habitat. Of the 280 acres of the action area, 197 ac. are in designated critical habitat but it is unknown how many acres of that designation support the Elements.

Past or Current Actions

This analysis describes factors affecting the environment of the species or critical habitat in the action area and includes State, tribal, local, and private actions already affecting the species or that will occur contemporaneously with the proposed action. Unrelated Federal actions affecting murrelets or murrelet critical habitat that have completed formal or informal consultation (including wholly beneficial actions) are also part of this baseline.

Within the action area, two capital maintenance projects including the Damnation Creek Safety Project (01-0K950: Damnation Creek Project) and the Klamath Capital Preventative Maintenance Project (01-0J210; Klamath Capital Project) recently received coverage under the Arcata Fish and Wildlife Office's Programmatic Letter of Concurrence (PLOC) for Caltrans's Routine Maintenance and Repair Activities, and Small Projects Program for Districts 1 and 2. Both the Damnation Creek Project and the Klamath Capital Project made may affect, but not likely to adversely affect determinations for murrelet and spotted owl and Damnation Creek made a made may affect, but not likely to adversely affect determination for marten. Both projects committed to implementing conservation measures that prevent elevated sound levels during the majority of the murrelet breeding season (March 24 through August 5) and a limiting operating period between August 6 and September 15. Additionally, several Caltrans emergency projects (01-0G100, 01-0H690, and 01-0H700) have occurred in the action area and were batched in the Last Chance Grade Emergency projects informal consultation, which included future emergency projects. The determination was may affect, but not likely to adversely affect for spotted owl, murrelet, and murrelet critical habitat based on the rationale of insignificant habitat impacts, as well as insignificant impacts from elevated sound levels and visual disturbance from emergency repairs. Noise and visual disturbance were assessed as likely similar to the higher ambient sound and visual disturbance levels already occurring in the action area, suggesting no additional auditory or visual disturbance to spotted owls or murrelets from the emergency repairs.

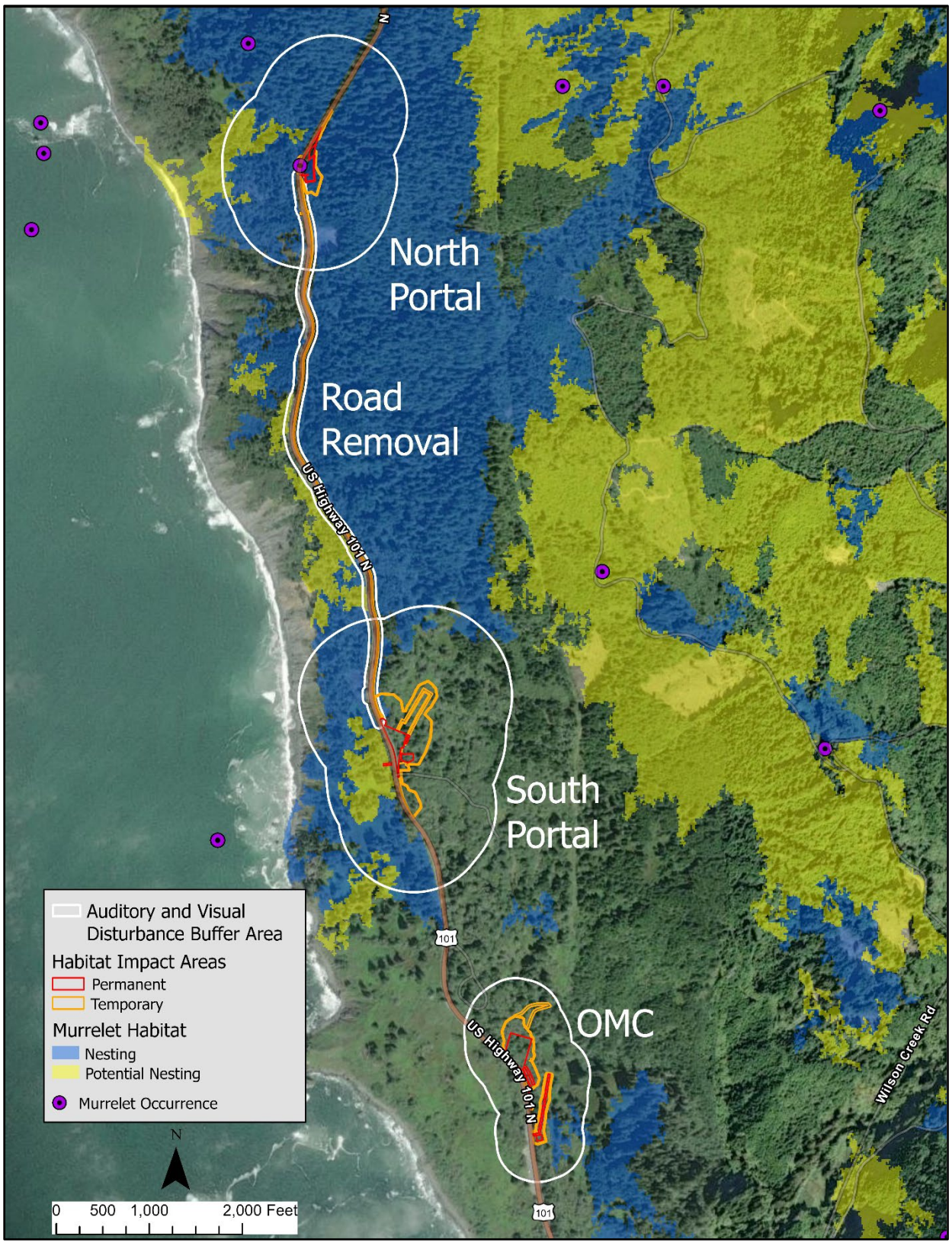


Figure 3. Murrelet habitat and occurrences within the 280-ac. action area (sum of white polygon areas).

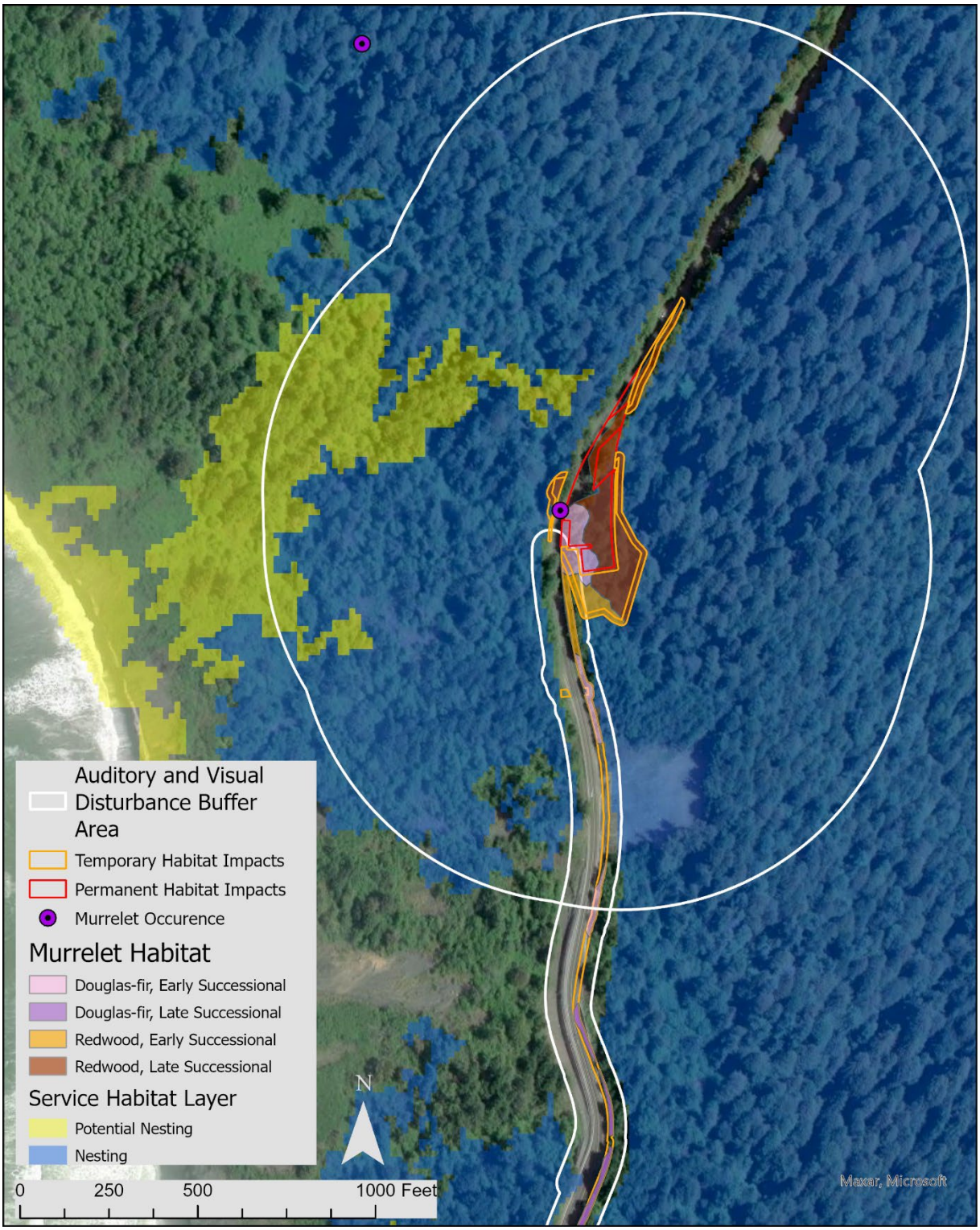


Figure 4. Murrelet habitat and occurrences within the north portal construction area and northern portion of the road removal area. The two murrelet occurrence locations represent roadside survey stations with multiple murrelets detected.

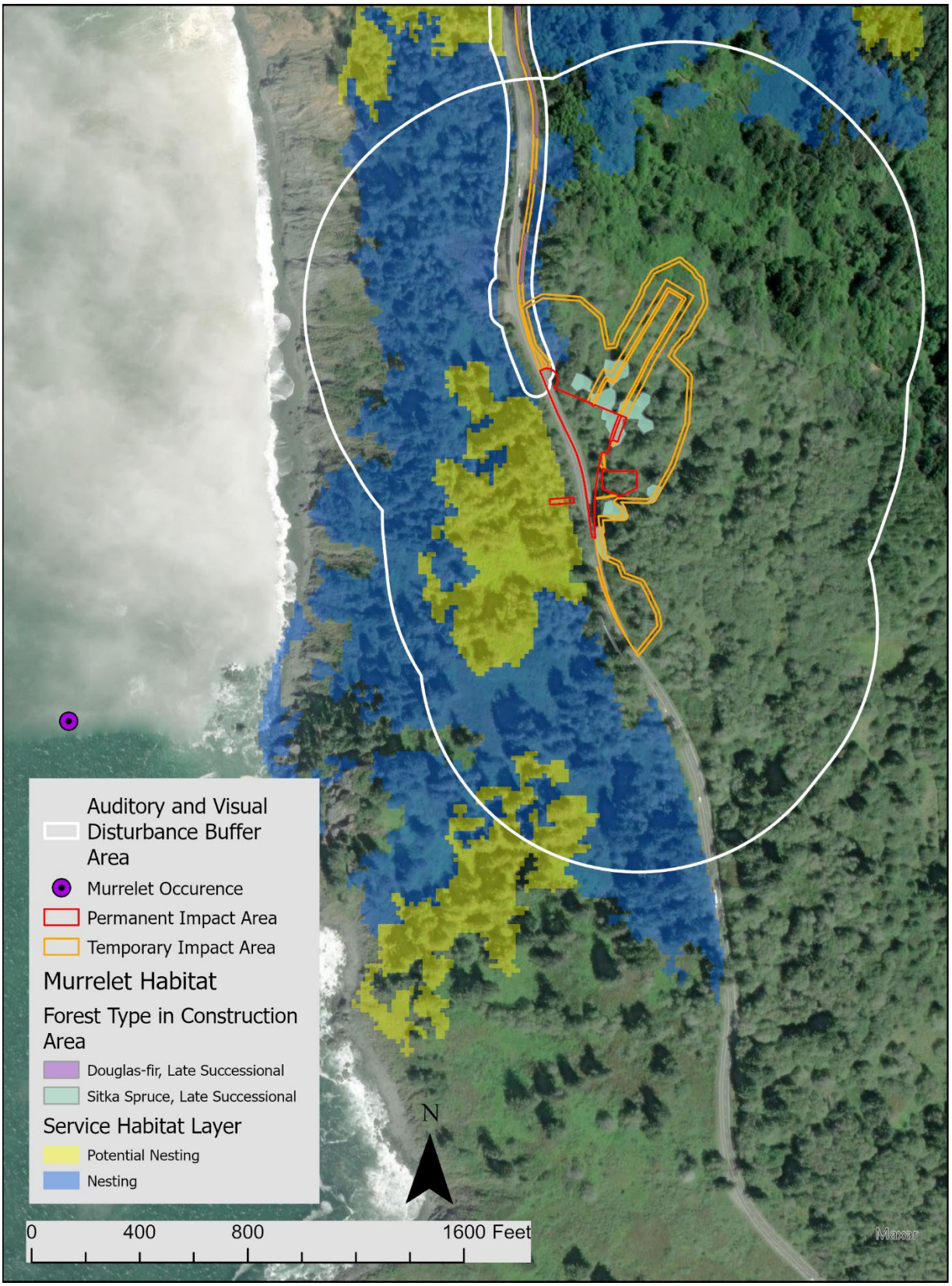


Figure 5. Murrelet habitat and occurrence within the south portal construction area and southern portion of the road removal area.

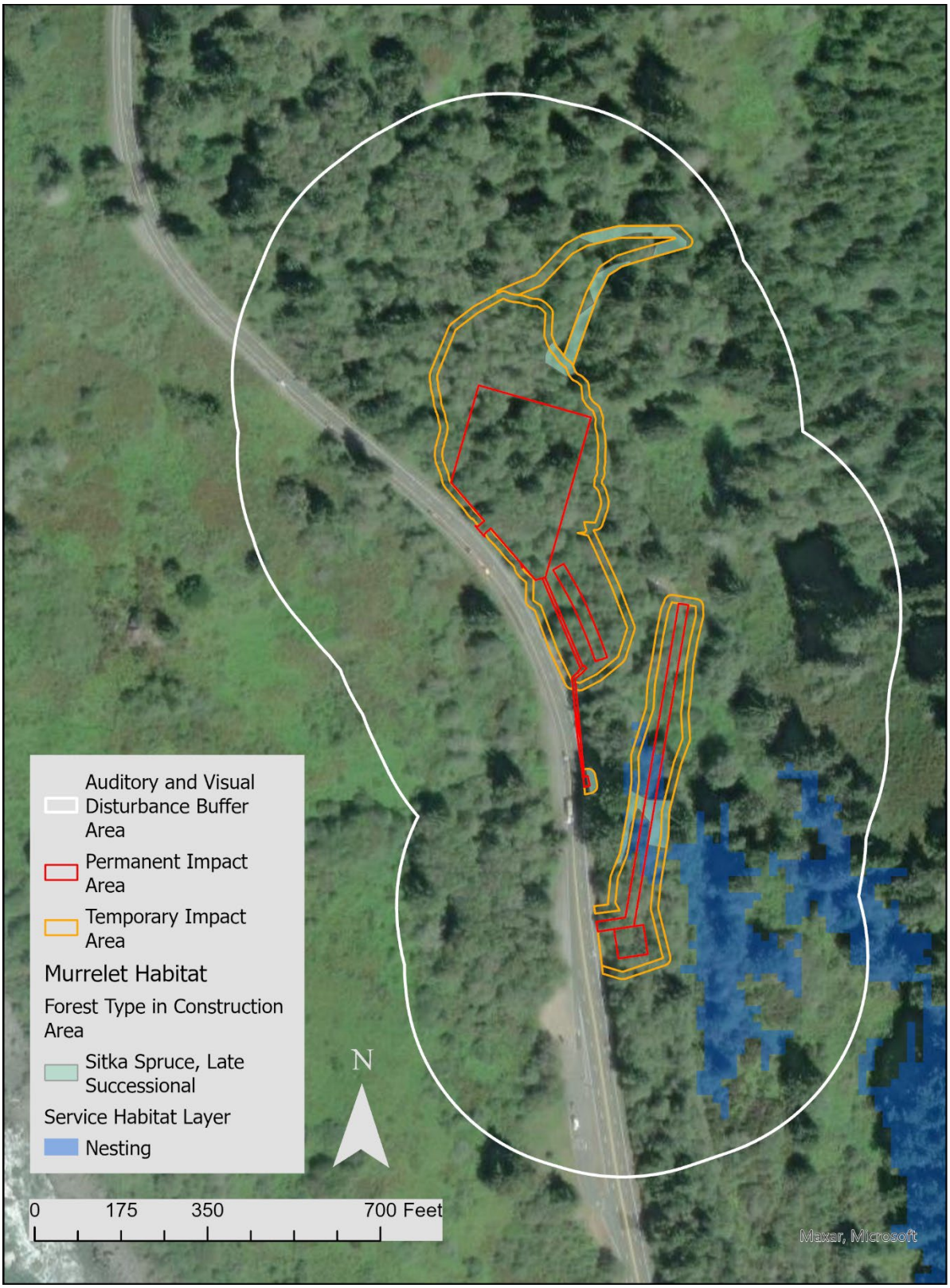


Figure 6. Murrelet habitat within the OMC construction area. The nearest terrestrial murrelet occurrence is 0.75 mi. southeast of the OMC construction area, and the nearest at-sea occurrence is 0.6 mi. to the northwest (as seen in Figure 5 above).

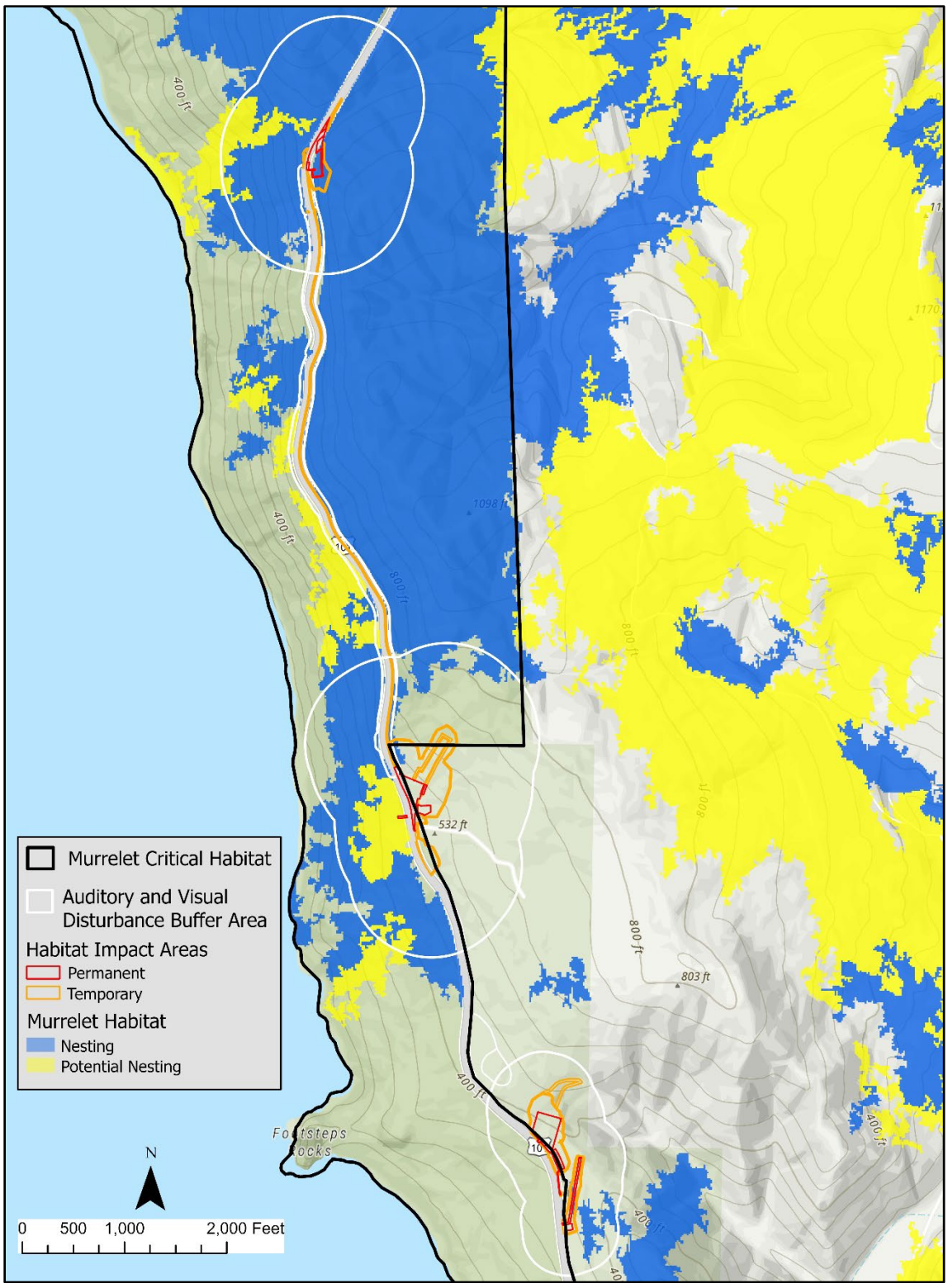


Figure 7. Designated murrelet critical habitat within the 280 ac. action area.

EFFECTS OF THE ACTION

The implementing regulations for section 7(a)(2) of the Act define effects of the action as "all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action" (50 CFR 402.02).

The following effects analysis is based on information provided in the Caltrans' biological assessment, as well as our assessment of baseline conditions and expected effects from implementation of the proposed action. Factors considered in the analysis include a description of the spatial extent, duration, magnitude, and frequency of occurrence of effects and stressors on individuals, as well as effects and stressors on elements of habitat, that could affect murrelets through modification or destruction of habitat suitable for breeding, sheltering, foraging, or dispersal.

The impact analysis for the murrelet was conducted by evaluating the potential adverse effects of the following anticipated project construction activities:

- Vegetation clearing and grubbing including the removal of suitable murrelet nest trees.
- Drilling of an exploratory tunnel at the south portal.
- Geotechnical drilling.
- Construction of tunnel approach structures.
- Excavating, grading, fill placement, compacting, at portals and OMC.
- Construction of bridge (at north portal), retaining walls, staging areas, and road approaches to tunnel portals. Pile driving will likely be required.
- Tunnel excavation. Blasting will likely be required.
- Removal of the old road alignment.

Proposed construction activities may result in adverse effects to murrelets and designated murrelet critical habitat including, (1) habitat loss or degradation, and (2) auditory and visual disturbance.

Habitat Loss or Degradation

Suitable and potential nesting habitats will be temporarily or permanently impacted by the project and includes the removal of 40 large conifers ≥48 in. dbh that the Service considers as suitable murrelet nest trees. Most of these large trees will be removed from the north portal construction area and include: 16 redwood trees (51.2–103.5 in. dbh), 3 Douglas-fir trees (48.2–61.1 in. dbh), 18 Sitka spruce trees (48.4–86.8 in. dbh), and 3 western hemlock trees (55.8–60.9 in. dbh). Overall, permanent and temporary impacts to suitable and potential nesting habitats include:

1. *Permanent Impacts*: Proposed project activities will result in the permanent loss or conversion of 2.53 ac. of suitable and potential nesting habitats:
    a. *Habitat Loss*: Approximately 1.11 ac. will be permanently replaced with hardscaped features, such as walls, highway features, and infrastructure. Over half (0.62 ac.) of the permanently lost nesting habitat will be late-successional redwood forest at the north portal construction area and 0.20 ac. of late-successional Sitka spruce forest at both portals and at the OMC construction area. The remainder of permanently lost habitat (0.29 ac.) will be within early successional redwood and Douglas-fir forest that the Service considers as potential nesting habitat due to the presence of scattered large conifer trees within a matrix of younger vegetation.
    b. *Habitat Conversion:* Approximately 1.42 ac. will undergo habitat conversion. In these areas, late-successional redwood (0.47 ac.), Douglas-fir (0.02 ac.), and Sitka spruce (0.93 ac.) forests will be removed to facilitate necessary cut-and-fill for the project, and although trees will be replanted after project completion, it will take at least a century for equivalent habitat to return. Therefore, the Service considers this habitat conversion as a permanent impact for the purposes of this consultation since it will not be available as suitable nesting habitat for at least 10 murrelet generations (a murrelet generation is generally accepted as 10 years).
2. *Temporary Impacts*: Proposed project activities will result in a temporary impact to 2.15 ac. of suitable and potential nesting habitats:
    a. *Short-term*: Approximately 1.59 ac. of suitable nesting habitat (late-successional redwood, Douglas-fir, and Sitka spruce forest) and 0.34 ac. of potential nesting habitat (early successional redwood and Douglas-fir forest with scattered large conifer trees) will be temporarily impacted in equipment access buffer areas and geotechnical drilling areas. Vegetation will be disturbed in these areas, but trees over 24 in. dbh will remain in place. The habitats in these areas should continue to function as they had pre-project in less than a year.
    b. *Long-term*: Impacts include 0.22 ac. of potential nesting habitat (early successional redwood and Douglas-fir forest with scattered large conifer trees) that will be removed to facilitate cut-and-fill. These areas will be replanted and should function as they had pre-project within 20 to 40 years.

The extent to which murrelets will use early successional coniferous habitat that includes scattered large trees suitable for nesting is unknown. However, the presence of large, contiguous patches of late successional coniferous forest habitat in and around the action area suggests that murrelets would avoid nesting in early successional habitat despite the presence of scattered large conifer trees that likely contain suitable nest platforms.

The loss of suitable habitat and nest trees will impact murrelets because the loss of old growth trees will result in fewer suitable nest trees with nesting platforms. The loss of suitable nesting trees with nesting platforms may result in murrelets nesting in less suitable habitat, which would increase the risk of injury or mortality of nesting young that are exposed to stressors such as predation and weather. Remaining nest trees adjacent to the trees that will be removed will become less suitable for nesting because remaining trees will be more exposed. The loss of

suitable nest trees will likely result in reduced fitness of adults searching for new nesting habitat and impact the reproductive success of individuals nesting in the area.

Long-term impacts to suitable and potentially suitable murrelet habitat will be offset by the restoration of 335 acres of early successional forest habitat to late successional forest within the range of the murrelet. The implementation of treatments that will create nesting platforms for murrelets will minimize the long-term impacts caused by the loss of suitable nesting habitat from the proposed project. The study of treatments creating nesting platforms and their efficacy will inform, and potentially improve, future restoration projects.

Short-term impacts to suitable and potentially suitable murrelet habitat will be offset by the undergrounding of powerlines as described in conservation measure 8 where murrelets have historically been subject to direct strikes against the powerlines between visits from foraging locations to/from nest trees (Service 2019).

Auditory and Visual Disturbance

Disturbance for the murrelet is defined by the Service as action-generated sound levels exceeding ambient sound levels in or near suitable nesting habitat (auditory disturbance) or as the reaction of nesting birds to human presence or activity (visual disturbance), resulting in disruption of essential breeding behaviors (Service 2020). Auditory or visual disturbance may adversely affect the murrelet when at least one of the following conditions is met (Service 2020): (1) action-generated sound levels exceed existing ambient sound levels by 20 or more dB; (2) action-generated sound levels, when added to existing ambient sound levels, exceeds 90 dB; or (3) proposed activities occur within the visual line-of-sight distance of 330 ft. or less from a murrelet nest. Disturbance during the murrelet nesting season may potentially disrupt the species' essential breeding behaviors leading to injury or mortality by: (1) causing abandonment of the breeding effort by failure to initiate nesting or to complete incubation, (2) disrupting nesting activity, such as feeding young, and (3) causing premature dispersal of juveniles.

Activities that require pile driving, blasting, use of heavy equipment, chainsaws, helicopters, and large vehicles introduce elevated sound levels and visual disturbances into the environment. The effects of auditory and visual disturbances on birds are extremely difficult to determine. Confounding factors include the tolerance level of individual birds, type and frequency of human activity, ambient sound levels, how sound reacts with topography and vegetation, and differences in how species perceive noise and human presence (Knight and Skagen 1988). Regardless of these difficulties, research conducted on a variety of bird species suggests that human disturbance can have a negative impact on reproductive success (Carney and Sydeman 1999, Frid and Dill 2002, Marzluff and Neatherlin 2006). Disturbance can affect productivity in several ways, including interference of courtship (Bednarz and Hayden 1988), nest abandonment (White and Thurow 1985), egg and hatchling mortality due to exposure and predation (Drent 1972, Swenson 1979), and altered parental care (Fyfe and Olendorrf 1976, Bortolotti et al. 1984).

Though largely inconclusive, Hébert and Golightly (2006) examined the effects of operating chainsaw noise during incubation and chick rearing periods on nesting adult murrelets and chicks. Adult murrelets and chicks both spent less time motionless and resting and more time

exhibiting “raised head” and “bill up” behaviors during the disturbance trial than pre- and post-trial. The relevance of these behaviors is unknown; however, a species that relies on being cryptic and motionless to avoid predation at the nest may risk being detected by a predator if it moves more often. Adult murrelets exposed to elevated sound levels or visual disturbance from construction could abandon active nests or reduce visits to the nest, either of which could lead to death of eggs and nestlings via exposure to the elements, starvation, or predation.

As described above, the 280 ac. action area is based on the distance elevated sound levels and visual disturbance will travel from the construction areas before attenuating back down to ambient levels. Elevated sound levels for the north and south portal construction areas, and OMC construction area, will travel farther (400 ft. for the OMC; 800 ft. for each of the two portals) than the 330 ft. visual disturbance distance (Service 2020). Therefore, the visual disturbance buffers are fully contained within the larger auditory disturbance buffers of those three construction areas. In contrast, Caltrans estimated a 50 ft. auditory disturbance buffer for the road removal area activities, but due to a high level of ambient visual disturbance along the road from many years of near continuous emergency repair activities, did not create a visual disturbance buffer, since murrelets likely either avoid the area or have become habituated to the high ambient visual disturbance.

The majority (145.1 ac. of the total 280 ac.; 51.8 percent) of habitat in the action area exposed to elevated sound levels or visual disturbance is unsuitable for murrelet nesting (Table 7). Approximately 116.9 ac. of suitable nesting habitat (41.8 percent of action area) and 18 ac. of potential nesting habitat (6.4 percent) will be exposed to elevated sound levels or visual disturbance. The north portal construction area contains the most (74.7 ac.; Table 7) suitable nesting habitat that will be exposed to elevated sound levels or visual disturbance followed by the south portal construction area (36.2 ac.; Table 7). The south portal construction area contains the most (10.6 ac.) potential nesting habitat that will be exposed to elevated sound levels or visual disturbance, followed by the north portal construction area (6 ac.; Table 7).

Table 7. Murrelet nesting habitat that will be exposed to elevated sound levels and visual disturbance, by construction area.

Construction area	Suitable nesting habitat (ac.)	Potential nesting habitat (ac.)	Unsuitable habitat (ac.)	Total
North portal	74.7	6	7.3	88
South portal	36.2	10.6	76.2	123
OMC	2.8	0	46.2	49
Road removal	3.2	1.4	15.4	20
Total	**116.9**	**18.0**	**145.1**	**280**

Predation

Common ravens and Steller's jays occur in the action area and are known murrelet nest predators in northern California (Hébert and Golightly 2007). Both species, along with other corvid species such as the Canada jay, may be attracted to the action area due to an increase in human activity and an increased abundance of trash and food from construction workers. Corvid predation events could increase in frequency as corvid densities increase in murrelet nesting habitat (Service 1997). However, these events are difficult to detect due to the cryptic nature of murrelet adults and chicks, inaccessibility to nests based on height in the canopy, and the effort required to identify and monitor murrelet nesting attempts. All food and trash will be contained and packed out of the project site at the end of each workday, which should reduce the likelihood of nest predation events, at least from resident corvids.

Critical Habitat

As described in the *Status of Critical Habitat in the Action Area* section, the Service considers suitable and potential nesting habitats (defined in the *Murrelet Nesting Habitat Availability* section) as meeting the criteria for designated murrelet critical habitat Elements 1 and 2. Therefore, permanent or temporary loss of suitable or potential nesting habitats due to the proposed activities will result in a loss of these Elements. With the exception of short-term temporary impacts to suitable or potential nesting habitats, which should return to suitability within a year after construction, long-term temporary impacts and habitat conversion will not return to suitability for at least 20 years (long-term temporary impacts) to over a century (habitat conversion). Finally, areas where suitable and potential nesting habitats will be permanently lost will never meet the criteria of Elements 1 and 2 after construction.

Caltrans proposes to remove 40 trees that are greater than 48 in. dbh, of which about half are within designated critical habitat. We assume that these trees contain platforms and constitute Element 1. The removal of these 40 platform trees of Element 1 is a permanent loss of that Element within the subunit. Additional platform trees (Element 1) may be lost in the removal of 0.82 ac. of late-successional redwood and Sitka spruce, and 1.42 ac. of late-successional redwood, Douglas fir, and Sitka spruce from habitat conversion. While this is an adverse effect to the critical habitat, we assume other platform trees will be left both in the action area and the

subunit of critical habitat such that the subunit will continue to support Element 1. Element 2 is a measure of suitable forested habitat surrounding platform trees. We do not have specific information about platform trees in the action area and in the rest of the subunit but we assume some will be removed and others will remain post-project. Habitat removal will only affect a small amount of the action area. Further, large trees (>24 in dbh) will be retained as possible.

The permanent loss of large late-successional forest and the conversion to younger stands in some areas (1.42 ac.) will be an adverse effect to Element 2 by reducing the amount of forest meeting the one-half site potential height. However, large trees (>24 in dbh) will be retained as possible and large trees outside of the action area will not be affected. While we do not have specific information about trees that qualify as Element 2, we assume some will remain due to the limited habitat removal and habitat conversion in the action area.

Permanent or temporary impacts to vegetation will occur within 13.54 ac. of designated murrelet critical habitat (Figures 4, 5, and 7). Approximately 9.58 ac. of critical habitat will be permanently impacted by the project, but only 2.01 ac. (21 percent), is considered by the Service as suitable nesting habitat. Approximately 3.96 ac. of critical habitat will be temporarily impacted by the project, but only 1.65 ac. (41.7 percent) is considered suitable nesting habitat.

Nearly 73 percent of permanent and temporary impacts to designated murrelet critical habitat will occur in habitat currently unsuitable for murrelet nesting. However, because potential murrelet nest trees (i.e., large, overstory conifer trees with numerous potential nesting platforms) will be removed from portions of this unsuitable habitat the Service expects that it will take much longer for this habitat to grow to suitability compared with its pre-project condition.

CUMULATIVE EFFECTS

Cumulative effects are defined as those effects of future state, tribal, or private activities, not involving federal activities that are reasonably certain to occur within the action area (50 CFR 402.02). Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

CONCLUSION

The regulatory definition of “to jeopardize the continued existence of the species” focuses on assessing the effects of the proposed action on the reproduction, numbers, and distribution, and their effect on the survival and recovery of the species being considered in this biological opinion. For that reason, we have used those aspects of the species’ status as the basis to assess the overall effect of the proposed action on the species.

The destruction or adverse modification of designated critical habitat means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species (50 CFR 402.02). We determine whether a proposed action is likely to result in the destruction or adverse modification of critical habitat through an analysis of how a proposed

action affects the physical and biological features of critical habitat within the action area in relation to the entirety of designated critical habitat. For the covered critical habitats, this process involves considering the effects at the level of the action area, then at the level of critical habitat unit, and then finally for the entirety of the critical habitat designation.

After reviewing the status of the murrelet and designated murrelet critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the Last Chance Grade Permanent Restoration Project as proposed, is not likely to jeopardize the continued existence of the murrelet and is not likely to result in the destruction or adverse modification of designated murrelet critical habitat.

The Service reached the non-jeopardy and no destruction or adverse modification conclusions based on the following:

- The permanent loss (2.53 ac.) of suitable and potential nesting habitat will have adverse effects on the reproduction of individual murrelets but will not appreciably reduce the reproduction of the species.
- Similarly, the temporary (short- or long-term) impacts to 2.15 ac. of suitable and potential nesting habitats will have adverse effects on the reproduction of individual murrelets but will not appreciably reduce the reproduction of the species. Further, most (1.59 ac.; 74 percent) of the temporary habitat impacts are short term, because suitable nest trees will be retained, and the habitat should continue to function as it had pre-project in less than a year after alteration.
- Although we consider the exposure of 134.9 ac. of suitable or potential murrelet nesting habitat to auditory and visual disturbance during the nesting season to also have negative impacts to reproduction at an individual level, we do not anticipate this level of disturbance to fall outside of annual variability of reproductive success at a population level. Seasonal restrictions on helicopter use, pile driving, and blasting should reduce the potential impacts of elevated sound levels and visual disturbance on nesting adult murrelets and dependent chicks.
- Suitable or potential nesting habitat that will be exposed to auditory and visual disturbance, permanent habitat loss or conversion, or temporary impacts, will occur along a busy U.S. Highway with relatively high ambient sound levels and visual disturbance, suggesting possible habituation by nesting murrelets or avoidance of the area for nesting. Further, dense vegetation along the road edge suggests a limited sight distance from work areas to adjacent suitable nesting habitat for murrelets, which reduces the potential for visual disturbance beyond the immediate vicinity of construction activities.
- The proposed project is not likely to appreciably diminish the value of critical habitat as a whole for the conservation of murrelets. A relatively small amount of designated murrelet critical habitat will be permanently lost or temporarily impacted in the 280 ac. action area. The Service has concluded that designated murrelet critical habitat within the action area, critical habitat sub-unit and unit, and critical habitat range wide will retain its function post construction despite the losses described below:

    - An estimated 9.58 ac. of designated critical habitat will be permanently lost; of that total, 2.01 ac. is considered suitable nesting habitat. The 9.58 ac. of permanently lost critical habitat represents 0.14 percent of the 6,662-ac. sub-unit of the CA-02-a unit that overlaps

the action area and 0.05 percent of the 18,019-ac. CA-02-a critical habitat unit. Finally, the 9.58 ac. of permanently lost critical habitat represents 0.00026 percent of the 3,698,100 ac. of designated murrelet critical habitat range wide. Most of the 9.58 ac. of permanently lost critical habitat will eventually be replaced by habitat created where US 101 will be removed between the north and south portals after tunnel construction.

- An estimated 3.96 ac. of critical habitat will be temporarily impacted during construction; 1.65 ac. is considered suitable nesting habitat. The remaining 2.31 ac. temporarily impacted is considered unsuitable for nesting. The 3.96 ac. of temporarily impacted critical habitat represents 0.06 percent of the 6,662 ac. sub-unit of the CA-02-a unit that overlaps the action area and 0.02 percent of the 18,019 ac. CA-02-a critical habitat unit. Finally, the 3.96 ac. of temporarily impacted critical habitat represents 0.00011 percent of the 3,698,100 ac. of designated murrelet critical habitat range wide.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of an incidental take statement and occurs as a result of the action as proposed.

This Incidental Take Statement assumes that the project will be implemented as described in the *Description of the Proposed Action* section of the preceding biological opinion. Conservation measures included in that section that reduce or minimize the risk of incidental take of murrelets are considered non-discretionary by the Service in its development of this Incidental Take Statement and must be implemented as described.

The measures described below are non-discretionary and must be undertaken by Caltrans so that they become binding conditions of any grant or permit issued to an applicant, as appropriate, for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this incidental take statement. If Caltrans (1) fails to assume and implement the terms and conditions, or (2) fails to require an applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, Caltrans must report the progress of the proposed action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE ANTICIPATED

The Service anticipates that murrelet take in the form of injury or mortality to nesting adults,

eggs, or chicks will occur from auditory and visual disturbance during the nesting season, and from the permanent and temporary loss and temporary degradation of suitable and potential nesting habitats. However, the Service cannot accurately estimate the number of murrelets that may be taken as a result of the proposed action due to a lack of information on murrelet nest density within the action area, and the extent to which loss of old growth individual trees and auditory and visual disturbance during the nesting season could result in injury or mortality.

Due to the difficulty in determining the number of marbled murrelets that could be taken due to the proposed action, a habitat surrogate will be used in accordance with regulations at 50 CFR 402.14(i)(1)(i).

It is appropriate to use surrogates to describe the anticipated extent of incidental take in an incidental take statement as long as: 1) the statement describes the causal link between the surrogate and the take of the listed species; 2) the statement describes why it is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individuals of the listed species; and, 3) the statement sets a clear standard for determining when the level of anticipated take of the listed species has been exceeded.

In this instance, nesting habitat acreage is used as a surrogate to specify the amount of take associated with marbled murrelet. The causal link being:

- Nesting habitat is essential to murrelet reproduction. Anthropogenic disturbance to the habitat in the form of elevated and novel audiovisual stimuli may result in take of the species due to the abandonment of nesting attempts, pre-mature fledging of chicks, or inadequate food being provided to chicks from adults.
- Area of disturbed nesting habitat correlates to an unknown number of marbled murrelet nesting attempts due to gaps in scientific knowledge on murrelet nesting density, site fidelity, and interannual population fluctuations.

The reason why it's not practical to express the amount of take in terms of individuals is because:

- Marbled murrelet nesting attempts are difficult to locate due to the crepuscular and cryptic nature of the species. Thus, it is also difficult to identify nest abandonment or predation events.
- Nesting locations are variable across years and the scientific understanding of nest site fidelity for this species is still developing.

The Service anticipates an unknown number of nesting marbled murrelets associated with a maximum of the following acreages below to be taken. Take will be considered exceeded if acreages above these amounts are impacted:

- 2.53 ac. of suitable and potential nesting habitats permanently lost and 2.15 ac. temporarily converted from suitable to unsuitable habitat for nesting.
- 134.9 ac. of suitable or potential nesting habitat exposed to elevated auditory or visual disturbance.

REASONABLE AND PRUDENT MEASURES

Pursuant to 50 CFR § 402.14 (i) (I) (ii) and (iv), reasonable and prudent measures (RPMs) are measures considered necessary and appropriate to minimize the impact (i.e., the amount or extent of incidental take) (50 CFR § 402.02). Terms and conditions are the actions required by the federal action agency that will implement the measures described in the RPMs (50 CFR § 402.14). These must be carried out for the exemption in section 7(o)(2) to apply.

The conservation measures listed in the *Description of the Proposed Action* section above are thorough and we conclude that no additional measures are necessary to minimize the impacts (i.e., amount or extent) of the incidental take we anticipate. This is contingent on the implementation of the conservation measures as proposed. Therefore, we are not providing additional reasonable and prudent measures or implementing terms and conditions for these activities.

TERMS AND CONDITIONS

The Service has determined that no terms and conditions are required.

REPORTING REQUIREMENTS

Upon locating a dead or injured murrelet, the Service's Division of Law Enforcement in Sacramento, California at (916) 414–6660 and the Arcata Fish and Wildlife Office at (707) 822–7201 must be notified immediately; and in writing within three working days. Notification must include the date, time, and location of the carcass; cause of death or injury, if known; and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. The finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed, unless to remove it from the path of further harm or destruction. Should any treated listed species survive, the Service shall be contacted regarding the final disposition of the specimen(s). In the case of take or suspected take of murrelets not exempted in this biological opinion, the Arcata Fish and Wildlife Office and the Division of Law Enforcement shall be notified within 24 hours of the incident.

Reporting of survey results for spotted owl and marten will be sent to the Arcata Fish and Wildlife Office by the end of the calendar year for each year surveys and or spot checks are conducted prior to, and during, construction. Additionally, annual progress reports for restoration activities associated with conservation measures 7 and 8 will be sent to the Arcata Fish and Wildlife Office by the end of each calendar year during construction.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be

implemented to further the purposes of the Act, such as to preserve endangered species habitat, to help implement recovery plans, or to development information. The Service recommends the following actions:

- Monitoring the road removal area after completion to assess which wildlife species use and colonize the area after a section of major highway is removed.
- Studying pre and post construction population via offshore surveys every other year to track population status.
- Implementing a nesting study via detection dogs or other means to identify nesting activity prior to and after construction in project site, as well as within restoration areas.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION-CLOSING STATEMENT

This concludes formal consultation on the proposed Last Chance Grade Permanent Restoration Project, U.S. Highway 101, Del Norte County, California. As provided in 50 CFR §402.16, reinitiation of consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion or written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) may have lapsed and any further take could be a violation of section 4(d) or 9.

If you have any questions regarding this biological opinion, please contact Matthew Parker of my staff at matthew_parker@fws.gov.

Sincerely,

Vicky Ryan
Digitally signed by VICKY RYAN
Date: 2025.05.15 14:13:02 -07'00'

Vicky Ryan
Field Supervisor

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APPENDIX A.

Suitable habitat definitions for the northern spotted owl and the coastal Distinct Population segment of the Pacific marten. **Source:** Programmatic Letter of Concurrence for the California Department of Transportation's Routine Maintenance and Repair Activities, and Small Projects Program for Districts 1 and 2 (AFWO-2022-0062929). Refer to the source document for full citations.

Northern Spotted Owl

Forsman et al. (1984) reported that northern spotted owls (owls) have been observed in many forest types, including Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), white fir (*Abies concolor*), ponderosa pine (*Pinus ponderosa*), Shasta red fir (*Abies magnifica var. shastensis*), mixed evergreen, mixed conifer-hardwood, and coast redwood (*Sequoia sempervirens*), and generally rely on older forested habitats containing the structures and characteristics required for nesting, roosting, and foraging. Such features typically include moderate to high (≥60 percent) canopy closure; a multi-layered, multi-species canopy with large overstory trees ≥30 inch (in.; (76 centimeters [cm] diameter-at-breast-height [dbh]), large trees with various deformities and decadence, large snags, large accumulations of woody debris, and open space below the canopy (Thomas et al. 1990). Foraging activity is associated with tree height diversity (North et al. 1999), canopy closure (Courtney et al. 2004, Irwin et al. 2000), snag volume, density of snags >20 in. (51 cm) dbh (Courtney et al. 2004, Irwin et al. 2000, North et al. 1999), density of trees ≥31 in. (79 cm) dbh (North et al. 1999), volume of woody debris (Irwin et al. 2000), and other structural characteristics of old forests (Carey et al.1992, Irwin et al. 2000). Dispersal habitat consists of stands with adequate tree size and canopy closure to provide protection from avian predators and opportunities to forage. A mosaic of late-successional habitat interspersed with other seral conditions may benefit owls more than large, homogeneous expanses of older forests (Franklin et al. 2000, Meyer et al. 1998, Zabel et al. 2003). In northwestern California, owls nest primarily in the broken tops, cavities, or on platforms (e.g., mistletoe brooms) of Douglas-fir (83 percent) and coast redwoods (9 percent), with a mean minimum dbh of 46.9 in. (SD = 3.7 in.; 119 cm [SD = 9.4 cm]) (Lahaye and Gutierrez 1999). It is important to note, however, that owls in northwestern California have nested in smaller diameter trees that contain the proper structural elements.

Coastal DPS Pacific Marten

Pacific martens (martens) have been shown to select habitat at three primary spatial scales: micro-habitat, stand, and home range (Slauson et al. 2019). Covered work activities will likely affect marten habitat at only the micro-site and stand scales. The following sections were copied directly from Slauson et al. 2019 with only minor changes such as the removal of figure and table references, and species nomenclature (i.e., replacing references to "Humboldt" marten with "Pacific" marten). Where information gaps existed, Slauson et al. (2019) used published information from outside the range of the DPS that best characterized aspects of its biology that are consistent across the range of the Pacific marten and American marten (*Martes americana*). The American marten was split into two species in 2012 (Dawson and Cook 2012); the new species Pacific marten (west of the Rocky Mountain crest) and the original American marten

(east of the Rocky marten crest). Citations below that predate the species split refer to the American marten regardless of where in North America the study occurred.

Micro-scale Habitat Use: Resting and Denning Habitat

Martens use rest structures daily between foraging bouts to provide thermoregulatory benefits and protection from predators (Taylor and Buskirk 1994). Short-term re-use rates for individual rest structures are typically low, and selection for structure type changes seasonally to meet thermoregulatory needs (e.g., Spencer 1987). Thus, many resting structures meeting various seasonal requirements are required across marten home ranges. Large-diameter live trees, snags, and logs provide the main types of resting structures for martens (Schumacher 1999, Slauson and Zielinski 2009, Spencer 1987). Slauson and Zielinski (2009) reported that among 55 rest structures used by Pacific martens in the summer and fall, the most used included snags (37 percent), downed logs (23 percent), and live trees (17 percent). Less commonly used structures included large slash piles with large-diameter logs (10 percent), natural rock piles (8 percent), and shrub clumps (6 percent). Pacific martens on more intensively managed lands also indicate that live trees, snags, and downed logs are the most commonly used rest structures (76 percent) with rock piles (11 percent) and slash piles (11 percent) used to a lesser degree (Slauson 2015). Although martens use human-created structures, such as slash piles, these structures appear to be most useful in summer when insulation from cold temperature or damp conditions is not a requirement (Raphael and Jones 1997).

Martens typically select the largest available structures for resting and denning (Gilbert et al. 1997, Spencer 1987, Wilbert 1992). Rest structures used by Pacific martens in largely un-managed forest averaged 37 in. (95 cm) dbh for snags, 35 in. (88 cm) large-end diameter for downed logs, and 37 in. (94 cm) dbh for live trees; structures that on average exceeded 300 years of age (Slauson and Zielinski 2009). Preliminary data on Pacific marten rest structures from more intensively managed lands indicate a similar pattern of use of large-diameter conifer structures, with 70 percent of structures >28 in. (70 cm) dbh (Slauson 2015). Most resting locations (i.e., the actual resting place in the structure) were in tree cavities (33 percent), on platforms in broken-top snags or on large live branches (33 percent), or in chambers within log piles or rock outcrops (28 percent) (Slauson and Zielinski 2009). Rest structures provide cavities or chambers that likely become especially important during the late fall through the late spring, when wet and rainy conditions are common.

Denning structures where females give birth to kits are called natal dens, and the locations where they later move their kits are referred to as maternal dens. Martens appear to be more selective of habitat conditions at den sites than at resting sites (Thompson et al. 2012). Characteristics of den structures and their surrounding stands each influence den-site selection (Ruggiero et al. 1998). High quality foraging habitat near den sites is likely important, allowing females to maximize energy gained from foraging during lactation and minimize time spent away from their kits, especially when kits are dependent on their mothers for thermoregulation. The most common den structures used by North American martens are large-diameter live and dead trees with cavities (Thompson et al. 2012).

Pacific marten dens in California (n = 42; 11 natal dens and 31 maternal dens) were

predominantly located in cavities of woody structures, with live trees (72% of single-use dens), snags (16%), and logs, rockpile, subterranean, and human-made marten box (3% each) comprising 91% of dens (Delheimer et al. 2021). Den structure species included both hardwoods and conifers and consisted of giant chinquapin (*Chrysolepis chrysophylla*; 55% of dens), redwood (17%), Douglas-fir (14%), tanoak (*Notholithocarpus densiflorus*; 7%), western hemlock (<4%), and western redcedar (*Thuja plicata*; <4%) (Delheimer et al. 2021). Mean diameter of single-use den trees was 80.3 ± 18.5 cm for live hardwood trees ($n = 17$), 135.4 ± 57.9 cm for live conifers ($n = 6$), 150.8 ± 58.8 cm for conifer snags (n = 4), and 91 cm for the single hardwood snag (Delheimer et al. 2021).

Stand Scale Habitat Use

Martens select forest stands that provide habitat structure supporting one or more life history needs that include foraging, resting, or denning. In addition, stand structure features that may reduce the risk of predation, such as dense overhead vegetation and vertical tree boles, could also be important. In general, the Pacific marten–and the American marten *Martes americana*–is associated with late-successional conifer stands (Powell et al. 2003) characterized by an abundance of large logs and large, decadent live trees and snags (Buskirk and Ruggiero 1994). Also, many key prey species occur in their highest densities in forest stands with late-successional structural features (e.g., western red-backed vole [*Myodes californicus*; Hayes and Cross 1987, Zabel and Waters 1992], northern flying squirrel [*Glaucomys sabrinus*; Waters and Zabel 1995], Douglas's squirrel [*Tamiasciurus douglasii*; Carey 1991]), and dense ericaceous shrub layers (e.g., chipmunks [*Neotamias* spp.; Hayes et al. 1995]). For reasons previously discussed, coarse woody debris is also an important component of stand structure, affecting both prey abundance and marten predation success (Andruskiw et al. 2008).

Analysis of Pacific marten habitat selection in California revealed that they most strongly selected stands of old-growth, conifer-dominated forests with dense, ericaceous shrub layers (Slauson et al. 2007). Late-mature stands were used in proportion to availability, while stands in earlier successional stages were selected against (Slauson et al. 2007). The old-growth and late mature stands selected by martens were most often dominated by Douglas-fir overstories, but also had mature hardwood understories composed of either tanoak or chinquapin. Shrub layers were dense (>70 percent cover), spatially extensive, and dominated by ericaceous species, including evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), and rhododendron (*Rhododendron macrophyllum*; Slauson et al. 2007). Detections of martens in southern coastal Oregon shared these same stand characteristics (Slauson and Zielinski 2001).

A recent study focusing on martens on more intensively managed lands on the western edge of the northern coastal California population found some martens using a mosaic of managed stands that were mostly harvested several decades ago. Many of those managed stands included substantial numbers of residual, large-diameter live and dead conifers and hardwoods.

In addition to old-growth stands in highly productive soils, martens in coastal California and south coastal Oregon also have used forest- and shrub-dominated habitats occurring on less productive serpentine soils, hereafter called serpentine habitats. These habitats typically feature conifer-dominated overstories, with dominant species including lodgepole pine (*Pinus contorta*

ssp. *murrayana*), western white pine (*Pinus monticola*), and Douglas-fir, but also include dense (>70 percent cover) shrub layers dominated by huckleberry oak (*Quercus vaccinifolia*), shrub form tanoak (*Notholithocarpus densiflorus* var. *echinoides*), and red huckleberry (*Vaccinium parvifolium*) (Slauson and Zielinski 2001, Slauson et al. 2007). In contrast to the dense old-growth stand structure martens use on productive soils, stands used in serpentine soils include any seral stage and with tree canopy closures ranging from sparse (20 percent) to dense (>70 percent; Slauson and Zielinski 2001, Slauson et al. 2007). Serpentine habitats used by martens also contain abundant rocky outcrops, providing chambers that martens use as resting structures where large woody structures are rare (Slauson and Zielinski 2009). Although serpentine soils are extensively distributed in northwestern California and southwestern Oregon, martens have only been found in serpentine habitats in mesic, fog-influenced areas near (<18.6 mi [<30 km]) the coast.

Martens in central coastal Oregon have been detected in surveys and found as roadkills (Moriarty et al. 2016, Zielinski et al. 2001) in and adjacent to shore pine (*Pinus contorta* ssp. *contorta*) and transitional shore pine–hemlock–Douglas-fir forests. Shore pine forests near these sites had many of the same characteristics as serpentine habitats, such as variable tree overstory with dense, spatially extensive ericaceous shrub understories (Chappell and Kagan 2001).

APPENDIX B.

Geospatial vegetation data and attribute codes used to build the murrelet suitable and potential nesting habitats feature class in ArcGIS Pro used for this consultation.

1. VEGETATION DATA

Source: EVEG (Existing Vegetation): https://data.fs.usda.gov/geodata/edw/datasets.php?xmlKeyword=Eveg

Geodatabases used:

- Existing Vegetation: Region 5-North Coast West
- Existing Vegetation: Region 5-North Coast Mid

2. EVEG ATTRIBUTE SELECTION FOR MURRELET NESTING HABITAT

Marbled Murrelet Nesting Habitat:

CWHR_TYPE = 'DFR' Or CWHR_TYPE = 'KMC' Or CWHR_TYPE = 'MHC' Or CWHR_TYPE = 'JPN' Or CWHR_TYPE = 'PPN' Or CWHR_TYPE = 'RDW' Or CWHR_TYPE = 'WFR' Or CWHR_TYPE = 'CPC' Or CWHR_TYPE = 'EPN' Or CWHR_TYPE = 'LPN' Or CWHR_TYPE = 'SMC' CWHR_DENSI = 'D' And CWHR_SIZE = '5'

Marbled Murrelet "Potential" Nesting Habitat:

CWHR_TYPE = 'DFR' Or CWHR_TYPE = 'KMC' Or CWHR_TYPE = 'MHC' Or CWHR_TYPE = 'JPN' Or CWHR_TYPE = 'PPN' Or CWHR_TYPE = 'RDW' Or CWHR_TYPE = 'WFR' Or CWHR_TYPE = 'CPC' Or CWHR_TYPE = 'EPN' Or CWHR_TYPE = 'LPN' Or CWHR_TYPE = 'SMC'
CWHR_DENSI = 'D' And CWHR_SIZE = '4'

3. CODE DEFINITIONS

CWHR: California Wildlife Habitat Relationships (https://wildlife.ca.gov/Data/CWHR).

CWHR_TYPE:

CPC = Closed-Cone Pine-Cypress
DFR = Douglas-Fir
EPN = Eastside Pine
JPN = Jeffrey Pine
KMC = Klamath Mixed Conifer
LPN = Lodgepole Pine
MHC = Montane Hardwood-Conifer
PPN = Ponderosa Pine
RDW = Redwood
RFR = Red Fir
SMC = Sierran Mixed Conifer
WFR = White Fir

CWHR_Density (also truncated as "CWHR_Densi"):

D = 60 to 100% Canopy Closure

CWHR_Size:

4 = Mean tree DBH 11" to 23.9"
5 = Mean tree DBH >=24"